United States
Department of
Agriculture

**Forest
Service**

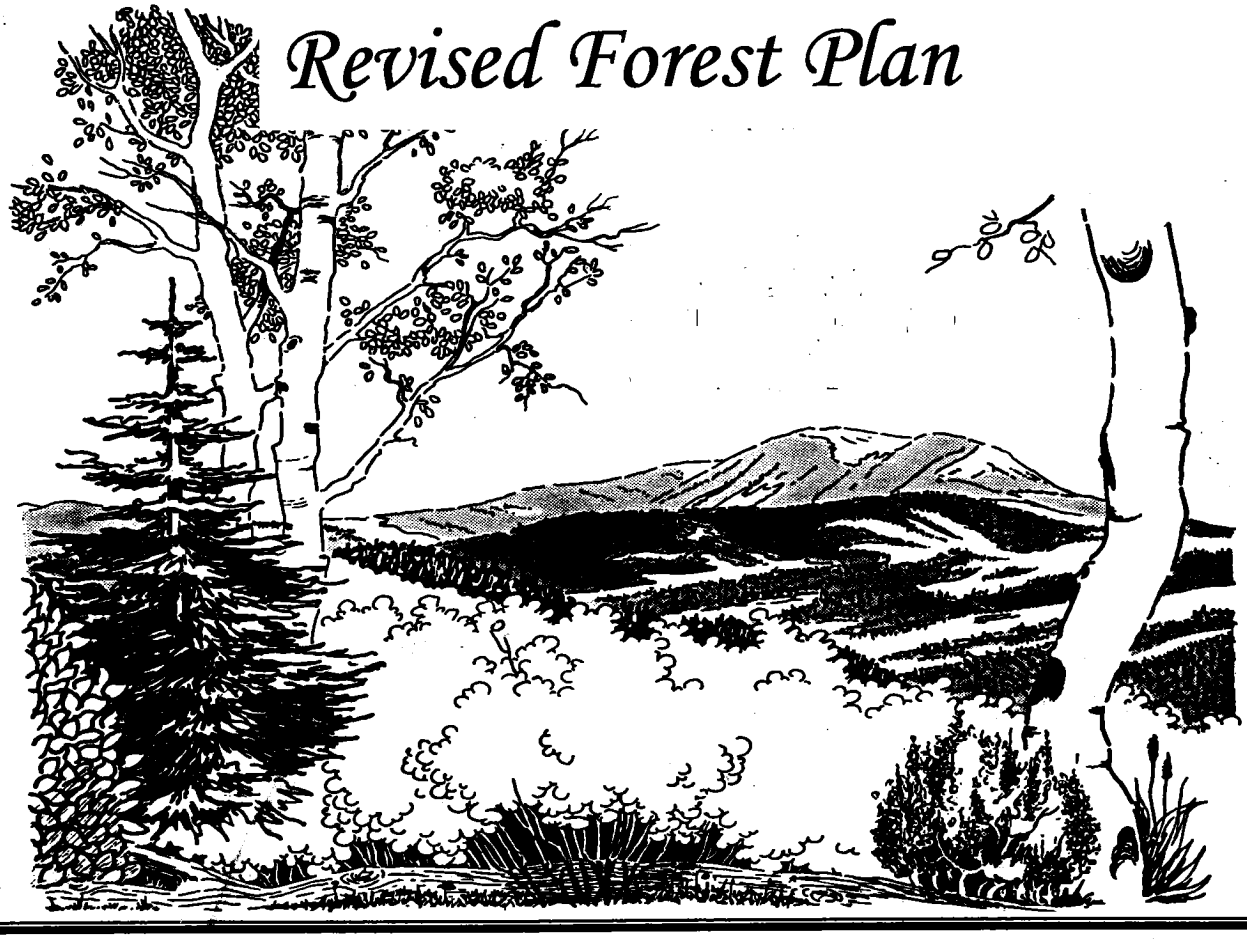
Caribou-Targhee
National
Forest

February, 2003

Final Environmental Impact Statement

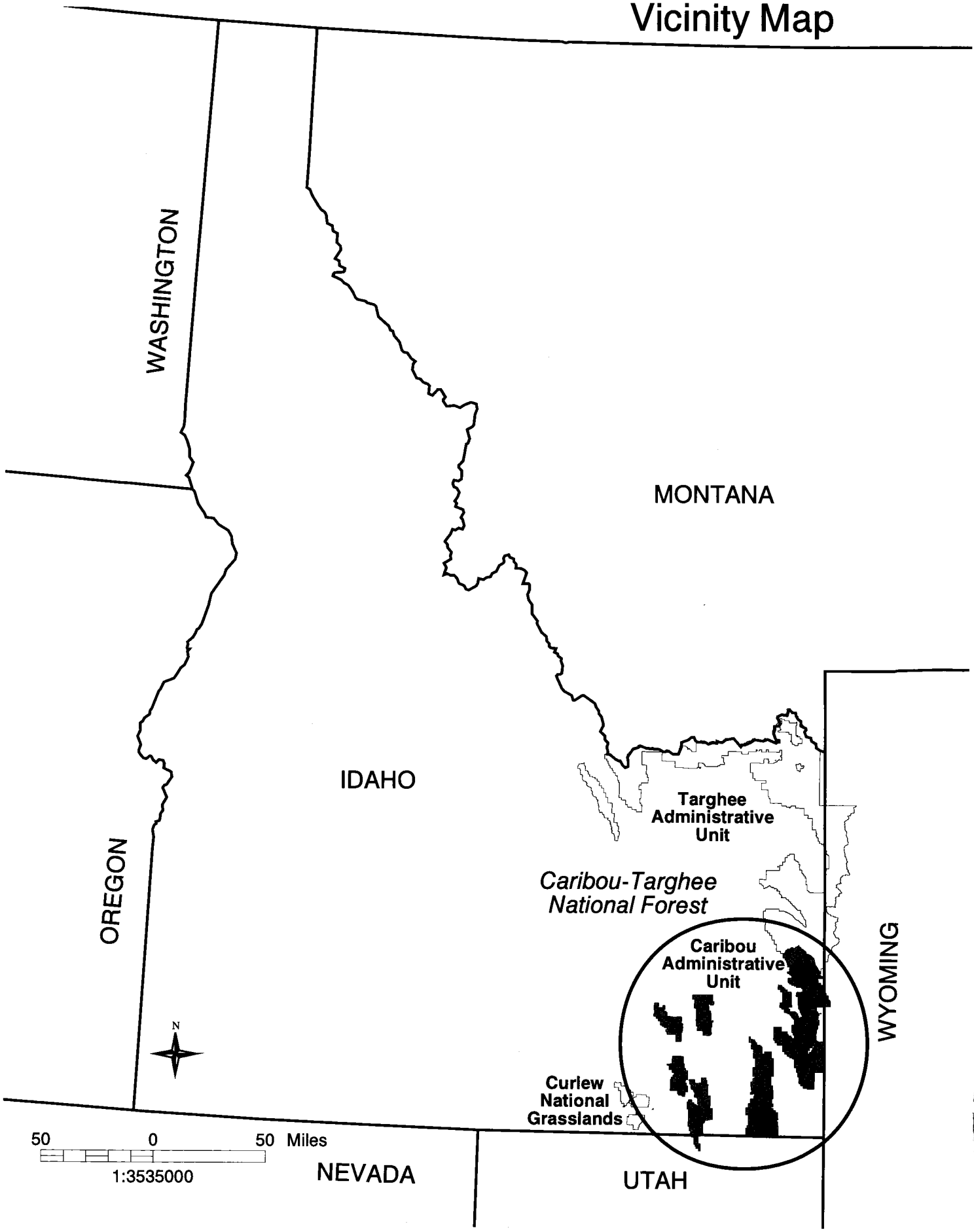
For the

Caribou National Forest
Revised Forest Plan



Volume IV: Appendix B, C, D and R

Vicinity Map



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Final Environmental Impact Statement

Caribou Revised Forest Plan
Volume IV

Contains

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Caribou Revised Forest Plan
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INTRODUCTION

The basic analytical framework for the revision of the Caribou Forest Plan is prescribed in the NEPA process. A set of alternative scenarios, representing different approaches to the identified needs for change, is simulated over time to provide information that can be used to compare and contrast those alternatives in terms of their ability to achieve the Desired Future Conditions (DFC). Analyzing the effects of the alternatives includes evaluation of vegetation dynamics, economics, wildlife habitat and species viability, scenery management, and commodity production.

This appendix describes the analysis process and techniques used by the interdisciplinary team during the management plan revision process. It contains the following:

- The framework for the planning process.
- A discussion of the data sources and assumptions made.
- A discussion of the various analytical tools and methods used.

The planning administrative record is an additional source of information used to develop this appendix and is incorporated by reference. The planning process is a very complex one. The complexity stems from the need to address a variety of interrelated and often conflicting issues by allocating land and scheduling activities in a cost-effective manner for the entire Forest over a long period of time. This appendix describes some of the analytical tools used to reduce the process to manageable proportions.

The size of the analysis area and the number of issues being addressed made the alternative development process and effects analyses complicated. The planning area contains more than one million acres in southeastern Idaho, western Wyoming and northern Utah.

FRAMEWORK FOR THE PLANNING PROCESS

The revision of a Forest Plan is guided by the general planning process described in 36 CFR 219.12. This section describes ten steps, which lead from the completion of a Forest Plan to the completion of a revised Forest Plan.

Land and resource management plans (management plans) currently direct management of the Caribou National Forest and the Ranger District units. The first Forest Plan was signed in September 1985.

STEP 10. (STEP 10 OF THE INITIAL PLANNING PROCESS) MONITORING AND EVALUATION

The last step of the initial Forest Plan process is the first step in revising a Forest Plan. Monitoring and evaluation reports were completed in 1991, 1997, and 2000 for the Caribou National Forest, an administrative unit of the Caribou-Targhee National Forest. Essentially, these evaluations summarized monitoring data and reviewed trends in Forest Plan implementation.

Revision of management plans is directed by the National Forest Management Act (NFMA), regulations 36 CFR 219 and the Forest Service Directives System (FSH 1909.12). A revised Management Plan and a Final Environmental Impact Statement describing environmental effects for the Caribou National Forest have been completed and are available for public review.

STEP 1. IDENTIFICATION OF PURPOSE AND NEED

Many sources were used to identify the need for change in management on the Caribou National Forest. Some principal sources included the following:

- Experiences in implementing the current Forest Plan and working with the public.
- Public involvement in implementing projects.
- Need for management plan amendments as a result of implementing projects.
- Monitoring and the effects of implementation.
- Understanding cumulative effects from implementing projects.
- Issues raised in appeals and litigation.
- Knowledge gained from research on management activities and uses.
- Discussions with employees.
- Coordination and input from other federal and state agencies, local city and county governments, and partners.
- Public feedback on values for the Caribou National Forest.
- Results of assessments.
- Changes in management philosophy for National Forest System lands.

From these sources, the Forest Service developed the Purpose and Need for Change and defined the major revision topics.

STEP 2. PLANNING CRITERIA

During this step the remainder of the process is outlined. Here the major revision topics were developed along with indicators for each issue. These provided focus for the rest of the analysis.

STEP 3. INVENTORY DATA AND INFORMATION COLLECTION

Numerous data sources were used, stored, and analyzed on many different computer systems. The majority of the data used was spatial and stored on the corporate IBM UNIX system in Arc/Info.

Several non-spatial databases were stored on personal computers using Microsoft Excel as the data management software. This information is primarily non-spatially related data.

STEP 4. ANALYSIS OF THE MANAGEMENT SITUATION (AMS)

This step determines the ability of the planning area to supply goods and services in response to society's demands. It provides background information for formulating a broad range of reasonable alternatives. In April 1999 the Forest released the ***Initial Analysis of the Management Situation Report*** for public review and comment. Included in the report were the Needs for Change in Management, a Range of Desired Future Conditions to be achieved, and a baseline report for various resources on the Forest.

The Forest received 57 comment letters from the public on the findings disclosed in the AMS. These comments were incorporated into the public scoping process and were considered in developing the Proposed Action and action alternatives to the proposed action.

In August 1999 the Forest Service published a Notice of Intent to Prepare an Environmental Impact Statement (DEIS) in the **Federal Register**. The federal notice initiated the formal public involvement process. In response to the federal notice and many other public outreach efforts, the Forest Service received public comments to help further define the major revision topics. Several additional revision topics were identified during this process. Much of the work originally completed in the AMS was updated and incorporated into this FEIS

STEP 5. FORMULATION OF ALTERNATIVES

See Chapter 1 of the FEIS for a discussion about the significant planning issues that drove the formulation of alternatives. See Chapter 2 of the FEIS for a discussion of each alternative considered in detail.

STEP 6. ESTIMATED EFFECTS OF ALTERNATIVES

The physical, biological, economic, and social effects of implementing each alternative considered in detail were estimated and compared according to NEPA procedures. See Chapter 4 of the FEIS.

STEP 7. EVALUATION OF ALTERNATIVES

Significant physical, biological, economic and social effects of implementing alternatives were evaluated by the Interdisciplinary Team and the Forest management team. Using a decision-making protocol, a selected alternative was identified in the Record of Decision.

STEP 8. PREFERRED ALTERNATIVE RECOMMENDATION

The Regional Forester reviewed the Forest Supervisor and Interdisciplinary Team's evaluation and recommendation and identified Alternative 7 as the preferred alternative in the Revised Management Plan and Draft Environmental Impact statement. The DEIS was released in May 2001 and made available for public review. Following the public review period, the Interdisciplinary Team evaluated agency and public comments, and revise steps 5-7 as needed to address DEIS comments. In response to those comments, the IDT created a new alternative crafted from those released in the Draft EIS. This new alternative, 7R, has been incorporated into the Final EIS and was recommended for selection. The Regional Forester reviewed the Forest Leadership Team's recommendation and Interdisciplinary Team's evaluation and made the final selection of the alternative to be implemented.

STEP 9. PLAN APPROVAL AND IMPLEMENTATION

The Regional Forester reviewed the Revised Forest Plan and Final Environmental Impact Statement (FEIS) for a final decision. A Record of Decision (ROD) has been completed.

STEP 10. (STEP 10 OF THE INITIAL PLANNING PROCESS) MONITORING AND EVALUATION

Repeat monitoring and evaluation.

Issue 1

Recreation, Access, and Scenery Management

Baseline Information

A.1: RECREATION OPPORTUNITY SPECTRUM (ROS) AND WINTER RECREATION MAPPING

Recreation Opportunity Spectrum (ROS) mapping is used as a primary tool to help define and allocate different alternatives for summer and winter recreation. For summer use, ROS was mapped, with some modification of the original criteria as defined (Forest Service, ROS Book, 1986). For winter recreation, the primary intent of mapping was to distinguish between areas allocated for motorized and non-motorized winter activities. This section describes how maps showing summer ROS and winter recreation were developed. It was decided not to use ROS as a tool to determine use capacities at this time.

SUMMER ROS MAPPING

Initially a current condition ROS map was developed using ROS as true to the ROS Book as possible. The current conditions map was used as a baseline for developing Summer ROS and Winter Recreation maps for each alternative. The initial GIS base maps for existing condition were created using ROS criteria as described in the 1986 ROS book. Criteria descriptions are as follows.

Remoteness Criteria

Primitive (P) - 3 miles from all roads, railroads, and motorized trails.

Semi-Primitive Non-Motorized (SPNM) - areas less than 3 miles and more than .5 mile from all roads, railroads, and motorized trails.

Semi-Primitive Motorized (SPM) - .5 mile buffer on all roads in maintenance classes 0, 3, 4, and 5 ("better than primitive").

Roaded Modified (RM) and Roaded Natural (RN) - .5 mile buffer on all roads in maintenance classes 1 and 2 ("primitive").

Size Criteria

Wilderness/Primitive - Areas must be 5,000 acres or more.

SPNM, SPM - Generally, polygons should be 2,500 to 5,000 acres. The original 1985 ROS mapping included some areas as small as 800 acres. These areas were retained in the inventory. Many of these areas are screened by vegetation or topography, creating a "buffer" from surrounding development and some offer important non-motorized settings for local recreationists.

Evidence of Humans Criteria

The following Forest GIS facility layers were overlaid to show presence of human developments. Generally, P, SPNM, and SPM classes are not present in areas covered by these layers.

devrec includes campgrounds, trailheads, etc.

sua means special use area.
utl means utility lines.

Based on review and adjustment from local knowledge, current condition maps were produced. (In general accordance with the ROS Book, buffers placed on roads, etc. were altered in some areas due "local topographic relief and vegetative cover and natural barriers and screening" (PG IV-6 ROS Book, 1986). The following classes in ROS were mapped for summer:

Primitive
SPNM Semi-Primitive Non-Motorized
SPM Semi-Primitive Motorized
RM Roaded-Modified
RN Roaded-Natural

WINTER RECREATION MAPPING

For the analysis, winter, or the snow-free season, has been defined as having 12" or more of snow on the ground. Thus, the Winter or snow season ROS applies only when this general condition is met, and at other times the Summer, or snow-free ROS apply. Two Winter Recreation Classes were created:

Semi-Primitive Non-Motorized (winter SPNM) – These areas emphasize non-motorized winter recreation such as x-country skiing, snow shoeing, tubing, etc., no snowmobiles or other motorized vehicles are allowed.

Semi-Primitive Motorized – Snowmobiling is permitted in these areas and/or on designated routes. Non-motorized uses are also permitted here.

It was determined that application of the full range of the Recreation Opportunity Spectrum to mapping winter activities did not work well. There are substantial differences in settings when areas are covered in snow. The resulting change to the character of roads and facilities and access, and appropriateness of motorized or non-motorized uses in certain areas of the Forest, made application of the full ROS categories to winter settings impractical. It was determined that mapping of Winter Recreation opportunities would answer two questions related to the decisions to be made:

1. Where can I snowmobile?
2. Where can I have a non-motorized winter experience?

While only two basic ROS classes are presented in the Winter Recreation maps, the process for mapping for Winter Recreation used ROS criteria, with the exception of "remoteness". The road "buffer" rules do not uniformly apply to winter recreation settings. Considerable adjustments were made to these maps based on the travel plan.

GENERAL GUIDELINES FOR MAPPING

Most 2.2 management prescriptions will be semi-primitive non-motorized in nature. Management Prescriptions 2.1.2, 4.2, 4.3, 5.1, and 8.x will generally have a motorized access classification applied to them. (SPM, RM or RN) In all alternatives, facility development is allowed if consistent with ROS setting and prescription direction.

ALTERNATIVE 1 (1985 FOREST PLAN ROS)

Summer

This alternative retains current management of Summer or snow-free ROS allocations. Alternative One's ROS allocation depicts existing condition and is based on the current Travel Map and existing levels of area developments. Alternative One's Summer ROS maps were used as a baseline to develop the other alternatives' Summer ROS allocations, i.e. working from known conditions to potential new recreation allocations. Summer ROS acres for

Alternative One may not include small areas currently managed as non-motorized. Prescription mapping was not done on a fine enough scale to "capture" small area closures or restrictions.

Winter

This alternative retains current management of Winter or snow season ROS allocations. Alternative One's Winter ROS allocation depicts existing condition and is based on the current Travel Map's snow-season management. Alternative One's Winter ROS maps were used as a baseline to develop the other alternatives' Winter ROS allocations-i.e. working from known conditions to potential new recreation allocations. Winter ROS acres for Alternative One may not include small areas currently managed as non-motorized. Prescription mapping was not done in a fine enough scale to "capture" small area closures or restrictions.

ALTERNATIVE 2

Summer

This alternative also retains current management of summer or snow-free ROS allocations.

Winter

This alternative reflects existing winter or snow season ROS allocations, with the exception of restrictions concerning Winter Range. Winter Range prescription areas were changed or increased under this alternative, changing winter ROS allocations from SPM to SPNM.

ALTERNATIVE 3

Summer

This alternative increases SPM summer allocations. Toponce, Caribou Mountain and Mt. Naomi SPNM areas change to SPM management. With this change, the Primitive area of Caribou Mountain, no longer qualifies as Primitive, due to the lack of a SPNM buffer.

Winter

This alternative proposes increasing SPM Winter ROS allocations, with the exception of restrictions in Winter Range. The Mt. Naomi SPNM area changes to SPM during the winter.

ALTERNATIVE 4

Summer

This alternative increases SPNM summer allocations and decreases SPM allocations. Much of the increase in SPNM acres is due to restricting motorized use to designated routes.

Winter

This alternative proposes increasing SPNM Winter ROS allocations, but many of these SPMN acres restrict human use to designated routes in areas of critical winter range.

ALTERNATIVE 5

Summer

This alternative emphasizes recreation development in RN and SPM areas. SPNM summer allocations are increased, decreasing SPM areas. Much of the increase in SPNM acres is due to restricting motorized use to designated routes and managing additional areas as non-motorized.

Winter

This alternative proposes increasing SPNM Winter ROS allocations, but many of these SPMN acres restrict human use to designated routes in areas of critical winter range.

ALTERNATIVE 6

Summer

This alternative increases SPNM summer allocations and decreases SPM allocations.

Winter

This alternative proposes increasing SPNM Winter ROS allocations.

ALTERNATIVE 7

Summer

This alternative increases SPNM summer allocations and decreases SPM allocations. Much of the increase in SPNM acres is due to restricting motorized use to designated routes.

Winter

This alternative proposes increasing SPNM Winter ROS allocations, but many of these SPMN acres restrict human use to designated routes in areas of critical winter range.

ALTERNATIVE 7R

Summer

This alternative increases SPNM summer allocations and decreases SPM allocations. Much of the increase in SPNM acres is due to restricting motorized use to designated routes.

Winter

This alternative proposes increasing SPNM Winter ROS allocations.

A 2 CROSS COUNTRY MOTORIZED TRAVEL

For this indicator, GIS calculations were made to determine the acres open to cross country motorized travel. For all alternatives, the acres on prescription maps with the access code "c" were tallied.

A 3 MOTORIZED AND NON-MOTORIZED TRAVEL OPPORTUNITIES

For the analysis, the GIS travel layer was used. This layer shows more motorized routes than are on the current travel plan since approximately 40 percent of the Forest is currently open to cross country motorized use and there are few designated routes in those areas. The IDT and Districts determined which motorized routes were open based on actual use of these "user-created" roads and trails. Map 10 in the Plan map package shows the existing condition and our best assessment of effectively open roads and trails. This map does not match the 2002 Travel Plan.

As discussed above, the analysis map does not match the Travel Plan map because few routes are actually "designated" in areas open to cross-country travel in the 1985 Plan. Furthermore, the Forest Plan analysis maps are at a larger scale than the travel plan therefore they are more accurate and depict roads and trails indiscernible at the smaller scale. The GIS maps are also based on spatial features rather than being a cartographic production.

To determine the changes for this indicator, the prescription areas and their corresponding road density were overlaid on the GIS road/trail layer. The ArcView program then calculated the actual route density in each polygon and compared that with the density standard. In polygons that exceeded their density standard, the actual miles of routes that would need to be closed in order to meet it were determined. These were added for each polygon by alternative to derive the total miles of routes which would likely need to be closed in order to meet the road densities for each alternative.

No determination was made of which roads and/or trails would need to be closed nor what methods would be used to close them. Those decisions will be made at a more site-specific level during travel plan updates.

Issue 2

Social and Economic Environment

Baseline Information

THE MODEL

Economic effects to local counties were estimated using an economic input-output model developed with IMPLAN Professional 2.0 (IMPLAN). IMPLAN is a software package for personal computers that uses the latest national input-output tables from the Bureau of Economic Analysis, secondary economic data at the county level from a variety of public sources, and proprietary procedures to develop an input-output model for a study area. The process and software were originally developed by the USDA-Forest Service and are now the property of the Minnesota IMPLAN Group (MIG, Inc.). All IMPLAN models were developed using 1997 data. These were the most recent data available at the time of model development.

IMPLAN is the accepted software that the Forest Service employs for forest plan economic analysis. Input to the IMPLAN program is organized in standardized Microsoft Excel spreadsheets, which have been prepared for agency-wide use by a team of Forest Service economists (FEAST Spreadsheets, Niccolucci, 12/14/2000). The Quicksilver ™program was used for the required present net value analysis. Technical assistance and advice in using these programs and in the development of models and the scope of the analysis was provided by personnel from Forest Service Regional Offices in Ogden and Denver, and by the Forest Service's Inventory and Monitoring Institute in Fort Collins, Colorado.

The Caribou National Forest model includes eleven of the counties surrounding the Forest. This represents the functioning economy of the region. People from all around the Caribou travel within the area for much of their goods and services and travel to the Forest for their recreation activities. In the Caribou model, only people coming from outside the eleven12 county areas were considered non-residents. Non-resident spending activity is considered an export of local resources and is counted as economic impact while local spending is considered a contribution to the economy, but not an increase of total spending to the area.
A map of the model area can be found in the Social and Economic section in Chapter 3.

Counties included in Caribou National Forest IMPLAN model are displayed in the table below.

• *Table B. 1. Counties Included in the Caribou IMPLAN Model.*

County	State	County	State
Bannock	Idaho	Oneida	Idaho
Bear Lake	Idaho	Power	Idaho
Bingham	Idaho	Box Elder	Utah
Bonneville	Idaho	Cache	Utah
Caribou	Idaho	Rich	Utah
Franklin	Idaho	Lincoln	Wyoming

ECONOMIC ENVIRONMENT

The description of the economic environment examines the contribution that forest related industries make to industry output and employment within the analysis area. Specific IMPLAN sectors were selected as a proxy, or representation

of the forest resource-related industries of interest in Forest planning. The following table illustrates the sectors selected are displayed in the following table, grouped by the forest resource-related industries they represent.

• *Table B. 2. Sector Aggregation Used Separate Forest Related Industries.*

Sector	Forest Resource-Related Industry
Recreation and Tourism Support	
454	Eating and Drinking
463	Hotel and Lodging
488	Amusement and Recreation Services
Wood Products	
133	Logging Camps and Logging Operations
134	Sawmills and Planning Mills
Mining	
044	Phosphate Rock
202044	Phosphate ProcessingRock
Grazing	
004	Cattle grazing
006	Sheep and goat grazing

The results of the contribution analysis are an estimate of employment and income related to Caribou National Forest resources. The analysis illustrates the relative importance of the Caribou National Forest activity within the analysis area.

Economic Impact Effects Analysis

Economic impact analysis describes what happens when a change in final sales (e.g. exports and consumer purchases) occurs for goods and services in the analysis area. Changes in final sales are the result of multiplying units of production (e.g., one hundred cubic feet of timber harvest or recreation visitor days [RVDs] of recreation use) multiplied by sales per unit. Economic impacts were estimated using the best available production and sales data. The sources of each are listed below.

Impacts to local economies are measured in two ways: employment and labor income. Employment is expressed in jobs. A job can be seasonal or year-round, full-time or part-time. The number of jobs is computed by averaging monthly employment data from state sources over one year. The income measure used was labor income expressed in 2000 dollars. Labor income includes both employee compensation (pay plus benefits) and proprietor income (e.g. profits by self-employed).

The analysis area model was used to determine the employment and income consequences throughout the economy of one-million-dollar changes for each kind of resource impact. The results are called response coefficients. Because input-output models are linear, multipliers or response coefficients need only be calculated once per model and then applied to the direct change in output. Spreadsheets were used to calculate total effects by multiplying the response coefficients by estimated levels of dollar activity. A customized Excel workbook called FEAST (Forest Economic Analysis Spreadsheet Tool) was developed and used for this purpose. Details of FEAST may be examined in the Project File. Specifications for developing response coefficients and levels of dollar activity are stated below.

EXPENDITURE DATA

Visitors to the National Forests in Idaho often engage in a variety of activities during a trip. Six recreation categories were considered for the DEIS to compare between alternatives. Expenditure data was obtained from Public Area Recreation Visitor Surveys (PARVS) conducted from 1985 through 1987 and combined with data from approximately 5,100 customer surveys conducted on fifty-five Forest Service Ranger Districts from 1988 to 1996. These recreation expenditure profiles were incorporated into the model for the recreation categories.

Recreation use numbers were based on 1993 RIS-RIM (Recreation Information System-Recreation Information Management) numbers and adjusted through discussions and consensus among the Recreation Specialists from the Ranger Districts and Supervisor's office. The percentage of use from outside the model area, non-residents, for the six categories was estimated by recreation specialist based on Hunt, et al, 1995, and professional judgment.

The PARVS expenditure profiles were adjusted to use Regional Purchase Coefficients (RPCs) to estimate the amount of local spending in both rural and urban models. PARVS resident data reflects expenditures by persons within a fifty50-mile radius of the analysis area. Non-resident data reflects expenditures by persons traveling to the analysis area from more than fifty50 miles away. All PARVS expenditure profiles were normalized to allow for response coefficients calculations. For specific expenditure information, refer to the FEAST and IMPLAN outputs in the planning record.

The unit of measure used to estimate recreation use was Recreation Visitor Days (RVD). One RVD is equal to twelve12 hours of a given activity for one person. However, most people do not participate in one recreation activity for a full twelve-hour day. Since the PARVS expenditure data is expressed in dollars per person per day/visit, it was necessary to convert the RVD data into the equivalent number of visits in order to more accurately estimate visitor expenditures. The assumptions used for the conversion of RVDs to visits are detailed in the following table:

• *Table B. 3. RVD Conversion Factors—Recreation.*

Activity Category	Average Duration of Activity per Visit	RVD Conversion Factor
Camping, picnicking, swimming	3.63 hours	2.73.31
Mechanized travel and viewing	2.63 hours	7.14.56
Hiking, horseback riding and water sports	4.17 hours	3.22.88
Winter sports	4.40 hours	4.32.73
Resorts, cabins, organization camps	10.07 hours	1.01.19
Other recreation	3.00 hours	3.04.00

Source: USDA Forest Service, 1981.

The 'Camping, Picnicking, & Swimming' category includes all camping and picnicking activities. 'Mechanized Travel & Viewing' includes all biking, snow machines, OHV use, driving for pleasure and scenic viewing activity. 'Hiking, Horseback Riding & Water Travel' includes all hiking, water sports, motor boating, mountain climbing, and horseback riding occurring on the Forest. The 'Winter Sports' category includes cross-country and downhill skiing and snow play. The "Resorts, Cabins, and Organization Camps" category includes all special use permits for lodges and large group overnight use. All other types of recreation are included in the 'Other recreation' category. Snowmobiling expenditures and trips were also modeled using recent survey information from Utah.

USE OF THE MODEL

One million dollars of expenditures for the categories of recreation discussed above were input into the IMPLAN model. The results were then incorporated into the FEAST workbook where they were multiplied by total expenditures for each recreation category. Only non-local recreation expenditures (tourism export) use was considered in the impact analysis.

FISH AND WILDLIFE

EXPENDITURE DATA

The U.S. Fish & Wildlife Service (USFWS) periodically conducts a national survey to obtain, among other information, data on expenditures for hunting, fishing, and other wildlife-related recreation. This information is available by state. The Forest Service Inventory and Monitoring Institute organized these expenditures profiles for use in IMPLAN. Expenditures were collected on a "per trip" basis, but converted to a person-day basis for use in IMPLAN. Expenditure profiles for resident expenditures in Idaho were used for estimating impacts from wildlife-related recreation.

The USFWS expenditure profiles were adjusted to use RPCs (Regional Purchase Coefficients) to reflect local spending in the IMPLAN model. As with the recreation expenditure profiles, resident data reflects expenditures by persons within a 50-mile radius of the analysis area and non-residents are from outside the 50-mile radius. All USFWS expenditure profiles were normalized to allow for response coefficients calculations.

Use data for general hunting, general fishing and non-consumptive wildlife use are based on 1996 RIM numbers and adjusted through discussion and consensus. The percentage of use by non-residents was developed by the forest Recreation Specialists from Hunt, et al, 1995, and professional judgment. To use the USFWS per visit expenditure profiles, the use units had to be converted into visits. The conversion factors used are highlighted in the following table.

• *Table B. 4. RVD Conversion Factors—Wildlife and Fish.*

Activity Category	Average Duration of Activity per Day	RVD Conversion Factor
General hunting	7.1 hours	1.71.69
General fishing	4.3 hours	2.82.79
Non consumptive wildlife	3.0 hours	4.04.00

Source: U.S.D.A Forest Service, 1981.

USE OF THE MODEL

One million dollars of expenditures for the three categories of wildlife and fish discussed above were input into the IMPLAN model. The results were then incorporated into the FEAST workbook where they were multiplied by total expenditures for each category. Only non-local recreation expenditures (tourism export) use is considered in the impact analysis.

GRAZING

EXPENDITURE DATA

Marketing and inventory data was obtained from The Oregon State University Government Information Sharing Project web site, "Census of Agriculture: 1987, 1992, 1997." The State's total marketing income for cattle and sheep was divided by the total inventories for the same in order to develop an estimated value per animal and then a value per Animal Unit Month (AUM). An AUM is the amount of forage needed to sustain one cow or approximately five sheep

for one month. Forest grazing use was estimated based on the number of AUMs currently permitted. Through the FEAST workbook, this data was multiplied by the value determined above to calculate the value of the grazing that occurs on the Forest.

USE OF MODEL

One million dollars of exports were input into the IMPLAN model through the range fed cattle and sheep, lambs, and goat sectors to determine RPCs. These RPCs were then applied to the value of the livestock grazed on the National Forest to estimate the total economic impact. Details of distribution estimates are available in FEAST, which is located in the project record.

TIMBER

EXPENDITURE DATA

Logging, sawmills and fuel wood where identified as the majority of uses for Caribou National Forest System stumpage. Employment in the lumber and wood products industry was estimated through the IMPLAN model. Details of distribution estimates are available in FEAST, which is located in the project record.

Timber volumes and revenues for the current situation were based on the average harvest volumes and stumpage revenues for 1998, 1999, and 2000. Volume estimates for each of the alternatives were developed based on vegetation modeling and historic management levels on the forest during the last planning period.

USE OF MODEL

One million dollars of stumpage exports were modeled through each timber-processing sector to determine a "response coefficient." Timber volume from the National Forests was multiplied by historical stumpage prices and multiplied by the response coefficient for "Logging Camps" to obtain the total economic impact. The distribution of National Forest timber processors and model relationships between "Logging Camps" and other sectors were used to derive the export value for each timber sector. This value was then multiplied by the appropriate response coefficient to determine total economic impact for each sector. All results were then summed for presentation in the FDEIS. This process was repeated for each alternative.

PHOSPHATE MINING AND PROCESSING

EXPENDITURE DATA

Phosphate mining and processing where identified as significant uses of Caribou National Forest System. Employment in the phosphate industry was estimated through the IMPLAN model. Details of distribution estimates are available in FEAST, which is located in the project record.

Phosphate volumes and revenues for the current situation were based on the average levels processed and revenues collected. Volume estimates for continued production are the same for all alternatives and were developed based on management of the forest throughout the planning period and continued demand and production in the area.

USE OF THE MODEL

One million dollars of phosphate exports were modeled through the mining and processing sectors to determine a "response coefficient." This value was then multiplied by the estimated future output to determine total economic impact for each sector. All results were then summed for presentation in the FEIS.

FEDERAL EXPENDITURES AND EMPLOYMENT

EXPENDITURE DATA

The Forest applied budget constraints to every alternative. This budget constraint was used to estimate total Forest expenditures, some of which had local economic effects. Total Forest obligations by budget object code were obtained for actual expenditures in 2000 from the National Finance Center. This data was used to estimate how the budget would be spent between programs. Details regarding the expenditures may be found in the project record. Forest Service employment was estimated by Forest staff based on current organizational charts and projections of future staffing levels based on expected workloads and budgets.

USE OF THE MODEL

To obtain an estimate of total impacts from Forest Service spending, salary and non-salary portions of the impact were handled separately. Non-salary expenditures were determined by using the budget object code information noted above. This profile was input into the IMPLAN model for non-salary expenditures for one million dollar expenditure, and the results multiplied by total Forest non-salary expenditures. Sales to the Federal Government are treated in the same manner as exports, money coming from outside the model area.

Salary impacts result from Forest employees spending a portion of their salaries locally. IMPLAN includes a profile of personal consumption expenditures for several income categories; the average compensation for an employee on the Caribou National Forest fell in the category of $40,000-$49,999. Across the U.S., Americans typically spend about 67 percent of their total salary plus benefits. Therefore, total Forest Service salaries were multiplied by 0.67 before being multiplied by the one million dollar response coefficient.

REVENUE SHARING -- 25 FUND PAYMENTS

EXPENDITURE DATA

Historically, Federal law has required that 25 percent of current or historical revenues be returned to the States and Counties within which the revenues were received. These payments may be used for a variety of purposes, including schools and roads. The *Secure Rural Schools and Community Self-Determination Act of 2000* provides a new formula for computing annual payments which is based on averaging a state's three highest payments between 1986 through 1999 to arrive at a compensation allotment or "full payment amount." All counties in the analysis area, except Rich County, Utah, selected stable payments. For the purposes of this analysis it was assumed that payment would be returned to the local impact area 25 percent of all National Forest revenues would be returned to the local impact area, and that a split of 50 percent for schools and 50 percent for roads would represent how local governments spend these revenues. A profile of expenditures for each of these purposes was derived from the model itself. Details regarding the expenditures may be found in the project record

USE OF THE MODEL

The national expenditure profile for state/local government education (schools) and estimates for road construction (roads) are provided within IMPLAN. One million dollars of each profile was used to obtain an estimated response coefficient for these Forest Service payments to the analysis area counties. The results were then incorporated into the FEAST where they were multiplied by total expenditures. Sales to local government are treated in the same manner as exports.

OUTPUT LEVELS

Output levels are specified in the FEAST Excel workbook, located in the Project File and in each individual resource section of this FEIS.

FINANCIAL AND ECONOMIC EFFICIENCY ANALYSIS

NET PUBLIC BENEFITS

Net public benefits are the "overall long-term value, to the nation, of all outputs and positive effects (benefits) less all associated Forest inputs and negative effects (costs) whether they can be quantitatively valued or not" (36 CFR 219.3). Net public benefits represent the sum of the net value of priced outputs plus the net value of non-priced outputs.

Financial efficiency is defined as how well the dollars invested in each alternative produce revenues to the agency. Economic efficiency is defined as how well the dollars invested in each alternative produce benefits to society. Present Net Value (PNV) is used as an indicator of financial and economic efficiency.

The table below highlights each activity included in the analysis, the unit of measure, and the economic and financial benefit of each. The economic benefit is an estimated market clearing price (what the resource would be priced at if available in the private sector) and consumer surplus (the estimated value a person has for a resource above the price actually paid). In this way, the PNV economic analysis attempts to account for the values people hold for forest resources, even though they may not have to pay for them. The financial value is a measure of the revenues actually received by the Forest Service for resource extraction, access, or use. As displayed in the following table, recreation activities tend to have low, or no revenues collected by the Forest Service while both grazing and wood products have associated fees. Although with the recreation fee program and increasing management of recreation sites by concessionaries, the revenues collected by the recreation program is likely to increase in the future. Costs associated with the PNV analysis are taken from the budget estimates for full implementation of each alternative.

• *Table B. 5. Economic Benefits and Financial Revenue Values in 2000 Dollars.*

Activity	Unit	Economic Benefit	Financial Value
Camping, picnicking, swimming	RVD	13.60	0.001
Mechanized travel and viewing	RVD	16.85	0
Hiking, horseback riding & water sports	RVD	25.44	0.002
Winter sports	RVD	101.32	0.04
Resorts, Cabins & Camps	RVD	23.38	0.34
Other recreation	RVD	77.74	0.165
General hunting	RVD	94.90	0
General fishing	RVD	126.53	0
Non consumptive wildlife	RVD	129.21	0
Grazing sheep	AUM	10.09	1.10
Grazing cattle	AUM	10.09	1.35
Sawtimber	CCF	1,631.00	80.00
Aspen	CCF	194.00	50.00
Fuelwood	CCF	24.00	0.50

Source: USDA Forest Service 1990. Caribou National Forest 2001. Quick Silver 2001.

Issue 3

Ecosystem Management

Introduction

As shown in the FEIS, this issue has been broken down into three parts: disturbances, forested vegetation diversity, and non-forested vegetation diversity. The baseline information for these sub-issues is, in part, from the 1999 Analysis of the Management Situation and Subregional Properly Functioning Condition Assessment. This information was compared to larger-scale analyses such as the Interior Columbia River Basin Ecosystem Management Project and the Intermountain Region's Properly Functioning Condition Assessment. From this collection of information, the Forest then decided upon desired future conditions for the various vegetation types on the Caribou.

Ecosystem Disturbances

INTRODUCTION

ACRES USED FOR ANALYSIS

• *Table B. 6 Estimated Acres Affected by Human-Induced Disturbance Annually Short-Term (10 Years).*

Disturbance	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Forested Vegetation								
Regeneration Harvest	1,680	1,670	2,190	710	650	490	730	1,030
Prescribed Fire	0	1,740	1,990	4,990	1,920	2,080	2,680	3,500
Non-Forested Vegetation								
Prescribed Fire	13,000	7,750	10,000	7,750	7,080	6,000	7,980	4,000
Total Acres	**14,680**	**11,160**	**14,180**	**13,450**	**9,650**	**8,570**	**11,390**	**8,530**

The acres of regeneration harvest were derived from VDDT first decade results. The acres of prescribed fire were taken from the Alternative descriptions for both for forested vegetation and non-forested vegetation.

• *Table B. 7 Estimated Acres Affected by Human-Induced Disturbance Annually Long-Term (100 Years).*

Disturbance	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Forested Vegetation								
Regeneration Harvest	770	720	850	410	390	250	290	640
Prescribed Fire	0	1,690	2,060	3,770	2,250	1,640	2,410	3,100
Non-Forested Vegetation								
Prescribed Fire	13,000	7,750	10,000	7,750	7,080	6,000	7,980	4,000
Total Acres	**13,770**	**10,160**	**12,910**	**11,930**	**9,720**	**7,890**	**10,680**	**7,740**

The acres of regeneration harvest and prescribed fire for forested vegetation were derived from VDDT tenth decade results. These vary from first decade acreages because of model assumptions and probabilities. See Issue 3, Forested Vegetation from a more detailed explanation of how the model works. Since the acres of probable treatments for non-forested vegetation were not derived from the VDDT model, they remain constant for all alternatives.

EM.1, 2 HAZARD RATINGS

EM. 1 INSECT HAZARD RATING

The Insect Hazard was derived from the amount of conifer in mature and old age classes predicted by VDDT. (See the *Forested Vegetation Diversity* section of this chapter for a complete discussion of the vegetation groupings and VDDT). The following range was applied to the Insect Hazard ratings: Low, 49 percent or less; Low-Moderate, 50-59 percent; Moderate, 60-69 percent; Moderate-High, 70-79 percent; and High when 80 percent or more of the conifer vegetation on the Forest is predicted to be in mature and old age classes. The Insect Hazard ratings were then ranked on an open-ended, relative scale with "1" being the most favorable ranking and carrying less risk to resources from insect epidemics, and higher numbers being less favorable with greater risk from insects.

% of old and mature vegetation	Hazard Rating
49% or less	Low
50-59%	Low-Moderate
60-69%	Moderate
70-79%	Moderate-High
80% or more	High

The estimated insect hazard was based on the overall conifer percentage of mature and old age-classes from VDDT for the first decade. The estimated wildfire hazard was based on the overall conifer and the overall aspen percentages of mature and old age-classes from VDDT for the first decade were averaged.

EM.2 WILDFIRE HAZARD RATING

Forested vegetation

The Wildfire Hazard for forested vegetation was derived from the amount of conifer and Quaking aspen in mature and old age classes on the Forest predicted by VDDT. (See the *Forested Vegetation Diversity* section of this chapter for a complete discussion of the vegetation groupings and VDDT.) The conifer percentage was added to the quaking aspen percentage, and a mean was calculated for percentage of forested vegetation in mature and old age classes. The Wildfire Hazard rating was applied on the following basis: Low, 49% or less; Low-Moderate, 50-59%; Moderate, 60-69%; Moderate-High, 70-79%; and High when 80% or more of the forested vegetation on the Forest is predicted to be in mature and old age classes.

Non-forest Vegetation

The Wildfire Hazard for non-forested vegetation is based on the predicted amount of sagebrush with greater than 15 percent canopy cover on the Forest. (See the *Non-forested Vegetation* section of this chapter for a complete discussion of the methods used to predict the amount of sagebrush with greater than 15 percent canopy cover on the Forest.)

The Wildfire Hazard rating was applied on the following basis: Low, 44 percent or less; Low-Moderate, 45-49 percent; Moderate, 50-54 percent; Moderate-High, 55-59 percent; and High when 60 percent or more of the non-forested vegetation on the Forest is predicted to be in the greater than 15 percent canopy cover class.

Overall Wildfire Hazard

In order to evaluate the overall hazard presented by wildfires on the Forest, the Wildfire Hazard ratings for both forested and non-forested vegetation were combined to provide an inclusive ranking for the Alternatives. The "Low" to "High" ratings were converted to a numeric rating system as follows: "Low," 1; "Low-Moderate," 2; "Moderate," 3; "Moderate-High," 4; and "High" was assigned the highest rating of 5. The numeric ratings were added and then a mean was calculated to portray the rating for each Alternative. Because the Forest contains approximately equal amounts of forested and non-forested vegetation, the combined numeric ratings are weighted nearly evenly. The combined Wildfire Hazard ratings were then ranked for each Alternative on an open-ended, relative scale with "1" being the most favorable ranking and carrying less risk to resources from uncharacteristically large wildfires, and higher numbers being less favorable with greater risk from wildfires. A lower ranking does not imply that the vegetative conditions are "good" or "desirable," only that those conditions carry a lower risk from wildfires than Alternatives ranked higher.

EM.3 FIRE CONDITION CLASS

The Condition Classes (Schmidt, *et al*, 2002) describe the vegetation composition and structural conditions as they currently exist, thereby serving as generalized wildfire hazard ratings. The risk of losing key ecosystem components due to wildland fire increases from Condition Class 1, which has the lowest risk, to Condition Class 3, which has the highest risk.

- *Table B. 8 Coarse-scale Fire Condition Class Descriptions.*

Condition Class	Description
1	Fire regimes are within or near their historic range. The risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within their historic range.
2	Fire regimes have been moderately altered from their historic range. The risk of losing key ecosystem components has increased to moderate. Vegetation attributes (species composition and structure) have been moderately altered from their historic range. Fire frequencies have departed (either increased or decreased) from historic frequencies by more than one fire return interval. This results in moderate changes to one or more of the following: fire size, intensity, severity, or landscape patterns.
3	Fire regimes have been significantly altered from their historic range. The risk of losing key ecosystem components is high. Vegetation attributes (species composition and structure) have been significantly altered from their historic range. Fire frequencies have departed (either increased or decreased) from historic frequencies by multiple fire return intervals. This results in dramatic changes to one or more of the following: fire size, frequency, intensity, severity, or landscape patterns.

The percentages of mature and old age-classes of conifer and of aspen were derived from VDDT first decade results. (See the *Forested Vegetation Diversity* section of this chapter for a complete discussion of the vegetation groupings and the VDDT model.) Changes in the amount of sagebrush with greater than 15 percent canopy cover were the same as those predicted in the *Non-forested Vegetation* section of this chapter. (See the *Non-forested Vegetation* section of this chapter for a complete discussion of the methods used to predict the amount of sagebrush with greater than 15 percent canopy cover on the Forest.)

• *Table B. 9 How Vegetation Types were classified into standard Fire Groups and Regimes.*

Forest Vegetation Type	Fire Group	Fire Regime
Limber Pine, Douglas-fir	Mesic Douglas-fir	III
Lodgepole Pine, Mixed Conifer	Lodgepole Pine	IV
Englemann Spruce/Subalpine Fir	Xeric Englemann Spruce/Subalpine Fir	III
Quaking aspen, Aspen/Conifer	Quaking aspen	IV
Sagebrush	Shrubland	II

Changes in the amount of sagebrush with greater than 15 percent canopy cover were the same as those predicted in the *Non-forested Vegetation* section. (See the *Non-forested Vegetation* section of this chapter for a complete discussion of the methods used to predict the amount of sagebrush with greater than 15% canopy cover on the Forest.) It was assumed that changes to the Sagebrush group affected the Shrubland fire group in Fire Regime II. For the Shrubland fire group the change in the amount of sagebrush with greater than 15 percent canopy cover from the Current Condition was assumed to affect the amount of vegetation in Condition Class 3 (CC3) as follows: 0 to 2 percent change produced no change in CC3; 3 to 4 percent change produced a 10 percent change in CC3; 5 to –9 percent change produced a 20 percent change in CC3; 10 to –14 percent change produced a 30 percent change in CC3 and a change of 15 percent or more produced a 40 percent in the percentage of CC3. These assumptions were made to be somewhat consistent with the Wildfire Hazard analysis for non-forested vegetation where 5 percent increments in the amount of sagebrush with greater than 15 percent canopy produced a change in the hazard rating. The first 5 percent change in Condition Class 3 was split into two classes, however, so that a small change (0-2%) did not result in change in the CC3 estimate. In general, it was assumed that fuel continuity increased as the amount of sagebrush with greater than 15 percent canopy increased, which in turn increased the CC3 percentage. The CC3 projections are intended to display differences between alternatives, and may not accurately predict actual conditions on-the-ground in the future.

For forested vegetation, the changes in the amount of old and mature age classes from the Current Condition were assumed to affect the amount of vegetation in Condition Class 3 (CC3) as follows: 0 to 4 percent change produced no change in CC3; 5 to 9 percent change produced a 10 percent change in CC3; 10 to14 percent change produced a 20 percent change in CC3; and a change of 15 percent or more produced a 30 percent in the percentage of CC3. These assumptions were made to be consistent with the Wildfire Hazard analysis for forested vegetation where 10 percent increments in the amount of mature and old vegetation produced a change in the hazard rating. The first 10 percent change in Condition Class 3 was split into two classes, however, so that a small change (0-4%) did not result in change in the CC3 estimate. In general, it was assumed that the amount and continuity of fuel (*e.g.*, down woody fuel, ladder fuel) increased as the amount of vegetation in mature and old age-classes increased, which in turn increased the CC3 percentage. The CC3 projections are intended to display differences between alternatives, and may not accurately predict actual conditions on-the-ground in the future.

It was further assumed that several fire groups that contain few acres would be unaffected by changes in Condition Class 3. The largest of these types makes up only 1 percent of the upland vegetation on the Forest. These small, scattered stands may receive incidental effects of when larger, neighboring stands are disturbed, thus disturbance is generally expected to keep pace with succession. The percentage of Condition Class 3 in the Woodland, Limber Pine, and Xeric Douglas-fir fire groups in Fire Regime III, and Mesic Englemann Spruce/Subalpine Fir fire group in Fire Regime V were assumed to remain constant.

Assuming that change from human-induced or natural disturbance takes place, all percentages were subtracted from Condition Class 3 (CC3), and added to Condition Class 1 (CC1). This is assumption is intended to conserve the amount of CC1 on the Forest. When succession is simulated, it was assumed that additions to CC3 are subtracted from Condition Class 2 (CC2), and an equal amount subtracted from CC1was added to CC2, so that the CC2 percentage tends to remain unchanged. If there is more to be subtracted from CC1 than is available, the additional amount is subtracted from CC2. However, it was assumed that situation never deteriorated further than 0 percent in CC1, 10 percent in CC2, and 90 percent in CC3 in the "worst-case scenario" during the 100-year time frame for which predictions were made.

The Condition Classes were ranked for each Alternative on an relative scale with "1" being the most favorable ranking and carrying less risk from wildland fire, and higher numbers being less favorable with greater risk from wildfire. The following range was applied to the percentage of the Forest in Condition Class 3: 40 to 49 percent, 1; 50 to 59 percent, 2; 60-69 percent, 3; 70-79 percent, 4, and 80 percent or more ranked 5. A lower ranking does not imply that the vegetative conditions are "good" or "desirable," only that those conditions carry a lower risk from uncharacteristic wildland fire and the loss of key ecosystem components than Alternatives ranked higher.

• *Table B. 10 Estimated Percentage of Vegetation in Condition Class 3.*

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Short Term % Condition Class 3	48	61	55	63	62	67	62	71
Short Term Ranking	**1**	**3**	**2**	**3**	**3**	**3**	**3**	**4**
LongTerm % Condition Class 3	45	67	55	67	73	73	67	72
Long Term Ranking	**1**	**3**	**2**	**3**	**4**	**4**	**3**	**4**

The following tables show how acres moved between fire condition classes based on succession and treatments by alternative.

Alternative 1 @ 10 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.60	242,700	0.30	121,350	0.10	40,450
Fire Regime III	0.11	30,000	0.31	83,760	0.58	155,840
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.27**	**281,940**	**0.25**	**254,820**	**0.48**	**494,040**

Alternative 1 @ 100 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.50	202,250	0.30	121,350	0.20	80,900
Fire Regime III	0.35	94,220	0.35	93,040	0.31	82,340
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.30**	**305,710**	**0.26**	**264,100**	**0.45**	**460,990**

Alternative 2 @ 10 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.20	80,900	0.30	121,350	0.50	202,250
Fire Regime III	0.18	49,440	0.33	90,180	0.48	129,980
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.14**	**139,580**	**0.25**	**261,240**	**0.61**	**629,980**

Alternative 2 @ 100 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.00	0	0.20	80,900	0.80	323,600
Fire Regime III	0.38	101,340	0.33	90,180	0.29	78,080
Fire Regime IV	0.04	13,300	0.14	48,600	0.82	291,100
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.11**	**117,230**	**0.21**	**220,790**	**0.67**	**692,780**

Alternative 3 @ 10 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.40	161,800	0.30	121,350	0.30	121,350
Fire Regime III	0.11	30,000	0.33	90,180	0.55	149,420
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.20**	**201,040**	**0.25**	**261,240**	**0.55**	**568,520**

Alternative 3 @ 100 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.20	80,900	0.30	121,350	0.50	202,250
Fire Regime III	0.38	101,340	0.33	90,180	0.29	78,080
Fire Regime IV	0.06	19,950	0.14	48,600	0.81	284,450
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.20**	**204,780**	**0.25**	**261,240**	**0.55**	**564,780**

Alternative 4 @ 10 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.20	80,900	0.30	121,350	0.50	202,250
Fire Regime III	0.11	30,000	0.33	90,180	0.55	149,420
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.12**	**120,140**	**0.25**	**261,240**	**0.63**	**649,420**

Alternative 4 @ 100 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.00	0	0.20	80,900	0.80	323,600
Fire Regime III	0.40	107,760	0.33	90,180	0.27	71,660
Fire Regime IV	0.04	13,300	0.14	48,600	0.82	291,100
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.12**	**123,650**	**0.21**	**220,790**	**0.67**	**686,360**

Alternative 5 @ 10 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.20	80,900	0.30	121,350	0.50	202,250
Fire Regime III	0.16	43,020	0.31	83,760	0.53	142,820
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.13**	**133,160**	**0.25**	**254,820**	**0.62**	**642,820**

Alternative 5 @ 100 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.00	0	0.10	40,450	0.90	364,050
Fire Regime III	0.33	88,500	0.33	90,180	0.34	90,920
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.09**	**97,740**	**0.17**	**180,340**	**0.73**	**752,720**

Alternative 6 @ 10 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.10	40,450	0.30	121,350	0.60	242,700
Fire Regime III	0.16	43,020	0.31	83,760	0.53	142,820
Fire Regime IV	0.00	0	0.14	48,600	0.86	304,400
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.08**	**86,060**	**0.25**	**254,820**	**0.67**	**689,920**

Alternative 6 @ 100 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.00	0	0.10	40,450	0.90	364,050
Fire Regime III	0.33	88,500	0.33	90,180	0.34	90,920
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.09**	**97,740**	**0.17**	**180,340**	**0.73**	**752,720**

Alternative 7 @ 10 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.20	80,900	0.30	121,350	0.50	202,250
Fire Regime III	0.16	43,020	0.31	83,760	0.53	142,820
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.13**	**133,160**	**0.25**	**254,820**	**0.62**	**642,820**

Alternative 7 @ 100 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.00	0	0.20	80,900	0.80	323,600
Fire Regime III	0.40	107,760	0.33	90,180	0.27	71,660
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.11**	**117,000**	**0.21**	**220,790**	**0.67**	**693,010**

Alternative 7R @ 10 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.00	0	0.30	121,350	0.70	283,150
Fire Regime III	0.14	36,420	0.33	90,180	0.53	143,000
Fire Regime IV	0.00	0	0.14	48,600	0.86	304,400
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.04**	**39,010**	**0.25**	**261,240**	**0.71**	**730,550**

Alternative 7R @ 100 Years

Fire Regimes	Condition Class 1		Condition Class 2		Condition Class 3	
	Percent	Acres	Percent	Acres	Percent	Acres
Fire Regime I	0.00	0	0.00	0	0.00	0
Fire Regime II	0.00	0	0.10	40,450	0.90	364,050
Fire Regime III	0.38	101,340	0.33	90,180	0.29	78,080
Fire Regime IV	0.02	6,650	0.14	48,600	0.84	297,750
Fire Regime V	0.70	2,590	0.30	1,110	0.00	0
Total	**0.11**	**110,580**	**0.17**	**180,340**	**0.72**	**739,880**

SUMMARY

To facilitate evaluating the different wildfire rating methods a numeric weighting scheme was applied to the Wildfire Hazard ratings for forested and non-forested vegetation, the Wildfire Hazard numbers were added to the Condition Class 3 percentage, and then a mean was calculated to display the outcome. In order to give the Wildfire Hazard ratings approximately equal weight as the Condition Class percentages (or at least the same order of magnitude) the following range was applied to the Wildfire Hazard ratings: Low, 10; Low-Moderate, 20; Moderate, 30; Moderate-High, 40; and High, 50. The means were then ranked for each Alternative on an open-ended, relative scale with "1" being the most favorable ranking and carrying less risk to resources from wildfire, and higher numbers being less favorable with greater risk from wildfire. Alternatives with means ranging from 30 to 39 were assigned a ranking of 1, those from 40 to 49 a ranking of 2, and means ranging from 50 to 59 were given a 3. A lower ranking does not imply that the vegetative conditions are "good" or "desirable," only that those conditions carry a lower risk from uncharacteristic wildland fire than Alternatives ranked higher.

Issue 3

Ecosystem Management

Forested Vegetation Diversity

INTRODUCTION

National Forest Management Act (NFMA) regulations (36 CFR 219.12(f) (9)) require that each alternative indicate:

- The conditions and uses that would result from long-term application of the alternative;
- The goods and services to be produced, and the timing and flow of these resource outputs together with associated costs and benefits;
- Standards and guidelines for resource management; and
- The purpose of the proposed management direction.

The Environmental Impact Statement, including Appendix B, along with the Forest Plan for each National Forest meets the requirements as listed above for the NFMA.

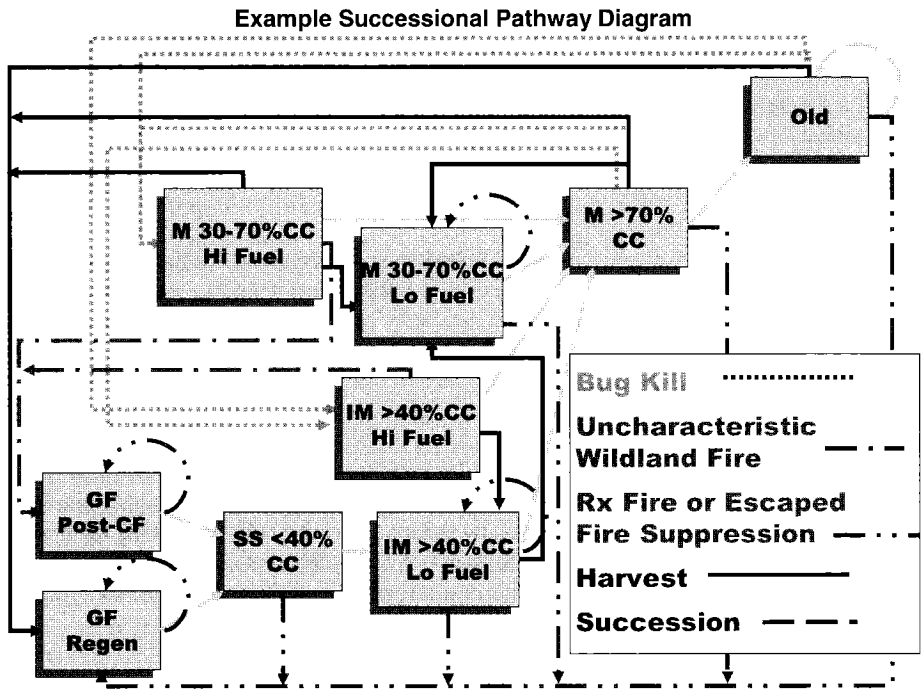
Vegetation Dynamics

BASELINE INFORMATION

Modeling effects on forested vegetation were accomplished using the Vegetation Dynamics Development Tool (VDDT). VDDT is the property of its developers, ESSA Technologies, Ltd., of Vancouver, B. C.

Projecting changes in vegetation structure and composition over time is an important part of landscape-level analyses. Vegetation can change due to a variety of factors such as human activity, fires, insects, pathogens, animals, weather, growth, and competition. The interaction of these factors can be quite complex, and it can be difficult to project the combined effects over long periods of time. VDDT is a software tool that allows the construction of models for the purpose of simplifying those combined effects over time, and examining the roles of various disturbance agents and management activities in vegetation change.

The following figure displays an example of a successional pathway diagram with insect kill, uncharacteristic wildland fire, prescribed fire/escaped fire suppression, harvest and successional pathways. Successional pathway diagrams for the Forest's VDDT model can be found in the Project File under VDDT Model.



GF – grass/forb; SS – seedling/sapling; IM – immature; M – mature; CC – canopy cover

PATHWAYS AND PROBABILITIES

The primary conceptual model for vegetation dynamics is that any given unit of vegetation will change over a period of time, succeeding through some arbitrarily defined set of stages if undisturbed; if disturbed, either naturally or by management, the vegetation will instead change through a different set of stages. Each potential set of stages, in sequence, is called a pathway.

Successional pathways, with or without disturbances, summarize scenarios in vegetation dynamics. Modeling such scenarios so as to have a quick and simple, yet useful, way of observing changes over time necessarily requires that only the most basic driving forces be included. Perhaps more importantly, many of those forces exert themselves as events which are expected to occur but for which the timing and frequency are essentially random. While management activities are disturbances that may be accurately predicted, natural disturbances may only reasonably be predicted in terms of historical probabilities. The outcomes from those disturbances, then, are also necessarily probabilistic. Clearly, the interaction of the many biological and physical factors that are at work can be quite complex, and it can be difficult to project their combined effects over long periods of time; the longer the scenario, the less certain the outcome.

Scenarios can define different sets of assumptions about fire suppression, insects and disease, or forest management objectives, by assigning probabilities to the applicable successional pathways. In each scenario, changes in the dominant disturbance types and their frequency are the result ofn changes in the vegetation. For example, a reduction in fire frequency, representing an assumption of increased fire suppression success, may increase the number of acres in a condition that is more susceptible to insects. In that case, without changing the probability of insect-caused disturbance, more insect-caused disturbance will occur in the model because more land area is in a more susceptible condition. For more information on disturbance probabilities, see Process Paper BP32 in the Project File.

Undisturbed Succession

Changes in vegetative conditions due to dynamics such as regeneration, growth, and self-thinning, form the basic successional pathway in the absence of disturbance. Some successional pathways are cyclical, indicating the likelihood

of some self-limited lifespan, followed by self-regeneration and repetition of the cycle, unless disturbed. Other successional pathways have an end condition that represents a steady state that can be maintained perpetually.

Modeled changes due to successional dynamics are defined by the time that a vegetative unit remains in a particular stage, and by the stage into which it will move after that time has passed.

Natural Disturbances

Disturbance-related pathways specify, for each stage, the type of disturbance, its probability (which defines its return frequency) and its impact on the vegetation. The impact is represented by the different stage to which the vegetative unit has been transferred as a result of the disturbance. That new stage may be on the undisturbed pathway, representing a simple setback in succession, or it may be on another pathway entirely.

Insects and Disease

For example, a unit defined as being Douglas-fir, mature, with greater than 70 percent canopy closure, may be given an 0.1percent annual probability of experiencing an infestation of beetles. If the infestation does not occur, that unit may remain in its current stage for a defined number of years, eventually succeeding to the next stage along the undisturbed pathway. However, if the infestation does occur, the unit may be transferred to a different stage, defined as Douglas-fir, mature, 30-70 percent canopy closure, with high fuel loads. This new stage is not on the undisturbed successional pathway.

Wildland Fire

The same vegetative unit may also have some probability of incurring the effects of a wildfire. If that disturbance occurs, the unit may be transferred to a stage defined as Douglas-fir, grass-forb stage, regenerated. This new stage is on the undisturbed successional pathway, representing the starting point for the pathway.

Management Disturbances

From a modeling perspective, there is no technical difference between natural disturbances and management disturbances. They go into the models in exactly the same way. The conceptual difference is in the calculation of probabilities, and in how they are used.

Management disturbances are the controlling input factors for the models. The objectives for a particular scenario may call for a certain mix of vegetative stages by a certain time, and the management disturbances must be adjusted up or down in terms of probability so as to achieve those objectives.

For example, where initial conditions indicate most of a cover type is in older stages, the scenario objectives may require that at least half of that cover type be in an immature or younger condition within some time span. To accomplish that, a combination of management activities that result in moving the vegetation to younger stages must be implemented. A set of initial probabilities can be calculated as a starting point for the model; after running the model, if the objectives are not achieved, the probabilities can be adjusted up or down in successive runs until the desired results are achieved, or until it is reasonably proven that the desired results are not feasible.

Prescribed Fire

Intentional disturbance by setting fire to the vegetation, or by allowing naturally occurring fires to burn, are treated as "prescribed fire" in these models. The result of the fires depends on the cover type and structural stage in which they occur. The impacts in some cases are lethal, causing the vegetation to be transferred to a "regenerated" stage; or the impacts may be non-lethal, resulting in transfer to a less dense stage. In some cases, fire simply maintains the vegetation in its current stage, preventing it from moving along its undisturbed successional pathway.

Timber Harvest

Harvest disturbances include partial harvests such as thinnings, regeneration harvests, and salvage harvests. These methods are designed to achieve silvicultural objectives and to produce salable timber products. The stages to which vegetation units are transferred after a harvest disturbance are intended to represent the desired silvicultural conditions which prompted the planned activity. For example, a partial harvest on a unit in a stage defined as Douglas-fir, immature, greater than 40 percent canopy closure, may result in the transfer of that unit to a stage defined as Douglas-fir, mature, 30-40 percent canopy closure. Such a disturbance would represent the planned thinning of an overly dense unit by removing the smaller and younger trees, thereby reducing the density and increasing the average size and age of the remaining trees to achieve silvicultural objectives related to increased resistance to insects while increasing the commercial timber value of the unit.

Livestock Grazing

Grazing by permitted livestock was included in the models as a management disturbance due to the effects that grazing has on many aspects of vegetation dynamics. For example, in a vegetation unit consisting primarily of seral aspen, grazing will typically increase the rate at which the aspen converts to conifer.

DEVELOPING ANALYSIS UNITS

Analysis units are made up of forested land with distinctly different characteristics that can be estimated, modeled, combined, and then projected through time to analyze change. The ID team combined a variety of characteristics to develop analysis units that would focus on ecosystem processes and function while meeting the intent of the National Forest Management Act. The two major vegetation characteristics or components that were combined were structural stage (size class and canopy closure) and cover type. These groupings were then overlaid with rule sets or GIS coverages, such as Management Prescription Categories (MPC), to finalize the analysis units and develop the analysis unit acreages for the VDDT model. Analysis units are the acres of a structural stage/cover type combination within a MPC.

LANDSCAPES

SIZE CLASSES

The Forest was analyzed as a unit with a variety of cover types and size classes. The Forest's Geographic Information System Vegetation layer and Continuous Forest Inventory were used as the basis for determining the breakdown of size classes for modeling. This layer consists of three vegetative classes, by cover type: (1) past harvest and high intensity fire-disturbed units; these acres make up the seedling/sapling stage, (2) old growth as mapped in the 1985 Caribou National Forest Plan and (3) mature. With three exceptions: two for large fires in 1987 (9,200 acres) and 1994 (2,300 acres) and one for a blowdown event (300 acres) in 1998. Forest vegetation has not experienced a large disturbance event since the early 1900's, so most conifer. Stands in this class are considered at least 70-80 years old. Successional pathways for the VDDT model included the five size classes listed below:

- Grass Forbs
- Seedling/Sapling
- Immature Tree
- Mature Tree
- Old Tree

Acres from the three GIS Vegetation layer classes were distributed into the five VDDT model classes proportionately using percentages from the Continuous Forest Inventory, completed in 1993. For additional information, see Process Paper BP2, available in the Project File.

CANOPY CLOSURE

The density of the vegetation was categorized into four canopy closure categories. They are used to determine the potential risks from insects or wildfire, and to estimate species composition. The higher the stand density, the less light reaches the forest floor, which favors climax species and increases the risk to insects and lethal fire. Some cover types, due to the harsh sites, do not reach a high-density condition, but only progress to moderate canopy closure. Canopy Closure groups are:

- Less than <40 percent
- Greater than or equal to ≥40 percent
- 40-70 percent
- Greater than or equal to ≥70 percent

VEGETATION COVER TYPES

Vegetation composition is influenced by environmental (site) characteristics. Using cover types to classify the landscape provides a logical framework for studying succession, or vegetation changes over time. See also Process Paper BP2 in the Project File.

Cover types were used to group size class and canopy closure into ecological units that would have similar responses to disturbances and have similar pathways through the successional stages. These groupings became the basis for the VDDT model, and understanding the ecological process and function of the vegetation. The Cover Type Groups are:

- Douglas Fir
- Spruce Fir
- Mixed Conifer / Lodgepole Pine
- Stable Aspen
- Seral Aspen

Tentatively suited timberlands have been reassessed as part of Forest Plan. Reassessment of tentatively suited timberlands has been completed in accordance with the National Forest Management Act, as contained in Forest Plan regulations 36 CFR § 219.14 and Forest Service Handbook FSH 2409.13, Chapter 20. The National Forest Management Act requires that, as a minimum, lands previously identified as not suited be reassessed at least every ten years. Since current efforts to revise the Forest Plans coincided with the need to reassess timberlands not suited, a complete reassessment of suited timberlands was performed. This allowed for a comprehensive examination of the status of timberlands on the Caribou National Forest that takes into account changes since the previous assessment of timberlands. Some of these changes included changes in land ownership, increased knowledge and experience with reforestation efforts, large wildfire events, and increased knowledge and experience regarding timber management effects on soils and water quality.

Assessment of tentatively suited timberlands was accomplished using Geographic Information Systems (GIS). Use of GIS will result in consistent identification of each of the following data elements:

- Net National Forest land area administered by each Forest.
- National Forest lands that are not forested.
- National Forest lands that have been withdrawn from timber production.
- National Forest lands which are physically unsuited for timber production due to the inability to assure adequate restocking, or irreversible damage to soils or watersheds.

• *Table B. 11. Steps and Data Sources for Assessing Tentatively Suited Lands*

Steps for Assessing Tentatively Suited Lands	Data Sources
1) Determine net National Forest system land area for each National Forest.	Lands data in GIS.
2) Identify non-forested lands. These lands include: • Non-forest vegetation cover types. • Roads. • Streams. • Lakes, ponds and reservoirs >= 1 acre is size. • State and county roads on National Forest system lands.	Non-forest vegetation cover for the cover types identified here will come from satellite imagery. The remaining items identified here should be available from a several data layers in GIS.
3) Identify and subtract National Forest system lands that have been withdrawn from timber production including: • Designated wilderness areas. • Research Natural Areas. • Wild segments of wild & scenic rivers (outside of wilderness areas). • Experimental Forests. • Other withdrawn areas. * Utility right-of-way corridors. * Electronic sites. * Administrative sites (unless previously identified in Step 2 as areas withdrawn from timber production). * Developed campgrounds. The products resulting from completion of steps 1, 2 & 3 will be: • Identification of available forested lands, identification of unavailable withdrawn lands, and non-forested lands.	Each of the identified items should be available from data layers in GIS.
4). Identification of physically unsuited lands. Landslide Prone Areas	Vegetation Cover Type Maps (described above). GIS Soils Layer (See discussion below)

Soils information from the 1985 Forest Plan in Appendix B (pages B-43 through B-44 and B-48 through B50) was used as a starting point to determine capability for physically unsuited lands for the Revised Forest Plan and EIS. However, at the time the soil resource inventory for the Caribou National Forest had not yet been completed when the 1985 Forest Plan was finished. Additional information was used from the completed soil resource inventory to assess timber suitability in the first stages.

Landtypes not capable of producing timber were first assessed based on the ability to produce 20 cubic feet per acre per year of timber. Ratings published in the Soil Survey of the Caribou National Forest (USDA-FS 1990) were used to determine which landtypes were capable of producing timber. From these ratings a GIS layer was produced that displayed soils with low productivity (see Landtype Layer-Low Productivity Soils). This layer was used as the first screen to separate capable and suitable timber lands.

Landtypes not restockable were first determined by which landtypes were non-forested and which were forested. Because the mapping is at such a broad scale and the map units were not designed to separate out forested soils from non-forested soils, the vegetation database was the primary source for determining which areas were forested verse non-forested. The soil layer was used to verify the findings (see Landtype Layer-Not Restockable Soils). It is recognized that within many of the soil polygons mapped as not restockable, there are areas that actually are restockable but could not be broken out because of the scale and detail of the soil mapping. For this reason, "selected pockets of land within the

landtypes classified as no capable of sustaining intensive management activities may meet the criteria for such use; the reverse also may be true." "If such conditions exist, each proposed project within these select areas will be considered on a case-by-case basis; however, such projects must be within the constraints for capability, suitability, compatibility and feasibility established in the Plan" (1985 Forest Plan).

Landtypes that were unstable were the last stage of analysis in the timber suitability determination. All landtypes that were mapped as unstable or marginally unstable were displayed in a GIS layer (see Landtype Layer-Unstable Soils). The definitions of unstable and marginally unstable are given in the Soil Survey report (USDA-FS 1990). Only those landtypes that are stable or could be mitigated i.e. gentle slopes, etc. are included in the suitable base.

Once these layers were completed in GIS, they were overlain with the vegetation layer and all timberlands that were outside the area mapped as not capable were given tentatively suitable timberland classification.

ACRES BY CLASS BY COVER TYPE

The formulation of the VDDT model is driven by how forested vegetation changes over time with and without management actions being applied. The primary output from the modeling for effects analysis is the acres of the different forest vegetation structures by cover type. This information is critical for understanding habitat conditions for wildlife, insect and wildfire hazards, species composition, integrating ecological processes and predicting short- and long-term effects. A sample from Alternative 7R is displayed in Table B-7.

- *Table B. 12. Conifer Acres and Percent Mature and Old by Decade Alternative 7R.*

Decade	Acres Mature and Old (M acres)	Percent Mature and Old	Decade	Acres Mature and Old (M acres)	Percent Mature and Old
1	255	80	6	213	64
2	242	75	7	223	66
3	230	71	8	228	67
4	187	67	9	233	68
5	211	64	10	234	68

EFFECTS ANALYSIS

DEVELOPMENT OF ALTERNATIVE MODELS

The Forest developed eight alternatives, each including a different disturbance scenario for modeling. (See Chapter 2, Alternative Descriptions.) VDDT models were constructed for the Forest for each alternative to address three main questions. First, what set of management activities, if any, must be placed on the landscape to achieve the objectives of a particular alternative? Objectives were generally defined as a mix of structural stages within each vegetation cover type at a particular time. Second, where natural succession and natural disturbances, rather than management activities, determine the future conditions of the forest, what will the forest look like and how will it function in the near and distant future? Third, what level of timber harvest, if any, is sustainable for this alternative?

The VDDT model projects a wide variety of outcomes from the different alternatives and other model formulations such as baseline and sensitivity runs. These outcomes can be used to gain an understanding and to discuss effects of the alternatives related to a wide range of resource areas and social/economic considerations.

Sensitivity analysis is a process in which one or more model parameters are altered such that successive runs provide insight into the influence of those parameters on the outcomes being modeled. For example, the affects of a budget constraint on DFC attainment can be measured by removing the constraint completely, or by incrementally increasing or decreasing budget level and rerunning the model. In order to better understand model behavior and to explore the

management policies or goals they represent, several types of sensitivity analysis were conducted: sensitivity analysis of goal weights; constraints applied to alternatives; and the effects of uncharacteristic wildfire on alternatives. Also, when consistent with the intent of an alternative or for purposes of conducting sensitivity analysis, model solutions were also explored that maximized sustainable harvest levels or minimized the amount of acres in high fire hazard condition.

One sensitivity analysis was conducted using the disturbance probabilities for wildfires that escape suppression. Instead of using a single consistent annual probability for all successional stages, the probabilities were randomly increased as forested vegetation advanced through each stage. This was done to model increasing fuel loading along a cover type's successional pathway to see how acres escaping wildfire suppression would respond to this increasing hazard. The model responded with a spike (large increase) of suppression-escaped wildfire acres at a point where acres had congregated in the mature and old age class. Although it seems intuitive, this approach was not developed in the analysis due to a lack of research and experience basis for increasing the probabilities of wildfire escaping suppression as forested vegetation advances through successional stages. Other analyses were run harvesting more volume earlier in the 100-year timeframe in the mature and old stages of conifer types to determine the effects. This resulted in a conifer harvest curve which started high and dropped rapidly through the decades. None of these simulations met the non-declining even flow constraint.

Using VDDT software, models covering ten to twenty decades were formulated for each alternative, with analysis units that represented approximately forty-two vegetative conditions, described by landscape location, vegetation cover types, and structural stages, moving through time along disturbed or undisturbed successional pathways. The undisturbed pathways followed basic successional processes and were the default unless either a natural disturbance event occurred or a management activity was imposed. Natural disturbances included wildland fire with failed suppression, catastrophic insect and disease events, and catastrophic large-scale fire. Management activities such as livestock grazing, prescribed fire, and timber harvest pushed the analysis units off the undisturbed pathways and onto disturbed pathways that reflected the outcome from such treatment. Desired future conditions (DFC) for each alternative were represented as goals for the number of acres to be maintained in specific structural stages, by cover type or groups of cover types.

Disturbances, both natural and managed, were introduced into the modeling process via probabilities. Development of initial conditions including the assignment of acres by class is discussed in "Developing Analysis Units" above. Disturbance probabilities were varied for each alternative, particularly for prescribed fire and harvest disturbances, in order to capture the intent of the alternative and to meet the non-declining yield constraint. Some disturbance probabilities were non-linear, allowing, for example, the probability of a catastrophic insect infestation to increase as the proportion of a particular cover type that is prone to infestation (such as old Spruce-Fir) increases. This allowed some recognition of the dynamics of contagion in both fire and insects; however, none of the analysis units were spatially specified beyond the landscape unit in which they occurred, so the spatial component of contagion was ignored.

All Alternatives

To model occurrences of wildfires, which escape suppression, the same annual probability (.002) was used in all stages for all species and alternatives. This was based primarily on past wildfire history and acres burned. Prescribed fire probabilities and acres disturbed vary by alternative based on alternative theme. Given the high percentage of forested vegetation acres in the mature and old age classes, most fire disturbance was considered high intensity which moved acres burned back to early successional stages. Timber harvest prescriptions and probabilities and insect probabilities in each cover type are similar by alternative on suited acres, but acres vary widely by alternative.

Management Prescription Categories (MPCs)

The array of MPC assignments to the alternatives was modeled in VDDT. Alternatives vary primarily by the different MPCs that are applied to analysis units. See Chapter 3 in the EIS, and Chapter 4, Part 2 in the Forest Plan for a complete description of MPCs.

MPCs that preclude mechanical treatments or where management direction focuses on restoration without providing for a sustainable level of outputs were labeled as "unsuited," meaning that the lands to which those MPCs were applied,

in that Alternative, would not be considered "suited" for timber management, and any timber volume removed from them would not accrue to the Allowable Sale Quantity (ASQ). MPCs that have mechanical treatments and provide for a sustainable level of outputs were labeled as suited. Mechanical treatments within unsuited MPCs will accrue volume (based on outcome of meeting Desired Future Conditions) toward the Total Sale Program Quantity (TSPQ). Mechanical treatments within suited MPCs will accrue volume (based on outcome of meeting DFCs) towards the Allowable Sale Quantity. See Project File (VolumeYieldFLMP.xls) for details on volume by stand condition and MPC for each alternative.

DESIRED FUTURE CONDITIONS

The Desired Future Conditions for each alternative are described in the alternative descriptions in Chapter 2. Alternatives differ in how well they meet the Desired Future Conditions for forested vegetation. Modeling vegetation change over time was accomplished using the VDDT model, which allows for a comparison between alternatives relative to attainment of Desired Future Conditions.

Desired Future Conditions were input into the analysis process as goals to achieve in the VDDT model. Generally, Desired Future Conditions were assigned in terms of a certain distribution of acres by structure class and species composition, focusing on the mature and old age classes. Each alternative had a unique set of goals to represent DFC. These DFCs generally called for a fairly even distribution of size classes on forested suited lands and late successional conditions on forested unsuited lands.

A balance of size classes is estimated to reflect a structure that would sustain the cover type in the long term. For the conifer types, the selected range of classes includes:

Grass/forb	10 percent
Seedling/sapling	10 percent
Young forest	20 percent
Mid-aged forest	20 percent
Mature forest	20 percent
Old forest	20 percent

These percentages are estimates or approximations based on work done by the Northern Goshawk Scientific Committee from 1990 to 1992 (Reynolds, *et al*, 1992).

The VDDT model used management actions as discussed earlier to change the forested vegetation to attempt to achieve the Desired Future Conditions for each alternative based on the MPCs assigned to reflect the intent and theme of the alternatives. The management actions contain different sets of activities that are applied to the analysis units. The management actions are summarized by alternative, while the activities are summarized by cover types and by the MPCs. These activities have different costs, occur at different timing sequences, produce different effects on the landscape, and have different amounts of ASQ and TSPQ.

Issue 3

Ecosystem Management

Non-forested Vegetation Diversity

INTRODUCTION

Projecting changes in vegetation structure and composition over time is an important part of the planning process. Vegetation changes for a variety of reasons such as human activity, fire, insects, pathogens, weather, or growth and competition. The interaction of these factors is complex and the combined effects are difficult to predict over long periods of time. The following table is a summary of the proposed treatments in the non-forested vegetation in each alternative and the outcomes from the calculations found below.

• *Table B. 13 Outcomes by Alternative for Non-Forested Vegetation.*

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Acres* Treated/Year	13,000	7,750	10,000	7,750	7,080	6,000	7,975	4,000
Acres Treated/Decade	130,000	77,500	100,000	77,500	70,800	60,000	79,750	40,000**
ac >15 cc After 10 years	35.4	48.3	42.8	48.3	50.0	52.7	47.8	56.8
Estimated Years to achieve DRFC	<10 ~8 yrs	60	14	60	Static	Achieves DRFC Currently	45	Moves Away from DRFC

* Treatment acres are based on the theme of the Alternative.

** Does not include the acres burned by wildfire.

Alt 1= Existing condition (13,000 acres treated/yr. for wildlife habitat improvement).

DESIRED RANGE OF FUTURE CONDITIONS (DRFC)

The goal for Alternatives 2, 3, 4, 5, 7, and 7R is to achieve/maintain 40 percent of the sagebrush/mountain shrub acres in 15 percent canopy cover density or greater. Achieve/maintain fifty to seventy percent of the sagebrush/mountain shrub acres in less than fifteen percent canopy cover density. Sagebrush is dominant on all but zero to five percent of the historical habitat. Mountain shrub types have a balanced range of shrubs/herbaceous understory components in various age classes. Disturbance regimes and patterns are within historical ranges.

No goals were identified for **Alternative 1**.

The goal of **Alternative 6** is to maintain greater than 50 percent of the sagebrush/mountain shrub acres in greater than 15 percent canopy cover density class.

PFC Goal for Alternatives 2, 3, 4, 5 and 7 and 7R is to maintain 40 percent of the sagebrush/mountain shrub acres in 15 percent canopy cover or greater. **Alternative 1 and 6** have no PFC goals. The goal of **Alternative 6** is to maintain greater than 50 percent of the sagebrush/mountain shrub acres in greater than 15 percent canopy cover.

ASSUMPTIONS

Following assumptions were made to complete the analysis.

- **Assumes** that **50 percent** of all sagebrush/mountain shrub acres (404,539 acres) is in the greater than 15 percent canopy cover density class. Approximately 202,269 acres are estimated to be in greater than 15 percent canopy cover, and that all treatment will be in this class to move the canopy cover back to 0-5 percent canopy cover density class.

- **Assumes** that **15 percent** of the sagebrush acres in the 0-15 percent canopy cover density class will never achieve greater than 15 percent canopy cover density (60,681 acres) because of edaphic or biological reasons.

- **Assumes** that **5 percent** of the remaining sagebrush/mountain shrub acres in less than 15 percent canopy cover is succeeding into the greater than 15 percent canopy cover annually. Approximately 7,080 acres of the 141,588 acres move into the greater than >15 percent canopy cover density class on an annual basis.

- **Assumes** all prescribed fire treatments move acres from the greater than 15 percent canopy cover density class to 0-5 percent canopy cover density class. Primarily, treatments will occur in the greater than 25 percent canopy cover density class.

- **Assumes** treatment acres include acres burned by wildfire, except Alternative 7R, where wildfire acres are analyzed in addition to the acres proposed for treatment. and acres burned by prescribed fire.

It should be noted that when analyzing just two vegetation classes in sagebrush/mountain shrub, after twenty years of treatments, the amount being treated in the greater than> 15 percent canopy cover density class to move the class back to the 0-5 percent canopy cover density class is equal to the amount of acres growing back into the greater than >15 percent canopy cover density class. Therefore, estimated acres treated to achieve the Desired Range of Future Conditions (DRFC) must be adjusted after twenty years in some alternatives.

SCALE AND SCOPE OF ANALYSIS

SAGEBRUSH/MOUNTAIN SHRUB VEGETATION GROUP

The sagebrush/mountain shrub vegetation group was analyzed forest-wide and includes approximately 404,500 of the 461,100 acres identified as non-forested acres in the Forest vegetation classification update in the year 2000. The remaining 56,600 acres are occupied by maple, mountain mahogany, and juniper. Because of their limited extent across the Forest, no objectives have been set for these woodland/shrubland vegetation types, but they will be evaluated at a site-specific level. The sagebrush/mountain shrub vegetation was analyzed by calculating the amount of acres left in the greater than 15 percent canopy cover density class after ten years and long-term (50-100 years), factoring in succession and disturbances. Based on experience from past treatments on the Forest and information from fire effects studies discussed in Chapter 3, the amount of time generally required for a treated site (0-5 percent canopy cover density) to re-establish canopy cover densities greater than fifteen percent is twenty to thirty years (Heyrend, 2001; Bunting, *et al*, 1987; Frass *et al*, 1992; Harniss, *et al*, 1973; Bushey, 1986; Walhof, 1997; Curlew EIS, 2002; and Beaver Creek EA, 1998)). Studies have also shown that when sagebrush canopy cover density reaches between twelve and twenty percent in some sagebrush plant communities, the herbaceous production is restricted. As the canopy cover density increases, the communities become closed to new herbaceous seedling recruitment (Winward, 1991; Sturges, 1975). Based on this information, the canopy cover densities were divided into two classes: less than 15 percent canopy cover density and greater than 15 percent canopy cover density.

Baseline indicator for existing acres in the greater than 15 percent canopy cover density class old/mature age condition is estimated at approximately 50 percent of the sagebrush/mountain shrub acres, or about 202,269 acres. in the greater than 15 percent canopy cover class

Succession

To analyze canopy cover density condition classesage condition classes for the sagebrush/mountain shrub vegetation group, succession was factored in when calculating canopy cover density classes over a ten-year period. Re-establishment of sagebrush is often somewhat variable, because many factors may influence succession, such as size of treatment area, proximity to seed source, climate, and soils. Based on experience from past treatments that have occurred on the Forest and information from fire effects studies discussed in Chapter 3, the amount of time generally required for a treated site in this (0-5 percent canopy cover density) to re-establish canopy cover densities greater than 15 percent is twenty to thirty years (Winward, 1991; Sturges, 1975). When considering succession over time, it is estimated that all of the existing acres in the 0-15 percent canopy cover density class that are capable of establishing canopy cover densities of greater the 15 percent will move into the greater than 15 percent canopy cover density class in the next twenty years if these acres are left untreated. This means that an average of 5 percent (5 x 20 years = 100) of the acres in the 0-15 percent canopy cover density class are expected to move into the greater than 15 percent canopy cover density class annually because of succession. Wildfires, wildland fire use, were considered as part of the acres treated in each alternative, except for Alternative 7R. In Alternative 7R an additional 3,000 acres were added from the average wildfire information for the decade. A spreadsheet that factors in treatments with succession rates was used to calculate outcomes in each alternative.

TALL FORB COVER TYPE

Because the tall forb cover type was not separated out in the Forest vegetation classification, the actual extent of this type has not been determined. This cover type was analyzed qualitatively forest-wide using inferences derived from range ocular and site analysis collected in the 1960's, where ground cover and species composition were identified for this cover type. Summarized data was used from "A Hierarchical Stratification of Ecosystems on the Caribou National Forest" (USDA, 1997).

WOODLAND COVER TYPES

Short-term and long-term goals for woodland cover types, such as juniper, maple and mountain mahogany, have not been established. Analysis of these cover types will be conducted at the site-specific level to determine treatment levels. No further analysis was completed.

Because the tall forb cover type was not separated out in the Forest vegetation classification, the actual extent of this type has not been determined. This cover type was analyzed qualitatively forest-wide using inferences derived from range ocular and site analysis collected in the 1960's, where ground cover and species composition were identified for this cover type. Summarized data was used from "A Hierarchical Stratification of Ecosystems on the Caribou National Forest" (USDA, 1997).

WOODLAND COVER TYPES

Short-term and long-term goals for woodland cover types, such as juniper, maple and mountain mahogany, have not been established. Analysis of these cover types will be conducted at the site-specific level to determine treatment levels. No further analysis was completed.

EFFECTS ANALYSIS

The following calculations were made to determine short-term outcomes for the sagebrush/mountain shrub vegetation group in each alternative. All acres treated would be from the greater than 15 percent canopy cover (cc) density class.

ALTERNATIVE 1

Treatments

13,000 acres in the greater than 15 percent cc treated per year, times ten years, equals 130,000 acres treated in the decade.

Succession

7,080 acres move into greater than 15 percent cc per year, times ten years, equals 70,800 acres moving into greater than 15 percent cc in the decade due to succession.

Result

130,000 acres treated per decade minus 70,800 acres moving back into greater than15 percent cc equals 59,200 acres net reduction of greater than 15 percent cc at the end of ten years.

Percent cc after 10 years

202,269 acres in greater than 15 percent cc @ year 1 minus 59,200 acres reduction in the acres in greater than 15 percent cc equals =143,069 acres left in greater than 15 percent cc. Then, 143,069 acres remaining in the greater than 15 percent cc divided by 404,539 acres of total sagebrush/mountain shrub equals 35.37 percent of the acres in greater than 15 percent cc after ten years.

Decades to achieve Long-term Goal

The following calculations were made to determine the effect on sagebrush/mountain shrub canopy cover density with this level of treatments.

35.37 percent of the acres are in greater than 15 percent cc after ten years minus 50 percent Existing Condition equals 14.63 percent reduction in the greater than 15 percent cc class after the first decade. 10 percent reduction in greater than 15 percent cc (50 percent current condition minus 40 percent as midpoint for historical range of variability (HRV) equals 10 percent for desired goal) divided by 14.63 percent reduction of acres in greater than 15 percent cc per decade equals 6.8 years or 0.7 decades to achieve 40 percent of the sagebrush/mountain shrub acres in greater than 15 percent cc/HRV.

ALTERNATIVE 2

Treatments

7,750 acres treated times ten years equals 77,750 acres treated over the decade

Succession

7,080 acres move into greater than 15 percent cc each year times ten years = 70,800 acres moving into greater than 15 percent cc due to succession.

Result

77,750 acres treated per decade minus 70,800 acres moving back into greater than 15 percent cc due to succession equals 6,950 acres net reduction of greater than 15 percent cc at the end of ten 10 years.

Percent cc after 10 years

202,269 acres in greater than 15 percent cc @ year 1 minus 6,950 acres reduction in greater than 15 percent cc equals =195,319 acres left in the greater than 15 percent cc at the end of the first decade.

195,319 ac in greater than 15 percent cc divided by 404,539 acres of total sagebrush/mountain shrub equals 48.3 percent of the acres left in the greater than 15 percent cc after ten10 years.

Decades to achieve Long-term Goal

48.3 percent of the acres remaining in the greater than 15 percent cc after ten10 yearsrs. minus 50 percent Existing Condition equals 1.72 percent reduction in the number of acres in the greater than 15 percent cc after the first decade. 10 percent reduction in the greater than 15 percent cc (50 percent Existing condition minus 40 percent midpoint for HRV) equals10 percent for desired goal) divided by 1.72 percent reduction per decade equals 58 years or about ~6.0 decades to achieve 40 percent of the sagebrush/mountain shrub acres in the greater than 15 percent cc/HRV.

ALTERNATIVE 3

Treatments

10,000 acres treated times ten years equals 100,000 acres treated over the decade

Succession

7,080 acres move into the greater than 15 percent cc each year times ten years equals 70,800 acres moving into greater than 15 percent cc due to succession.

Result

100,000 acres treated per decade minus 70,800 acres moving back into greater than 15 percent cc due to succession per decade equals 29,200 acres net reduction of acres in the greater than 15 percent cc at the end of ten years.

Percent cc after 10 years

202,269 acres in greater than 15 percent cc @ year 1 minus 29,200 acres reduction in acres in greater than 15 percent cc due to succession equals 173,069 acres left in greater than 15 percent cc at the end of the first decade.

173,069 acres remaining in the greater than 15 percent cc divided by 404,539 acres of total sagebrush/mountain shrub equals 42.8 percent of the acres left in greater than 15 percent cc after ten years.

Decades to achieve DFC

42.8 percent of the acres remaining in greater than 15 percent cc after ten years minus (50 percent Existing Condition equals 7.2 percent reduction in acres in the greater than 15 percent cc after the first decade. 10 percent reduction in the acres in greater than 15 percent cc (50 percent Existing condition minus 40 percent midpoint for HRV) equals 10 percent for desired goal) divided by 7.2 percent reduction per ten years equals = 13.8 years or about ~1.4 decades to achieve 40 percent of the sagebrush/mountain shrub acres in greater than 15 percent cc/HRV.

ALTERNATIVE 4

Treatments

7,750 acres treated times ten years equals 77,750 acres treated per decade

Succession

7,080 acres move into greater than 15 percent cc each /year times ten years equals 70,800 acres moving into greater than 15 percent cc due to succession.

Result

77,750 acres treated per decade minus 70,800 acres moving back into greater than 15 percent cc due to succession equals 6,950 acres net reduction of greater than 15 percent cc at the end of ten years.

Percent cc after 10 years

202,269 acres in greater than 15 percent cc @ year 1 minus 6,950-acre reduction in acres in greater than 15 percent cc acres equals 195,319 acres left in greater than 15 percent cc at the end of the first decade.

195,319 acres remaining in greater than 15 percent cc divided by 404,539 acres total sagebrush/mountain shrub equals 48.3 percent of the acres are left in greater than 15 percent cc after ten years.

Decades to achieve DFC

48.3 percent of the acres remaining in greater than 15 percent cc after ten years minus 50 percent Existing Condition equals 1.72 percent reduction in the number of acres in greater than 15 percent cc after the first decade. 10 percent (50 percent Existing condition minus 40 percent midpoint for HRV) equals 10 percent for desired goal) divided by 1.72 percent reduction per ten years equals 58 years or about ~6.0 decades to achieve 40 percent of the sagebrush/mountain shrub in greater than 15 percent cc/HRV.

ALTERNATIVE 5

Treatments

7,080 acres treated times ten years equals 70,800 acres treated per decade

Succession

7,080 acres move into greater than 15 percent cc each year times ten years equals 70,800 acres moving into the greater than 15 percent cc due to succession.

Result

70,800 acres treated per decade minus 70,800 acres moving back into the greater than 15 percent cc due to succession equals 0 acres net reduction of greater than 15 percent cc at the end of ten years.

Percent cc after 10 years

202,269 acres in greater than 15 percent cc @ year 1 minus 0 acres reduction in acres in the greater than 15 percent cc equals 202,269 acres left in greater than 15 percent cc at the end of the first decade.

202,269 acres remaining in the greater than 15 percent cc at the end of first decade divided by 404,539 acres of total sagebrush/mountain shrub equals 50 percent of the acres in greater than 15 percent cc after ten years.

Decades to achieve Long-term Goal

50 percent of the acres remaining in greater than 15 percent cc after ten yearrs.minus 50 percent Existing condition equals 0 percent reduction in acres in greater than 15 percent cc after ten years. 10 percent (50 percent existing condition minus 40 percent midpoint for HRV) equals 10 for desired goal percent) divided by 0 percent reduction per

ten years equals more than 100 years or more than ten decades to achieve 40 percent of the sagebrush/mountain brush in greater than 15 percent cc/HRV.

ALTERNATIVE 6

Treatments

6,000 acres treated times ten years equals 60,000 acres treated over the decade.

Succession

7,080 acres move into greater than 15 percent cc each /year times ten years equals 70,800 acres moving into greater than 15 percent cc due to succession.

Result

60,000 acres treated per decade minus 70,800 acres moving back into greater than 15 percent cc due to succession equals 10,800 acres net increase of acres in the greater than 15 percent cc at the end of ten years.

Percent cc after 10 years

202,269 acres in greater than 15 percent cc @ year 1 plus 10,800 acres increase in the greater than 15 percent cc equals 213,069 acres left in greater than 15 percent cc at the end of the first decade.

213,069 acres remaining in the greater than 15 percent cc divided by 404,539 acres of total sagebrush/mountain shrub total sagebrush/mountain shrub equals 52.7 percent of the acres left in greater than 15 percent cc after ten years.

Decades to achieve Long-term Goal

52.7 percent of the acres remaining in greater than 15 percent cc after ten years minus 50 percent existing condition equals a 2.7 percent increase in the number of acres in the greater than 15 percent cc after the first ten years. 2.7 percent increase per decade times ten decades equals 77 percent of the sagebrush/mountain shrub acres are in greater than 15 percent cc after 100 years. This alternative achieves the long-term goal within the first decade.

ALTERNATIVE 7

Treatments

7,975 acres treated times ten years equals 79,750 acres treated in the decade.

Succession

7,080 acres move into the greater than 15 percent cc each year times ten years equals 70,800 acres moving into the greater than 15 percent cc due to succession.

Result

79,750 acres treated per decade minus 70,800 acres moving back into greater than 15 percent cc due to succession equals 8,950 acres net reduction in acres in the greater than 15 percent cc at the end of ten years.

Percent cc after 10 years

202,269 acres in greater than 15 percent cc @ year 1 minus 8,950 acres decrease in greater than 15 percent cc equals 193,319 acres remaining in the greater than 15 percent cc at the end of the first decade.

193,319 acres remaining in the greater than 15 percent cc divided by 404,539 acres of total sagebrush/mountain shrub equals 47.8 percent of the acres remaining in greater than 15 percent cc after ten years.

Decades to achieve Long-term Goal

47.8 percent of the acres remaining in greater than 15 percent cc after ten years minus 50 percent existing condition equals a 2.21 percent reduction in the number of acres in greater than 15 percent cc per decade. 10 percent reduction in acres in the greater than 15 percent cc (50 percent Existing condition minus 40 percent midpoint for HRV) equals 10 percent for desired goal) divided by 2.21 percent reduction per decade equals 45 years or 4.5 decades to achieve 40 percent of sagebrush/mountain shrub acres in greater than 15 percent cc/HRV.

ALTERNATIVE 7R

Treatments

4,000 acres treated times ten years equals 40,000 acres treated in the decade of greater than 15 percent cc. In addition 3,000 acres were added for wildfire, which results in 43,000 acres treated over the decade.

Succession

7,080 acres in the greater than< 15 percent cc class move into the greater than 15 percent cc each year times ten years equals 70,800 acres moving into greater than 15 percent cc from succession.

Result

430,000 acres treated per decade minus 70,800 acres moving back into greater than 15 percent cc due to succession equals 30,800 27,800 acres net increase in the greater than 15 percent cc at the end of the first decade.

Percent cc after 10 years

202,269 acres (see assumptions above) existing in greater than 15 percent cc plus 27,800 acres net increase in the greater than 15 percent cc equals 230,069 acres left in greater than 15 percent cc after the first decade.

2303,069 acres remaining in the greater than 15 percent cc divided by 404,539 acres total sagebrush/mountain shrub equals 56.8 percent of the acres in greater than 15 percent cc after the first decade.

Decades to achieve DFC

56.8 percent of acres remaining in greater than15 percent cc resulting after ten years minus 50 percent in greater than 15 percent cc (Existing condition) equals a 7.6 percent increase in the number of acres in greater than 15 percent cc after the first decade.

Desired goal in this alternative is to haveis30 - 50 percent of the sagebrush/mountain shrub acres in greater than 15 percent cc.

Approximately 0.68 percent increase per year is being added to the greater than 15 percent cc in this alternative so in approximately ten years 6.8 percent is added to the greater than 15 percent cc class.

After 100 years the outcome is expected to be 79 percent of the acres in greater than15 percent cc. This alternative will not achieve the long-term goal without additional treatments being added in the future decades.

LONG TERM ANALYSIS

After approximately twenty years of treating sagebrush/mountain shrub vegetation, the amount of acres moving into the greater than 15 percent canopy cover density is nearly equal to the amount of acres being treated annually and taken out the number of acres in the greater than 15 percent canopy cover density class, because of the twenty year rotation cycle. Therefore, in the long term, if treatments remain the same, the amount of acres in the greater than 15 percent canopy cover density tends to increase over time due to succession in most alternatives. The following calculations were made to determine long-term outcomes.

ALTERNATIVE 1

This alternative treats approximately 130,000 acres in the greater than 15 percent canopy cover density class per decade. After two decades, the acres treated are equal to acres moving into greater than 15 percent canopy cover density class. Approximately 260,000 acres will have been treated after two decades. Assuming all 260,000 acres are treated, divide by 404,500 total sagebrush/mountain shrub acres and approximately about 64 percent of the acres will be in the less than 15 percent canopy cover density class. This leaves about 36 percent of the acres in the greater than 15 percent canopy cover density class.

ALTERNATIVE 2

This alternative treats approximately 77,500 acres in the greater than 15 percent canopy cover density class per decade. After two decades, the acres treated are equal to acres moving into greater than 15 percent canopy cover density class. Approximately 155,000 acres will have been treated after two decades. Assuming all 155,000 acres are treated, divide by 404,500 total sagebrush/mountain shrub acres and approximately 38 percent of the acres will be in less than 15 percent canopy cover. This leaves about 62 percent of the acres in the greater than 15 percent canopy cover density class over the long term

ALTERNATIVE 3

This alternative treats approximately 100,000 acres in the greater than 15 percent canopy cover density class per decade. After two decades, the acres treated are equal to acres moving into greater than 15 percent canopy cover density class. Approximately 200,000 acres will have been treated after two decades. Assuming all 200,000 acres are treated, divide by 404,500 total sagebrush/mountain shrub acres and approximately 49 percent of the acres will be in less than 15 percent canopy cover density. This leaves about 51 percent of the acres in the greater than 15 percent canopy cover density class over the long term.

ALTERNATIVE 4

See Alternative 2.

ALTERNATIVE 5

Alternative 5 treats approximately 70,800 acres in the greater than 15 percent canopy cover density class per decade. After two decades, the acres treated are equal to acres moving into greater than 15 percent canopy cover density class. Approximately 141,600 acres will have been treated after two decades. Assuming all 141,600 acres are treated, divide by 404,500 total sagebrush/mountain shrub acres and approximately 35 percent of the acres will be in less than 15 percent canopy cover density. This leaves about 65 percent of the acres in the greater than 15 percent canopy cover density class over the long term

ALTERNATIVE 6

This alternative treats approximately 60,000 acres in the greater than 15 percent canopy cover density class per decade. After two decades, the acres treated are equal to acres moving into greater than 15 percent canopy cover density class. Approximately 120,000 acres will have been treated after two decades. Assuming all 120,000 acres are treated, divide

by 404,500 total sagebrush/mountain shrub acres and approximately 30 percent of the acres will be in less than 15 percent canopy cover density. This leaves about 70 percent of the acres in the greater than 15 percent canopy cover density class over the long term.

ALTERNATIVE 7

This alternative treats approximately 79,750 acres in the greater than 15 percent canopy cover density class per decade. After two decades, the acres treated are equal to acres moving into greater than 15 percent canopy cover density class. Approximately 159,500 acres will have been treated after two decades. Assuming all 159,500 acres are treated, divided by 404,500 total sagebrush/mountain shrub acres and about 39 percent of the acres will be in less than 15 percent canopy cover density. This leaves about 61 percent of the acres in the greater than 15 percent canopy cover density class over the long term.

ALTERNATIVE 7R

Alternative 7R treats approximately 40,000 acres in the greater than 15 percent canopy cover density class per decade. An additional 3,000 acres are added for wildfire. After two decades, the acres treated are equal to acres moving into the greater than 15 percent canopy cover density class. After two decades, 86,000 acres will have been treated. Assuming all 86,000 acres are treated, divided by 404,500 total sagebrush/mountain shrub acres is about 21 percent in less than 15 percent canopy cover density. This leaves about 79 percent of the acres in the greater than 15 percent canopy cover class over the long term.

The following table displays the outcomes by alternative from the above calculations.

Alt	Existing % of Acres in >15% canopy cover class	Desired Range of Future Conditions (%Acres in > 15 cc)	1st Decade Outcome (% Acres in > 15 cc)	Long-term Goal (% Acres in > 15 cc)	Estimated Time to Attain DFC (Decades)	Long-term Outcome (% Acres with > 15 CC)
1	50	None Established	35	None Established	~0.7	36
2	50	30-50	48	40	6.0	62
3	50	30-50	43	40	1.4	51
4	50	30-50	48	40	6.0	62
5	50	30-50	50	540	>10.0	65
6	50	>50	53	>50	N/A	70
7	50	30-50	48	40	4.5	61
7R	50	30-50	58	50	>10.0	79

Issue 4

Livestock Grazing

NFMA Capability and Suitability

INTRODUCTION

As a result of public comments on the Caribou National Forest Draft Environmental Impact Statement and Draft Revised Forest Plan, capability and suitability of lands for livestock grazing were re-evaluated between the Draft and Final EIS. The IDT met and came up with a process for determining suitability based on the R4 Protocol, other Forest's processes, and the NFMA regulations. Some things to remember:

- Range capability is generally determined based on physical characteristics while suitability includes value judgments about the appropriateness of grazing and other uses foregone.
- "Rangeland suitability is...the integration of capability and the appropriateness of grazing livestock on a particular area of land considering such things as economics, social concerns, and grazing compatibility with other land uses." (R4 Protocol)
- Not capable or unsuitable does not mean closed to grazing, it means those acres are not counted when determining grazing capacity of an allotment.

The IDT confirmed the capability analysis for both cattle and sheep but made some changes in the suitability analysis. These are detailed below.

CRITERIA AND PROCESS FOR DETERMINING RANGELAND CAPABILITY

The 1982 planning regulations (36 CFR 219.20, prior to the 2001 published version of the 36 CFRs) require the mapping of capable lands for grazing, even though rangeland capability is no longer used to set livestock permit numbers. Permits have an established number and season of use that has been determined over time, and any adjustments are based on short- or long-term monitoring.

Capability is defined in the Intermountain Region's Protocol as:

> *"The potential of an area of land to produce resources, supply goods and services, and allow resource uses under an assumed set of management practices and at a given level of management intensity. Capability depends on current conditions and site conditions, such as climate, slope, landform, soils and geology, as well as the application of management practices, such as silviculture or protection from fire, insects, and disease."*

Rangeland capability represents the biophysical determination of those areas that can sustain grazing but it is not a decision to graze livestock nor a capacity determination. Determining capability requires the assessment of those biophysical characteristics conducive to livestock grazing. **Capable acres do not vary by alternatives.**

The physical characteristics suggested in the Intermountain Region's protocol for consideration in determining capability include:

- Areas with less than 30 percent slopes for cattle and less than 45 percent slopes for sheep;

- Areas producing more than or having the potential to produce an average of 200 pounds of forage/acre on an air-dry basis over the planning period;

- Areas with naturally resilient soils (not unstable or highly erodible soils);

- Areas where ground cover (vegetation, litter, rock greater than 3/4 inches) is sufficient to protect soil from erosion. The minimum percentage cover will be 60 percent unless local data is available for use in setting more specific ground cover requirements;

- Areas accessible to livestock (without such factors as dense timber, rock, or other physical barriers); and

- Area within one mile of water or where the ability to provide water exists.

Capability is determined using all these criteria together but they may be modified if documented data indicates changes are warranted; or, additional criteria may be developed if local conditions warrant. National Forest System lands meeting these criteria are considered capable of being grazed by domestic livestock with management.

Rangeland capability was mapped at a site-specific level, by allotment, when range analysis was done in the 1960s and 1970s. However, for this Forest Planning effort, a GIS model was used to map capable acres using only three of the criteria described above. The model used:

- Slopes (less than 45 percent for sheep and less than 30 percent for cattle);
- Distance from water (one mile for sheep and cattle); and,
- The vegetative cover type. Vegetative cover was used as a proxy for forage production based on an earlier assessment documented in "A Hierarchical Stratification of Ecosystems of the Caribou National Forest" which gives a range of estimated forage production by vegetation type.

In this assessment of capability, soils were not used, because the mapping units are a mixture of various soil families, and they are not specific to a particular location on the ground. Ground cover was not used, because there is no data in GIS for mapping this criterion. Accessibility was not mapped, because it must be determined at the site-specific level. Data Sources used in the model included:

- Ownership of Forest Lands came from Cartographic Feature Files (CFFs);
- Slope was determined from USGS 30-meter Digital Elevation Model (DEMs);
- Vegetation came from the Vegetation Cover Types of the Caribou National Forest; and
- Water sources were taken from a Forest inventory GIS layer

Model Results

Slopes and distance from water were taken directly from the CFFs. Since vegetation cover types were used as a proxy for forage production, decisions were made on which cover types were most likely to be grazed and would produce at least the minimum amount of forage of 200 pounds per acre on an air-dry basis. Aspen/conifer, aspen, aspen/maple, riparian, grass/shrub, mountain brush, Douglas-fir, juniper, maple, and mahogany cover types were selected, because these are types most resource professionals consider as "rangelands," and because the "Hierarchal Strategies of Ecological Units on the Caribou National Forest" report indicates these types have average production figures associated with them-that were mapped during earlier range analyses, which showed these vegetation types produce at least 200 pounds per acre of air dry forage.

The model showed that about 719,000 acres on the Forest are capable of supporting sheep grazing, and 469,000 acres are capable of supporting cattle grazing. More land is capable of supporting sheep because they are smaller, lighter animals and can graze on steeper slopes without causing soil damage. These numbers are similar to the 1985 Forest Plan, which determined approximately 700,000 acres were capable of sustaining livestock grazing.

Because a computer model was used to estimate the acres, the final acre figure for capable rangelands should be considered a conservative estimate that can be re-analyzed on a site-specific basis as the need arises. It should also be

noted that other cover types may undergo some degree of grazing, but they were not included, because the entire cover type may not be capable of supporting grazing by domestic animals. On the other hand, some of the cover types that were included as capable also may not have the entire cover type capable of being grazed. An example is the aspen/conifer cover type. Areas where conifers have not yet heavily invaded the site still provide plenty of forage. Sites that have reverted to mostly conifer would provide relatively little forage, and so may not meet the criteria on a site-specific basis for capable lands.

In addition, land that is determined to be "not capable" does not mean that livestock may not occasionally be present or trail across the land (Washington Office Letter, 4/25/97). "Not capable" does mean the land would not support livestock on a sustained basis. Acres meeting the capability criteria are no longer used in setting stocking rates or the permitted numbers on the grazing permits. Livestock will be seen on non-capable acres and may even graze it lightly on occasion. "Non-capable acres" will not be fenced to exclude all livestock grazing (Washington Office Letter, 4/25/97). "Capable acres" are where livestock spend most of their time and where management is focused. These are the acres of land where monitoring, both short-term for annual impacts or variations of use and long-term to determine trend toward meeting the projected goals and desired future conditions, take place.

DATA SOURCES

The following information was gathered or developed to determine capable rangelands and maps developed which displayed the information:

- Ownership from CFFs (Cartographic Feature Files)
- Slope by 10% breaks from DEMs (USGS 30-meter Digital Elevation Model)
- Vegetation Cover Types of the Caribou National Forest producing more than 200 pounds forage per acre using the "Hierarchal Stratification of Ecological Units on the Caribou NF" (USDA-FS, 1997).
- Location of water sources (perennial streams or point sources from inventory)

CRITERIA AND PROCESS FOR DETERMINING SUITABILITY

Criteria

Rangeland suitability represents the integration of land capability and the appropriateness of grazing livestock on a particular area of land, considering such things as economics, social concerns, and grazing compatibility with other land uses.

Suitability is assessed by alternative and determines whether livestock grazing is compatible with management direction for a management area's other uses and values. Some situations or conflicts can often be mitigated (for example, through fencing), making an area suitable for livestock when it would not be otherwise. Suitable and non-suitable lands may appear within a single allotment. Non-suitable lands will not be fenced to keep livestock out in most cases.

Suitable acres must first be capable of supporting livestock grazing and meet the capability criteria discussed above. Suitable acres can change over time or under different management options. For example, mining restoration sites would not be suitable while they were being restored. If they are restored to meet the criteria of capability and there were no social or economic values or other uses pre-empting grazing use, then they might become suitable after mining ceases and restoration goals are met.

Process

The ID team met and collectively determined suitability criteria for each alternative based on the theme/emphasis of the alternative. In addition to the criteria chosen, the team considered using other factors, but these were dropped. This

additional information can be found in the Capability and Suitability Process Paper and IDT meeting notes located in the Project File. The final suitability recommendations were discussed and approved by the Forest Leadership Team. The following rules were followed in determining rangeland suitability:

- Acres had to be capable of supporting grazing (they met the criteria described above);
- Capable acres already having standards and guidelines in a management prescription that do not allow livestock grazing were subtracted from the suitable base (i.e., they were determined to be unsuitable); and
- Based on the theme of each alternative, the team determined which, if any, additional acres should be considered unsuitable.

Some areas were considered unsuitable in **ALL alternatives**. These are:

- Research Natural Areas in prescription 2.2. (Establishment Reports for RNAs exclude grazing as a condition of establishment of the RNA.);
- Developed recreation sites in prescription 4.1. This is a conflict with the users and livestock are generally fenced out;
- All of the Pocatello Watershed. It was designated by Congress to maintain water quality and quantity;
- Portions of the Mill Creek and Elkhorn watersheds on the Westside Ranger District, which have been closed to grazing until watershed restoration is achieved; and
- Mining reclamation areas showing unacceptable levels of selenium that are toxic to SHEEP and would therefore be considered unsuitable TO SHEEP ONLY.

In addition, each alternative was assessed for unsuitable grazing lands based on the theme or emphasis featured in the alternative. Rationale is included with each bullet statement.

ALTERNATIVES 1, 2 AND 3

In this alternative, no change in livestock suitability determinations occurred between the Draft EIS and this Final EIS. In addition to the areas considered unsuitable in ALL alternatives, the following lands were also considered unsuitable for livestock grazing in Alternative 1:

- Lands within the Grace Watershed in prescription 2.1.3 because this was part of and included in the 1985 Forest Plan. (Alternative 1, the No Action alternative, projects the effects of continuing management under the 1985 Forest Plan).

ALTERNATIVE 4

The re-analysis of rangeland suitability changed between the Draft EIS and this Final EIS for this alternative. In addition to the areas that apply to ALL alternatives, other areas determined to be unsuitable for livestock grazing in this alternative include:

- Lands within the Grace Watershed in prescription 2.1.3 because this was in the 1985 Forest Plan;
- 303(d) streams and the drainage directly affecting that segment (immediately surrounding the segment). The entire watershed containing that WQLS segment would not be unsuitable because many areas within the 6th code HUC's are removed from the 303(d) segment, and grazing in these areas does not directly affect the improvement of the 303(d) stream. Also, many streams cross private land and then flow back onto the Forest requiring coordination of uses with adjacent landowners to affect stream improvement. See map of 303(d) stream segments in project file;

- Tarweed sites in Diamond Flat, Green Canyon, Franklin Basin, Egan Basin Danish Pass, Crows Nest, Church Hollow are considered not suitable for livestock grazing because of scheduled restoration actions. Until these are achieved, the areas are unsuitable for grazing;

- The Black Canyon leafy spurge site on the Westside District is considered not suitable for CATTLE GRAZING ONLY in this alternative. Restoration actions, if successful, would make it suitable at some point in time.

ALTERNATIVE 5

The re-analysis of livestock suitability between the Draft and Final EIS changed in this alternative. In addition to the areas that apply to ALL alternatives, unsuitable areas also include:

- Lands within the Grace Watershed in prescription 2.1.3 because this was in the 1985 plan.

- 303(d) streams and the drainage directly affecting that segment (immediately surrounding the segment). The entire watershed containing that WQLS segment would not be unsuitable because many areas within the 6th code HUC's are removed from the 303(d) segment, and grazing in these areas does not directly affect the improvement of the 303(d) stream. Also, many streams cross private land and then flow back onto the Forest requiring coordination of uses with adjacent landowners to affect stream improvement. See map of 303(d) stream segments in project file;

- Recreation areas: Mink Creek Recreation Area (Prescription 4.3), Cub River, McCoy Creek, Pebble Creek, Bloomington (Prescription 4.3). The entire wild area within the prescription boundary would be considered unsuitable.

- Wild and Scenic River eligible sites along St. Charles Creek and Elk Valley Marsh are considered not suitable for livestock grazing because of the high recreation use in St. Charles Canyon and the need to protect unique plant communities and wetland areas around Elk Valley Marsh.

ALTERNATIVE 6

The re-analysis of suitability between the draft and final EIS changed in this alternative. In addition to the areas that apply to ALL alternatives, it includes:

- Lands within the Grace Watershed in prescription 2.1.3.

- 303(d) streams and the drainage directly affecting that segment (immediately surrounding the segment). The entire watershed containing that WQLS segment would not be unsuitable because many areas within the 6th code HUC's are removed from the 303(d) segment, and grazing in these areas does not directly affect the improvement of the 303(d) stream. Also, many streams cross private land and then flow back onto the Forest requiring coordination of uses with adjacent landowners to affect stream improvement. See map of 303(d) stream segments in project file;

- Tarweed sites in Diamond Flat, Green Canyon, Franklin Basin, Egan Basin Danish Pass, Crows Nest, Church Hollow are considered no suitable for livestock grazing because of scheduled restoration actions. Until these are achieved, the areas are unsuitable for grazing.

- The Black Canyon leafy spurge site on the Westside District is considered not suitable for CATTLE GRAZING ONLY in this alternative. Restoration actions, if successful, would make it suitable at some point in time.

- Recreation areas: Mink Creek Recreation Area (Prescription 4.3), Cub River, McCoy Creek, Pebble Creek, Bloomington (Prescription 4.3). The entire wild area within the prescription boundary would be considered unsuitable.

- Wild and Scenic River eligible sites along St. Charles Creek and Elk Valley Marsh are considered not suitable for livestock grazing because of the high recreation use in St. Charles Canyon and the need to protect unique plant communities and wetland areas around Elk Valley Marsh.

- Strongholds for Yellowstone and Bonneville Cutthroat Trout: Watersheds in these areas were determined to be not suitable for livestock grazing because of the need to maintain or improve stream and aquatic habitat condition for these sensitive fish species.

ALTERNATIVE 7

The re-analysis of suitability between the draft and final EIS changed in this alternative. In addition to those areas for ALL alternatives it includes:

- Lands within the Grace Watershed in prescription 2.1.3.

- Recreation Areas: Bloomington Lake, Cub River, and the Mink Creek Special Management Areas (Prescription 4.3) were determined to be not suitable because of high recreation demands.

- Tarweed sites in Diamond Flat, Green Canyon, Franklin Basin, Egan Basin Danish Pass, Crows Nest, and Church Hollow are considered not suitable for livestock grazing because of scheduled restoration actions. Until these are achieved, the areas are unsuitable for grazing.

- The Black Canyon leafy spurge site on the Westside District is considered not suitable for CATTLE GRAZING ONLY in this alternative. Restoration actions, if successful, would make it suitable at some point in time.

- Wild and Scenic River eligible sites along St. Charles Creek and Elk Valley Marsh are considered not suitable for livestock grazing because of the high recreation use in St. Charles Canyon and the need to protect unique plant communities and wetland areas around Elk Valley Marsh.

ALTERNATIVE 7R (SELECTED ALTERNATIVE IN RECORD OF DECISION)

The same areas as in Alternative 7 were determined to be unsuitable to livestock grazing in this alternative. In addition, the Gravel Creek Riparian Area was also determined to be unsuitable.

- *Table B. 14 Summary of Range Capability/Suitability Matrix for Cattle.*

Capability Suitability	Factor	Alt 1	Alt 2	Alt 3	A lt 4	Alt 5	Alt 6	Alt 7	A lt 7R
Capability	Slopes greater than 30%	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable
Capability	Distance from water greater than 1 mile	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable
Capability	Covertype[1]: Rock, water, lodgepole pine, Mixed conifer, Mixed conifer2	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable

Capability Suitability	Factor	Alt 1	Alt 2	Alt 3	A lt 4	Alt 5	Alt 6	Alt 7	A lt 7R
	Management Prescriptions	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Suitability	Research Natural Areas (Rx 2.2)	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Wild & Scenic River Eligible Sites (Rx 2.5) St Charles, Elk Valley Marsh	-------	-------	-------	-------	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Gravel Creek Riparian Area (Rx 2.1.6)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Suitable
	Watershed/ Fish	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Suitability	Municipal Watersheds (Rx 2.1.3) Pocatello and Grace Watersheds	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	-------
	Pocatello Watershed Only								Not Suitable
Suitability	Yellowstone, Bonneville Cutthroat Trout Strongholds	-------	-------	-------	-------	-------	Not Suitable	-------	-------
Suitability	303(D) Stream Segments and Immediately Adjacent Watershed	-------	-------	-------	Not Suitable	Not Suitable	Not Suitable	-------	-------
	Recreation	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Suitability	Developed Recreation Sites, including campgrounds, trailheads, etc.	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Dispersed Recreation Sites (Rx 4.3)								
	Set 1: Mink Creek, Cub River, McCoy Creek, Pebble Creek, Bloomington Lake (Buffers are ¼ mile except Cub River which is 300 feet) and Montpelier Reservoir as shown in Alternative	-------	-------	-------	-------	Not Suitable	Not Suitable	-------	-------
	Set 2: Mink Creek, Cub River (Buffers are ¼ mile except Cub River which is 300 feet) and Montpelier Reservoir as shown in Alternative					-------	-------	Not Suitable	Not Suitable

Capability Suitability	Factor	Alt 1	Alt 2	Alt 3	A lt 4	Alt 5	Alt 6	Alt 7	A lt 7R
	Range	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Suitability	Areas Specifically Identified (Westside Ranger District 3 polygons)	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Invasive Plants (Tarweed)	-------	-------	-------	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Noxious Weeds (Black Canyon)	-------	-------	-------	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable

1 Cover types considered "capable" for cattle are aspen, aspen/conifer, aspen/maple, maple, Douglas-fir, juniper, mountain mahogany, grass/shrub, mountain brush, riparian areas.

• *Table B. 15 Summary of Range Capability/Suitability Matrix for Sheep.*

Capability Suitability	Factor	Alt 1	Alt 2	Alt 3	A lt 4	Alt 5	Alt 6	Alt 7	A lt 7R
Capability	Slopes greater than 45%	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable
Capability	Distance from water greater than 1 mile	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable
Capability	Covertype: Rock, water, lodgepole pine, Mixed conifer, Mixed conifer2	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable	Not Capable
	Management Prescriptions	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Suitability	Research Natural Areas (Rx 2.2)	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Wild & Scenic River Eligible Sites (Rx 2.5) St Charles, Elk Valley Marsh	-------	-------	-------	-------	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Gravel Creek Riparian Area (Rx 2.1.6)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Not Suitable
	Watershed/ Fish	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Suitability	Municipal Watersheds (Rx 2.1.3) Pocatello and Grace Watersheds	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	-------
	Pocatello Watershed Only								Not Suitable
Suitability	Yellowstone, Bonneville Cutthroat Trout Strongholds	-------	-------	-------	-------	-------	Not Suitable	-------	-------

Capability Suitability	Factor	Alt 1	Alt 2	Alt 3	A lt 4	Alt 5	Alt 6	Alt 7	A lt 7R
Suitability	303(D) Stream Segments and Immediately Adjacent Watershed	-------	-------	-------	Not Suitable	Not Suitable	Not Suitable	-------	-------
	Recreation	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Suitability	Developed Recreation Sites, including campgrounds, trailheads, etc.	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Dispersed Recreation Sites (Rx 4.3)								
	Set 1: Mink Creek, Cub River, McCoy Creek, Pebble Creek, Bloomington Lake (Buffers are ¼ mile except Cub River which is 300 feet) and Montpelier Reservoir as shown in Alternative	-------	-------	-------	-------	Not Suitable	Not Suitable	-------	-------
	Set 2: Mink Creek, Cub River (Buffers are ¼ mile except Cub River which is 300 feet) and Montpelier Reservoir as shown in Alternative					-------	-------	Not Suitable	Not Suitable
	Range	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Suitability	Areas Specifically Identified (Westside Ranger District 3 polygons)	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Invasive Plants (Tarweed)	-------	-------	-------	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Noxious Weeds (Black Canyon)	-------	-------	-------	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable
Suitability	Phosphate Mine Reclamation Areas (Selenium)	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable	Not Suitable

1 Cover types considered "capable" for sheep are aspen, aspen/conifer, aspen/maple, maple, Douglas-fir, juniper, mountain mahogany, grass/shrub, mountain brush, riparian areas.

• *Table B. 16 Changes in Suitable Cattle Acres by Alternative.*

Alternative	Acres	Asp Con Acres	Asp/Map Acres	Aspen Acres	DougFir Acres	Gr/Shr Acres	Juniper Acres	Mahog Acres	Maple Acres	MtnBr Acres	Rip Acres
Capable Acres	**469,162**	**64,839**	**7,293**	**91,094**	**61,481**	**199,595**	**1,769**	**5,725**	**12,466**	**21,433**	**4,113**
Suitable Acres											
Alt 1-3	460,303	64,744	7,242	89,925	59,543	196,067	1,659	5,625	11,949	20,162	3,387
Alt 4	407,942	59,056	6,835	79,109	50,800	172,159	1,433	5,408	10,933	19,390	2,819
Alt 5	401,051	58,830	6,835	77,734	50,395	168,876	1,433	5,278	10,671	18,734	2,265
Alt 6	255,269	32,067	6,784	53,192	30,306	100,729	1,376	4,912	10,202	14,725	976
Alt 7	452,251	64,259	6,835	88,790	58,778	192,200	1,651	5,331	11,527	20,027	2,853
Alt 7R	452,621	64,278	6,835	88,792	58,835	192,232	1,651	5,367	11,751	20,027	2,853

• *Table B. 17 Changes in Suitable Sheep Acres by Alternative.*

Alternative	Potential Acres	Asp Con Acres	Asp/Map Acres	Asp Acres	Doug-fir Acres	Gr/Shr Acres	Juniper Acres	Mahog Acres	Maple Acres	MtnBr Acres	Rip Acres
Capable Acres	**718,745**	**97,436**	**13,255**	**132,934**	**107,032**	**295,379**	**4,587**	**11,752**	**20,009**	**32,218**	**4,143**
Suitable Acres											
Alt 3	701,942	97,269	13,144	131,150	103,346	287,715	4,350	11,354	19,096	30,496	4,022
Alt 4	630,160	89,320	13,144	115,969	89,083	257,111	4,043	11,261	17,692	29,190	3,347
Alt 5	621,256	88,895	13,144	114,364	88,410	252,925	4,043	10,999	17,341	28,396	2,739
Alt 6	403,149	47,411	13,052	79,387	55,282	155,153	3,831	10,289	16,329	21,223	1,192
Alt 7	693,115	96,909	12,599	129,867	102,360	283,615	4,330	10,897	18,746	30,340	3,452
Alt 7R	694,066	96,945	12,599	129,837	102,625	283,694	4,330	11,027	19,180	30,340	3,452

POTENTIAL FORAGE OUTPUT BY ALTERNATIVE

A calculation of potential forage was made to show the amount of forage outputs based on suitable acres in each alternative. These calculations are **estimates only** and should not be extrapolated to determine actual carrying capacities or other site-specific parameters on individual grazing allotments. The calculations were based on the number of suitable acres in each alternative and the proposed upland and riparian utilization standards contained within each of the alternatives.

Production was based on figures from the report, "A Hierarchical Stratification of Ecosystems of the Caribou National Forest", February 1997. Appendix B in the report is entitled, "Cover Type Production/Site Data for Ranger Districts on the Caribou National Forest."

The production numbers in the report were summarized by community type from actual Site or Ocular Analysis forms used during the range analysis process of the 1960s, 1970s and into the 1980s. The community types were averaged for an average Ranger District production figure by cover type. For the purposes of the Forest Plan calculations, the Ranger District averages were used to arrive at a production figure for the Forest for each cover type. No production figures were available for the riparian communities. Therefore, a professional estimate of 1,500 to 2,000 pounds per acre was made, and a mid-point of 1,750 pounds per acre was used in the AUM calculations. The following table shows the

community types, capable acres for sheep and cattle, percent of the total vegetation community type that is considered capable within the Forest, and the pounds of potential production used in the AUM estimates for each cover type:

• *Table B. 18 Potential Production by Community Type.*

Community Type	Cattle		Sheep		Production Potential
	Capable Acres	Percent of Type	Capable Acres	Percent of Type	(Pounds/Acre) per Year
Aspen	91,094	57%	132,934	83%	1,041 lbs.
Aspen/Conifer	64,839	59%	97,436	89%	805 lbs.
Aspen/Maple	7,293	39%	13,255	71%	1,016 lbs.
Douglas-fir	61,481	43%	107,032	75%	655 lbs.
Grass/Shrub (Sagebrush)	199,595	55%	295,379	81%	937 lbs.
Juniper	1,769	15%	4,587	38%	440 lbs.
Mahogany	5,725	29%	11,752	59%	710 lbs.
Maple	12,466	51%	20,009	81%	990 lbs.
Mountain Brush	21,433	55%	32,218	82%	1,052 lbs.
Riparian	3,440	83%	3,946	95%	1,750 lbs.

Formula for Potenial Forage Outputs by Alternative

The acres identified as suitable for sheep in each alternative were multiplied by the average production per acre per year in each vegetation community type and summed. The suitable sheep acres were used because they include suitable acres for cattle. An average of 719,001,770 pounds of forage production per year (in total) was calculated for capable lands. This number relates to forage production and not herbage production. When range analysis was completed in the 1960s – 1980s, range conservationists recorded production for species that were considered "Desirable and Intermediate" for forage. Production figures were recorded in dry weight per acre.

Using GIS, the non-suitable acres in each alternative were subtracted from each vegetation community type in which they appeared. For example, in Alternative 1, the current situation, 719,001,770 pounds of production are produced by the suitable acres. These acres are all considered suitable for livestock grazing, except for the Pocatello and Grace watersheds, Research Natural Areas, developed recreation sites, portions of the Mill Creek and Elkhorn watersheds closed for watershed restoration, and mining reclamation areas showing unacceptable selenium content. The remaining suitable acres were multiplied by the Potential Production figure for the vegetation community type to arrive at the total forage output. If a range of herbage production was suggested, the mid-point was used (See Table B.13). Then, utilization rates proposed in each alternative were used to calculate the potential available forage for each alternative. This process was repeated for each of the alternatives.

• *Table B. 19 Potential Forage Production Output by Alternative.*

Alternative	Suitable Acres		Total Forage Production in Pounds	
	Cattle Range	Sheep Range	Cattle Range	Sheep Range
Alt 1	460,303	701,942	419,495,065	626,425,756
Alt 2	460,303	701,942	419,495,065	626,425,756
Alt 3	460,303	701,942	419,495,065	626,425,065
Alt 4	407,942	630,160	367,116,042	569,066,965
Alt 5	401,051	621,256	361,119,499	555,495,370
Alt 6	255,269	403,149	233,684,494	342,921,492
Alt 7	452,251	693,115	411,678,569	624,896,221
Alt 7R	452,625	694,066	412,010,585	625,761,005

Forage production estimates were summed for each alternative, multiplied by the suggested herbage utilization rate for that alternative and then divided by the average amount of forage used by an animal during one month of grazing. For cattle, a cow and a 450-pound calf will average about 36 pounds of forage per day. Over a month they will ingest 1,080 pounds of forage (36 pounds per day times 30 days). For sheep, a ewe and an 80- to 90-pound lamb will use 7 pounds of forage per day. Over a month they will ingest 210 pounds of forage (7 pounds per day times 30 days). Estimates of forage use by sheep and cattle are from the 1964 Range Analysis handbook. The results of these calculations are shown in Table B.15.

For calculation purposes, a cow and 450-pound calf were used. Also, estimates were based on cow/calves, because the majority of permits issued on the Forest are for cattle. A ratio of 1:5 cow/calves to ewe/lambs was used to convert cows to sheep. For example, five sheep animal months are equivalent to one cow animal month. This equalizes the numbers so they can be compared.

- *Table B. 20 Calculation of Potential AUMs Based on Potential Forage Production on Suitable Acres and Utilization Rates in Each Alternative*

Alternative	Suitable Acres		Total Forage Production in Pounds		Herbage	Potential Capacity (based on uniform use)	
	Cattle	Sheep	Cattle	Sheep	Use Rate	Cattle	Sheep
Alt 1	460,303	701,942	419,495,065	626,425,756	55%	213,632	1,640,639
Alt 2	460,303	701,942	419,495,065	626,425,756	45%	174,790	1,342,340
Alt 3	460,303	701,942	419,495,065	626,425,065	45%	174,790	1,342,340
Alt 4	407,942	630,160	367,116,042	569,066,965	45%	152,965	1,219,429
Alt 5	401,051	621,256	361,119,499	555,495,370	45%	150,463	1,190,347
Alt 6	255,269	403,149	233,684,494	342,921,492	45%	97,369	734,832
Alt 7	452,251	693,115	411,678,569	624,896,221	45%	171,533	1,339,256
Alt 7R	452,625	694,066	412,010,585	625,761,005	45%	171,671	1,340,916

** Potential Capacity measured as Cow/Calf Month (1,080 lbs./mo)
** Potential Capacity measured as Ewe/Lamb Month (210 lbs./mo)

EXAMPLE USING ALTERNATIVE 1

Step 1

Start with the "total pounds of forage outputs from capable acres" 719,001,770 pounds/acre/year. (This starting point is the same for all alternatives.)

Step 2

Calculate capable acres and production considered "non-suitable" in Alternative 1 to get the "pounds of forage not available."

Step 3

Subtract "pounds of forage not available" from the "total pounds of forage (719,001,770 pounds) and Subtotal. The subtotal is the "potential pounds of forage available" in Alternative 1.

Step 4

Using the "potential pounds of forage available" from Step 3, multiply by .55 (midpoint between 50 percent and 60 percent utilization level proposed in this alternative) and subtotal. This figure represents the "estimated pounds of forage available" on suitable acres in this alternative, based on proposed utilization rates."

Step 5

Divide the "estimated pounds of forage available" from Step 4 by 1,080 pounds (36 pounds of forage for cow/calf day times 30 days per month) or by 210 pounds (7 pounds of forage for ewe/lamb day times 30 days per month). The resulting number is the total estimated potential AUMs available on suitable acres in this alternative.

REPEAT THIS PROCESS FOR EACH ALTERNATIVE.

The Project File contains all of the calculations for Potential Production and Estimated Potential AUMS by alternative.

LG3 CHANGES IN ACTUAL USED BASED ON CURRENT MANAGEMENT

VARIABLES

Prescribed Burning

As described in Chapter 4, *Ecosystem Management, Non-Forested Vegetation Diversity*, between 6,000 and 13,000 acres of sagebrush and mountain shrub vegetation would be treated annually using prescribed fire, depending on treatment proposals in each alternative. Nearly all of these acres are likely to be within grazing allotments and are capable and suitable for livestock grazing. To accomplish these treatments, livestock grazing practices would need to be adjusted. Treatment areas that are burned must be rested from livestock grazing for at least one year prior to treatment to build an adequate amount of fine fuels to carry fire. After treatment (burning) these areas usually need at least a two-year rest from grazing to restore plant vigor and ground cover. As a result, treated areas would likely not be grazed for at least three years, depending on vegetation response to fire and whether or not the desired conditions are achieved. In some cases the areas that are burned may be lightly used or grazed as early as two years after a fire, but only if the desired conditions are achieved.

Using a minimum three-year cycle for treatment projects, an estimated 18,000 acres to 39,000 acres would not be available for livestock grazing on an annual basis beginning in Year 3. Between 1,200 and 2,600 AUMs of grazing would be unavailable annually. An estimated sixty-five percent, or between 780 AUMs and 1,690 AUMs, would come from cattle allotments.

Prescribed burning would also occur in the forested ecosystems of the Forest. Depending on treatment proposals in the alternatives, between 1,740 acres and 4,990 acres will be treated. Treatment on these areas is not expected to significantly affect livestock grazing activities or available forage.

Forage Utilization Standards

To determine changes in AUMs by alternative, the forage use standards described in Chapter 2, were used. These include upland utilization, riparian grazing (all parameters), and winter range forage utilization levels. For alternatives 4, 7, and 7R, the current version of the Caribou Riparian Grazing Implementation Guide was used. To make the calculations, these standards were sent to the District personnel. District rangeland managers determined what amount of a reduction, if any, would be required to meet the grazing standards for each allotment. This process was repeated by alternative. Rangeland managers based their calculations on the amount of time it takes to reach allowable use with current management. Historic range data on actual use was used to validate their information. Many of the potential reductions could be eliminated or reduced through on-the-ground changes such as more herding, strategic salting, etc. Allotment specific data can be found in the Project File.

Suitability Analysis

As described previously, in alternative 4 – 7R, suitable acres have changed from the DEIS and the current situation. The AUMs associated with unsuitable areas were subtracted from currently permitted AUMs. Because vegetation types vary on the unsuitable lands, an average of 5 acres/AUM was used. For example, in alternative 7R, approximately

11,035 acres that currently suitable for cows would become unsuitable due to the new analysis. Using an average of 5 acres per AUM, there would be 2,207 AUMs unavailable (11,035 acres / 5 acres/AUM).

EXAMPLE USING ALTERNATIVE 1

Approximately 20,000[1] cattle (71,707 AUMs) and about 69,000[2] sheep (37,441 AUMs) currently graze the forest. Livestock management and grazing systems are used to maintain or improve forage outputs for livestock and wildlife and to protect and improve watershed conditions and coordinate with other uses.

No forest-wide riparian livestock utilization levels or stubble heights would be implemented in this Alternative. Utilization rates and/or stubble heights would continue to be determined at the site-specific level through the Allotment Management Planning (AMP) process. The upland browse utilization on key plants ranges between thirty-five percent and forty-five percent, with the utilization on key herbaceous vegetation ranging between fifty and sixty percent. No criteria are used for soil and/or streambank disturbance. (See Chapter 2, Alternative 1 and Table 2.3 for additional information.)

In this Alternative, approximately 13,000 acres of sagebrush and/or mountain shrub would be treated with prescribed fire. Treating 13,000 acres annually would result in a loss of about 2,600 AUMs annually at the forest-wide scale (13,000 acres / 5 acres/AUM = 2,600 AUMs). Using a minimum three-year cycle for treated areas, approximately 39,000 acres, producing 7,800 AUMs of forage, would be unavailable for grazing beginning in Year 3 of the Revised Forest Plan. Approximately sixty-five percent (65%) or 5,070 AUMs would come from cattle allotments. There are no other reduction factors in this alternative.

SUMMARY

- *Table B. 21 Estimated Potential Change in Current Cattle Animal Unit Months (AUMs) based on current management by Alternative.*

Potential Reduction Factor	Potential Loss of AUMs							
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt.6	Alt. 7	Alt.7R
Existing AUMs	**71,707**	**71,707**	**71,707**	**71,707**	**71,707**	**71,707**	**71,707**	**71,707**
Riparian and Upland Use Criteria	0	2,208	205	7,791 to 12,756	9,034 to 14,606	14,387 to 14,784	7,791 to 12,756	7,791 to 12,756
Winter Range Rx 2.7.1, 2.7.2	0	0	0	906	733	757	410	410
Recreation, Unique Ecosystems (Unsuitable)	0	0	0	0	3,857	3,857	2,207	2,207
Nonfunctioning/303d listed streams (Unsuitable)	0	0	0	5,225	5,225	5,225	0	0
Prescribed burning	5,070	3,023	3,900	3,023	2,761	2,340	3,110	1,555
Yellowstone and Bonneville strongholds (Unsuitable)	0	0	0	0	0	20,407	0	0
Existing AUMs - potential lost AUMs	66,637	66,476	67,602	49,797 to 54,762	44,525 to 50,097	24,337 to 24,734	53,224 to 58,189	54,779 to 59,744
Percent Change from Existing	**-7%**	**-7%**	**-6%**	**-24% to -31%**	**-30% to -38%**	**-65% to -66%**	**-19% to -26%**	**-17% to -24%**

[1] These numbers are rounded to the nearest thousand.
[2] These numbers are rounded to the nearest thousand.

- Table B. 22 Estimated Potential Change in Current Sheep Animal Unit Months (AUMs) based on current management by Alternative.

Potential Reduction Factor	Potential Loss of AUMs							
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt.6	Alt. 7	Alt.7R
Existing AUMs	**37,441**	**37,441**	**37,441**	**37,441**	**37,441**	**37,441**	**37,441**	**37,441**
Riparian and Upland Use Criteria	0	320	0	517	517	1,199	517	5217
Winter Range Rx 2.7.1, 2.7.2	0	0	0	517	517	517	517	517
Recreation, Unique Ecosystems (Unsuitable)	0	0	0	0	0	0	0	0
Nonfunctioning/303d listed streams (Unsuitable)	0	0	0	5,225	0	0	0	0
Prescribed burning	2,730	1,627	2,100	1,627	1,487	1,260	1,005	520
Yellowstone and Bonneville strongholds (Unsuitable)	0	0	0	0	0	19,216	0	0
Existing AUMs - potential lost AUMs	34,711	35,494	35,341	34,780	34,920	15,249	35,402	35,904
Percent Change from Existing	**-7%**	**-5%**	**-6%**	**-7%**	**-7%**	**-59%**	**-5%**	**-4%**

LG 4: UPLAND VEGETATION RESPONSE TO GRAZING

See Livestock Section in Chapters 3 and 4.

WILDLIFE CAPACITY ESTIMATE

- *Table B. 23 Estimated Herbaceous Forage Potentially Available for Wildlife on Suitable Range by Alternative.*

Alternative ↓	Total # forage on capable sheep range (A)	Total # forage on suitable sheep range (B)	# forage available for wildlife on capable but not suitable sheep range ((A – B) * 100% = C)	% of forage available to wildlife on suitable sheep range (E)	# of forage potentially available for wildlife on suitable sheep range (B * E = F)	Total forage available for wildlife on suitable and capable but not suitable sheep range (C + F)	Total forage available to wildlife (C + F) shown as:			
							Animal Unit Months ((C+F)/1080 = G)	Antelope Months	Mule Deer Months	Elk Months
Alt 1	719,346,520	626,425,756	92,920,764	45	218,891,590	311,812,354	288,715	3,464,580	2,309,720	721,787
Alt 2	719,346,520	626,425,756	92,920,764	55	344,534,165	437,454,930	405,050	4,860,610	3,240408	1,012,625
Alt 3	719,346,520	626,425,065	92,921,455	55	344,533,790	437,455,245	405,051	4,860,610	3,240408	1,012,625
Alt 4	719,346,520	569,066,965	150,279,555	55	312,986,830	463,266,385	428,950	5,147,400	3,431,600	1,072,375
Alt 5	719,346,520	555,495,370	163,851,150	55	305,522,450	469,373,600	434,605	5,215,260	3,476,840	1,086,512
Alt 6	719,346,520	342,921,492	376,425,028	55	188,606,820	565,031,848	523,177	6,278,124	4,185,416	1,307,942
Alt 7	719,346,520	624,896,221	94,450,299	55	343,692,920	438,143,219	405,688	4,868,256	3,245,504	1,014,220
Alt 7R	719,346,520	625,761,005	93,585,515	55	344,168,550	437,754,065	405,327	4,863,924	3,242,616	1,013,317

Antelope months = (G * (1080 #/AUM divided by 90 #/antelope month)) = (G * 12)
Mule Deer months = (G * (1080 #/AUM divided by 135 #/antelope month)) = (G * 8)
Elk months = (G * (1080 #/AUM divided by 425 #/elk month)) = (G * 2.5)

Issue 5

Minerals, Reclamation and Hazardous Substances

Baseline Information

SUMMARY

The acres anticipated to be disturbed by phosphate mining related activity during the planning period were developed based on past mining activity, coupled with information on existing mine plan approvals and future mining proposals. The level of development is not subject to Forest Service discretion. Thousands of acres of National Forest System lands are currently under Federal phosphate lease; leases that convey to the lessees the rights to extract the phosphate resources. Whether or not all or any of the existing leases will be mined, and in what sequence, is not determined by the Forest Service, but by industry exercising their rights, based on the economics associated with phosphate resource development. Because phosphate mining and reclamation methods are changing, the determination of probable or anticipated impacts from the potential release of selenium or possibly other hazardous substancesmaterials from mining disturbances is impossible to accurately predict. Federal and State water quality standards must legally be met. Potential impacts to surface resources are discussed in the endividual resource area sections in the EIS. Environmental analyses will be completed for each new surface-disturbing minerals-related proposal received.

The clean-up or remediation of past and present hazardous substances asscoiated with phosphate mining on the Forest will be handled through Forest Service authorities under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Activities under this authority are outside the scope of the Forest Plan, although standards and guidelines in the Forest Plan will be considered for their applicability as requirements in CERCLA actions.

No oil/gas leasing will occur as a result of this Forest Plan Revision, therefore no impacts or analysis are necessary. A separate NEPA document would be needed before leasing could occur;; that documents/decisions from that process would amend the plan and disclose associated impacts. Although not precluded in the Forest Plan, it is not anticipated that there will be any applications for geothermal leases during the planning period.

Locatable mineral development has been virtually non-existent (except the Caribou Basin area) for the past several years; that trend is anticipated to continue through the planning period.

Issue 6

Watershed/Riparian Areas

EFFECTS OF ALTERNATIVES ON SOIL, WATERSHED, WATER QUALITY, RIPARIAN AND AQUATIC SYSTEMS

INTRODUCTION

In an ecosystem, no part stands alone. The very nature of a watershed depends on interdependence and interaction of all the physical and biological elements contained within the watershed (Leopold, 1997). The condition of the entire watershed, including the uplands and tributary watershed system, needs to be evaluated as a whole. The watershed can influence the quality, quantity, and stability of downstream resources by controlling production of sediment and nutrients, influencing streamflow, and modifying the distribution of chemicals throughout the riparian wetland area.

Riparian health refers to the ecological status of vegetation, geomorphic and hydrologic development, along with the degree of structural integrity exhibited by the riparian area. A healthy riparian area is in dynamic equilibrium with the streamflow forces and sediments. In a healthy condition, the channel network can adjust to handle moderate changes in stormflow/ snowmelt runoff with minimal disturbance of the channel and associated riparian plant communities (Prichard 1998). Therefore, the entire system is analyzed, from overall watershed function and health, to in-channel processes. Activities that have a potential to have measurable affects on these systems are analyzed by alternative.

SCALE OF ANALYSIS

Analysis of direct, indirect, irretrievable, irreversible and cumulative effects in this EIS for watershed and related resources is done primarily at the Project Work Inventory (PWI) scale. The Caribou National Forest is comprised of twenty-two PWI watersheds. The PWI watersheds are a grouping of 5th HUCs into somewhat homogenous areas. About fifty 5th HUC watersheds occur within the Forest, and about one hundred and fifty 6th HUCs. Trying to analyze impacts and determine effects for such a large number of areas is complex and inefficient. Paring down the number of analysis areas into similar areas is more efficient and it enables the reader to better grasp the relative consequences or differences between alternatives. The PWI scale is able to aggregate cumulative impacts assessed at the finer, 6th HUC or stream reach scales, yet is still small enough to prevent dilution of information in a larger 4th HUC scale assessment.

RESOURCE PROTECTION METHODS AND BEST MANAGEMENT PRACTICES

It is assumed that basic resource protection will be incorporated into all land disturbing activities that have the potential to affect watershed, soil, water, riparian and aquatic resources. This assumption is based on existing laws, regulations, and executive orders. These include the Clean Water Act with amendments, Executive Order 11988 and 11990, which govern impacts within floodplains and wetlands, State water quality regulations, etc. Other measures may be more generic or voluntary in nature and put in place by responsible stewards of the public's land. This guidance is in the form of specific Goals, Objectives, Standards and Guidelines found in each of the prescription areas. Further, additional site-specific analysis is required before any land-disturbing activity can occur. This second-level of site-specific analysis provides opportunities to identify and minimize direct, indirect and cumulative environmental effects that cannot be determined at the larger scale of this EIS.

The Forest's water resources have been specifically identified by the public as an area of concern. The health and well being of riparian and aquatic resources is a goal common to all alternatives. Some alternatives address the issue with more stringent measures than others, but all have a common commitment to protecting and, where needed, improving the riparian and aquatic resources. For example, components of INFISH have been integrated into all the alternatives. The Forest's land managers believe this direction is needed for healthy and productive watershed, riparian and aquatic

ecosystems. Some alternatives supplement INFISH direction by providing, for example, additional livestock grazing requirements. Impacts of timber harvesting on watershed and stream channel stability, as well as riparian and aquatic system function and quality, are addressed through the Idaho Forest Practices Act (IDL, 1992). Mining impacts are specifically addressed in each mine's operating plan. Impacts of grazing are specifically addressed in allotment management plans and annual operating plans. Recreation impacts are addressed through individual recreation plans, travel plans and so on.

DISTURBANCE ACTIVITIES

Natural disturbances, such as wildfire, drought, floods, and windstorms can occur almost anywhere at any given time. It is impossible to predict when or where these events may occur, and therefore they cannot be readily analyzed at this programmatic level. As a result, these disturbances are not a part of this analysis. If and when these events occur, their effects will have to be analyzed with ongoing activities, at the time and place they occur. General effects to watershed resources are described for:

- Timber Harvest
- Livestock Grazing
- Road Disturbances
- Recreation Management
- Minerals Management
- Watershed and Aquatic Restoration
- Prescribed Fire and Wildland Fire Use

Other activities may have an impact on watershed and/or riparian resources. Other potential impacts to these resources include hydropower development, irrigation diversions, noxious weed and insect infestations and control, highway construction, and air pollution. These impacts are expected to be unpredictable or insignificant on a Forest-wide basis or have impacts that are localized that cannot be evaluated at the programmatic level. Where these activities may have a measurable effect at the localized level, they will be dealt with at that level, through site-specific NEPA, special use permits, and/or similar processes. Those activities that may have an intermittent or undetermined or immeasurable effect are not be analyzed as part of this process. Again, any new activities must be evaluated for cumulative effects and the presence of these other activities or processes, if they exist, will be determined at the time the individual projects are assessed.

The following tables display how watershed effects were quantified. Qualitative assessment is in Chapters 3 and 4.

TIMBER HARVEST

Acres and types of potential treatments are analyzed at the Forest-wide scale. As such, no definitive effects on specific watersheds can be assessed. However, anticipated harvest can be pro-rated on a watershed basis by calculating the percentage of each watershed that contains a timber harvesting prescription (5.x). That pro-rated percentage can then be applied to the total anticipated harvesting for the decade and a potential disturbance by watershed calculated.

Roads are normally constructed in association with timber harvesting. As with timber harvesting, determinations of potential locations have only been evaluated by total anticipated miles at the Forest level. Therefore, miles of roads, as timber harvesting, are pro-rated within the same watersheds that potential harvesting will occur. Acres disturbed assume that the corridor will be twenty20 feet wide. Acres harvested are obtained from data generated by the Forest's Timber Forester. Road densities are obtained from the Forest's corporate road GIS layer. Watershed acres are derived from the Forest's Watershed GIS corporate layer.

Alternative 1

In this alternative, 16,800 acres of land will be harvested over the next decade. Most watersheds have a pro-rated percentage of disturbance from roads less than one-tenth of one percent. These percentages were rounded up to 0.1 percent for the sake of analysis.

• *Table B. 24 Alternative 1*

Watershed Number	Timber Harvest Rx in Watershed[1] (Acres)	Percent of Total Forest Rx[2] (Percent)	Prorated Potential Harvest Treatment[3] (Acres)	Percent of Watershed Area Harvested[4] (Percent)	Prorated percent of Watershed Disturbed from Roading[5] (Percent)	Total Percent of Watershed Disturbed from Timber Harvesting and Roading[6] (Percent)
1	0	0%	0	0%	0%	0%
2	5,254	2.2%	370	0.1%	0.1[3]%	0.2%
3	24,014	10.0%	1,680	2.5%	0.1%	2.6%
4	0	0%	0	0%	0%	0%
5	2,434	1.0%	168	0.2%	0.1%	0.3%
6	12,344	5.1%	857	1.4%	0.1%	1.5%
7	19,543	8.2%	1,378	2.8%	0.1%	2.9%
8	4,175	1.7%	286	0.4%	0.1%	0.5%
9	0	0%	0	0%	0%	0%
10	1,649	0.6%	101	0.1%	0.1%	0.2%
11	9,245	3.9%	655	1.8%	0.1%	1.9%
12	42,932	18.0%	3,024	3.6%	0.1%	3.7%
13	9,064	3.8%	638	1.6%	0.1%	1.7%
14	2,395	1.0%	168	0.9%	0.1%	1.0%
15	6,923	2.9%	487	0.7%	0.1%	0.8%
16	70,983	29.7%	4,990	4.0%	0.1%	4.1%
17	11,504	4.8%	806	1.6%	0.1%	1.7%
18	0	0%	0	0%	0%	0%
19	777	0.3%	50	0.1%	0.1%	0.2%
20	4,663	2.0%	336	0.8%	0.1%	0.9%
21	851	0.3%	50	0.1%	0.1%	0.2%
26	12,617	5.3%	890	3.3%	0.1%	3.4%

1 From GIS
2 Total Rx acres in each watershed divided by total Rx acres forest-wide.
3 Percent of total Forest Rx times acres of land harvested (e.g. 16,800).
4 Prorated harvested acres divided by total acres in each watershed (from old Forest Plan).
5 Total number of miles to be constructed divided by 22 watersheds divided by individual watershed acres.
6 Sum of columns 5 and 6.

Watersheds 12 (Bear Lake Outlet), 16 (Blackfoot River) and 26 (Logan River) have the highest percentage impact at 3.7 percent, 4.1percent, and 3.4 percent respectively. The remainder of the watersheds shows less than 3 percent of the area impacted by timber harvesting and constructed roads.

Alternative 2

In this alternative 16,700 acres of land will be harvested over the next decade.

- *Table B. 25 Alternative 2*

Watershed Number	Timber Harvest Rx in Watershed[1] (Acres)	Percent of Total Forest Rx[2] (Percent)	Prorated Potential Harvest Treatment[3] (Acres)	Percent of Watershed Area Harvested[4] (Percent)	Prorated Percent of Watershed Disturbed from Roading[5] (Percent)	Total Percent of Watershed Disturbed from Timber Harvesting and Roading[6] (Percent)
1	0	0%	0	0%	0%	0%
2	5,254	2.4%	401	1.2%	0.1%	1.3%
3	22,690	10.1%	1,687	2.6%	0.1%	2.7%
4	0	0%	0	0%	0%	0%
5	1,612	0.7%	117	0.1%	0.1%	0.2%
6	12,341	5.5%	919	1.5%	0.1%	1.6%
7	19,549	8.7%	1,453	3.0%	0.1%	3.1%
8	3,480	1.5%	251	0.1%	0.1%	0.2%
9	0	0%	0	0%	0%	0%
10	1,649	0.7%	117	0.2%	0.1%	0.3%
11	9,216	4.1%	685	1.8%	0.1%	1.9%
12	42,117	18.8%	3,140	3.7%	0.1%	3.8%
13	5,360	2.4%	401	1.0%	0.1%	1.1%
14	2,128	1.0%	167	0.9%	0.1%	1.0%
15	6,926	3.1%	518	0.8%	0.1%	0.9%
16	61,288	27.4%	4,576	3.7%	0.1%	3.8%
17	11,504	5.1%	852	1.8%	0.1%	1.9%
18	0	0%	0	0%	0%	0%
19	629	0.3%	50	0.1%	0.1%	0.2%
20	4,661	2.1%	351	0.8%	0.1%	0.9%
21	851	0.4%	67	0.8%	0.1%	0.9%
26	12,617	6.6%	1,102	4.0%	0.1%	4.1%

1 From GIS
2 Total Rx acres in each watershed divided by total Rx acres forest-wide.
3 Percent of total Forest Rx times acres of land harvested (e.g. 16,800).
4 Prorated harvested acres divided by total acres in each watershed (from old Forest Plan).
5 Total number of miles to be constructed divided by 22 watersheds divided by individual watershed acres.
6 Sum of columns 5 and 6.

Watersheds 7 (Stump Creek), 12 (Bear Lake Outlet), 16 (Blackfoot River) and 26 (Logan River) have the highest percentage impact at 3.1 percent, 3.8 percent, and 3.8 percent and 4.1 percent respectively. The remainder of the watersheds has less than 3 percent of the watershed area impacted by timber harvesting and constructed roads.

Alternative 3

In this alternative, 21,900 acres of land will be harvested over the next decade.

- *Table B. 26 Alternative 3*

Watershed Number	Timber Harvest Rx in Watershed[1] (Acres)	Percent of Total Forest Rx[2] (Percent)	Prorated Potential Harvest Treatment[3] (Acres)	Percent of Watershed Area Harvested[4] (Percent)	Prorated Percent of Watershed Disturbed from Roading[5] (Percent)	Total Percent of Watershed Disturbed from Timber Harvesting and Roading[6] (Percent)
1	1,431	0.4%	88	0.4%	0.1%	0.5%
2	5,254	1.7%	372	1.2%	0.1%	1.3%
3	22,690	7.3%	1,599	2.4%	0.1%	2.5%
4	145	0.1%	22	0.1%	0.1%	0.2%
5	15,967	5.2%	1,139	1.6%	0.1%	1.7%
6	18,470	6.0%	1,314	2.2%	0.1%	2.3%
7	19,543	6.3%	1,380	2.8%	0.1%	2.9%
8	3,480	1.1%	241	0.3%	0.1%	0.4%
9	0	0%	0	0%	0%	0%
10	1,649	0.5%	110	0.2%	0.1%	0.3%
11	19,418	6.3%	1,380	3.7%	0.1%	3.8%
12	56,725	18.4%	4,030	4.7%	0.1%	4.8%
13	12,217	3.9%	854	2.2%	0.1%	2.3%
14	2,800	0.9%	197	1.1%	0.1%	1.2%
15	8,839	2.9%	635	1.0%	0.1%	1.1%
16	81,436	26.4%	5,781	4.7%	0.1%	4.8%
17	11,504	3.7%	810	1.6%	0.1%	1.7%
18	1,630	0.5%	110	0.6%	0.1%	0.7%
19	5,164	1.7%	372	0.8%	0.1%	0.9%
20	4,711	1.5%	329	0.8%	0.1%	0.9%
21	2,186	0.7%	153	1.7%	0.1%	1.8%
26	13,184	4.3%	942	3.4%	0.1%	3.5%

1 From GIS
2 Total Rx acres in each watershed divided by total Rx acres forest-wide.
3 Percent of total Forest Rx times acres of land harvested (e.g. 16,800).
4 Prorated harvested acres divided by total acres in each watershed (from old Forest Plan).
5 Total number of miles to be constructed divided by 22 watersheds divided by individual watershed acres.
6 Sum of columns 5 and 6.

Watersheds 11 (Bear Lake), 12 (Bear Lake Outlet), 16 (Blackfoot River) and 26 (Logan River) have the highest percentage impact at 3.8 percent, 4.8 percent, and 4.8 percent,% and 3.5 percent respectively. The remainder of the watersheds shows less than 3 percent of the watershed area impacted by timber harvesting and constructed roads.

Alternative 4

In this alternative, 7,100 acres of land will be harvested over the next decade.

- *Table B. 27 Alternative 4*

Watershed Number	Timber Harvest Rx in Watershed[1] (Acres)	Percent of Total Forest Rx[2] (Percent)	Prorated Potential Harvest Treatment[3] (Acres)	Percent of Watershed Area Harvested[4] (Percent)	Prorated Percent of Watershed Disturbed from Roading[5] (Percent)	Total Percent of Watershed Disturbed from Timber Harvesting and Roading[6] (Percent)
1	4	0.1%	7	0.1%	0%	0%
2	2,022	1.5%	106	0.3%	0.1%	0.4%
3	15,884	12.1%	859	1.3%	**0.1%**	1.4%
4	0	0%	0	0%	0%	0%
5	0	0%	0	0%	0%	0%
6	5,207	4.0%	284	0.4%	0.1%	0.5%
7	5,219	4.0%	284	0.6%	0.1%	0.7%
8	162	0.1%	57	0.1%	0.1%	0.2%
9	0	0%	0	0%	0%	0%
10	0	0%	0	0%	0%	0%
11	4,951	3.8%	270	0.7%	0.1%	0.8%
12	32,675	25.0%	1,775	2.1%	0.1%	2.2%
13	1,979	1.5%	106	0.3%	0.1%	0.4%
14	3,263	2.5%	178	1.0%	0.1%	1.1%
15	2,762	2.1%	149	0.2%	0.1%	0.3%
16	36,149	27.6%	1,960	1.6%	0.1%	1.7%
17	4,616	3.5%	249	0.5%	0.1%	0.6%
18	0	0%	0	0%	0%	0%
19	22	0.1%	57	0.1%	0.1%	0.2%
20	9,837	7.5%	533	1.3%	0.1%	1.4%
21	514	0.4%	28	0.3%	0.1%	0.4%
26	5,595	4.3%	305	1.1%	0.1%	1.2%

1 From GIS
2 Total Rx acres in each watershed divided by total Rx acres forest-wide.
3 Percent of total Forest Rx times acres of land harvested (e.g. 16,800).
4 Prorated harvested acres divided by total acres in each watershed (from old Forest Plan).
5 Total number of miles to be constructed divided by 22 watersheds divided by individual watershed acres.
6 Sum of columns 5 and 6.

Watersheds 3 (Georgetown), 12 (Bear Lake Outlet), 14 (Grays Lake), 16 (Blackfoot River), 20 (Lower Portneuf) and 26 (Logan River) have the highest percentage impact at 1.4 percent, 2.2 percent, 1.1 percent, 1.7 percent, 1.4 percent and 1.2 percent respectively. The remainder of the watersheds shows less than 1 percent of the watershed area impacted by timber harvesting and constructed roads.

Alternative 5

In this alternative, 6,500 acres of land will be treated over the next decade.

- *Table B. 28 Alternative 5*

Watershed Number	Timber Harvest Rx in Watershed[1] (Acres)	Percent of Total Forest Rx[2] (Percent)	Prorated Potential Harvest Treatment[3] (Acres)	Percent of Watershed Area Harvested[4] (Percent)	Prorated Percent of Watershed Disturbed from Roading[5] (Percent)	Total Percent of Watershed Disturbed from Timber Harvesting and Roading[6] (Percent)
1	**0**	0%	0	0%	0%	0%
2	2,528	2.4%	156	0.5%	0.1%	0.6%
3	8,827	8.4%	2,159	3.3%	0.1%	3.4%
4	0	0%	0	0%	0%	0%
5	1,603	1.5%	98	0.1%	0.1%	0.2%
6	5,060	4.8%	312	0.5%	0.1%	0.6%
7	5,234	5.0%	325	0.5%	0.1%	0.6%
8	1,358	1.3%	85	0.1%	0.1%	0.2%
9	0	0%	0	0%	0%	0%
10	0	0%	0	0%	0%	0%
11	4,897	4.6%	299	0.8%	0.1%	0.9%
12	23,440	22.2%	1,443	1.7%	0.1%	1.8%
13	1,977	1.9%	124	0.3%	0.1%	0.4%
14	6,195	5.9%	384	2.2%	0.1%	2.3%
15	1,949	1.8%	117	0.2%	0.1%	0.3%
16	30,485	28.9%	1,879	1.5%	0.1%	1.6%
17	3,886	3.7%	241	0.5%	0.1%	0.6%
18	0	0%	0	0%	0%	0%
19	120	0.1%	7	0.1%	0.1%	0.2%
20	77	0.1%	7	0.1%	0.1%	0.2%
21	2,140	2.0%	130	1.5%	0.1%	1.6%
26	5,595	5.3%	345	1.3%	0.1%	1.4%

1 From GIS
2 Total Rx acres in each watershed divided by total Rx acres forest-wide.
3 Percent of total Forest Rx times acres of land harvested (e.g. 16,800).
4 Prorated harvested acres divided by total acres in each watershed (from old Forest Plan).
5 Total number of miles to be constructed divided by 22 watersheds divided by individual watershed acres.
6 Sum of columns 5 and 6.

Watersheds 3 (Georgetown), 12 (Bear Lake Outlet), 14 (Grays Lake), 16 (Blackfoot River), 21 (Rattlesnake) and 26 (Logan River) have the highest percentage impact at 3.4 percent, 1.8 percent, 2.3 percent, 1.6 percent, 1.6 percent and 1.4 percent respectively. The remainder of the watersheds shows less than 1 percent of the watershed area impacted by timber harvesting and constructed roads.

Alternative 6

In this alternative, 4,900 acres of land will be treated over the next decade.

- *Table B. 29 Alternative 6*

Watershed Number	Timber Harvest Rx in Watershed[1] (Acres)	Percent of Total Forest Rx[2] (Percent)	Prorated Potential Harvest Treatment[3] (Acres)	Percent of Watershed Area Harvested[4] (Percent)	Prorated Percent of Watershed Disturbed from Roading[5] (Percent)	Total Percent of Watershed Disturbed from Timber Harvesting and Roading[6] (Percent)
1	0	0%	0	0%	0%	0%
2	0	0%	0	0%	0%	0%
3	11,208	11.5%	563	0.8%	0.1%	0.9%
4	0	0%	0	0%	0%	0%
5	1,845	1.9%	93	0.1%	0.1%	0.2%
6	4,200	4.3%	210	0.3%	0.1%	0.4%
7	2,538	2.6%	127	0.3%	0.1%	0.4%
8	2,567	2.6%	127	0.1%	0.1%	0.2%
9	0	0%	0	0%	0%	0%
10	0	0%	0	0%	0%	0%
11	5,158	5.3%	260	0.7%	0.1%	0.8%
12	20,882	21.4%	1,049	1.2%	0.1%	1.3%
13	2,572	2.6%	127	0.3%	0.1%	0.4%
14	2,914	3.0%	147	0.8%	0.1%	0.9%
15	588	0.6%	29	0.1%	0.1%	0.2%
16	24,739	25.4%	1,245	1.0%	0.1%	1.1%
17	3,886	4.0%	196	0.4%	0.1%	0.5%
18	0	0%	0	0%	0%	0%
19	963	1.0%	49	0.1%	0.1%	0.2%
20	7,893	8.1%	397	1.0%	0.1%	1.1%
21	0	0%	0	0%	0%	0%
26	5,594	5.7%	279	1.0%	0.1%	1.1%

1 From GIS
2 Total Rx acres in each watershed divided by total Rx acres forest-wide.
3 Percent of total Forest Rx times acres of land harvested (e.g. 16,800).
4 Prorated harvested acres divided by total acres in each watershed (from old Forest Plan).
5 Total number of miles to be constructed divided by 22 watersheds divided by individual watershed acres.
6 Sum of columns 5 and 6.

Watersheds 12 (Bear Lake Outlet), 16 (Blackfoot River), 20 (Lower Portneuf) and 26 (Logan River) have the highest percentage impact at 1.3 percent, 1.1 percent, 1.1 percent and 1.1 percent respectively. The remainder of the watersheds shows less than 1 percent of the watershed area impacted by timber harvesting and constructed roads.

Alternative 7

In this alternative, 7,300 acres of land will be treated over the next decade.

- *Table B. 30 Alternative 7*

Watershed Number	Timber Harvest Rx in Watershed[1] (Acres)	Percent of Total Forest Rx[2] (Percent)	Prorated Potential Harvest Treatment[3] (Acres)	Percent of Watershed Area Harvested[4] (Percent)	Prorated Percent of Watershed Disturbed from Roading[5] (Percent)	Total Percent of Watershed Disturbed from Timber Harvesting and Roading[6] (Percent)
1	0	0%	0	0%	0%	0%
2	2,467	2.4%	175	0.6%	0.1%	0.7%
3	9,362	9.1%	664	1.0%	0.1%	1.1%
4	0	0%	0	0%	0%	0%
5	1,163	1.1%	80	0.1%	0.1%	0.2%
6	6,669	6.5%	475	0.8%	0.1%	0.9%
7	4,137	4.0%	292	0.6%	0.1%	0.7%
8	1,848	1.8%	131	0.2%	**0.1%**	0.3%
9	0	0%	0	0%	0%	0%
10	2,993	2.9%	212	0.4%	0.1%	0.5%
11	4,466	4.3%	314	0.8%	0.1%	0.9%
12	22,437	21.8%	1,591	1.9%	0.1%	2.0%
13	3,286	3.2%	234	0.6%	0.1%	0.7%
14	2,187	2.1%	153	0.9%	0.1%	1.0%
15	2,073	2.0%	146	0.2%	0.1%	0.3%
16	27,596	26.7%	1,949	1.6%	0.1%	1.7%
17	4,278	4.2%	307	0.6%	0.1%	0.7%
18	0	0%	0	0%	0%	0%
19	1	0%	0	0%	0.1%	0.1%
20	2,175	2.1%	153	0.4%	0.1%	0.5%
21	38	0.1%	7	0.1%	0.1%	0.2%
26	5,968	5.8%	423	1.5%	0.1%	1.6%

1 From GIS
2 Total Rx acres in each watershed divided by total Rx acres forest-wide.
3 Percent of total Forest Rx times acres of land harvested (e.g. 16,800).
4 Prorated harvested acres divided by total acres in each watershed (from old Forest Plan).
5 Total number of miles to be constructed divided by 22 watersheds divided by individual watershed acres.
6 Sum of columns 5 and 6.

Watersheds 3 (Georgetown), 12 (Bear Lake Outlet), 16 (Blackfoot River) and 26 (Logan River) have the highest percentage impact at 1.1 percent, 2.0 percent and 1.7 percent, and 1.6 percent respectively. The remainder of the watersheds shows 1 percent or less of the watershed area impacted by timber harvesting and constructed roads.

Alternative 7R

In this alternative 12,000 acres of land will be treated over the next decade.

- *Table B. 31 Alternative 7R*

Watershed Number	Timber Harvest Rx in Watershed[1] (Acres)	Percent of Total Forest Rx[2] (Percent)	Prorated Potential Harvest Treatment[3] (Acres)	Percent of Watershed Area Harvested[4] (Percent)	Prorated Percent of Watershed Disturbed from Roading[5] (Percent)	Total Percent of Watershed Disturbed from Timber Harvesting and Roading[6] (Percent)
1	0	0%	0	0%	0%	0%
2	3,114	1.9%	211	0.7%	0.1%	0.8%
3	13,279	8.3%	921	1.4%	0.1%	1.5%
4	0	0%	0	0%	0%	0%
5	3,931	2.4%	266	0.4%	0.1%	0.5%
6	9,874	6.1%	677	1.1%	0.1%	1.2%
7	7,757	4.8%	533	1.1%	0.1%	1.2%
8	0	0%	0	0%	0%	0%
9	0	0%	0	0%	0%	0%
10	0	0%	0	0%	0%	0%
11	3,211	2.0%	222	0.6%	0.1%	0.7%
12	42,195	24.1%	2,675	3.1%	0.1%	3.2%
13	3,218	2.1%	233	0.6%	0.1%	0.7%
14	3,358	2.1%	233	1.3%	0.1%	1.4%
15	8,808	5.5%	611	1.0%	0.1%	1.1%
16	47,873	29.8%	3,308	2.7%	0.1%	2.8%
17	5,315	3.3%	366	0.7%	0.1%	0.8%
18	367	0.2%	22	0.1%	0.1%	0.2%
19	472	0.3%	33	0.1%	0.1%	0.2%
20	2,077	1.3%	144	0.4%	0.1%	0.5%
21	861	0.5%	56	0.1%	0.1%	0.2%
26	8,227	5.1%	566	2.1%	0.1%	2.2%

1 From GIS
2 Total Rx acres in each watershed divided by total Rx acres forest-wide.
3 Percent of total Forest Rx times acres of land harvested (e.g. 16,800).
4 Prorated harvested acres divided by total acres in each watershed (from old Forest Plan).
5 Total number of miles to be constructed divided by 22 watersheds divided by individual watershed acres.
6 Sum of columns 5 and 6.

Watersheds 12 (Bear Lake Outlet), 16 (Blackfoot River) and 26 (Logan River) have the highest percentage impact at 3.2 percent and 2.8 percent, and 2.2 percent respectively. The remainder of the watersheds shows less than 2 percent of the watershed area impacted by timber harvesting and constructed roads.

Summary

The overall impacts of timber harvesting in relation to the percentage of watersheds impacted are negligible in every alternative. Less than 5 percent of any watershed is anticipated to be impacted in any of the alternatives. The following table describes the overall potential to disturb the watersheds by timber harvesting by relating each alternative to the other.

It is assumed there is a linear relationship between the total acres of timber harvested and the potential effects to watersheds. That is, the more timber harvested forest-wide, the greater the potential to degrade watershed values, even though potential effects will be mitigated through the use of BMPs and other standards and guidelines.

• *Table B. 32 Summary of watershed disturbance from timber harvest*

Timber Harvesting	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Total Number of Acres Treated	16,800	16,700	21,900	7,100	6,500	4,900	7,300	11,100
Miles of related roads	81	73	98	17	16	7	18	35
Relative potential to protect watersheds[1]	7	6	8	3	2	1	4	5

1 A rating of "1" has the least potential to disturb watershed function and associated riparian, water quality and aquatic habitat. A rating of "7" has the greatest potential.

ROADS

The effects of roads are included in Timber Harvesting and Recreation Management

RECREATION MANAGEMENT

Alternative 1

This alternative maintains the current management. Motorized vehicle travel is a combination of unrestricted cross-country and designated road and trail routs.

Alternative 2

This alternative maintains current road and trail density, but relocates/redesigns roads/trails out of AIZs where possible. Cross-country summer motorized travel remains unchanged over present.

Alternative 3

This alternative may increase current road and trail densities. Maintains current cross-country summer motorized travel

Alternative 4

This alternative decreases current road and trail densities across the Forest. No summer cross-country motorized travel allowed.

Alternative 5

This alternative would adjust road and trail densities up or down, depending on the prescription area, but total miles remain essentially the same. It reduces the amount of area available for summer cross-country motorized travel from current levels by about 95 percent.

Alternative 6

This alternative decreases road and trail densities from present levels (Alt 1). No summer cross-country motorized travel allowed.

Alternative 7

Road and trail densities could increase in some prescriptions and decrease in others, but total miles will decrease by about 130 miles. About 5,000 less acres open to summer cross-country travel than Alternative 5.

Alternative 7R

Road densities will remain about the same as the present levels across the Forest. Some routs may be closed or some new ones built, conforming to allowable density standards defined in each prescription area. About 6,500 acres more will be accessible to open cross-country travel than Alternative 7.

It is assumed there is a linear relationship between the total miles of road or acres of land available for motorized cross-country travel and potential effects to watersheds.

- *Table B. 33 Summary of watershed disturbance by motorized recreation.*

Recreation Management	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Total Acres Open to X-Country Travel (From Table 4.4)	420,215	420,215	420,215	0	27,800	0	22,900	29,400
Miles of Open Motorized Routes (From Table 2.90)	2,033	2,033	2,033	1,876	1,876	1,298	1,904	1,978
Relative potential to protect watersheds[1]	6	6	6	2	4	1	3	5

1 A rating of "1" has the least potential to disturb watershed function and associated riparian, water quality and aquatic habitat. A rating of "6" has the greatest potential. The ratings are not an order of magnitude (e.g. Alt 3 having 6 times more watershed disturbance than Alt 6); rather the rankings are a simple depiction of relative rankings of one Alternative to another (from Table 4.4 – Acres Open to Cross-Country Motorized Travel and Table 2.90 – Miles of Open Motorized Routes).

PRESCRIBED FIRE AND WILDLAND FIRE USE, MECHANICAL AND CHEMICAL TREATMENT

Treatments are a combination of fire, mechanical and chemical. Some vegetation treatments may have relatively minor land-disturbing impacts. For example, some aspen regeneration treatments may call for simply cutting trees and leaving them on-site. No major access roads will be built and ground cover will not be disturbed. In fact, the felled trees would add to total ground cover, further reducing erosion potential on that site. Another example is areas that are chemically treated to reduce sagebrush canopies. Applied herbicides would reduce canopy cover, but would not disturb ground cover, with little or no hydrologic effects. Some areas may be more disturbed but would recover within a year or two. These more hydrologically benign treatments would effectively allow additional treatment within the same watershed without cumulative temporal (over time) impacts. However, in order to display a worst-case scenario, it is assumed that all treatments have the same relative impacts and hydrologic recovery will not occur within the decade.

The following tables reflect the percentage of forested and non-forested watersheds expected to be impacted by Alternative. Total acres to be treated are those projected by the Forest's Ecologist and Forester. It is assumed there is a linear relationship between acres treated and potential watershed disturbance.

• *Table B. 34 Alternative 1 - (130,000 acres treated)*

Watershed Number	Watershed Area Within Forest Boundary (Acres)	Potential Area Treated (Acres)	Percent (%) of Watershed Potentially Affected
1	21,720	5,909	27.2%
2	31,137	5,909	19.0%
3	65,679	5,909	9.0%
4	28,337	5,,909	20.9%
5	69,691	5,909	8.5%
6	60,838	5,909	9.7%
7	48,723	5,909	12.1%
8	71,855	5,909	8.2%
9	28,449	5,909	20.8%
10	57,342	5,909	10.3%
11	37,238	5,,909	15.9%
12	85,182	5,909	6.9%
13	38,831	5,909	15.2%
14	17,661	5,909	33.5%
15	62,668	5,909	9.4%
16	123,484	5,909	4.8%
17	49,975	5,909	11.8%
18	17,962	5,909	32.9%
19	48,180	5,909	12.3%
20	40,809	5,909	14.5%
21	8,729	5,909	67.7%
26	27,344	5,909	21.6%

This alternative tentatively treats more acres than any of the other alternatives. Large portions (10 percent or greater[4]) of fifteen15 watersheds would be affected under this alternative. Disturbances within these fifteen15 watersheds range from just over 10 percent in Watershed 10 to nearly 70 percent in Watershed 21. Thirty percent disturbance is approached or exceeded in watersheds 1 (27.2 percent), 14 (33.5 percent), 18 (32.9 percent), and 21 (67.7 percent).

[4] "Ten Percent" has no particular significant hydrological or statistical significance. It is simply used to help the reader compare relative differences in potential disturbances between alternatives.

• *Table B. 35 Alternative 2 - (94,900 acres treated)*

Watershed Number	Watershed Area Within Forest Boundary (Acres)	Potential Area Treated (Acres)	Percent (%) of Watershed Potentially Affected
1	21,720	4,313	19.9%
2	31,137	4,313	13.9%
3	65,697	4,313	6.6%
4	28,337	4,313	15.2%
5	69,691	4,313	6.2%
6	60,838	4,313	7.1%
7	48,723	4,313	8.9%
8	71,855	4,313	6.0%
9	28,449	4,313	15.2%
10	57,342	4,313	7.5%
11	37,238	4,313	11.6%
12	85,182	4,313	5.6%
13	38,831	4,313	11.1%
14	17,661	4,313	24.4%
15	62,668	4,313	6.9%
16	123,484	4,313	3.5%
17	49,975	4,313	8.6%
18	17,962	4,313	24.0%
19	48,180	4,313	9.0%
20	40,809	4,313	10.6%
21	8,729	4,313	49.4%
26	27,344	4,313	15.8%

Eleven watersheds have proposed treatments in excess of 10 percent or more of the watershed area. Percentages in these eleven11 watersheds range from 10.6 percent (Watershed 20) to nearly 50 percent (Watershed 21). Watersheds 14 and 18 have about 24 percent potential disturbance, which is approaching the 30 percent disturbance guideline (Ssee Forest Plan). Watershed 21 tentatively treats nearly 50 percent½ of its watershed area, well in excess of the 30 percent disturbance guideline.

• *Table B. 36 Alternative 3 – (119,900 acres treated)*

Watershed Number	Watershed Area Within Forest Boundary (Acres)	Potential Area Treated (Acres)	Percent (%) of Watershed Potentially Affected
1	21,720	5450	25.1%
2	31,137	5450	17.5%
3	65,697	5450	8.3%
4	28,337	5450	19.2%
5	69,691	5450	7.8%
6	60,838	5450	9.0%
7	48,723	5450	11.2%
8	71,855	5450	7.6%
9	28,449	5450	19.2%
10	57,342	5450	9.5%
11	37,238	5450	14.6%
12	85,182	5450	6.4%
13	38,831	5450	14.0%
14	17,661	5450	30.9%
15	62,668	5450	8.7%
16	123,484	5450	4.4%
17	49,975	5450	10.9%
18	17,962	5450	30.3%
19	48,180	5450	11.3%
20	40,809	5450	13.4%
21	8,729	5450	62.4%
26	27,344	5450	19.9%

Fourteen watersheds have potential treatments in excess of 10 percent. Potential disturbances within these 14 watersheds range from 10.9 percent (watershed 17) to over 60 percent (Watershed 21). Four watersheds are approaching or exceeding the 30 percent watershed disturbance guideline. These are watersheds 1 (25.1 percent), 14, (30.9 percent), 18 (30.3 percent), and 21 (62.4 percent).

• *Table B. 37 Alternative 4 – (127,400 acres treated)*

Watershed Number	Watershed Area Within Forest Boundary (Acres)	Potential Area Treated (Acres)	Percent (%) of Watershed Potentially Affected
1	21,720	5,790	26.7%
2	31,137	5,790	18.6%
3	65,697	5,790	8.8%
4	28,337	5,790	20.4%
5	69,691	5,790	8.3%
6	60,838	5,790	9.5%
7	48,723	5,790	11.9%
8	71,855	5,790	8.1%
9	28,449	5,790	20.4%
10	57,342	5,790	10.1%
11	37,238	5,790	15.5%
12	85,182	5,790	6.8%
13	38,831	5,790	14.9%
14	17,661	5,790	32.8%
15	62,668	5,790	9.2%
16	123,484	5,790	4.7%
17	49,975	5,790	11.6%
18	17,962	5,790	32.2%
19	48,180	5,790	12.0%
20	40,809	5,790	14.2%
21	8,729	5,790	66.3%
26	27,344	5,790	21.2%

Fifteen watersheds exceed 10 percent watershed disturbance. These range from 10.1 (Watershed 10) to nearly 70 percent (Watershed 21). Watersheds approaching or exceeding the 30 percent disturbance guideline are watersheds 1 (26.7 percent), 14 (32.8 percent), 18 (32.2 percent) and 21 (66.3 percent).

• *Table B. 38 Alternative 5 – (90,000 acres treated)*

Watershed Number	Watershed Area Within Forest Boundary (Aacres)	Potential Area Treated (Aacres)	Percent (%) of Watershed Potentially Affected
1	21,720	4,090	18.8%
2	31,137	4,090	13.1%
3	65,697	4,090	6.2%
4	28,337	4,090	14.4%
5	69,691	4,090	5.9%
6	60,838	4,090	6.7%
7	48,723	4,090	8.4%
8	71,855	4,090	5.7%
9	28,449	4,090	14.4%
10	57,342	4,090	7.1%
11	37,238	4,090	11.0%
12	85,182	4,090	4.8%
13	38,831	4,090	10.5%
14	17,661	4,090	23.2%
15	62,668	4,090	6.5%
16	123,484	4,090	3.3%
17	49,975	4,090	8.2%
18	17,962	4,090	22.8%
19	48,180	4,090	8.5%
20	40,809	4,090	10.0%
21	8,729	4,090	46.9%
26	27,344	4,090	15.0%

Eleven watersheds exceed 10 percent potential disturbances. These range from 10 percent (Watershed 20) to nearly 50 percent (Watershed 21). The only watershed that potentially exceeds the 30 percent disturbance guideline is Watershed 21 which has a projected 46.9 percent disturbance. Watershed 14 has the next highest potential disturbance at 23.2 percent, closely followed by Watershed 18 at 22.8% percent.

• *Table B. 39 Alternative 6 – (80,800 acres treated)*

Watershed Number	Watershed Area Within Forest Boundary (Acres)	Potential Area Treated (Acres)	Percent (%) of Watershed Potentially Affected
1	21,720	3,672	16.9%
2	31,137	3,672	11.8%
3	65,697	3,672	5.6%
4	28,337	3,672	13.0%
5	69,691	3,672	5.3%
6	60,838	3,672	6.0%
7	48,723	3,672	7.5%
8	71,855	3,672	5.1%
9	28,449	3,672	12.9%
10	57,342	3,672	6.4%
11	37,238	3,672	9.9%
12	85,182	3,672	4.3%
13	38,831	3,672	9.4%
14	17,661	3,672	20.8%
15	62,668	3,672	5.9%
16	123,484	3,672	3.0%
17	49,975	3,672	7.3%
18	17,962	3,672	20.4%
19	48,180	3,672	7.6%
20	40,809	3,672	9.0%
21	8,729	3,672	42.1%
26	27,344	3,672	13.4%

Eight watersheds exceed 10 percent of the watershed as potentially disturbed. These range from 11.8 percent (Watershed 2) to over 40 percent (Watershed 21). The only watershed that potentially exceeds the 30 percent guideline is Watershed 21 which potentially disturbs 42.1 percent of the watershed. The next highest potential watershed disturbance is Watershed 24 (20.8 percent), followed closely by Watershed 18 (20.4 percent).

• *Table B. 40 Alternative 7 -- (106,800 acres treated)*

Watershed Number	Watershed Area Within Forest Boundary (Acres)	Potential Area Treated (Acres)	Percent (%) of Watershed Potentially Affected
1	21,720	4,854	22.3%
2	31,137	4,854	15.6%
3	65,697	4,854	7.4%
4	28,337	4,854	17.1%
5	69,691	4,854	7.0%
6	60,838	4,854	8.0%
7	48,723	4,854	10.0%
8	71,855	4,854	6.8%
9	28,449	4,854	17.1%
10	57,342	4,854	8.5%
11	37,238	4,854	13.0%
12	85,182	4,854	5.6%
13	38,831	4,854	12.5%
14	17,661	4,854	27.5%
15	62,668	4,854	7.7%
16	123,484	4,854	3.9%
17	49,975	4,854	9.7%
18	17,962	4,854	27.0%
19	48,180	4,854	10.1%
20	40,809	4,854	11.9%
21	8,729	4,854	55.6%
26	27,344	4,854	17.8%

Thirteen watersheds exceed 10 percent potential disturbance. These range from 10.0 percent potentially disturbed (Watershed 7) to over 55 percent potentially disturbed (Watershed 21). Watersheds that are approaching or exceeding the 30 percent disturbance guideline are watersheds 14 (27.5 percent), 18 (27 percent), and 21 (55.6 percent).

• *Table B. 41 Alternative 7R – (78,000 acres treated)*

Watershed Number	Watershed Area Within Forest Boundary (Aacres)	Potential Area Treated (Aacres)	Percent (%) of Watershed Potentially Affected
1	21,720	3,545	16.3%
2	31,137	3,545	11.4%
3	65,697	3,545	5.4%
4	28,337	3,545	12.5%
5	69,691	3,545	5.1%
6	60,838	3,545	5.8%
7	48,723	3,545	7.2%
8	71,855	3,545	4.9%
9	28,449	3,545	12.5%
10	57,342	3,545	6.2%
11	37,238	3,545	9.5%
12	85,182	3,545	4.2%
13	38,831	3,545	9.1%
14	17,661	3,545	20.1%
15	62,668	3,545	5.7%
16	123,484	3,545	2.9%
17	49,975	3,545	7.1%
18	17,962	3,545	19.7%
19	48,180	3,545	7.4%
20	40,809	3,545	8.7%
21	8,729	3,545	40.6%
26	27,344	3,545	13.0%

Eight watersheds potentially exceed 10 percent disturbance. These range from 11.4 (Watershed 2) to over 40 percent (Watershed 21). Only a single watershed (Watershed 21) exceeds the 30 percent disturbance guideline (Watershed 21 @ 40.6 percent). The next greatest potential disturbance is in Watershed 14 (20.1 percent), followed closely by Watershed 18 (19.7 percent).

Summary

The overall impacts of prescribed fire, mechanical and chemical treatments in relation to the percentage of watersheds potentially impacted are negligible to substantial in every alternative. Alternative 1 has the largest number of acres proposed to be treated, resulting in the greatest number of watersheds that have 10 percent or more acres disturbed and the largest number of watersheds that approach or exceed the 30 percent Forest Plan disturbance guideline. Alternative 7R has the least amount of proposed treatment acres, resulting in the fewest watersheds exceeding 10 percent disturbance, with only a single watershed exceeding the 30 percent disturbance guideline. The following table describes the overall potential to disturb the watersheds by fire, chemical and mechanical treatments by relating each alternative to the other. It is assumed there is a linear relationship between the total acres treated and potential effects to watersheds. That is, the more acres treated, the greater the potential to degrade watershed values over the short-term, even though potential effects will be mitigated through the use of BMPs and other standards and guidelines. Long-term values may be improved by allowing vegetation to return toward historical conditions.

• *Table B. 42 Summary of impacts to watersheds*

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Total Acres Treated	130,000	94,900	119,900	127,400	90,000	80,800	106,800	78,000
Relative potential to protect watersheds[1]	8	4	6	7	3	2	5	1

1* A rating of "1" has the least potential to disturb watershed health and associated riparian, water quality and aquatic habitat. A rating of "8" has the greatest potential. The ratings are not an order of magnitude (e.g. Alt 4 having 8 times more watershed disturbance than Alt 1), rather a simple depiction of relative rankings of one Alternative to another. In many instances, watershed conditions may be better following treatment than prior to treatment, which would effectively reverse the ratings. However, hydrologic recovery is directly dependent on the location and intensity of treatment and recovery time could vary greatly between treatment types. Therefore, in order to depict a worst-case scenario, it is assumed that disturbed areas will not recover hydrologically within ten years following treatment.

CUMULATIVE EFFECTS

Past and present watershed disturbances remain constant within each alternative. Only foreseeable disturbances (timber harvesting, livestock grazing, road construction/ closures, etc.) will vary between alternatives. When determining the cumulative effects on watershed health, it is assumed that there is a linear relationship between potential disturbances and potential watershed deterioration. The more acres burned, for example, the greater potential to affect the components of watershed health phases described above. Since it is not specifically known when or where prescribed burning will occur, specific predictions for individual watersheds cannot be made. However, predictions can be generally made on a Forest-wide scale by relating potential disturbances to potential watershed impacts, which in turn can relate alternatives relatively to one-another.

• *Table B. 43 Alternative 1*

Watershed Number	Percent of Watershed Potentially Disturbed from Future Timber Harvesting and Roading over the Next Decade	Percent of Watershed Potentially Affected by Fire and Other Treatments over the Next Decade	Percent of Watershed Impacted by Past Mining, Timber Harvesting and Fires	Total Percent of Watershed Impacted by Past, Present and Foreseeable Activities
1	0%	27.2%	1.7%	28.9%
2	0.2%	19.0%	3.0%	22.2%
3	2.6%	9.0%	12.1%	23.7%
4	0%	20.9%	1.1%	22.0%
5	0.3%	8.5%	1.0%	9.8%
6	1.5%	9.7%	10.6%	21.8%
7	2.9%	12.1%	5.7%	20.7%
8	0.5%	8.2%	0.8%	9.5%
9	0%	20.8%	65.3%	86.1%
10	0.2%	10.3%	4.7%	15.2%
11	1.9%	15.9%	9.2%	27.0%
12	3.7%	6.9%	15.8%	26.4%
13	1.7%	15.2%	18.9%	35.8%
14	1.0%	33.5%	6.8%	41.3%
15	0.8%	9.4%	3.0%	13.2%
16	4.1%	4.8%	26.7%	35.6%
17	1.7%	11.8%	3.9%	17.4%

18	0%	32.9%	1.4%	34.3%
19	0.2%	12.3%	0.4%	12.9%
20	0.9%	14.5%	5.2%	20.6%
21	0.2%	67.7%	5.2%	73.1%
26	3.4%	21.6%	7.5%	32.5%

Watersheds 1, 9, 12, 13, 14, 16, 18 and 21 are potentially approaching or exceeding the 30 percent disturbed watershed guideline.

Watershed 1 (Geneva) has about 27 percent of the watershed that could be treated within the next decade. Cumulative disturbance could exceed 28 percent of the watershed area.

The major impact in Watershed 9 (Jackknife Creek) is a major fire that occurred in the watershed more than a decade ago. The watershed is currently mostly stable, though some landslides have occurred in the watershed in the past five5 years. No timber harvesting is scheduled for the next decade within this watershed, but about 20 percent of the watershed could be treated within the next decade.

Watershed 12 (Bear Lake Outlet) has about 26 percent cumulative disturbance. About 10 percent of the watershed could be harvested or treated over the next decade.

Watershed 13 (Grace) has about a 36 percent cumulative disturbance. About 17 percent of the watershed could be treated by harvesting or other treatments over the next decade.

Watershed 16 (Blackfoot River) has been impacted by mining, road construction and timber harvesting. Proposed harvesting and other vegetation treatments could impact an additional 10 percent of the watershed. Over 35 percent of the watershed will be cumulatively impacted if proposed timber harvesting and other treatments are implemented.

Watershed 18 (Upper Portneuf West) has about 35 percent cumulative disturbance. There is no proposed timber harvesting, but other vegetation treatments could disturb about 33 percent of the watershed.

Watershed 21 is a very small watershed. Cumulative pro-rated treatments could disturb about 73 percent of the total watershed. Only a very small portion of the watershed would be harvested, but a substantial portion of the vegetation could be treated.

- *Table B. 44 Alternative 2*

Watershed Number	Percent of Watershed Potentially Disturbed from Future Timber Harvesting and Roading over the Next Decade	Percent of Watershed Potentially Affected by Fire and Other Treatments over the Next Decade	Percent of Watershed Impacted by Past Mining, Timber Harvesting and Fires	Total Percent of Watershed Impacted by Past, Present and Foreseeable Activities
1	0%	19.9%	1.7%	21.6%
2	1.3%	13.9%	3.0%	18.2%
3	2.7%	6.6%	12.1%	21.4%
4	0%	15.2%	1.1%	16.3%
5	0.2%	6.2%	1.0%	7.4%
6	1.6%	7.1%	10.6%	19.3%
7	3.1%	8.9%	5.7%	17.7%
8	0.2%	6.0%	0.8%	7.0%
9	0%	15.2%	65.3%	80.5%
10	0.3%	7.5%	4.7%	12.5%
11	1.9%	11.6%	9.2%	22.7%
12	3.8%	5.6%	15.8%	25.2%
13	1.1%	11.1%	18.9%	31.1%
14	1.0%	24.4%	6.8%	32.2%

15	0.9%	6.9%	3.0%	10.8%
16	3.8%	3.5%	26.7%	34.0%
17	1.9%	8.6%	3.9%	14.4%
18	0%	24.0%	1.4%	25.4%
19	0.2%	9.0%	0.4%	9.6%
20	0.9%	10.6%	5.2%	16.7%
21	0.9%	49.4%	5.2%	55.5%
26	4.1%	15.8%	7.5%	27.4%

Watersheds 9, 12, 13, 14, 16, 18, 21 and 26 all have cumulative impacts tentatively approaching or exceeding 30 percent of the watershed area.

The major impact in Watershed 9 (Jackknife Creek) is a major fire that occurred in the watershed more than a decade ago. The watershed is currently mostly stable, though some landslides have occurred in the watershed in the past five5 years. No timber harvesting is scheduled for the next decade within this watershed, but about 15 percent of the watershed could be treated within the next decade.

Watershed 12 (Bear Lake Outlet) has about 25 percent cumulative disturbance. Nearly 10 percent of the watershed could be harvested or treated over the next decade.

Watershed 13 (Grace) has about a 31 percent'% cumulative disturbance. About 12 percent of the watershed could be treated by harvesting or other treatments over the next decade.

Watershed 14 (Grays Lake) has about 32 percent cumulative disturbance. Nearly 25 percent of the watershed could be harvested or other vegetation treatments over the next decade.

Watershed 16 (Blackfoot River) has been impacted by mining, road construction and timber harvesting. Proposed harvesting and burning could impact an additional 7 percent of the watershed. Over 30 percent of the watershed will be cumulatively impacted if proposed timber harvesting and other vegetation treatments are implemented.

Watershed 18 (Upper Portneuf West) could have about 25 percent cumulative impacts. No timber harvesting is proposed, but about 24 percent of the watershed could be treated.

Watershed 21 (Rattlesnake) is a very small watershed. About 55 percent of the watershed could be cumulative impacted. Less than 1 percent of the watershed is proposed to be harvested, but nearly half of the watershed could be treated.

Watershed 26 (Logan River) could have about 27 percent of the watershed cumulatively disturbed. About 20 percent of the watershed could be disturbed from harvesting and other vegetation treatments.

• *Table B. 45 Alternative 3*

Watershed Number	Percent of Watershed Potentially Disturbed from Future Timber Harvesting and Roading over the Next Decade	Percent of Watershed Potentially Affected by Fire and Other Treatments over the Next Decade	Percent of Watershed Impacted by Past Mining, Timber Harvesting and Fires	Total Percent of Watershed Impacted by Past, Present and Foreseeable Activities
1	0.5%	25.1%	1.7%	27.3%
2	1.3%	17.5%	3.0%	21.8%
3	2.5%	8.3%	12.1%	22.9%
4	0.2%	19.2%	1.1%	20.5%
5	1.7%	7.8%	1.0%	10.5%
6	2.3%	9.0%	10.6%	21.9%
7	2.9%	11.2%	5.7%	19.8%
8	0.4%	7.6%	0.8%	8.8%
9	0%	19.2%	65.3%	84.5%
10	0.3%	9.5%	4.7%	14.5%
11	3.8%	14.6%	9.2%	27.6%
12	4.8%	6.4%	15.8%	27.0%
13	2.3%	14.0%	18.9%	35.2%
14	1.2%	30.9%	6.8%	38.9%
15	1.1%	8.7%	3.0%	12.8%
16	4.8%	4.4%	26.7%	35.9%
17	1.7%	10.9%	3.9%	16.5%
18	0.7%	30.3%	1.4%	32.4%
19	0.9%	11.3%	0.4%	12.6%
20	0.9%	13.4%	5.2%	19.5%
21	1.8%	62.4%	5.2%	69.4%
26	3.5%	19.9%	7.5%	30.9%

Watersheds 1, 9, 11, 12, 13, 14, 16, 18, 21 and 26 all have tentative cumulative impacts approaching or exceeding the 30 percent disturbance guideline of the watershed area.

Watershed 1 (Geneva) has little harvesting proposed, but could treat nearly 25 percent of the watershed. Total cumulative impacts could exceed 27 percent.

The major impact in Watershed 9 (Jackknife Creek) is a major fire that occurred in the watershed more than a decade ago. The watershed is currently mostly stable, though some landslides have occurred in the watershed in the past five5 years. No timber harvesting is scheduled for the next decade within this watershed, but about 20 percent of the watershed could be treated within the next decade.

Watershed 11 (Bear Lake) has about 28 percent of the watershed potentially cumulatively disturbed. About 10 percent of the potential disturbance is from proposed timber harvesting and vegetation treatments.

Watershed 12 (Bear Lake Outlet) could have about 27 percent cumulative disturbance. Over 10 percent of the watershed could be harvested or treated over the next decade.

Watershed 13 (Grace) could have about a 35 percent cumulative disturbance. About 17 percent of the watershed could be treated by harvesting or other treatments over the next decade.

Watershed 14 (Grays Lake) could have nearly 40 percent of the watershed cumulatively disturbed. Over 30 percent of the watershed could be treated over the next decade.

Watershed 16 (Blackfoot River) has been impacted by mining, road construction, and timber harvesting. Proposed harvesting and other treatments could impact an additional 10 percent of the watershed. Over 35 percent of the watershed would be cumulatively impacted if proposed timber harvesting and other vegetation treatments are implemented.

Watershed 18 (Upper Portneuf West) could have about 32 percent of the watershed cumulatively impacted. Less than 1 percent of the watershed is proposed to have additional harvesting, but about 30 percent of the watershed could be treated.

Watershed 21 (Rattlesnake) could have about 70 percent of the watershed cumulatively impacted. The majority of the disturbance would come from vegetation treatments.

Watershed 26 (Logan River) could have about 31 percent of the watershed cumulatively impacted. About 20 percent of the disturbance would come from vegetation treatments.

- *Table B. 46 Alternative 4*

Watershed Number	Percent of Watershed Potentially Disturbed from Future Timber Harvesting and Roading over the Next Decade	Percent of Watershed Potentially Affected by Fire and Other Treatments over the Next Decade	Percent of Watershed Impacted by Past Mining, Timber Harvesting and Fires	Total Percent of Watershed Impacted by Past, Present and Foreseeable Activities
1	0%	26.7%	1.7%	28.4%
2	0.4%	18.6%	3.0%	22.0%
3	1.4%	8.8%	12.1%	22.3%
4	0%	20.4%	1.1%	21.5%
5	0%	8.3%	1.0%	9.3%
6	0.5%	9.5%	10.6%	20.6%
7	0.7%	11.9%	5.7%	18.3%
8	0.2%	8.1%	0.8%	9.1%
9	0%	20.4%	65.3%	85.7%
10	0%	10.1%	4.7%	14.8%
11	0.8%	15.5%	9.2%	25.5%
12	2.2%	6.8%	15.8%	24.8%
13	0.4%	14.9%	18.9%	34.2%
14	1.1%	32.8%	6.8%	40.7%
15	0.3%	9.2%	3.0%	12.5%
16	1.7%	4.75	26.7%	33.1%
17	0.6%	11.6%	3.9%	16.1%
18	0%	32.2%	1.4%	33.6%
19	0.2%	12.0%	0.4%	12.6%
20	1.4%	14.2%	5.2%	20.8%
21	0.4%	66.3%	5.2%	71.9%
26	1.2%	21.2%	7.5%	29.9%

Watersheds 1, 9, 11, 12, 13, 14, 16, 18, 21 and 26 all have potential cumulative impacts approaching or exceeding 30 percent of the watershed area.

Watershed 1 (Geneva) has no harvesting proposed, but could treat nearly 27 percent of the watershed. Total cumulative impacts could exceed 28 percent.

The major impact in Watershed 9 (Jackknife Creek) is a major fire that occurred in the watershed more than a decade ago. The watershed is currently mostly stable, though some landslides have occurred in the watershed in the past five 5

years. No timber harvesting is scheduled for the next decade within this watershed, but about 20 percent of the watershed could be treated over the next decade.

Watershed 11 (Bear Lake) could have about 25 percent of the watershed potentially cumulatively disturbed. About 16 percent of the potential disturbance would be from proposed timber harvesting and vegetation treatments, with the majority from vegetation treatments.

Watershed 12 (Bear Lake Outlet) could have about 25 percent cumulative disturbance. About 9 percent of the watershed could be harvested or treated over the next decade.

Watershed 13 (Grace) could have about a 34 percent cumulative disturbance. Over 15 percent of the watershed could be treated by harvesting or other vegetation treatments over the next decade.

Watershed 14 (Grays Lake) could have over a 40 percent projected cumulative disturbance. About 34 percent of the watershed could be treated by harvesting or other vegetation treatments over the next decade.

Watershed 16 (Blackfoot River) has been impacted by mining, road construction and timnber harvesting. Proposed harvesting and vegetation treatments are expected to impact an additional 6 percent of the watershed. Over 33 percent of the watershed could be cumulatively impacted if proposed timber harvesting and vegetation treatments are implemented.

Watershed 18 (Upper Portneuf West) could have about 34 percent of the watershed cumulatively impacted. No timber harvesting is proposed, but about 32 percent of the watershed could be treated over the next decade.

Watershed 21 (Rattlesnake) has about 72 percent projected cumulative disturbance. Over 66 percent of the watershed could be treated by harvesting or vegetation treatments over the next decade.

Watershed 26 (Logan River) could have about 30 percent of the watershed cumulatively impacted. About 22 percent of the disturbance would come from vegetation treatments and timber harvesting.

- *Table B. 47 Alternative 5*

Watershed Number	Percent of Watershed Potentially Disturbed from Future Timber Harvesting and Roading over the Next Decade	Percent of Watershed Potentially Affected by Fire and Other Treatments over the Next Decade	Percent of Watershed Impacted by Past Mining, Timber Harvesting and Fires	Total Percent of Watershed Impacted by Past, Present and Foreseeable Activities
1	0%	18.8%	1.7%	20.5%
2	0.6%	13.1%	3.0%	16.7%
3	3.4%	6.2%	12.1%	21.7%
4	0%	14.4%	1.1%	15.5%
5	0.2%	5.9%	1.0%	7.1%
6	0.6%	6.7%	10.6%	17.9%
7	0.6%	8.4%	5.7%	14.7%
8	0.2%	5.7%	0.8%	6.7%
9	0%	14.4%	65.3%	79.7%
10	0%	7.1%	4.7%	11.8%
11	0.9%	11.0%	9.2%	21.1%
12	1.8%	4.8%	15.8%	22.4%
13	0.4%	10.5%	18.9%	29.8%
14	2.3%	23.2%	6.8%	32.3%
15	0.3%	6.5%	3.0%	9.8%
16	1.6%	3.3%	26.7%	31.6%
17	0.6%	8.2%	3.9%	12.7%
18	0%	22.8%	1.4%	24.2%

19	0.2%	8.5%	0.4%	9.1%
20	0.2%	10.0%	5.2%	15.4%
21	1.6%	46.9%	5.2%	53.7%
26	1.4%	15.0%	7.5%	23.9%

Watersheds 9, 13, 14, 16, and 21 have projected cumulative impacts that could approach or exceeding 30 percent of the watershed area.

The major impact in Watershed 9 (Jackknife Creek) is a major fire that occurred in the watershed more than a decade ago. The watershed is currently mostly stable, though some landslides have occurred in the watershed in the past five5 years. No timber harvesting is scheduled for the next decade within this watershed, but about 14 percent of the watershed could be treated within the next decade.

Watershed 13 (Grace) could have about a 30 percent cumulative disturbance. Over 10 percent of the watershed could be treated by harvesting or other vegetation treatments over the next decade.

Watershed 14 (Grays Lake) could have over 32 percent projected cumulative disturbance. About 23 percent of the watershed could be treated by harvesting or other vegetation treatments over the next decade.

Watershed 16 (Blackfoot River) has been impacted by mining, road construction and timber harvesting. Proposed harvesting and additional vegetation treatments could impact an additional 4.9 percent of the watershed. Over 31 percent of the watershed could be cumulatively impacted if proposed timber harvesting and vegetation treatments are implemented.

Watershed 21 (Rattlesnake) could have about 54 percent projected cumulative disturbance. Over 48 percent of the watershed could be treated by harvesting or vegetation treatments over the next decade.

- *Table B. 48 Alternative 6*

Watershed Number	Percent of Watershed Potentially Disturbed from Future Timber Harvesting and Roading over the Next Decade	Percent of Watershed Potentially Affected by Fire and Other Treatments over the Next Decade	Percent of Watershed Impacted by Past Mining, Timber Harvesting and Fires	Total Percent of Watershed Impacted by Past, Present and Foreseeable Activities
1	0%	16.9%	1.7%	18.6%
2	0%	11.8%	3.0%	14.8%
3	0.9%	5.6%	12.1%	18.6%
4	0%	13.0%	1.1%	14.1%
5	0.2%	5.3%	1.0%	6.5%
6	0.4%	6.0%	10.6%	17.0%
7	0.4%	7.5%	5.7%	13.6%
8	0.2%	5.1%	0.8%	6.1%
9	0%	12.9%	65.3%	78.2%
10	0%	6.4%	4.7%	11.1%
11	0.8%	9.9%	9.2%	19.9%
12	1.3%	4.3%	15.8%	21.4%
13	0.4%	9.4%	18.9%	28.7%
14	0.9%	20.8%	6.8%	28.5%
15	0.2%	5.9%	3.0%	9.1%
16	1.1%	3.0%	26.7%	30.8%
17	0.5%	7.3%	3.9%	11.7%
18	0%	20.4%	1.4%	21.8%
19	0.2%	7.6%	0.4%	8.2%

20	1.1%	9.0%	5.2%	15.3%
21	0%	42.1%	5.2%	47.3%
26	1.1%	13.4%	7.5%	22.0%

Watersheds 9, 13, 14, 16 and 21 have potential cumulative impacts approaching or exceeding 30 percent of the watershed area.

The major impact in Watershed 9 (Jackknife Creek) is a major fire that occurred in the watershed more than a decade ago. The watershed is currently mostly stable, though some landslides have occurred in the watershed in the past five5 years. No timber harvesting is scheduled for the next decade within this watershed, but about 13 percent of the watershed could be treated.

Watershed 13 (Grace) could have about 29 percent cumulative disturbance. Nearly 10 percent of the watershed could be treated by harvesting or other vegetation treatments over the next decade.

Watershed 14 (Grays Lake) could have over 28 percent projected cumulative disturbance. About 21 percent of the watershed could be treated by harvesting or other vegetation treatments over the next decade.

Watershed 16 (Blackfoot River) has been impacted by mining, road construction and timnber harvesting. Proposed harvesting and other vegetation treatments are tentatively proposed to impact an additional 4.1 percent of the watershed. Nearly 31 percent of the watershed could be cumulatively impacted if proposed timber harvesting and other vegetation treatments are implemented.

Watershed 21 (Rattlesnake) could have about 47 percent projected cumulative disturbance. Over 42 percent of the watershed could be treated by harvesting or vegetation treatments over the next decade.

- *Table B. 49 Alternative 7*

Watershed Number	Percent of Watershed Potentially Disturbed from Future Timber Harvesting and Roading over the Next Decade	Percent of Watershed Potentially Affected by Fire and Other Treatments over the Next Decade	Percent of Watershed Impacted by Past Mining, Timber Harvesting and Fires	Total Percent of Watershed Impacted by Past, Present and Foreseeable Activities
1	0%	22.3%	1.7%	24.0%
2	0.7%	15.6%	3.0%	19.3%
3	1.1%	7.4%	12.1%	20.6%
4	0%	17.1%	1.1%	18.2%
5	0.2%	7.0%	1.0%	8.2%
6	0.9%	8.0%	10.6%	19.5%
7	0.7%	10.0%	5.7%	16.4%
8	0.3%	6.8%	0.8%	7.9%
9	0%	17.1%	65.3%	82.4%
10	0.5%	8.5%	4.7%	13.7%
11	0.9%	13.0%	9.2%	23.1%
12	2.0%	5.6%	15.8%	23.4%
13	0.7%	12.5%	18.9%	32.1%
14	1.0%	27.5%	6.8%	35.3%
15	0.3%	7.7%	3.0%	11.0%
16	1.7%	3.9%	26.7%	32.3%
17	0.7%	9.7%	3.9%	14.3%
18	0%	27.0%	1.4%	28.4%
19	0.1%	10.1%	0.4%	10.6%
20	0.5%	11.9%	5.2%	17.6%
21	0.2%	55.6%	5.2%	61.0%
26	1.6%	17.8%	7.5%	26.9%

Watersheds 9, 13, 14, 16, 18, 21 and 26 have tentative cumulative impacts approaching or exceeding 30 percent of the watershed area.

The major impact in Watershed 9 (Jackknife Creek) is a major fire that occurred in the watershed more than a decade ago. The watershed is currently mostly stable, though some landslides have occurred in the watershed in the past five5 years. No timber harvesting is scheduled for the next decade within this watershed, but about 17 percent of the watershed could be treated.

Watershed 13 (Grace) could have about a 32 percent cumulative disturbance. Nearly 13 percent of the watershed could be treated by harvesting or other vegetation treatments over the next decade.

Watershed 14 (Grays Lake) could have over 35 percent projected cumulative disturbance. About 28 percent of the watershed could be treated by harvesting or other vegetation treatments over the next decade.

Watershed 16 (Blackfoot River) has been impacted by mining, road construction and timber harvesting. Proposed harvesting and other vegetation treatments are tentatively expected to impact an additional 5.6 percent of the watershed. Nearly 32 percent of the watershed could be cumulatively impacted if proposed timber harvesting and vegetation treatments are implemented.

Watershed 18 (Upper Portneuf West) could have about 28 percent of the watershed cumulatively impacted. No timber harvesting is proposed, but about 27 percent of the watershed could be treated over the next decade.

Watershed 21 (Rattlesnake) has about 61 percent projected cumulative disturbance. Over 55 percent of the watershed could be treated by harvesting or vegetation treatments over the next decade.

Watershed 26 (Logan River) could have about 27 percent of the watershed cumulatively impacted. About 18 percent of the disturbance would come from vegetation treatments and timber harvesting.

- *Table B. 50 Alternative 7R*

Watershed Number	Percent of Watershed Potentially Disturbed from Future Timber Harvesting and Roading over the Next Decade	Percent of Watershed Potentially Affected by Fire and Other Treatments over the Next Decade	Percent of Watershed Impacted by Past Mining, Timber Harvesting and Fires	Total Percent of Watershed Impacted by Past, Present and Foreseeable Activities
1	0%	16.3%	1.7%	18.0%
2	0.8%	11.4%	3.0%	15.2%
3	2.0%	5.4%	12.1%	19.5%
4	0%	12.5%	1.1%	13.6%
5	0.5%	5.1%	1.0%	6.6%
6	1.3%	5.8%	10.6%	17.7%
7	1.3%	7.2%	5.7%	14.2%
8	0%	4.9%	0.8%	5.7%
9	0%	12.5%	65.3%	77.8%
10	0%	6.2%	4.7%	10.9%
11	0.7%	9.5%	9.2%	19.4%
12	3.5%	4.2%	15.8%	23.5%
13	0.8%	9.1%	18.9%	28.8%
14	1.5%	20.1%	6.8%	28.4%
15	1.1%	5.7%	3.0%	9.8%
16	2.8%	2.9%	26.7%	32.4%
17	0.9%	7.1%	3.9%	11.9%
18	0.2%	19.7%	1.4%	21.3%
19	0.2%	7.4%	0.4%	8.0%

20	0.4%	8.7%	5.2%	14.3%
21	0.2%	40.6%	5.2%	46.0%
26	2.3%	13.0%	7.5%	22.8%

Watersheds 9,13, 14, 16 and 21 have cumulative impacts tentatively approaching or exceeding 30 percent of the watershed area.

The major impact in Watershed 9 (Jackknife Creek) is a fire that occurred in the watershed more than a decade ago. The watershed is currently mostly stable, though some landslides have occurred in the watershed in the past five5 years. No timber harvesting is scheduled for the next decade within this watershed, but about 13 percent of the watershed could tentatively be scheduled to be treated, primarily for aspen regeneration.

Watershed 13 (Grace) could have about a 29 percent cumulative disturbance. About 9 percent of the watershed could be treated by harvesting or other treatments over the next decade.

Watershed 16 (Blackfoot River) has been impacted by mining, road construction and timber harvesting. Proposed harvesting and vegetation treatments (mostly for aspen regeneration) are expected to impact an additional 5.7 percent of the watershed. Over 32 percent of the watershed could be cumulatively impacted if proposed timber harvesting and other treatments are implemented.

Watershed 21 (Rattlesnake) could have about 46 percent cumulative disturbance. About 41 percent of the watershed area could be treated with fire or other treatments, mostly for aspen regeneration.

Summary

Watersheds 3, 6, 9, 12, 13 and 16 have 10 percent or more of the watershed area that has been impacted by past timber harvesting, mining, roading and fire. These watersheds could be further impacted by proposed timber harvesting and burning in nearly every alternative. Alternatives 1 and& 2 have eight8 watersheds that could have cumulative impacts approach or exceed 30 percent watershed disturbance. Alternatives 3 and& 4 have ten10 watersheds that could approach or exceed 30 percent cumulative disturbance. Alternatives 5, 6 and 7R have five5 watersheds that could approach or exceed 30 percent cumulative disturbance. AlternativeWatershed 7 has seven7 watersheds that could exceed 30 percent cumulative disturbance. Delaying, reducing or eliminating proposed activities in these individual watersheds over the next decade would serve to eliminate or reduce cumulative impacts within these watersheds. The following tables summarize the cumulative impacts to all the watersheds within the Forest relative to each other. These impacts are the components needed to assess the issue indicator "*Relative rates to improve watershed geomorphic integrity.*". "Rate,", in this context, is not specifically a time factor (weeks, months, years), but a relationship between alternatives to improve overall watershed values, including geomorphic integrity. The time required to improve a watershed varies greatly by the overall condition of the watershed, the geology, climate, etc.

- *Table B. 51 Summary of Cumulative Effects on Watersheds by Alternative.*

Relative Potential to Protect[1]	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 5**	**Alt 6**	**Alt 7**	**Alt 7R**
Timber Harvest	7	6	8	3	2	1	4	5
Livestock Grazing	6	7	8	3	2	1	4	4
Recreation Management	6	6	6	2	4	1	3	5
Watershed Restoration	6	6	8	1	3	2	4	5
Prescribed Burning and other treatments	8	4	6	7	3	2	5	1
Total Points	**33**	**29**	**36**	**16**	**14**	**7**	**20**	**20**
Cumulative	**7**	**6**	**8**	**3**	**2**	**1**	**4**	**4**

1 A rating of "1" has the greatest potential to protect and/or improve watershed functions and associated riparian, water quality and aquatic habitat. A rating of "8"7 has the least potential to protect and/or improve overall watershed values. The ratings are not an order of magnitude (e.g. Alt 3 having 8 times more watershed disturbance than Alt 6), rather simple relative rankings of one Alternative to another.

• *Table B. 52 Existing Conditions within 5th Code Watersheds.*

5thHUC Watershed Number(s) Watershed Name (PWI #)	Watershed Area (W/in Forest Bdry)	IWWI Rating	Stream Condition Miles*	Miles of Per. or Intermit. Streams	Miles of Roads in W/S	Acres of AIZ (2.8.3 Rx)	Miles of Roads in AIZ	Miles of Trails in AIZ	Miles of 303(d) Strms	Acres of Previous Disturb-ance from Mining, Timber Harvest, Fires	% Dis-turbed
1601010205 1601010206 Geneva /01	17,371 4,349	7 6	PFC / 4.5 RL / 7.6 RM / 10.1 RH / 5.0 NF / 0.0	36/26 6/8	35.6 11.7	2,632 476	1.7 0.0	12.3 0.0	8.5 3.8	15 h* 239 h	1.7%
1601020105 1601020107 Montpelier /02	30,655 482	7 6	PFC / 3.8 RL / 5.4 RM / 21.8 RH / 3.2 NF / 8.7	48/57 0/1	86.8 3.0	3,898 10	26.3 0.0	8.0 0.0		721 h 0	3.0%
1601020104 1601020103 1601020102 1601020101 Georgetown /03	31,698 10,238 15,804 7,957	6 6 6 6	PFC/ 20.9 RL / 7.6 RM / 26.1 RH / 7.0 NF / 0.0	11/99 9/16 15/38 6/28	53.1 32.5 37.5 15.5	2,017 858 1,491 769	16.6 5.8 12.7 4.5	5.0 0.8 4.1 0.6		501 h + 1189 m* 2478 h 2737 h + 118 m 600 h	12.1%
1601020205 1601020206 1601020207 1601020204 Weston /04	15,488 2,889 6,541 3,419	7 6 7 6	PFC / 5.8 RL / 7.7 RM / 11.3 RH / 11.6 NF / 6.0	26/65 4/15 9/27 3/21	38.2 24.0 12.7 10.9	2,603 474 965 501	11.6 3.3 1.8 3.4	0.7 0.6 1.0 0.9	1.6 2.6	99 h 0 0 0	1.1%
1601020405 1601020408 1601020412 1601020410 1601020411 Malad /05	982 21,564 26,482 9,119 11,544	4 7 7 7 6	PFC / 6.0 RL / 25.9 RM / 26.0 RH / 16.3 NF / 41.3	0/4 22/78 24/110 5/41 24/30	0.8 47.0 49.1 8.8 25.5	52 2,505 2,708 850 2,021	0.1 10.1 8.5 4.7 9.5	0.0 7.1 2.8 3.6 2.3	 1.3 5.0	0 0 214 h 0 183 m	1.0%

PFC – Properly Functioning Condition
RL – Functional-at-Risk with a low risk potential
RL – Functional-at-Risk with a moderate risk potential
RH – Functional-at-Risk with a high risk potential
NF – Non-functioning
h – timber harvest including mature overstory removal and regeneration cuts
m – mining activities, primarily phosphate mining
f – fire disturbance

5thHUC Watershed Number(s) Watershed Name (PWI Number)	Water-shed Area (W/in Forest Bdry)	IWWI Water-shed Rating	Stream Condition Miles*	Miles of Perennial or Intermittent Streams	Miles of Roads in W/S	Acres of AIZ (2.8.3 Rx)	Miles of Roads in AIZ	Miles of Trails in AIZ	Miles of 303(d) Streams	Acres of Previous Disturbance from Mining, Timber Harvest and Fires	% of Dis-turb-ed
1704010507 Crow Creek /06	60,838	6	PFC / 9.1 RL / 16.9 RM / 19.7 RH / 25.6 NF / 0.0	96/147	133.5	7,868	27.4	27.1		2757 h + 3368 m	10.6%
1704010508 Stump Cr. /07	48,723	5	PFC/ 8.4 RL / 15.2 RM / 19.5 RH / 42.8 NF / 0.0	78/79	51.8	6,333	13.2	27.5	5.9	167 f + 2642 h + 650 m	5.7%
1704010503 1704010509 1704010501 Tincup Cr. /08	6,551 48,394 16,910	6 6 6	PFC/ 17.0 RL / 7.9 RM / 42.0 RH / 30.4 NF / 8.7	7/13 94/60 19/29	15.1 41.4 19.6	667 7,203 1,695	2.8 15.4 6.6	0.0 10.9 4.4		0 379 0	0.8%
1704010510 1704010500 Jackknife /09	28,183 266	7 5	PFC / 6.0 RL / 12.0 RM / 13.2 RH / 10.6 NF / 4.0	82/27 0/1	24.6 0.8	5,945 8	10.7 0.0	0.0 0.0		6944 f + 11583 h 0	65.3%
1704010411 1704010409 1704010410 McCoy Cr. /10	56,399 937 6	7 5 6	PFC/18.3 RL / 6.9 RM / 30.7 RH / 18.3 NF / 3.1	146/72 0/1 0/0	89.0 1.1 0.0	10,050 17 0	10.7 0.0 0.0	1.2 0.0 0.0		179 f + 2458 h 0 0	4.7%

5thHUC Watershed Number(s) Watershed Name (PWI Number)	Water-shed Area (W/in Forest Bdry)	IWWI Water-shed Rating	Stream Condition Miles*	Miles of Per. or Interm. Streams	Miles of Roads in W/S	Acres of AIZ (2.8.3 Rx)	Miles of Roads in AIZ	Miles of Trails in AIZ	Miles of 303(d) Streams	Acres of Previous Disturbance from Mining, Timber Harvest and Fires	% of Dis-turb-ed
1601020109 1601020108 Bear Lake /11	12,214 25,024	6 6	PFC / 1.4 RL / RM / 8.8 RH / 18.6 NF /	6/22 15/48	31.2 42.3	731 1,657	5.3 9.7	0.1 2.3		947 h 2317 h	9.2%
1601020108 1601020106 1601020103 1601020102 Bear Lake Outlet /12	25,025 34,116 10,237 15,804	6 6 6 6	PFC/ 18.5 RL / RM / 19.8 RH /31.1 NF / 3.1	15/49 25/45 9/16 14/38	41.0 95.8 32.5 37.5	1,657 2,307 859 1,491	9.7 19.9 5.8 12.7	2.4 2.4 0.8 4.2		2318 h 5412 2478 h 2737 h	15.8
1601020212 1601020213 1601020211 Grace /13	2,530 19,344 16,957	7 6 6	PFC / 3.8 RL / RM / RH / 2.2 NF / 0.0	0/10 16/44 0/36	12.2 36.2 37.8	131 1,741 474	0.2 2.1 4.3	0.0 2.9 1.9	 1.5	220 h 4538 h 2391 h	18.9
1704020507 Grays Lake /14	17,661	7	PFC / RL / 5.0 RM / 4.8 RH/ 5.9 NF / 0.0	21/34	31.4	1,947	6.5	0.2		1119 h	6.8
1601020209 1601020206 1601020203 1601020202 Cub River /15	23,170 2,888 35,099 1,511	6 6 6 5	PFC/ 26.1 RL / RM / 7.8 RH / 13.0 NF / 0.2	11/39 5/14 26/71 0/3	36.2 24.0 34.6 0.0	1,302 473 2,721 33	7.1 3.4 16.2 0.0	3.7 0.7 3.6 0.0	0.7 1.5	1260 h 0 379 0	3.0
1704020709 1704020708 1704020711 1704020712 1704020713 1704020710 Blackfoot River /16	177 1,407 46,712 30,389 42,127 2,672	not rated not rated 6 5 6 3	PFC/ 15.2 RL / RM / 22.3 RH / 69.7 NF / 2.0	0/0 0/3 53/106 35/57 11/120 2/6	0.0 3.3 123.0 75.8 118.8 8.1	2 38 4,790 3,079 2,238 221	0.0 0.2 19.1 23.8 18.9 3.0	0.0 0.0 13.4 4.2 4.7 0.0	 18.5 15.5 7.0	0 55 m 4193 f + 6644 h+7127m 5291 h + 298 m 4577 h + 3230 m 551 h + 152 m	26.7
1704020808 1704020809 1704020811 Upper Portneuf East /17	3,643 23,548 22,784	6 6 6	PFC/ 30.1 RL / 3.8 RM / 0.7 RH / 20.2 NF / 0.9	3/10 23/51 34/49	2.9 41.0 44.1	299 2,209 2,795	0.9 14.0 11.3	2.2 0.8 2.0		0 663 h 1087 h	3.9

5thHUC Watershed Number(s) Watershed Name (PWI Number)	Water-shed Area (W/in Forest Bdry)	IWWI Water-shed Rating	Stream Condition Miles*	Miles of Perennial or Intermittent Streams	Miles of Roads in W/S	Acres of AIZ (2.8.3 Rx)	Miles of Roads in AIZ	Miles of Trails in AIZ	Miles of 303(d) Streams	Acres of Previous Disturbance from Mining, Timber Harvest and Fires	% of Dis-turb-ed
1704020804 1704020803 1704020606 Upper Portneuf West /18	10,870 6,682 410	6 6 not rated	PFC/ 11.3 RL / 5.0 RM / 6.7 RH / 10.3 NF / 2.0	10/22 8/12 0/1	7.5 5.3 0.0	968 720 25	1.8 1.9 0.0	3.3 1.6 0.0	 0.2	142 h 74 h 0	1.4
1704020805 1704020804 1704020807 Marsh Cr. /19	4,494 10,871 32,815	5 6 7	PFC/ 19.6 RL / 2.5 RM / 13.4 RH / 11.8 NF / 2.2	2/10 9/23 31/110	3.2 7.5 65.3	255 968 3,564	0.1 1.9 16.3	0.0 3.4 8.6	0.4 1.5	18 h 0 13 m	0.4
1704020802 1704020803 1704020801 Lower Portneuf /20	31,215 6,682 2,912	6 6 6	PFC/ 29.7 RL / RM / 12.3 RH / 3.1 NF / 3.2	33/81 8/12 4/10	64.4 5.2 12.7	3,122 720 387	20.2 1.8 2.3	4.6 1.6 0.0		1912 h 0 0	5.2
1704020621 1704020620 Rattlesnake /21	5,700 3,029	6 6	PFC / 2.7 RL / RM / 3.4 RH / 7.1 NF / 0.0	5/9 3/8	8.0 10.5	430 329	1.9 1.0	3.0 0.0		421 h 0	5.2
1601020303 Logan River /26	27,344	5	PFC/ 11.9 RL / RM / RH / 0.7 NF / 0.0	22/38	34.6	1,853	12.3	1.9		1977 h	7.5

- *Table B. 53 Proposed Timber Harvesting by 5th Code Watersheds by Alternative Within the 5.x Prescription Areas.*

5thHUC Watershed Number(s)	Watershed Name /PWI number	Alt 1 Timber Harvest Rx (5.x) (Acres)*	Alt 2 Timber Harvest Rx (5.x) (Acres)	Alt 3 Timber Harvest Rx (5.x) (Acres)	Alt 4 Timber Harvest Rx (5.x) (Acres)	Alt 5 Timber Harvest Rx (5.x) (Acres)	Alt 6 Timber Harvest Rx (5.x) (Acres)	Alt 7 Timber Harvest Rx (5.x) (Acres)	Alt 7R Timber Harvest Rx (5X) (Acres)
1601010205	Geneva				4				
1601010206	/01			1,431					
1601020105	Montpelier	5,254	5,254	5,254	2,022	2,528		2,467	3582
1601020107	/02								
1601020104	Georgetown	4,118	4,125	4,118	3,777	1,128	4,612	2,849	4320
1601020103	/03	7,099	6,484	6,505	1,363	1,904	1,362	1,606	7892
1601020102		9,363	9,213	9,213	9,271	4,321	4,231	3,904	17246
1601020101		3,434	2,868	3,131	1,473	1,474	1,003	1,003	3483
16010	Weston			68					
1601020206	/04								
1601020207				77					
1601020204									
1601020405	Malad								
1601020408	/05								
1601020412		2,434	1,612	5,371		1,603	1,819	1,163	4289
1601020410				5,300					
1601020411				5,296			26		
1704010507	Crow Creek	12,344	12,341	18,470	5,207	5,060	4,200	6,669	10649
	/06								
1704010508	Stump Cr.	19,543	19,549	19,543	5,219	5,234	2,538	4,137	8248
	/07								
1704010503	Tincup Cr.	24	24	24				24	
1704010509	/08					1,358	2,567		
1704010501		4,151	3,456	3,456	162			1,824	
1704010510	Jackknife								
1704010500	/09								
1704010411	McCoy Cr.	1,649	1,649	1,649				2,903	
1704010409	/10							90	
1704010410									
1601020109	Bear Lake	4,599	4,599	4,599	3,266	3,266	3,266	2,937	2497
1601020108	/11	4,646	4,617	14,820	1,685	1,631	1,892	1,529	
1601020108	Bear Lake	4,646	4,617	14,821	1,686	1,631	1,892	1,529	6634
1601020106	Outlet	21,823	21,803	26,186	20,355	15,282	13,397	15,397	19088
1601020103	/12	7,100	6,484	6,505	1,363	1,905	1,362	1,606	
1601020102		9,363	9,213	9,213	9,271	4,622	4,231	3,905	
1601020212	Grace								
1601020213	/13	3,666	1,349	3,150	1,952	1,952	1,938	1,197	2702
1601020211		5,398	4,011	9,067	27	25	634	2,089	7932
1704020507	Grays Lake	2,395	2,128	2,800	3,263	6195	2,914	2,187	3580
	/14								
1601020209	Cub River	4,749	4,749	6,411	2,173	1,359		1,408	1888
1601020206	/15								
1601020203		2,177	2,177	2,428	589	590	588	665	809
1601020202									
1704020709	Blackfoot				92	92			
1704020708	River	141	29	438	534	534		33	
1704020711	/16	21,165	12,334	25,322	14,892	11,287	900	9,458	9541
1704020712		21,641	21,443	23,771	11,359	10,627	11,460	9,585	14093
1704020713		26,360	26,466	29,911	7,303	5,976	10,744	7,111	24753
1704020710		1,676	1,016	1,994	1,969	1,969	1,635	1,409	1635

5thHUC Watershed Number(s)	Watershed Name /PWI number	Alt 1 Timber Harvest Rx (5.x) (Acres)*	Alt 2 Timber Harvest Rx (5.x) (Acres)	Alt 3 Timber Harvest Rx (5.x) (Acres)	Alt 4 Timber Harvest Rx (5.x) (Acres)	Alt 5 Timber Harvest Rx (5.x) (Acres)	Alt 6 Timber Harvest Rx (5.x) (Acres)	Alt 7 Timber Harvest Rx (5.x) (Acres)	Alt 7R Timber Harvest Rx (5X) (Acres)
1704020808 1704020809 1704020811	Upper Portneuf East /17	 3,915 7,589	 3,915 7,589	 3,915 7,589	 370 4,246	 3,886	 3,886	 618 3,660	 1558 4111
1704020804 1704020803 1704020606	Upper Portneuf West /18			1,630					
1704020805 1704020804 1704020807	Marsh Cr. /19	1 776	1 628	1 5,163	22	 120	23 940	1	
1704020802 1704020803 1704020801	Lower Portneuf /20	3,123 1,540	3,121 1,540	3,171 1,540	9,834 3	 77	7,454 77 362	2,028 147	2487 385
1704020621 1704020620	Rattlesnake /21	851	851	2,186	514	531 1,609		38	959
1601020303	Logan River /26	12,617	12,617	13,184	5,595	5,595	5,594	5,968	8171

* From Forest's Timber Forester

Note: PWI watershed boundaries may split several 5th code watersheds. Those watersheds that occupy one or more PWI watersheds are highlighted with color codes to show which watersheds have been split. Like colors denote common watersheds. (Example: Watershed 1704020804 is within PWI watershed 18 and 19 and both are shown in red)

RIPARIAN

See Chapters 3 and 4.

WATER QUALITY

See Chapters 3 and 4.

Issue 7

Timber Program

The information for the Timber Program analysis was derived from the VDDT model described in Issue 3—Forested Vegetation. See that section for more detailed information.

Available and Capable Timberlands

TIMBER SUITABILITY

This document is an addendum to an earlier document **"Technological Building Blocks for Deriving Timberland Suitability Answers"** written in 1996 by Kimberly C. Mayeski and Faye Krueger. The 1996 document addresses both programmatic direction for deriving timberland suitability and some of the GIS strategies used in the 1996 suitability run. In 2000, with Forest Plan Revision officially underway a new effort was undertaken to map suitable acres. Many updates/changes had been made to the GIS layers used in 1996 and a new run was warranted. While the programmatic direction has not changed since 1996, some of the GIS aspects are handled differently. This document addresses the GIS strategies that were used in the 2000 suitability run. NOTE: While the term "suitable for timber" is often used in both documents it is actually referring to "***tentatively*** suitable for timber." GIS is used to produce numbers for planning purposes but the real test for timber suitability is on the ground.

Between 1996 when the first inventory was completed and 2000 when the suitability was calculated for the Forest Plan Revision many strides were made in the technical capabilities of GIS on the Caribou with IBM personal computers and peripheral equipment that allowed for more file storage, larger GIS files, and faster processing speeds. While in 1996 ArcInfo work was done under the Grid program because of system processing limitations, in 1999-2000 ArcInfo system capabilities were much greater, processing was much simpler through Arc and Arcview was a very useful tool for both analysis and the creation of display maps.

Significant changes were made to several of the GIS layers used in the timberland suitability model. The layers (themes) used and the updates/changes made are addressed later in this document under the "**Background…..**" section.

PROGRAMMATIC DIRECTION – GIS THOUGHTS

While each acre on the Forest must meet a myriad of conditions in order to be considered suitable for timber, the sequence in which the conditions are applied can affect the usability of intermediate map products generated along the Stage 1 - Stage 4 process described in the Mayeski/Krueger document. To take the list in Table 1, Section 1 of the document, replicated below, Sseveral of the items listed are directly tied to what would be a cover type layer, while other items represent administrative decisions in regard to physical area (regardless of cover type), and others are corridor buffers applied in an attempt to account for linear features that are difficult to capture when working on a broad-scale analysis. The letters in brackets (**[a] [b] [c]**) within Section 1 represent how the themes of similar nature might be grouped in GIS. The paragraphs below the table explain some of the reasons behind the groupings.

Table B. 54 Land Classification List (NFMA Regulations)

Section	Type	Layer
Section 1 [a]	Non-Forest land (includes water)	Rangeland
[b]		Administrative Sites
[c]		Improved Roads
[c]		Utilities
[b]		Private land
[a]		Mines
[a]		Standing Bodies of Water
[c]		Streams
Section 2	Land Withdrawn from Timber Production	Wilderness
		Research Natural Areas
Section 3	Land Not Capable of Producing Crops of Industrial Wood	Rocky or talus
		Low productivity sites
Section 4	Land Physically Unsuitable	Unstable soils
		Land types not restockable within five years
		Slopes 65% and greater

The following section further defines the columns in the table above.

SECTION 1[a].

Of the layers listed in Table 1, Section 1, those that can be taken directly from the Caribou's covertype layer are:

Rangeland (whether the ground is forested or not).
Mines (actual disturbed areas).
Standing bodies of water.

The Caribou's primary cover-type layer came from the satellite image classification conducted in 1995-1996 on 1991 vintage satellite data. This classification, combined with updates/changes from work with District personnel in 1999-2000, adding the layer for standing water, and taking into account ground-disturbing activities such as mining, harvest, and wildfires, became the layer from which timber suitability was run. How the ground-disturbing activities were incorporated into the cover layer is addressed later in this document.

SECTION 1[b].

Those items that are a result of administrative controls are:

Administrative sites.
Private land.

These two layers have littlereally have nothing to do with the cover types that are on the ground, but with the level of control exercised and the kind of activity that the Agency allows. Administrative sites are areas that we, as an Agency, have agreed not to manage for timber, not that they do not have timber on them, but these are "withdrawn" and are considered taken out of the suitable timber base. Private lands (includes private and State inholdings and patented mining claims) within the Forest Boundary are also excluded from the suitable timber base, not that there is no timber on these lands but the Agency has no authority to manage them for timber.

SECTION 1[c].

Those items that are an attempt to account for detailed features:

Improved roads (constructed roads).
Utility corridors.
Streams.

This third set of items (Streams) is buffered in GIS, because they are generally addressed as line features on most maps while they do take up physical space on the ground. On the ground they really are long, narrow polygons. Improved roads and utility corridors are generally cleared pathways, long narrow polygons through native vegetation (timber/brush/grass). Overhead utility corridors are generally cleared pathways similar to roads but native vegetation is often allowed to grow back, except for timber. Timber would probably be allowed to grow back over buried utility lines but the degree of surface disturbance allowed over buried utility lines would not permit timber harvest, therefore these lands are considered not suitable for timber. Perennial and intermittent streams are also treated as line features in GIS but on the ground they really are long narrow polygons across unaltered native vegetation. Perennial streams are generally wider than intermittent ones and would be given a wider buffer.

Forest-wide average widths are used in GIS in the buffering process to convert the road, utility, and streamline coverages into polygons. Buffer widths used for each theme are shown on the flowchart on page 7. The area occupied by the buffers is considered to be removed from actual resource production and is not "suitable" for timber management.

SECTION 2.

Under Section 2 the two layers listed, Wilderness and Research Natural Areas (RNAs), are a result of administrative decisions. For the Forest at this time there is no officially designated Wilderness, only the two areas proposed for Wilderness in the 1985 LRMP. These two proposed wilderness areas will not be factored into the timber suitability equation at this point but can be taken out later should there be Legislative action that makes them officially designated Wilderness. The RNAs, however, have been officially designated and these acres will be removed from timber suitability.

SECTIONS 3 and 4.

Under Sections 3 and 4 the layers listed would remove acres from timber suitability. These layers focus on the capability of the soils to produce industrial wood, that reforestation cannot be assured or that topographic factors are present under which irreversible resource damage might occur under a harvest scenario.

BACKGROUND ON THE INDIVIDUAL LAYERS

Many of the individual layers used in the timber suitability run were actually created as part of the Forest's general GIS library or "corporate" data. Most of these layers have uses beyond timber suitability. Many of them continue to evolve as updates and/or changes are warranted over time. Several of the layers were used in the 1996 suitability run but have since been modified (cover types, soils), others were created from newer Cartographic Feature Files (CFFs) obtained in 1999. The mine, harvest, and wildfire themes incorporated into the cover type layer were created/updated during the winter of 1999-2000, just prior to the suitability run.

Vegetation [cover types] layer

This base layer is often referred to as a "veg" layer when in fact there are many areas on the Forest that are not vegetated; rock and water are two examples. These are not vegetation types *per se* but cover physical areas and are cover types that would not be suitable for timber. Rock was already a component of the "veg" layer; water bodies over one acre in size were incorporated in February, 2000.

During the summer of 1999 additional review of the 1996 vegetation layer took place with District personnel in order to fine-tune vegetative classes on the GIS layer. In general, broad areas were reviewed for local accuracy with some

attempt to isolate minor vegetative components such as willow/riparian, pure sagebrush, and tall forb communities. Results were marginal. In general, these communities were not easily identified on the vegetative layer, that they were not separate polygons. These vegetation types were most often blended in with other types, although usually not with forested types.

Additional updates were made to the harvest unit layer to bring it up to current before it was incorporated into the cover type layer. Several other disturbance regimes were also taken into account on the cover type layer in order to address timber suitability, whether or not the acres actually have trees on them.

Natural and man-caused disturbances such as wildfire and mining were brought into play. In the case of wildfires, two wildfires were digitized; the Tincup Fire from 1994 and the Trail Creek fire from 1988. For the Trail Creek Fire, which occurred before the satellite image was taken, Forest Service personnel used aerial photos to determine what the cover type was before it burned in 1988 and compared it to what appeared to be on the satellite image of 1991. Some suitable timber acres that had been converted to short-term non-forest types, but which would eventually return to timber, were classified as suitable for timber even though they do not currently have a forested canopy. Seral stage on these acres would be early.

For the Tincup Fire, which occurred in 1994, the types on the cover type layer, which might have been a timber type before the fire and a timber type after the fire, might have changed from mid- or late-seral to early-seral. In this case suitability for timber would not have changed but seral stage of timber would have, and it was important to capture this here as it would not be accounted for on other thematic layers. In the case of other disturbances such as surface mining where there would be a long term conversion of timber into non-forest types, the cover type was changed to rock or other non-timber types on open areas. These acres were classified as unsuitable for timber management.

For purposes of timber suitability, the following cover types were combined to represent the conifer cover class:

DF (Douglas-fir)
LP (lodgepole pine)
mixcon1 (DF, LP, AF (subalpine fir))
mixcon2 (S (Englemann Spruce), AF).

The aspen and aspen/conifer classes were by themselves. All other cover types (mountain mahogany, juniper, maple, aspen/maple, riparian, sagebrush, mountain brush, rock and water) were classified as not suitable for timber management.

Improved roads

A more recent CFF (Cartographic feature file) layer was used for the roads layer. Those features coded as improved roads, secondary highways or above were buffered 30 feet on each side of the road. Thirty feet was determined to be an average width forest-wide. This buffer included the road profile itself and the adjacent borrow pit. Note: While the travel plan/roads inventory was underway on the Forest at the time, and since it was months from completion, it was not used in this timber suitability analysis.

Utilities

A more recent CFF layer was used for the utilities layer. In addition, some features that had been overlooked in the past were digitized from the land status maps. Utility lines were buffered 30 feet on each side of the line.

Land ownership

A more recent CFF layer was used for land ownership. In addition, many land exchanges that had occurred since 1996 were incorporated into the new theme.

Mining activity

Steve Robison and Anita Lusty reviewed and updated the mines layer. These changes were incorporated into GIS and used in the timber suitability analysis. See also the last sentence under the vegetation section above. Additionally, mining disturbance was mapped across all lands within the Forest boundary and was incorporated into the Forest-wide cover type layer.

During formulation of Alternatives 1-7 in Feb 2001, the decision was made to use the 2000 version of phosphate mine perimeters within the alternatives. The 1999 version had been used during the initial suitability run. Incorporating the 2000 version into the alternatives changed the effect of timber suitability as now there where suitable timber acres that had been mined and would no longer be suitable. This changed suitable acres from how they were originally calculated and as they are shown within this document.

Standing water

A more recent CFF layer was used for water bodies (lakes, ponds, reservoirs). Polygons greater than 1 acre in size were incorporated into the covertypes layer. Standing water polygons were buffered 30 feet on the exterior for purposes of timber suitability.

Streams

A more recent CFF layer was used for streams. In addition, several quads on the north end of the Bear River Range where nearly every stream was labeled "perennial," were corrected by Brad Transtrum before the suitability analysis was run. Per Lee Leffert, Forest Hydrologist, the areas immediately adjacent to the streams are considered to be sensitive streamside zones that are not appropriate for growing/ harvesting trees. Perennial streams and other perennial water bodies were buffered 30 feet on each side of the line. Intermittent streams were buffered 15 feet on each side. The areas inside the buffers were considered not suitable for timber management.

A second situation that arose that caused suitable timber acreage to be different than the way it was portrayed previously in this document concerns AIZs or Aquatic Influence Zones. Originally a 30-foot buffer (each side, perennial and intermittent) was used along streams to take streamside zones out of the suitable base. This width was changed to 150 feet for perennial water and 50 feet for intermittent. This change did not happen until the end of the analysis, and the effects are not incorporated into the timber suitability as it is described previously in this document.

The AIZ layer used (buffers 150 feet on perennial, 50 feet on intermittent) is **cnf_aiz_feb21** in the same directory.

Research Natural Areas

Digitized in 1996, these were verified against the official files and updated as necessary. RNAs are considered not suitable for timber management.

Soils

The Caribou's Forest-wide soils layer which was used to derive several of the themes in the suitability run had been digitized in 1996 and edge-matched against the Forest Boundary and private inholdings in 1999. Source maps were from a 1:24,000 order 3 correlated soils survey which was done in the early 1970's . Attribute information for the landtypes was put into a table on which the themes were based. This table, ***soils_suittimb.dbf*** is located in the working directory ***/fsfiles/office/gis/cnf_plan/ suit_timb/cnf*** . The themes for low productivity, unstockability (includes where irreversible resource damage might occur), and instability were all produced from the soils theme. In addition, many landtypes were classified as being suitable for timber management only with mitigation. This information is also in the soils table.

Slopes Greater than > 65 Percent

Slope maps were produced from a new set of Digital Elevation Model (DEM) files obtained in 1999. Maps were produced showing slopes over 65 percent and a second set of maps show areas where slopes are greater than 45 percent. Slopes over 65 percent are considered not suitable for timber management. Slopes between 45 percent and 65 percent may be suitable with mitigation.

RUNNING THE SUITABILITY "MODEL"

In preparing to run the timber suitability "model" in GIS each of the above layers was created separately. The Forest-wide layers were split into different physical areas (directories ***/sod*** – for Soda Springs RD, includes the Pruess portion of Montpelier RD, ***/mon*** –for Montpelier RD, actually only the Bear River or Cache Range, ***/poc*** – for the two Pocatello RD polygons, ***/mal*** - for the two Malad RD polygons, no Curlew) under the ***/fsfiles/office/gis/cnf_plan/suit_timb*** directory. Source coverages, buffer coverages, dissolved coverages are all located in these directories. This was done to document the coverages that were current at the time the suitability run was made. The originals, located in other directories, may undergo updates and/or changes over time but the coverages in the ***/suit_timb*** directory were the most current versions when the timber suitability model was run.

The suitability "model" that was run was not a self-contained, executable program but a series of unions/intersects/dissolves in ArcInfo and some attribute table work in ArcView. The beginning theme was the covertype theme. Three classes of vegetation were considered suitable for timber, aspen, conifer, and aspen/conifer. Subsequent themes applied acted as filters, these may or may not have taken out additional acres. Once all of the filters were applied the remaining acres were considered "tentatively suitable for timber." Periodic checks were made with review by resource specialists to verify that results were coming out as expected, that polygons were being classified correctly. For further explanation of this process, see the Project File, GIS Documentation, Timber Suitability.

The final step in creation of the suitable timber layer for the Caribou involved dealing with the isolated stands of aspen and/or conifer less than ten acres in size. These isolated areas may not be economical to harvest in the event that road building is necessary for access to them. As there are three different suitable timber types (conifer, aspen/conifer, and aspen) still on the GIS layer at this point, individual polygons of suitable timber might be less than ten acres in size but if a three-acre polygon of conifer is adjacent to an eight-acre polygon of aspen, while individually the polygons are each less than ten acres in size, because they are both suitable types and adjacent to each other, added together at eleven acres the ground would still be suitable.

This concept of adjacent suitable polygons was portrayed in GIS by first dissolving the three suitable cover types (aspen, conifer, and aspen/conifer) into one, selecting and eliminating the suitable polygons that are still less than ten10 acres, then converting the map back to the original three3 suitable cover types. This being done, the result was a net loss of approximately 4,600 polygons and 4,800 acres of isolated, otherwise "suitable" ground. Acreage results are in Table B.55, below. Should the desired minimum polygon size change, this portion of the process can be run again using the new size limit.

During the course of the filtering process many of the harvested acres may have been dropped out of the "tentatively suitable" timber base. This was because they happened to fall within the bounds of one of the filters that were applied. Upon investigation most of these harvested areas were dropped out due to soils. In general the landtype polygons are large blocks, several hundred acres in size and are considered to be often times comprised of several different soil types that individually might be found to be unsuitable for timber management even though they might have small inclusions that would be classified as suitable. In preparation for timber harvest, resource specialists determine through on-the-ground inspection before timber sale activities begin that the areas within the boundaries of the harvest units are actually suitable for timber management. At the end of the timber suitability run the harvested polygons that had been dropped out through the filtering process were added back into the suitable timber base. This was the final step in running the suitability model. The net effect of the applying the minimum stand size is shown in the table below. The last column also includes the effect of adding the harvest units back into the suitable base.

• *Table B. 55 Results of filtering process for suitability.*

Cover class	Acres Originally "Forested"	Acres after filters were applied	Acres after applying 10- acre minimum and adding harvest units back in
Aspen	152,309	79,491	78,433
Conifer	282,747	168,533	176,449
Aspen/conifer	115,737	54,123	52,345
TOTALS "suitable"	550,793	302,147	307,227
Not suitable For timber	491,298	739,944	734,864

At the end of the process a separate hard copy map was produced to document the individual themes. Postscript files are located in a directory called /fsfiles/office/gis/cnf_plan/suit_timb/maps. As so often happens in GIS processing, sometimes changes are made or mistakes are found that result in reworking through a series of steps several times before a final product is produced. Such was the case here. Water buffers were changed after the first run and several landtypes were changed. Some of these were found to be incorrectly labeled in the attribute table. Harvest units had not been added back in to the suitable base. Reworking through the steps in the Flowchart was necessary to fix the problems that were encountered. All the GIS steps taken the final output is cnf_layer4add in the working directory /fsfiles/office/gis/cnf_plan/suit_timb/cnf.

Overall, these processes are GIS processes used to produce numbers for planning purposes. Much relies on the accuracy of the vegetation/covert type map that was produced from satellite imagery and on the scale and accuracy of the other GIS layers that were used along the way. GIS can only produces maps and figures for "tentatively suitable" ground and usually only on a broad scale. Resource specialists reviewed the GIS layers to verify the results; these will be further verified in site-specific analysis.

The Project File contains several additional documents containing further documentation of the mapping process. They include: list of files, additional notes on files, and examples of ArcInfo *log* file.

The final GIS coverage for suitable timber is cnf_tsuite_f22 in /fsfiles/office/gis/cnf_plan/suit_timb/cnf.

ESTIMATION OF TIMBER VOLUME

Timber volume information is needed in the Forest Planning process to determine Long Term Sustained Yield Capacity (LTSYC) and Allowable Sale Quantity (ASQ) by alternative. To get the volume information, we used the yield table set developed during the Targhee National Forest Plan Revision process by the Forest Vegetation Simulator Model. The Targhee and Caribou National Forests use the same variant of the model (Teton). The Forests also share similar habitat types and productivity ranges, therefore, the model should produce a similar range of yield results for each Forest, by species.

Each cover type in the VDDT (Vegetation Dynamics Development Tool) model has a successional pathway which includes a series of natural and human-caused disturbances (fire, harvest etc.). The occurrence of harvest disturbances in the model is based on silviculture prescriptions by species. To produce our volume information, I used the timeframe a harvest occurred in a given silviculture prescription, as portrayed in the successional pathway diagrams/charts, and read the volume/acre figure from the species-specific yield table for that timeframe (See also Process Paper BP2 in the Project File). A yield/acre was assigned to each management prescription for each harvest treatment entry; there were no reductions in ASQ yield made for different management prescriptions (See also Project File:

VolumeYieldFLMP.xls). For example, a suitable acre in a recreation emphasis alternative yields the same volume as an acre in the commodity emphasis alternative, for a given harvest treatment entry. This figure is then entered into the VDDT model by opening the "mega" model (Caribou_xx.proj), selecting "Edit Values by Attribute" and entering ccf volume/ac. under the "Inv_oth_aspen" and "Inv_oth_conifer" columns for Management Prescriptions #2, 3, 4 and 6 and "Inv_suit_conifer" for Management Prescription #5. When this data is processed with an alternative run through the model database and spreadsheet, the LTSY and ASQ values are produced. The number of acres in a given management prescription is the major determinant in arriving at the ASQ and LTSY for a particular alternative. An alternative with an emphasis on recreation has fewer acres suitable for timber harvest than an alternative with a commodity emphasis, therefore a smaller ASQ.

Documentation for each volume/acre harvest entry to the VDDT model is found in a two-page spreadsheet in the EM drawer under Caribou Res., Car_timber, 1950, Forest Plan Revision, titled Volume Yield FLMP.xls. A copy of the spreadsheet is attached. Additional information on each silvicultural treatment is found in the individual Forest Vegetation Simulator runs for the specific treatment. This includes projection information on species, density, diameter, age, height and growth for pre and post treatment stands.

LIMITS

Limits, in a modeling sense, are used to represent physical, ecological, financial, legal, or social thresholds that simulation must fall within in order to be considered reasonable or appropriate. For example, budgetary requirements to implement an alternative must be within reason compared to historic levels and Desired Future Conditions attainment must comply with other resource management objectives consistent with a given alternative. Models of alternatives had to satisfy numerous types of limits in order to be feasible. The most common limits applied was for acres treated in any given time period.

ESTIMATION OF BUDGET FOR MANAGEMENT ACTIVITIES

Each alternative had a budget objective for management actions that adjust the structure of forested vegetation. Budget limits were for mechanical and fire activities and varied by alternative and are displayed in Table B-9 in thousands of dollars annually. Budget expenditures for FY1998 for timber management activities (reforestation, thinning, harvesting) and fuel reduction activities (prescribed fire) were used to generate the budget limits (TSPIRS, 1999). These budget levels did influence the attainment of DFC and outcomes such as acres of prescribed fire and mechanical treatments.

Budgets received for management activities can have an effect on achievement of DFCs. Budgetary costs in the VDDT model are for management actions that change the forested vegetation. Other budget information from activities such as recreation, wildlife restoration, riparian restoration and others is discussed in Chapter 3.

Alternatives that have large differences in the objective function from the baseline model indicate that constraints (including budget) are having major effects. Alternatives that differ little in the objective function from the baseline model indicate that management direction in the form of MPCs is having the most effect on achieving DFCs of the forested vegetation.

During the Plan Revision process budgets were constrained to be reflective of historical levels or anticipated levels if activity levels were substantially increased. Other outcomes from the model may provide information for evaluating the differences between the alternatives and were used in the effects analysis. Table B-56 displays the budget level for each alternative along with other outcomes for the first decade, which provide information for alternative evaluations.

• *Table B. 56. Budget Levels by Alternative and Other Outcomes*

Caribou National Forest		Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt.6	Alt.7	Alt 7R
Budget for Treatments of Forested Vegetation	$/yr	$1,207M	$2,652M	$3,166M	$4,815M	$2,168M	$2,151884 M	$2,884M600	$2,600884M
Created Openings	Ac/yr	770	720	850	410	390	2450	450640	640450
Mechanical Harvest	Ac/yr	1680	1670	2190	710	650	490730	7301631	1,635730

ESTIMATION OF ALLOWABLE SALE QUANTITY (ASQ)

The sustainable level of timber harvest volume from suited acres is referred to as ASQ and the National Forest Management Act requires estimation of this outcome. Suited acres are defined by MPC and were discussed above.

Estimates of the timber volume generated from mechanical treatments on suited acres were included in the VDDT model to estimate ASQ. Yield estimates for the activities within Management Actions, discussed above, were the basis for determining ASQ. The objective of non-declining flow was included in all alternatives. Table B.57 displays the model-generated portion of the Allowable Sale Quantity as calculated by VDDT.

- *Table B. 57 ASQ Acres - Vegetation Management Practices Annual Estimated Harvest Acres in 1st Decade from Suitable Lands.*

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt7R
REGENERATION HARVEST	**Acres**	**Acres**	**Acres**	**Acres**	**Acres**	**Acres**	**Acres**	**Acres**
A. Clearcut								
With and without reserve leave trees	1,010	820	1,170	340	330	210	380	230
B. Shelterwood and Seed Tree								
Preparatory Cut	110	160	170	60	60	40	40	180
Seed Cut	370	360	470	170	140	180	170	40
Removal Cut								
Selection	10	10	10	30	20	10	20	50
INTERMEDIATE HARVEST								
Commercial Thinning	20	30	30	20	20	10	20	40
Salvage/Sanitation	50	50	50	40	40	40	50	70
TOTAL ASQ ACRES	**1,570**	**1,430**	**1,900**	**660**	**610**	**490**	**680**	**610**
TIMBER STAND IMPROVEMENT	310	280	370	130	120	100	130	360
REFORESTATION[1]	550	500	650	230	210	170	230	280

1 Includes natural and artificial.

• *Table B. 58 ASQ Volume - Summary of Allowable Sale QuantityAnnual Estimated Harvest Volume (CCF) in 1st Decade*

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt7R
REGENERATION HARVEST	**CCF**	**CCF**	**CCF**	**CCF**	**CCF**	**CCF**	**CCF**	**CCF**
A. Clearcut								
With and without reserve leave trees	7,900	6,660	7,930	1,910	1,910	1,450	2,050	1,890
B. Shelterwood and Seed Tree								
Preparatory Cut	720	1,140	1,150	320	320	280	360	1,690
Seed Cut	1,580	1,580	2,300	1,030	1,030	1,100	1,100	310
Removal Cut								
Selection	30	30	40	80	80	40	80	480
INTERMEDIATE HARVEST								
Commercial Thinning	70	90	80	60	60	30	60	330
Salvage/Sanitation	300	300	300	100	100	100	300	500
TOTAL ASQ VOLUME	**10,600**	**9,800**	**11,800**	**3,500**	**3,500**	**3,000**	**3,700**	**5,200**

Approximately 100 CCF of the commercial thinning and salvage/sanitation ASQ volume will be non-sawtimber post/pole and commercial firewood harvest.

The sustainable level of timber harvest volume from suited acres is referred to as ASQ and the National Forest Management Act requires an estimation of this outcome. Suited acres are defined by MPC and were discussed above.

Each alternative proposes a level of timber harvest, primarily tied to the amount of acres suitable for timber harvest acres in that alternative. Successional stages in each cover class on suitable lands were treated with silvicuture prescriptions. The resulting harvest volume is the Allowable Sale Quantity (ASQ) for that alternative. The Total Sale Program Quantity (TSPQ) includes the ASQ, firewood harvest from suitable lands, plus timber harvest on unsuitable lands. See Chapter 4, Timber Sale Program section of the EIS, for additional discussion on the ASQ and TSPQ.

ESTIMATION OF TOTAL SALE PROGRAM QUANTITY (TSPQ)

The level of timber harvest volume from forested acres is referred to as Total Sale Program Quantity and the National Forest Management Act requires estimation of this outcome. This total volume amount includes the ASQ.

Estimates of the timber volume generated from mechanical treatments on forested acres were included in the VDDT model to estimate the modeling portion of Total Sale Program Quantity (TSPQ). Yield estimates for the activities within Management Actions, discussed above, were the basis for determining the modeled portion of TSPQ. Table B.59 displays the model-generated portion of Total Sale Program Quantity by Alternative for the Forest as calculated by VDDT. Additional volume estimates from salvage, post and poles, and firewood were added to the model estimates to determine the final amount of Total Sale Program Quantity in the Forest Plans.

• *Table B. 59 Summary of Total Sale Program Quantity Annual Estimated Harvest Acres from Suitable and Unsuitable Lands for 1st Decade*

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt7R
REGENERATION HARVEST	**Acres**	**Acres**	**Acres**	**Acres**	**Acres**	**Acres**	**Acres**	**Acres**
A. Clearcut								
With and without reserve leave trees	1,010	820	1,170	340	330	210	380	460
B. Shelterwood and Seed Tree								
Preparatory Cut	200	370	430	80	70	40	40	450
Seed Cut	370	360	490	170	140	180	180	40
Removal Cut								
Selection	10	10	30	20	10	20	50	50
INTERMEDIATE HARVEST								
Commercial Thinning	20	30	30	20	20	10	20	40
Salvage/Sanitation	50	50	50	40	40	40	50	70
TOTAL TSPQ ACRES	**1,680**	**1,670**	**2,190**	**710**	**650**	**495**	**700**	**1,100**

• *Table B. 60 Summary of Total Sale Program QuantityAnnual Estimated Harvest Volume (CCF) for 1st Decade*

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt7R
REGENERATION HARVEST	**CCF**	**CCF**	**CCF**	**CCF**	**CCF**	**CCF**	**CCF**	**CCF**
A. Clearcut								
With and without reserve leave trees	8,050	6,910	8,130	2,080	2,080	1,450	2,050	3,780
B. Shelterwood and Seed Tree								
Preparatory Cut	1,310	1,500	2,890	430	370	280	360	2,530
Seed Cut	370	360	470	170	140	180	170	310
Removal Cut								
Selection	10	10	10	30	20	10	20	480
INTERMEDIATE HARVEST								
Commercial Thinning	20	30	30	20	20	10	20	330
Salvage/Sanitation	4,840	4,890	4,570	1,870	1,970	1,930	2,280	2,270
TOTAL TSPQ VOLUME	**14,600**	**13,700**	**16,100**	**4,600**	**4,600**	**4,000**	**4,900**	**9,700**

TSPQ salvage volume includes estimated total sawtimber salvage and personal use firewood harvest from all lands.

In the first decade, Alternatives 1-3 emphasize clearcutting in the mixed conifer type and shelterwood seed step harvest in Douglas-fir, focusing primarily on ASQ volume on suitable lands, including roadless areas. Harvest on unsuitable lands, i.e. those with prescription emphasis other than timber harvest, is limited preparatory shelterwood harvests in conifer and a minor amount of clearcutting in aspen. Alternatives 4-7, with RACI constraints restricting harvest in roadless areas, have a similar but reduced harvest emphasis, with Alternatives 6 and 5 having the lowest harvest level.

Unsuitable land harvest is minor with none in Alternatives 6. Alternative 7R has a reduced emphasis on clearcutting in mixed conifer types on suitable lands, but an increased emphasis on preparatory shelterwood harvests. In mixed conifer and Douglas fir, the prepartatory shelterwood treatments are designed to select and leave younger, healthy mature Douglas fir and lodgepole pine for future seed trees. Where aspen is an early seral species in conifer stands, these treatments are also designed to restore aspen. Alternative 7R also increases emphasis on selection harvest in the Englemann spruce/subalpine fir cover type over other alternatives. Unsuitable land harvest is greatest for Alternative 7R among all alternatives, emphasizing clearcutting in the aspen cover type and preparatory shelterwood harvests in conifer designed primarily to restore aspen.

NON-DECLINING YIELD

Non-Declining yield of timber harvest volume was determined for each alternative. A minimum/maximum treatment acreage was specified in VDDT and probabilities were adjusted; then, successive runs were made of the model for each alternative until the resulting harvest volume varied by no more than 20 percent per decade over ten decades. Adhering to this constraint was a key determinant in setting harvest probabilities.

Long-Term Sustained Yield Capacity

A Long Term Sustained Yield Capacity (LTSYC) attribute is included in the VDDT model, which calculates this figure. See Chapter 4, Timber Sale Program section of the EIS, for the LTSYC by alternative.

Issue 8

Roadless Area Management and Recommended Wilderness

The **Wilderness Recommendation** Analysis is located in **Appendix C** of this document. The Forest assembled an ad hoc team consisting of Planning Team members and Recreational Specialists from each District. The team met over a period of a year. Using the six Wilderness characteristics, they reviewed and evaluated the attributes of each of the thirty-four Roadless Areas using those criteria. As part of the review, they incorporated findings from the 1996 Roadless Reinventory Report that shows past activities in each of the Roadless Areas over the last ten to fifteen years. From this information, the team gave each Roadless Area a new Wilderness Attribute Rating (WAR). They then compared the updated WARs ratings to the 1985 Plan. See Appendix C for more detailed information.

The **Roadless Area Re-evaluation** is located in **Appendix R** of this document. The Forest Planning Team and District representatives met over the past year to re-evaluate management of IRA's in absence of the Roadless Area Conservation Initiative (RACI). Using the nine characteristics of IRA's identified in the RACI, the Forest reviewed and evaluated the attributes of each of the thirty-four Roadless Areas. As part of the review, they incorporated findings from the 1996 Roadless Reinventory Report that shows past activities in each of the Roadless Areas over the last ten to fifteen years, the updated WAR ratings, public comments on the Draft EIS. Using this information, the Team recommended prescriptions for managing the IRA's. Existing management prescriptions were used and many different prescriptions could be applied on the same IRA. See Appendix R for more detailed information.

Issue 9

Wildlife Habitat Management

Detailed information on the analysis processes used in this Final EIS is in Appendix D. This separate appendix explains in detail the rationale use for analyzing potential effects to Big Game and the Viability Analysis as required by NFMA. The Fish Population and Rare Plant Viability Evaluations are also included in Appendix D.

The following calculations show how the smoke emission numbers were calculated for Table 4.122 of the EIS.

SMOKE ANALYSIS (PM10) IN TIMBER/MIXED CONIFERS/ASPEN

All emission amounts were derived from Table 4.116 PM_{10} Emission by Vegetation type in the FEIS.

ALTERNATIVE 1

0 Acres treated
No Smoke

ALTERNATIVE 2

1,740 Acres treated of Conifer, Mixed Conifer, Aspen

Conifer, Aspen, Mixed Conifer = 822.0 lbs/AC emitted
Aspen = 236.0 lbs/AC emitted
1058 lbs/AC/2 = **529 lbs/AC Ave.**

529 lbs/AC x 1,740 AC treated = 920,460 lbs/2000 lbs/ton = **460 tons**

ALTERNATIVE 3

1,990 Acres treated of Douglas Fir, Lodgepole Pine, Mixed Conifer

Spruce/Fir = 822 lbs/AC emitted
Lodgepole Pine = 503 lbs/AC emitted
Douglas Fir = 488 lbs/AC emitted
1,813 lbx/AC/3 = **604 lbs/AC Ave.**

604 lbs/AC x 1,990 AC treated = 1,202,623 lbs/2000 lb/ton = **601 tons**

ALTERNATIVE 4

4,990 Acres treated of Mixed Conifer, Conifer, Aspen

Mixed Confier, Conifer = 822 lbs/AC emitted
Aspen = 236 lbs/AC emitted
1,058 lbs/AC/2 = **529 lbs/AC Ave.**

529 lbs/AC x 4,990 AC treated = 2,639,710 lbs/2000 lbs/ton = **1,320 tons**

ALTERNATIVE 5

1,920 Acres treated of Mixed Conifer, Conifer, Aspen
Mixed Conifer, Conifer = 822 lbs/AC emitted
Aspen = 236 lbs/AC emitted
1,058 lbs/AC/2 = **529 lbs/AC Ave.**

529 lbs/AC x 1,920 AC treated = 1,015,680 lbs/2000 lbs/ton = **508 tons**

ALTERNATIVE 6

2,080 Acres treated of Aspen, Mixed Conifer, Conifer

Mixed Conifer, Conifer = 822 lbs/AC emitted
Aspen = 236 lbs/AC emitted
1,058 lbs/AC/2 = **529 lbs/AC Ave.**

529 lbs/AC x 2,080 AC treated = 1,100,320 lbs/2000 lbs/ton = **550 tons**

ALTERNATIVE 7

2,680 Acres treated of Conifer, Mixed Conifer, Aspen

Mixed Conifer, Conifer = 822 lbs/AC emitted
Aspen = 236 lbs/AC emitted
1,058 lbs/AC/2 = **529 lbs/AC Ave.**

529 lbs/AC x 2,680 AC treated = 1,417,720 lbs/2000 lbs/ton = **709 tons**

ALTERNATIVE 7R

3,500 Acres treated of Conifer, Mixed Conifer, Aspen

Mixed Conifer, Conifer = 822 lbs/AC emitted
Aspen = 236 lbs/AC emitted
1,058 lbs/AC/2 = **529 lbs/AC Ave.**

529 lbs/AC x 3,500 AC treated = 1,851,500 lbs/2000 lbs/ton = **926 tons**

PM 2.5 PORTION OF TOTAL PM_{10} IN TIMBER/MIXED CONIFER/ASPEN

All emission amounts were derived from Table 4.116 PM_{10} Emission by Vegetation type in the FEIS.

ALTERNATIVE 1

0 Acres treated
No Smoke

ALTERNATIVE 2

1,740 Acres treated of Conifer, Mixed Conifer, Aspen

Mixed Conifer, Conifer = 697.5 lbs/AC emitted
Aspen = 200.0 lbs/AC emitted
897.5 lbs/AC/2 = **448.75 lbs/AC Ave.**

448.75 lbs/AC x 1,740 AC treated = 720,825 lbs/2000 lbs/ton = **389 tons**

ALTERNATIVE 3

1,990 Acres treated of Douglas Fir, Lodgepole Pine, Mixed Conifer

Spruce/Fir = 697.5 lbs/AC emitted
Lodgepole Pine = 427.0 lbs/AC emitted
Douglas Fir = 414.0 lbs/AC emitted
1538.5 lbs/AC/3 = **513 lbs/AC Ave.**

513 lbs/AC x 1,990 AC treated = 1,020,538/2000 lbs/ton = **511 tons**

ALTERNATIVE 4

4,990 Acres treated of Conifer, Mixed Conifer, Aspen

Mixed Conifer, Conifer = 697.5 lbs/AC emitted
Aspen = 200.0 lbs/AC emitted
897.5 lbs/AC/2 = **448.75 lbs/AC Ave.**

448.75 lbs/AC x 4,990 AC treated = 2,240,510/2000 lbs/ton = **1,118 tons**

ALTERNATIVE 5

1,920 Acres treated of Conifer, Mixed Conifer, Aspen

Mixed Conifer, Conifer = 697.5 lbs/AC emitted
Aspen = 200.0 lbs/AC emitted
897.5 lbs/AC/2 = **448.75 lbs/AC Ave.**

448.75 lbs/AC x 1,920 AC treated = 860,160 lbs/2000 lbs/ton = **430 tons**

ALTERNATIVE 6

2,080 Acres treated of Conifer, Mixed Conifer, Aspen

Mixed Conifer, Conifer = 697.5 lbs/AC emitted
Aspen = 200.0 lbs/AC emitted
897.5 lbs/AC/2 = **448.75 lbs/AC Ave.**

448.75 lbs/AC x 2,080 AC treated = 931,840 lbs/2000 lbs/ton = **466 tons**

ALTERNATIVE 7

2,680 Acres treated of Conifer, Mixed Conifer, Aspen

Mixed Conifer, Conifer = 697.5 lbs/AC emitted
Aspen = 200.0 lbs/AC emitted
897.5 lbs/AC/2 = **448.75 lbs/AC Ave.**

448.75 lbs/AC x 2,680 AC treated = 1,200,640 lbs/2000 lbs/ton = **600 tons**

ALTERNATIVE 7R

3,500 Acres treated of Conifer, Mixed Conifer, Aspen

Mixed Conifer, Conifer = 697.5 lbs/AC emitted
Aspen = 200.0 lbs/AC emitted
897.5 lbs/AC/2 = **448.75 lbs/AC Ave.**

448.75 lbs/AC x 3,500 AC treated = 1,568,000 lbs/2000 lbs/ton = **784 tons**

SMOKE ANALYSIS – PM_{10} IN SAGEBRUSH/MOUNTAIN SHRUB

All emission amounts were derived from Table 4.116 PM_{10} Emission by Vegetation type in the FEIS.

ALTERNATIVE 1

13,000 Acres treated

Sagebrush = 62.5 lbs/AC emitted

62.5 lbs/AC x 13,000 AC treated = 812,500 lbs/2000 lbs/ton = **406 tons**

ALTERNATIVE 2

7,750 Acres treated

Sagebrush is 62.5 lbs/AC emitted

62.5 lbs/AC x 7,750 AC treated = 484,375 lbs/2000 lbs/ton = **242 tons**

ALTERNATIVE 3

10,000 Acres treated

Sagebrush = 62.5 lbs/AC emitted

62.5 lbs/AC x 10,000 AC treated = 625,000 lbs/2000 lbs/ton = **312 tons**

ALTERNATIVE 4

7,750 Acres treated

Sagebrush = 62.5 lbs/AC emitted

62.5 lbs/AC x 7,750 AC treated = 484,375 lbs/2000 lbs/ton = **242 tons**

ALTERNATIVE 5

7,080 Acres treated

Sagebrush = 62.5 lbs/AC emitted

62.5 lbs/AC x 7,080 AC treated = 442,500 lbs/2000 lbs/ton = **221 tons**

ALTERNATIVE 6

6,000 Acres treated

Sagebrush = 62.5 lbs/AC emitted

62.5 lbs/AC x 6,000 AC treated = 375,000 lbs/2000 lbs/ton = **187 tons**

ALTERNATIVE 7

7,975 Acres treated

Sagebrush = 62.5 lbs/AC emitted

62.5 lbs/AC x 7,975 AC treated = 498,437 lbs/2000 lbs/ton = **249 tons**

ALTERNATIVE 7R

4,000 Acres treated

Sagebrush = 62.5 lbs/AC emitted

62.5 lbs/AC x 4,000 AC treated = 250,000 lbs/2000 lbs/ton = **125 tons**

SMOKE ANALYSIS – $PM_{2.5}$ PORTION OF PM_{10} IN SAGEBRUSH/MOUNTAIN SHRUB

All emission amounts were derived from Table 4.116 PM_{10} Emission by Vegetation type in the FEIS.

ALTERNATIVE 1

13,000 Acres treated

Sagebrush = 53.0 lbs/AC emitted

53.0 lbs/AC x 13,000 AC treated = 689,000 lbs/2000 lbs/ton = **344 tons**

ALTERNATIVE 2

7,750 Acres treated

Sagebrush = 53.0 lbs/AC emitted

53.0 lbs/AC x 7,750 AC treated = 410,750 lbs/2000 lbs/ton = **205 tons**

ALTERNATIVE 3

10,000 Acres treated

Sagebrush = 53.0 lbs/AC emitted

53.0 lbs/AC x 10,000 AC treated = 530,000 lbs/2000 lbs/ton = **265 tons**

ALTERNATIVE 4

7,750 Acres treated

Sagebrush = 53.0 lbs/AC emitted

53.0 lbs/AC x 7,750 AC treated = 410, 750 lbs/2000 lbs/ton = **205 tons**

ALTERNATIVE 5

7,080 Acres treated

Sagebrush = 53.0 lbs/AC emitted

53.0 lbs/AC x 7,080 AC treated = 375,240 lbs/2000 lbs/ton = **188 tons**

ALTERNATIVE 6

6,000 Acres treated

Sagebrush = 53.0 lbs/AC emitted

53.0 lbs/AC x 6,000 AC treated = 318,000 lbs/2000 lbs/ton = **159 tons**

ALTERNATIVE 7

7,975 Acres treated

Sagebrush = 53.0 lbs/AC emitted

53.0 lbs/AC x 7,975 AC treated = 422,675 lbs/2000 lbs/ton = **211 tons**

ALTERNATIVE 7R

4,000 Acres treated

Sagebrush = 53.0 lbs/AC emitted

53.0 lbs/AC x 4,000 AC treated = 212,000 lbs/2000 lbs/ton = **106 tons**

Caribou-Targhee NF

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Final Environmental Impact Statement

Caribou Revised Forest Plan
Appendix C—Wilderness Recommendation

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Appendix C Wilderness Recommendation

This appendix describes the process used to evaluate inventoried roadless areas, IRAs, on the Caribou National Forest for their potential as wilderness. Each of the thirty-four roadless areas is summarized in an individual report describing the IRA's capability for wilderness, current and future resource uses, and the need for the area to be included in the National Wilderness Preservation System. Additional information on the history and inventory of the Caribou National Forest roadless areas can be found in Appendix R and the Roadless Area section of the Revision FEIS.

INTRODUCTION

Past roadless inventories, such as the 1985 Forest plan roadless inventory, were used as a starting point to identify roadless and wilderness resources on the CNF. The area boundaries were updated in 1996 based on criteria in the FSH 1909.12 Inventory and Evaluation of Roadless Areas. The analysis and data gathered for Appendix R, the Roadless Area Re-evaluation, was used in this evaluation, also. For more information on individual IRAs' uses and values as un-roaded parcels of land, see Appendix R.

As defined in FSH 1909.12, Chapter 7, each roadless area was evaluated for potential wilderness in terms of three primary criteria:

- **Availability** – Other resource demands and uses of an area. Consideration of current constraints or encumbrances are important.

- **Capability** – The degree to which the area contains the basic characteristics that makes it suitable for wilderness designation without regard to its availability or need a wilderness. Characteristics such as naturalness of the environment, the presence of challenging and primitive experiences and feelings of solitude are evaluated. Another aspect considered is the ability to manage the area as wilderness. Factors such as size, shape, and an area's relationship to external influences are considered when determining recommended boundaries.

- **Need** – The degree to which it contributes to the local and national distribution of wilderness. This analysis considers the demand for additional wilderness recreation opportunities, as well as the need to give certain ecosystems and landforms protection that wilderness designation can afford.

The evaluation discusses each criterion for each IRA. Some IRAs possess more of the described wilderness characteristics than others. FSH 1909.12 Chapter Seven states, "The combination of basic natural characteristics are of infinite variety. No two areas possess these characteristics in the same measure." IRAs also vary in their availability and how well they fulfill the "need" for wilderness designation. Each IRA is unique in how it satisfies the three criteria. The evaluation does not "rank" IRAs numerically with each other. Below is a discussion of how each criterion was addressed for the individual IRAs.

AVAILABILITY

Past, present and future uses are listed, such as special use authorizations, type and level of recreation use, mineral activities and past timber harvest. No value ratings were used to describe an inventoried roadless area's availability.

CAPABILITY

The capability assessment describes to what degree an IRA possesses the six characteristics of wilderness:

- Natural Integrity

- Apparent Naturalness
- Opportunity for Solitude
- Opportunity for Primitive Recreation
- Challenging Experiences
- Special ecological, geological, or cultural features

The IRA's characteristics are described using the relative rankings of low, moderate, high, and very high. These rankings help illustrate the quality of an IRA's wilderness character.

An area that has little development or human use might be rated as "very high" for natural integrity and apparent naturalness. As defined in FSH 1909.12.7.11(a), roadless areas may qualify for inventory as potential wilderness even though they include minor facilities or evidence of human activity, such as historic mining, communication sites, fences, and unimproved travel ways. In evaluating these areas for wilderness capability; the presence of minor developments affects an area's natural integrity and apparent naturalness. An area with some evidence of human activity would rate "high" or "moderate" depending on the degree of development and how visually evident the facility or activity is. An area with many evident facilities and past human activities would be described as "low" for naturalness of the environment.

An IRA might rate "high" for natural appearance, but "low" for solitude or primitive recreation if the area is small in size or has adjacent developments that can be seen and heard from the interior of the IRA. Large areas usually offer a stronger opportunity for solitude than small, narrow or irregularly shaped IRAs.

The presence of challenging experiences within an IRA is commonly related to extreme topography or large acreage. An IRA with a demanding rock climbing area would be rated "high" for challenging experience. An area with flat or typical terrain would rate "low."

Special features include historical sites or routes, rare geological areas, areas with unique recreation activity or important wildlife habitat. Special features within IRAs are considered for their value as a wilderness resource and for their special management needs.

The manageability of the IRA for wilderness is also considered within the capability assessment. When discussing "manageability," or the size and shape of the area, the 1996 inventoried roadless boundaries are used. An area with few "cherry stemmed" roads or intrusions would rate "good" for manageability. A small, narrow area with many intrusions would rate "fair" or "poor" for manageability. Often an interior or exterior boundary could be mapped that would improve the ability to manage a given area as wilderness. These opportunities are noted in the discussion.

NEED

Need is considered from two perspectives: social and biological. Social need considers local and national distribution and recreation opportunities provided by the National Wilderness Preservation System. An area that would provide a primitive rock climbing opportunity in a region with no similar opportunities would rate "high" towards fulfilling this social need. An IRA that has a high alpine lake setting where there are numerous alpine lake settings might rate a "moderate" or "low" for need, depending on demand for this recreation setting. An IRA that would add a unique ecosystem to the National Wilderness Preservation System would rate "high" for biological need. An IRA that has typical landforms and vegetation, which are already represented in the National Wilderness Preservation System, may rate "low" for biological need. Ratings for non-motorized recreation needs and wildlife and fish habitat were taken from resource data gathered for Appendix R.

WILDERNESS RECOMMENDATIONS BY ALTERNATIVE

Alternatives 1 and 2 - Core areas of Worm Creek and Mt. Naomi Roadless Areas.

Alternative 3 - No recommendation.

Alternative 4 - Core areas of Mt. Naomi, Caribou City and Stump Roadless Areas.

Alternative 5 - Core areas of Worm Creek, Mt. Naomi and Caribou City Roadless Areas.

Alternative 6 - Entire roadless areas of Worm Creek, Mt. Naomi, Elkhorn Mountain, Bear Creek, Caribou City, Stump Peak, Gannett-Spring Creek and Red Mountain Roadless Areas.

Alternatives 7 and 7R - Core areas of Mt. Naomi and Caribou City Roadless Areas.

AVAILABILITY AND CAPABILITY OF THE CARIBOU NATIONAL FOREST'S 34 ROADLESS AREAS

Areas inventoried for wilderness potential with the highest capability, as defined in FSH 1909.12-7.21, include Caribou City, Mt. Naomi, Stump Peak, Worm Creek, and Mink Creek Inventoried Roadless Areas.

Mt. Naomi Roadless Area has high capability that is enhanced by its adjacency to the Mt. Naomi Wilderness in Utah. All alternatives, with the exception of Alternative 3, recommend this area for wilderness designation and manage the area for non-motorized use in the summer. Mt. Naomi Roadless Area and Mt. Naomi Wilderness Area together offer over 59,000 acres for primitive and semi-primitive non-motorized summer recreation.

Caribou City has high capability and unique or special features of historic mining and a "primitive" hunting experience. Portions of the Caribou City roadless area have historic mining sites and the remains of two mining towns. There is a high public interest in these historic features. Caribou City Roadless Area also offers an area of good elk habitat that is managed as non-motorized. This is one of the few areas in southeast Idaho that offers a "primitive" elk hunting experience. Alternatives 1, 2, and 3 do not recommend any portion of the Caribou City Roadless Area as wilderness. Alternatives 4, 5, 7, and 7R propose the core non-motorized area of Caribou City Roadless Area as recommended wilderness. Alternative 6 proposes to manage the entire Caribou City Roadless Area as recommended wilderness, which would protect the historic area, but could make research and visitor interpretation more difficult. Alternative 7 and 7R propose to manage the historic areas of Caribou City Roadless Area under a special area prescription emphasizing visitor interpretation and research. A special area prescription on the historic portion of the roadless area would protect and interpret historic values while providing for recreation opportunities both motorized and non-motorized.

Worm Creek Roadless Area has high capability and the unique feature of an alpine lake. Bloomington Lake is popular year-round for hiking, sight-seeing, swimming, fishing, and snowmobiling. Bloomington Lake lies in a glacial cirque and offers unique flora and fauna. Alternative 1, 2, 4, and 5 recommend a core portion of the Worm Creek Roadless Area for wilderness, which would maintain these unique resources. Alternative 6 proposes to manage the entire Worm Creek roadless area as recommended wilderness, which could make research, visitor interpretation and management more difficult. Alternatives 7 and 7R manage the Bloomington Lake area with a special emphasis prescription that would manage the area for non-motorized recreation, interpretation, and research, which would also maintain and protect lake resources, while maintaining or enhancing the recreation experience.

Stump Creek has high capability and the unique feature of the historic Lander Trail. Many people visit portions of the historic wagon-road established in 1859 as an alternative route for the California-Oregon Trail migration. Portions of the Lander Trail route are managed as non-motorized in the snow-free season, protecting the remnants of the wagon-road and the extensive rockwork in Terrace Canyon. The rest of Stump Peak roadless area is managed for motorized use. Alternatives 1, 2, 3, 5, 7, and 7R do not recommend any portions of Stump Creek Roadless Area for wilderness. Alternative 4 recommends a core area of Stump Peak for wilderness designation, but not the Lander Trail corridor. Alternative 7R proposes to manage the Lander Trail Corridor as a combination of motorized and non-motorized recreation under a special emphasis prescription that manages for visitor interpretation and research.

Mink Creek Roadless Area in the Bear River Range has high capability, but it is small in size and would be difficult to manage as a wilderness. It was not recommended for wilderness in any alternatives.

All National Forest System lands found to meet wilderness capability requirements generally are available for wilderness consideration. However, the availability is constrained by a determination of the value of and need for the wilderness resource relative to the value and need of the other resources for the site. To be available for wilderness, the wilderness values of the resource, both tangible and intangible, should exceed the value of other resources that formal wilderness designation would preclude. Lands that generally are best suited for development and intensive management for sustained-yield production or resources other than Wilderness include the following:

- Areas in which the need for increased water production and on site storage is vital.

- Lands that are needed for application of wildlife management measures of considerable magnitude.
- Highly mineralized areas of strategic and economic importance.
- Areas containing natural phenomena of unique or outstanding nature where public access and development is needed.
- Lands meeting clearly documented resource demands such as timber, mineral production or developed recreation such as winter sports sites.
- Lands committed through contractual agreements for use, purposes, or activities not in concert with the requirements of the Wilderness Act.

Individual narratives discuss the existing uses of roadless areas, and the wilderness characteristics table displays existing uses that may not be compatible with retaining wilderness characteristics, or may not be compatible with wilderness recommendation. Roadless areas with known phosphate potential or existing phosphate leases include Dry Ridge, Mead Peak, Sage Creek, Schmid Peak, and Stump Peak. Roadless areas that have a unique or outstanding feature where public access and development is needed include portions of Caribou City, Stump Creek and Worm Creek.

NEED

FSH 1909.12-7.23 directs the Forest Service to "determine the need for an area to be designated as wilderness through an analysis of the degree to which it contributes to the local and national distribution of Wilderness." Need is addressed on a national basis and is evaluated in terms of the geographical distribution of areas, representation of landforms and ecosystems, and the presence of wildlife expected to be visible in Wilderness. Assessment of need is divided into two categories: biological need (landform representation and biodiversity) and social need (outdoor recreation opportunities).

BIOLOGICAL NEED:

Six designated wilderness areas represent high elevation landscapes and ecosystems of the region. The Mt. Naomi Wilderness in Northern Utah represents an alpine ecosystem with many lakes and streams, vegetation includes aspen and mixed conifer. The Bridger Wilderness has an elevation range of 13,804 feet to 8,000 feet above sea level and represents a variety of glacial landforms and habitat for moose, deer, elk and bighorn sheep. The Teton Wilderness has an elevation range of 7,500 feet to 12,165 feet above sea level and offers habitat for trumpeter swans, grizzly and black bears, and bighorn sheep. The Jedediah Smith Wilderness also represents a high elevation ecosystem at approximately 10,000 feet above sea level on the "backside" of the Tetons. The Winegar Hole Wilderness Area represents landforms of volcanic origin, elevations range from 6,020 feet to 6,985 feet above sea level. Vegetation types include lodgepole pine, Douglas-fir and subalpine fir. This area is prime habitat for grizzly bear and trumpeter swan. (Wilderness Preservation System, on-line data, USFS). Lower elevation vegetation types could be represented in the wilderness system, with the recommendation of the entire roadless areas of Elkhorn (5,500 to 9,095 feet above sea level), Red Mountain (6,300 feet to 8,727 feet above sea level) and Caribou City (6,000 feet to 9,803 feet above sea level) in Alternative 6. Alternatives 1, 2, 4, 5, 7, and 7R recommend areas within an elevation range of 7,000 feet to 9,803 feet above sea level.

SOCIAL NEED:

Approximately 4,006,000 acres have been designated as Wilderness in Idaho. Over 760,000 acres have been designated as Wilderness in Utah, and over 2,922,000 acres have been designated in Wyoming (Wilderness Preservation System, on-line data, USFS). Wilderness opportunities in Idaho and adjacent states are well distributed and accessible to most area communities.

BEAR CREEK ROADLESS AREA #04615 (21,048 ACRES)

Location and Access

Bear Creek is located in Bonneville County, Idaho. The area includes most of the Caribou Range between Fall Creek Road on the north, McCoy Creek Road on the south, and Bear Creek-Jensen Road on the east. 2,800 acres of the IRA are on the Targhee National Forest and managed under the Revised Targhee Forest Plan.

Setting

The topography is moderately steep, characterized by parallel ridges. Elevations range from 6,000 feet above sea level to 9,400 feet above sea level. Vegetation includes large open areas of grass and brush interspersed with aspen stands. Conifer stands include scattered patches of Douglas-fir and lodgepole pine.

AVAILABILITY

Vegetation Treatment - No recent timber management activities have occurred in this IRA. Most of the area supports grass and shrub cover.

Recreation - In the summer, most of the area is managed for semi-primitive non-motorized experiences. In the winter, the area is managed as motorized. Recreation use includes horseback riding and deer hunting. The Targhee portion of Bear Creek IRA is managed for motorized recreation, on designated routes.

Minerals - The area has no current oil or gas leases. The area has patented claims and past mining activity on the southern boundary.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - Special use authorizations within the area include outfitting and guiding for big game and a communication tower. No State or private lands occur within the IRA.

Roads and Trails - No system roads occur in this IRA; there is one mile of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "moderate to low;" human activities are very evident, including unimproved roads and mineral prospects.

Remoteness and Solitude are rated as "moderate," due to the IRA's size and existing road intrusions.

Opportunities for primitive recreation and challenging experiences are considered "moderate" due to size and road intrusions.

Special Features or Attractions include good elk habitat.

Manageability of the area would be "fair," due to road intrusions.

NEED

The area received a "moderate" rating for unique landforms, but a "high" rating for non-motorized recreation needs. It has "high" values for fish and wildlife habitat. The nearest designated wilderness is the Jedediah Smith Wilderness. During the Forest Plan Revision process, some public interest was expressed to recommend the area for wilderness, based on erodible soils and wildlife values. Other public comments were against recommending the area for wilderness. Idaho conservation groups have suggested the area for wilderness designation. This area was included in the 1985 Forest Plan Settlement Agreement in which the Forest agreed to prohibit timber harvest in the IRA until the year 2000.

BONNEVILLE PEAK ROADLESS AREA #04154 (32,170 ACRES)

Location and Access

Bonneville Peak Roadless Area is in Bannock and Caribou counties on the Westside Ranger District. The area lies four miles east of Inkom, Idaho. Major road access includes the Pebble Creek Road, Green Canyon Road, Inman Creek Road and Bell Canyon Road. Lands within the area were once Shoshone-Bannock Indian lands and are now subject to Indian Treaty Rights.

Setting

The topography of the IRA is typical for Southeast Idaho. Terrain varies from very steep rocky ledges to moderately sloping valleys and basins. Bonneville Peak is 9,260 feet above sea level. The lowest elevation is 5,500 feet above sea level. Vegetation includes brush and grass-covered slopes with some aspen. Narrow stands of Douglas-fir and lodgepole pine are found on high north facing slopes.

AVAILABILITY

Vegetation Treatment - The area does not have recent timber sales; past timber harvest is evident along roads.

Recreation - The area has the Boundary National Recreation Trail, popular with horseback riders and OHV users. Big Springs Campground and Pebble Creek Ski Area are on the west and south boundaries respectively. Portions of the area are very popular with back-country skiers and snowmobilers.

Minerals - The area has no current oil or gas leases.

Range - Cattle are authorized to graze most of the area.

Water - The area has no municipal water use.

Land Uses - This IRA has two special use authorizations: one for outfitting and guiding, one for a slurry pipeline. Approximately 1,480 acres of State or private lands occur within the IRA.

Roads and Trails - The area has no system roads, but there are thirty-seven miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "high," with evidence of some human activities such as unimproved roads.

Remoteness and Solitude are rated as "moderate," because of minimal screening of valley developments.

Opportunities for primitive recreation and challenging experiences are considered "moderate" due to the area's limited size and road intrusions.

Special Features or Attractions include a popular back-country skiing area.

Manageability of the area is considered "poor," due to road intrusions. Locating boundaries on natural features and eliminating road corridors could achieve a core area.

NEED

The area is rated as "moderate to high" for unique landforms and winter non-motorized recreation needs. It has "moderate" values for wildlife habitat and research purposes. The nearest designated wilderness is Mt. Naomi. During the Forest Plan revision process, limited public interest was expressed for recommending the area for wilderness. The area was included in a 1985 Forest Plan Settlement Agreement. Other public comments were against recommending the area for wilderness.

CARIBOU CITY ROADLESS AREA #04161 (79,013 ACRES)

Location and Access

Caribou City Roadless Area is in Bonneville County on the Soda Springs Ranger District and the Palisades Ranger District, which is managed under the revised Targhee Forest Plan. The area lies one mile east of the Grays Lake National Wildlife Refuge, and .25 miles southwest of the Palisades Reservoir. Approximately 79,000 acres are on the Caribou National Forest. In the 1870s Caribou City was once the center of a brisk gold boom, but is now a ghost town and is listed on the National Register of Historic Places.

Patented and unpatented mining claims are found on Caribou Mountain and McCoy Creek. On the southern portion of the area, McCoy Creek, Caribou City, and Bald Mountain roads provide access to the area. Deep Creek, Jackknife Creek and Cabin Creek roads are on the eastern boundary. The Tincup Highway, State Highway 34, runs along the southern border. The Tincup Road lies on the southwest side. The Morgan Meadows, North Fork of Eagle Creek, and Barnes Creek roads are on the western boundary.

Setting

The topography and geography of the IRA are diverse. Flat benches and basins to steep mountain ridges and side slopes are all represented. Elevations range from 9,803 feet at Caribou Mountain to 6,000 feet above sea level near the Palisades Reservoir. Vegetation includes lodgepole pine, Douglas-fir, sagebrush, mountain brush and aspen.

AVAILABILITY

Vegetation Treatment - No recent timber activity has occurred in the area. Soils are unstable and slumpy.

Recreation - The primary recreation attraction is deer, elk and moose hunting. The core area of the IRA offers the only Primitive recreation experience on the Forest. The northwest portion of the IRA is popular for recreational gold panning.

Minerals - The area has no current oil or gas leases. Patented and unpatented mining claims exist in the area.

Range - Livestock are authorized to graze most of the area.

Water - The area contains no municipal water use.

Land Uses - Special use authorizations include a buried fiber optic line and an above ground powerline along the Tincup Highway. Approximately 280 acres of State or private lands occur within the IRA.

Roads and Trails - The area has no system roads, but there are nine miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "high," with evidence of some human activities such as unimproved roads and historic and current mining activity.

Remoteness and Solitude are rated as "high," because of the area's large size.

Opportunities for primitive recreation and challenging experiences are considered "high" due to large, contiguous acreage.

Special Features or Attractions include good wildlife habitat, primitive non-motorized recreation, and historic mining areas.

Manageability of the area is considered "fair" along roadless boundaries, due to road intrusions. A large core area could be achieved by locating boundaries on natural features, such as watershed or topographic ridges.

NEED

The area is rated "high" for unique landforms and non-motorized recreation needs. It has "high" values for wildlife needs and research purposes. The nearest designated wildernesses are Mt. Naomi and Jedediah Smith Wilderness. During the Forest Plan revision process, high public interest was expressed in recommending the area for wilderness. Other public comments were against recommending the area for wilderness. The area was included in the 1985 Forest Plan Settlement Agreement in which the Forest agreed to prohibit timber harvest in the IRA until the year 2000. A portion of the area was recommended for wilderness in the 1992 Northern Rockies Ecosystem Protection Act Proposed Wilderness and the 1992 Idaho Conservation League Wilderness Proposal.

CLARKSTON MOUNTAIN ROADLESS AREA #04159 (22,454 ACRES)

Location and Access

Clarkston Mountain Roadless Area is in Oneida County, Idaho and Box Elder and Cache counties in Utah on the Westside Ranger District. The area extends from two miles southeast of Malad, Idaho to 1.5 miles north of Plymouth, Utah. Approximately 6,575 acres of the area are in Utah. The area is eighteen miles long and averages about two miles in width. The 1985 Roadless Area Inventory omitted the Utah acres. Road access to the area includes the Two Mile Canyon Road along the north border, the Skyline, Left Fork of Dry Canyon, Steel Canyon, and Black Canyon roads from the east, the Water Canyon Road from the south, and the Gardner Canyon, Burnett Canyon, and Four Mile Canyon roads from the west. The Willow Spring Road (pre-1978) bisects the area.

Setting

The area's topography is steep and rocky with sagebrush, grass, juniper and mountain brush. Small patches of Douglas-fir and aspen occur on some northern slopes. Elevations range from 4,800 feet near Cherry Creek to 8,224 feet at Gunsight Peak.

AVAILABILITY

Vegetation Treatment - No recent timber activity has occurred in this IRA.

Recreation - The entire IRA is managed for a semi-primitive motorized setting in summer. A small campground is adjacent to the east boundary. The area is popular for horse and trail bike riding, snowmobiling, and deer hunting.

Minerals - No current oil or gas leases occur in the IRA.

Range - Livestock are authorized to graze entire area.

Water - The area has no municipal water use.

Land Uses - The IRA has one groomed snowmobile trail and one special use authorization for outfitting and guiding big game. Approximately 560 acres of State or private lands occur within the IRA.

Roads and Trails - There are no system roads, but there are twenty-one miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "moderate," with evidence of some human activities, such as unimproved roads.

Remoteness and Solitude are rated as "low," because of minimal natural screening and the area's small size.

Opportunities for primitive recreation and challenging experiences are considered "low" due to area's small size.

Special Features or Attractions include areas of good deer habitat, and a Research Natural Area.

Manageability of the area is considered "poor," due to narrow width of the area and private in holdings.

NEED

The area is rated "low" for unique landforms and non-motorized recreation needs. It has "moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi. During Forest Plan revision efforts, limited public interest was expressed for recommending the area for wilderness.

DEEP CREEK ROADLESS AREA #04158 (7,089 ACRES)

Location and Access

Deep Creek Roadless Area is within Oneida County, Idaho on the Westside Ranger District of the Caribou-Targhee National Forest. It lies approximately .5 miles east of Malad, Idaho. Access routes to the area include the Deep Creek and Weston Canyon roads along the north and east, Two Mile Canyon and Trail Hollow roads along the southern border, and the Little Valley Road on the western boundary. Interstate 15 is .5 miles away and runs parallel to the western boundary of the IRA.

Setting

Moderate slopes characterized the area, and brush and grass are the predominant vegetation. The area exhibits less topographic relief than is typical for other nearby roadless areas.

AVAILABILITY

Vegetation Treatment - No recent timber activity has occurred in this IRA.

Recreation - Dispersed recreation includes horseback and motorized trail use, snowmobiling and deer hunting. Visitors are attracted to the area, because of its close proximity to the community of Malad. The Deep Creek Reservoir near the eastern border of the area attracts many anglers and campers.

Minerals - No current oil or gas leases occur in the IRA. The area has a "low" locatable mineral potential.

Range - Livestock are authorized to graze entire area. Range improvements are present.

Water - The area has no municipal water use.

Land Uses - Special use authorizations within the IRA include outfitting and guiding big game; two water transmission systems, an area under cultivation, and a pasture. No acres of State or private lands occur within the IRA.

Roads and Trails - The area has no system roads, but there are fourteen miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "moderate." The general appearance of the area is natural due to the steep, inaccessible west-facing slopes that dominate the area. Livestock grazing, unimproved roads and OHV use are evident.

Remoteness and Solitude are rated as "low," because of the area's small size and minimal natural screening.

Opportunities for primitive recreation and challenging experiences are considered low due to area's size.

Special Features or Attractions includes areas of good deer habitat.

Manageability of the area is considered "poor," due to the area's small size and road intrusions.

NEED

The area is rated "low" for unique landforms and non-motorized recreation needs. It has "moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi, approximately thirty air miles east of the area. During the Forest Plan revision process, limited public interest was expressed for recommending the area for wilderness.

DRY RIDGE ROADLESS AREA #04164 (23,306 ACRES)

Location and Access

The Dry Ridge Roadless Area is within Caribou and Bear Lake counties, Idaho on the Soda Springs and Montpelier Ranger Districts of the Caribou-Targhee National Forest. It lies approximately fourteen miles east of Soda Springs, Idaho. The major access roads to the area are Diamond Creek Road on the northeast, the Georgetown Canyon Road along the southeast, and the Slug Creek Road on the western boundary. Other roads into the area include the Left Fork of the Georgetown Canyon Road on the southwest, and the Dry Canyon Road on the west. The area is rich in phosphate ore and is extensively leased.

Setting

The area's topography includes the high, rather uniform, Dry Ridge at about 8,000 feet, although fifty percent of the area gently slopes down to about 6,500 feet. The vegetative cover includes wet and dry meadows, sagebrush, grass, mountain brush, aspen, and conifer stands on north and east-facing slopes.

AVAILABILITY

Vegetation Treatment - No recent timber activity has occurred in the IRA, but there is evidence of past timber harvest.

Recreation - A small campground is located adjacent to the southwest boundary. Dry Ridge IRA receives moderate use for big-game hunting, OHV use, and dispersed camping. Visitors are attracted to the area by the loop road from Georgetown Canyon into Diamond Creek and the "driving for pleasure" opportunities it affords.

Minerals - The area has no current oil or gas leases. Phosphate leases cover much of the Dry Ridge area. Considerable phosphate exploration work is evident within and adjacent to the area. Active mining is underway north of the area in Maybe Canyon and the Mountain Fuel Mine occurs along the west boundary. Patented mining claims border the area on the south.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - The IRA has special use authorizations for outfitting and guiding big game, a railroad spur and a slurry pipeline. No acres of State or private lands occur within the IRA.

Roads and Trails - The area has no system roads, but there are eleven miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "low to moderate," because some human activities are evident including past timber harvest units, unimproved or closed roads, livestock grazing, and extensive evidence of phosphate mining. The general appearance of the area is natural, due to the steep, inaccessible west-facing slopes that dominate the area.

Remoteness and Solitude are rated as "low," because of the area's size and minimal natural screening from adjacent mining activity.

Opportunities for primitive recreation and challenging experiences are considered low due to area's small size.

Special Features or Attractions - No special features have been identified in this IRA.

Manageability of the area is considered "very poor," due to the area's size and numerous human intrusions.

NEED

The area rated as "low" for unique landforms; it has some acres of non-motorized recreation opportunity. It has a "low" value for research purposes. The nearest designated wilderness is Mt. Naomi, approximately forty air miles southwest of the area. During the Forest Plan Revision process little public interest was expressed for recommending the area for wilderness.

ELKHORN MOUNTAIN ROADLESS AREA # 04156 (43,723 ACRES)

Location and Access

The Elkhorn Mountain Roadless Area is within Bannock and Oneida counties, Idaho on the Westside Ranger District of the Caribou-Targhee National Forest. The center of the area is about twelve air miles north of Malad, Idaho. The Wright's Creek National Recreation Trail bisects the southern portion of the IRA. The Elkhorn Mountain Roadless Area is bordered by the Wright's Creek Road to the northwest and Mill Canyon Road to the east. Other roads to the area include Heath Canyon, Limekiln Canyon, and Secret Springs roads on the south; Elkhorn Creek, Bill Morgan Canyon, Indian-Mill Creek, and the Tom Perry Canyon roads on the west; and the South Fork of Hawkins Creek Road on the north.

Setting

The topography of the area is typical for the mountain ranges in this part of Southeast Idaho. The elevation varies from 9,095 feet at Elkhorn Peak to about 5,500 feet near the east and south boundaries. The terrain is generally steep, and the vegetative cover types include sagebrush, grass, mountain brush, and scattered stands of aspen and mountain maple. Narrow stands of Douglas-fir are found on the area's north slopes.

AVAILABILITY

Vegetation Treatment - No recent timber activity has occurred in the IRA.

Recreation - Activities include hunting, camping, OHV and snowmobile use. Summit Campground is located just east of the IRA. Horseback riding, OHV use, and hiking are popular on the Wright's Creek National Recreational Trail. The area is also used for cross-country skiing.

Minerals - No current oil or gas leases occur within this IRA.

Range - Most of the area is authorized for livestock grazing.

Water - The area has no municipal water use.

Land Uses - The IRA has special use authorizations, including outfitting and guiding big game and a power line. Approximately 190 acres of State or private lands occur within the IRA.

Roads and Trails - The area has no system roads, but there are sixty-eight miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "high;" human intrusion is evident as a result of firewood cutting, grazing use, and unimproved roads. A perlite mine is operating on the northwestern border and is visible from the IRA.

Remoteness and Solitude are rated as "low," because of the size and minimal screening from valley developments.

Opportunities for primitive recreation are considered "moderate" due to limited size, but rated as "low" for challenging experiences due to size and lack of challenging terrain.

Special Features or Attractions include areas of good deer habitat.

Manageability of the area is considered "poor" along the inventoried boundaries, but a core area could be achieved by locating a boundary on natural features.

NEED

The area is considered "moderate" for unique landforms; it offers some acres of non-motorized recreation opportunity. It has "moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi, approximately sixty air miles east of the area. During the Forest Plan Revision process scoping moderate public interest was expressed for recommending the area for wilderness to enhance wildlife habitat and provide for non-motorized experiences. Other public comments were against recommending the area for wilderness. Elkhorn Mountain was a settlement area in a 1985 Forest Plan Settlement Agreement in which the Forest agreed to prohibit timber harvest in the IRA until the year 2000.

GANNETT- SPRING CREEK ROADLESS AREA #04111 (IDAHO PORTION) (19,709 ACRES)

Location and Access

The Gannett Spring Creek Roadless Area lies within the Bridger-Teton National Forest in Wyoming (45,122 acres) and the Caribou-Targhee National Forest (19,709 acres) in Idaho. The Gannett Spring Creek Roadless Area (Idaho portion) is within Caribou County, Idaho on the Montpelier Ranger District of the Caribou-Targhee National Forest. During the 1985 Forest planning effort, the Wyoming Wilderness Act was passed by Congress and signed into law on October 30, 1984. This occurred after the Forest's Draft EIS and proposed Forest Plan had been released to the public for review. The Wyoming Wilderness Act either designated areas as wilderness or wilderness study areas, or released the remaining areas to multiple uses other than wilderness. The Wyoming portion of this area was released. As a result, it was no longer required to evaluate the entire area as one unit. The Idaho portion of the IRA is approximately ten miles southwest of Afton, Wyoming. The Forest boundary forms the north and east border. Access to the area from the south is by Elk Valley Road and Ephraim Valley Road. The Crow Creek Road forms much of the western boundary.

Setting

Elevations range from approximately 6,000 feet near Crow Creek to 8,000 feet along mountain ridges near the center of the area. Most of the area is comprised of moderate to gently rolling hills, with steep drainages, typical of the topography of this part of Southeast Idaho. Vegetation includes grasses and sagebrush with stands of Douglas-fir on northern slopes.

AVAILABILITY

Vegetation Treatment - No recent timber activity has occurred in the area.

Recreation - Recreation use includes big-game hunting, fishing, OHV use, and camping.

Minerals - The area has no current oil or gas leases. Exploration wells have been drilled adjacent to the boundary in Elk Valley and to the south on Red Mountain.

Range - Livestock grazing is authorized for most of the area.

Water - The area has no municipal water use.

Land Uses - No special use authorizations for the IRA. Approximately 655 acres of State or private lands occur within the area.

Roads and Trails - The area has no system roads, but there are twelve miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "moderate," because of past vegetation treatments, livestock improvements, and adjacent oil and gas drilling activity.

Remoteness and Solitude are rated as "low," because of the size and minimal screening from valley developments.

Opportunities for primitive recreation are considered "moderate" due to roads and other uses; opportunity for challenging experiences is "low" due to the rolling terrain.

Special Features or Attractions include the Crow Creek Road, which is a popular recreation access road and is located on the old pioneer travel route. Other early pioneer wagon roads exist in the area. Elk Valley Marsh is a unique high elevation wetland. The 200-acre parcel was found to be eligible for further study under the Wild and Scenic Rivers Act. See the Wild and Scenic River section of the FEIS.

Manageability of the area is considered "poor" along inventoried boundaries, but a core area could be achieved by locating a boundary on natural features.

NEED

The area is rated "moderate" for unique landforms; some acres of non-motorized recreation opportunity exist. It has "moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi, approximately 60 air miles west of the area. During the Forest Plan revision process some public interest was expressed for recommending the area for wilderness to enhance wildlife habitat and provide for non-motorized experiences. Other public comments were against recommending the area for wilderness. Gannett Spring Creek was a settlement area in a 1985 Forest Plan Settlement Agreement.

GIBSON ROADLESS AREA #04181 (IDAHO-8,320 ACRES; UTAH-5,347 ACRES)

Location and Access

The area lies in Franklin County, Idaho, and Cache County, Utah. All of the IRA is on the Cache National Forest. The Idaho portion of the IRA is administered by the Montpelier Ranger District of the Caribou-Targhee National Forest, and the Utah portion of the IRA is administered by the Logan Ranger District of the Wasatch-Cache National Forest. The area straddles the Utah-Idaho border and is located about eight miles west of Bear Lake. Access on the north is provided by the Egan Basin Road and on the east by the Beaver Creek Road. The west boundary is formed by Logan River Road. The Gibson Basin Road makes a corridor into the northern edge of the area.

Setting

The average elevation of the area is around 8,500 feet above sea level. The topography is quite gentle with a few steep and rocky slopes. Vegetation cover types include mountain brush, maple, aspen, sagebrush, and grass at lower elevations. Douglas-fir, lodgepole pine, spruce, and subalpine fir occur along northern slopes.

AVAILABILITY

Vegetation Treatment - Most of the conifer stands in the area have been selectively logged in the past. The Franklin Basin timber sale (1996) was just south of the Danish Pass Road and just east of the Franklin Basin Road.

Recreation - The primarily recreation pursuits are snowmobiling, hunting, and camping. A small, low-standard campground exists on the east boundary. The Highline National Recreation Trail is popular with OHV users, equestrians, and day hikers. Portions of the area are popular for back-country skiing.

Minerals - The area has no current oil or gas leases.

Range - Most of the area is authorized for livestock grazing.

Water - The area has no municipal water use.

Land Uses - No recreation special use authorizations exist in the IRA nor are there any State or private lands within the roadless area.

Roads and Trails - The area has no system roads, but there are eleven miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "moderate," because portions of the area have been affected by timber harvest, unimproved roads, recreation use, and grazing. Roads penetrate the area to Horse Lake and Sink Hollow.

Remoteness and Solitude are rated as "moderate," due to road intrusions.

Opportunities for primitive recreation and challenging experiences are considered "low," due to terrain.

Special Features or Attractions include Gibson Lakes.

Manageability is considered "fair," due to existing road intrusions.

NEED

The area is rated "low" for unique landforms and non-motorized recreation needs. It has "moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi, which is adjacent to the area. During the Forest Plan revision process, limited public interest was expressed for recommending this area for wilderness.

HELL HOLE ROADLESS AREA #04168 (5,309 ACRES)

Location and Access

Hell Hole Roadless Area is in Bear Lake County, Idaho on the Montpelier Ranger District of the Caribou-Targhee National Forest. It lies about four miles east of Montpelier, Idaho. The Sheep Creek Road is south of the area, and the Bear Hollow Road cuts a corridor into the southern boundary.

Setting

The topography of the area is moderately steep and characterized by sagebrush and grass-covered slopes, with pockets of Douglas-fir on north and east aspects. Riparian vegetation covers the low areas along Montpelier Creek and Willow Spring. The average elevation of the area is 6,900 feet.

AVAILABILITY

Vegetation Treatment - No recent timber activity has occurred in the area.

Recreation - Most of the area is managed for semi-primitive motorized experiences year-round. Activities include snowmobiling and deer hunting.

Minerals - The area has no current oil or gas leases. Phosphate leases are adjacent to area.

Range - Most of the area is authorized for livestock grazing.

Water - The area has no municipal water use.

Land Uses - There are no special use authorizations within the IRA. There is a FS radio repeater within the IRA. There are no State or private land in-holdings.

Roads and Trails - There are no system roads, but there are eleven miles of motorized system trails.

CAPABILITY

Naturalness of the environment is considered "moderate," because human activities are evident, including unimproved roads and livestock grazing.

Remoteness and Solitude are rated as "low," due to small size of area, and agricultural activities are visible from most of the area.

Opportunities for primitive and challenging experiences are rated as "low," due to the area's small size.

Special Features or Attractions include areas of deer winter range.

Manageability of the area is considered "poor," due to the area's road intrusions. A core area could be achieved by placing boundaries on natural features, but the core area would be smaller than 5,000 acres.

NEED

The area is rated "low" for unique landforms and "low" for non-motorized recreation needs. It has "low to moderate" values for wildlife habitat. The nearest designated wilderness is Mt. Naomi. During the Forest Plan revision process, limited public interest was expressed for recommending the area for wilderness.

HUCKLEBERRY BASIN ROADLESS AREA #04165 (21,100 ACRES)

Location and Access

Huckleberry Basin Roadless Area is in Bear Lake and Caribou counties, Idaho on the Soda Springs Ranger District. The area lies six miles east of Soda Springs. Johnson Creek and Patterson Canyon roads provide access form the north. The Slug Creek Road forms the eastern boundary. The Left Fork of the Georgetown Canyon Road and the Red Pine Canyon Road provide access from the south. Big Canyon, Rattlesnake Canyon, Ninemile Creek, Fossil Canyon, Dry Canyon and Sulphur Canyon roads are found along the western boundary.

Setting

Topography of the area ranges from gentle to very steep. Elevation ranges from 8,302 feet at Sulphur Peak to about 6,000 feet near U.S. Highway 30. Vegetation includes sagebrush, grass, mountain brush, aspen, and patches of Douglas-fir and lodgepole pine on north and east facing slopes. Narrow stands of Douglas-fir and lodgepole pine are found on high, north-facing slopes.

AVAILABILITY

Vegetation Treatment – Recent timber harvest activities are very evident in the area.

Recreation - Dispersed recreation use includes firewood gathering and hunting.

Minerals - The area has no current oil or gas leases. Phosphate leases and areas of high potential occur within the area.

Range - Livestock are authorized to graze most of the area.

Water - The area has no municipal water use.

Land Uses - The area has one special use authorization for outfitting and guiding big game. Approximately 156 acres of State or private lands occur within the IRA.

Roads and Trails - The area has no system roads, but there are twenty-one miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "low," with evidence of unimproved roads, timber harvest activities, and mining.

Remoteness and Solitude rate as "low," because of development.

Opportunities for primitive recreation and challenging experiences are considered "very low" due to roads and timber harvest.

Special Features or Attractions - No special features or attractions have been identified in this IRA.

Manageability of the area is considered "poor," due to road intrusions and timber harvest activities.

NEED

The area is rated as "low" for unique landforms and non-motorized recreation demands. It has "low to moderate" value for wildlife habitat. The nearest designated wildernesses are Mt. Naomi and Jedediah Smith Wilderness. During the Forest Plan revision process limited public interest was expressed for recommending this area for wilderness.

LIBERTY CREEK ROADLESS AREA #04175 (15,150 ACRES)

Location and Access

Liberty Creek Roadless Area is in Bear Lake and Franklin counties, Idaho on the Cache National Forest administered by the Montpelier Ranger District. The area is twelve miles west of Montpelier, Idaho. Access to the unit is from State Highway 36 on the northwest, the Copenhagen Canyon Road and the Power Line Road. Eastern access is from the Green Basin Road.

Setting

The area's topography is moderate with vegetation of mountain brush, aspen, lodgepole pine and Douglas-fir. The average elevation is 7,700 feet above sea level.

AVAILABILITY

Vegetation Treatment - Several timber sales have occurred in this area.

Recreation - Snowmobiling, OHV use, hunting and skiing are popular in the area.

Minerals - The area has no current oil or gas leases. There is "low" potential for phosphate and locatable minerals.

Range - Livestock are authorized to graze most of the area.

Water - The area has no municipal water use.

Land Uses - Two special use authorizations exist in the area: a water transmission ditch and a power line along Copenhagen Canyon. No acres of State or private lands occur within this IRA.

Roads and Trails - The area has no system roads, but there are nineteen miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "low," with evidence of some human activities, such as unimproved roads and timber harvest.

Remoteness and Solitude are rated as "low," due to the area's small size and road intrusions.

Opportunities for primitive recreation and challenging experiences are considered "low" due to the area's small size and road intrusions.

Special Features or Attractions – No special features or attractions have been identified in this IRA.

Manageability of the area is considered "poor" along roadless boundaries, due to road intrusions.

NEED

The area is rated as "low" for unique landforms and non-motorized recreation needs. It has "low to moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi. During the Forest Plan revision effort, limited public interest was expressed for recommending the area for wilderness.

MEAD PEAK ROADLESS AREA #04167 (44,585 ACRES)

Location and Access

Mead Peak Roadless Area is in Caribou and Bear Lake counties, Idaho on the Montpelier Ranger District. The center of this area is about twenty miles southwest of Afton, Wyoming. Road access to the area includes Georgetown Creek and Wells Canyon roads. The South Fork of the Deer Creek Road forms a corridor into the northern boundary. The eastern boundary is formed by the Crow Creek Road, and the southern boundary is the Montpelier Canyon Highway. The Home Canyon Road cuts a deep corridor into the southwestern edge. Bennington Canyon, Pine Canyon, and Little Threemile Canyon roads are found along the western edge of the area.

Setting

The area's topography varies from gently sloping foothills to high, steep, subalpine mountains. Mead Peak is the highest point on the Forest at 9,953 feet above sea level. Conifer stands include Douglas-fir, lodgepole pine, and alpine fir; aspen occurs on all slopes.

AVAILABILITY

Vegetation Treatment - Recent timber harvest activities have occurred in the area.

Recreation - The area is popular for big game hunting, fishing, and camping.

Minerals - The area has no current oil or gas leases. There are phosphate leases within the area.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses -The area has no existing special use authorizations. Approximately 1,267 acres of State or private lands occur within the IRA.

Roads and Trails - There are no system roads, but there are fifty-two miles of motorized system trails.

CAPABILITY

Naturalness of the environment is rated as "moderate," because of the evidence of some human activities, such as unimproved roads and timber harvest activities.

Remoteness and Solitude rate as "moderate," because of road intrusions into the area.

Opportunities for primitive recreation and challenging experiences are considered "moderate" due to area's size, but there are many road intrusions.

Special Features or Attractions include good wildlife and fish habitat. The IRA contains Mead Peak, the highest point on the Forest, and a Research Natural Area.

Manageability of the area is considered "poor," due to road intrusions into the area. A core area, with boundaries along natural features, could be achieved.

NEED

The area is rated "low" for unique landforms and "moderate" for non-motorized recreation needs. It has "moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi. During the Forest Plan revision process, limited public interest was expressed for recommending the area for wilderness.

MINK CREEK ROADLESS AREA #04176 (16,344 ACRES)

Location and Access

Mink Creek Roadless Area is in Bear Lake and Franklin counties, Idaho on the Cache National Forest administered by the Montpelier Ranger District. It is located approximately twenty miles northeast of Preston, Idaho. Access from the north is on State Highway 36 and Mill Hollow Road. Dry Basin Road and the Horseshoe Basin Road form the eastern boundary. Birch Creek and Paris Canyon roads form the southern boundary.

Setting

Topography in the area is quite steep and rocky. Elevations range from 8,000 feet to 5,500 feet above sea level. Vegetation includes mountain maple, aspen, mahogany, Douglas-fir, sagebrush, and grass.

AVAILABILITY

Vegetation Treatment - Recent timber sale activities have occurred in this area.

Recreation - Dispersed recreation activities include motorized trail use, snowmobiling, and deer hunting.

Minerals - The area has no current oil or gas leases. The IRA has "low" locatable mineral potential.

Range - Livestock grazing is authorized on most of the area.

Water - The area supports a water diversion under special use authorization.

Land Uses - The area has special use authorizations including a power line and a water diversion.

Roads and Trails - There are no system roads, but there are twenty-five miles of motorized system trail.

CAPABILITY

Naturalness of the environment is rated as "very high," even though livestock facilities and unimproved roads are present in the area.

Remoteness and Solitude are considered "moderate" because of the area's size and minimal natural screening.

Opportunities for primitive recreation and challenging experiences are rated as "moderate", the area is small in size, but does have some steep, rocky terrain.

Special Features or Attractions – No special features or attractions have been identified for this IRA.

Manageability of the area is considered "poor," due to the area's small size and road intrusions. A core area could be achieved by locating the boundaries on natural features.

NEED

The area is rated "low" for unique landforms and non-motorized recreation needs. It has "low to moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi. During Forest Plan revision efforts, limited public interest was expressed for recommending the area for wilderness.

MOUNT NAOMI ROADLESS AREA #04758 IDAHO PORTION (28,115 ACRES)

Location and Access

The Idaho portion of the Mount Naomi Roadless Area is in Franklin County, Idaho on the Cache National Forest, administered by the Montpelier Ranger District. The area lies about four miles east of Franklin, Idaho. The Mt. Naomi Roadless Area originally included a total acreage of 94,068 acres within the states of Idaho and Utah. In 1984, Utah Wilderness legislation designated 44,350 acres of Mt. Naomi roadless area in Utah for inclusion into the National Wilderness Preservation System. The public was notified that the remaining Idaho portion would be evaluated as part of the 1985 Caribou National Forest Plan. The major access roads to the area include Cub River Road on the north, Hillyard Canyon and Logan River roads on the east, and Sugar and Maple Creek roads on the west.

Setting

The IRA's topography includes rolling hills on the east and steep, rocky slopes near the interior of the area. Elevations vary from 6,000 feet to two peaks that exceed 9,000 feet. About fifty percent of the area gently slopes down to about 6,500 feet. Much of the higher elevations are exposed rock outcrops. Vegetation includes conifer stands on the north and east-facing slopes, with some aspen, mountain brush, and maple. Drainage bottoms also include maple and scattered conifer.

AVAILABILITY

Vegetation Treatment - Recent timber sales have occurred on the eastern boundary.

Recreation - Dispersed recreation includes snowmobiling, OHV use, and semi-primitive non-motorized summer use within the interior of the area.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized over most of the area.

Water - The area has no municipal water use.

Land Uses - The area has one special use authorization for a water transmission line. About forty acres of State or private lands occur within the IRA.

Roads and Trails - There are no system roads, but there are thirteen miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "very high," although some evidence of human activities are present.

Remoteness and Solitude are rated as "high," because of the area's large size.

Opportunities for primitive recreation and challenging experiences are considered "high."

Special Features or Attractions include a large area for semi-primitive non-motorized recreation.

Manageability of the area is considered "poor" along the roadless area boundaries. A substantial core area would be achieved if boundaries were adjusted to exclude popular motorized trails and lower elevations.

NEED

The area is rated "high" for unique landforms and non-motorized recreation opportunity. It has "high" values for fish habitat and research purposes. The area is directly adjacent to the Mt. Naomi Wilderness in Utah. During the Forest Planning revision, high

public interest was expressed for recommending the area for wilderness. This area was recommended for wilderness in the 1985 Forest Plan. Several conservation groups and individuals have actively supported wilderness designation for Mt. Naomi. Off-road vehicle users and some local organizations, concerned with watershed management opportunities, have expressed opposition to wilderness designation.

This area was listed for "roadless management" by the State of Idaho in Governor Evans' letter of August 4th, 1983. It was included in Proposal number 4 of Senator McClure's Issue Update dealing with wilderness proposals. The area was included in the 1986 Forest Plan settlement of no timber harvest till the year 2000.

NORTH PEBBLE ROADLESS AREA #04155 (5,480 ACRES)

Location and Access

The North Pebble Roadless Area is in Caribou County, Idaho on the Westside Ranger District. It is located nine miles northwest of Bancroft, Idaho. The Pebble Creek Road and the Wood Gulch Road form the eastern boundary of the North Pebble Roadless Area. The Hornet Canyon, King Creek and Gooding Canyon roads also provide access to the area.

Setting

The area's topography is dominated by gently sloping terrain, making it non-typical of other forest roadless areas. The elevation varies from about 6,000 feet to 7,500 feet. Vegetation cover types include grass, forbs, and mountain brush, with a few scattered stands of aspen and conifer on north slopes.

AVAILABILITY

Vegetation Treatment - There has been recent timber harvest within the area.

Recreation - Activities include hiking, hunting, camping, and snowmobile use. The area receives heavy recreation use of all kinds.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on much of the area.

Water - The area has no municipal water use.

Land Uses - The area has one special use authorization for outfitting and guiding big game. A powerline and phosphate slurry line are located along the area's perimeter.

Roads and Trails - There are no system roads, but there is a half-mile of motorized system trail.

CAPABILITY

Naturalness of the environment is rated as "moderate," because the evidence of unimproved roads and timber harvest activities.

Remoteness and Solitude are considered "low," because of the area's small size and minimal natural screening.

Opportunities for primitive recreation and challenging experiences are rated as "low" due to area's small size.

Special Features or Attractions – No special features or attractions have been identified for this IRA.

Manageability of the area is considered "good" along inventoried boundaries.

NEED

The area is rated "moderate" for unique landforms and non-motorized recreation opportunity. It has "moderate" values for wildlife needs. The nearest designated wilderness is Mt. Naomi. During the Forest Plan Revision effort limited public interest was expressed for recommending the area for wilderness.

OXFORD MOUNTAIN ROADLESS AREA #04157 (40,870 ACRES)

Location and Access

The Oxford Mountain Roadless Area is in Bannock, Franklin and Oneida counties, Idaho on the Westside District of the Caribou-Targhee National Forest. It includes the mountain range south of Downey, Idaho between U.S. Highway 91 and Interstate 15. Access includes the Deep Creek-Weston Canyon Road along the southwest border and the Cherry Creek Road. Other roads leading to the area include Rockslide Canyon, Clifton Basin, Fivemile Creek roads on the east; and First, Second, Third and Dry Creeks and New Canyon roads on the west.

Setting

Elevations in the IRA range from approximately 5,500 feet, rising to 9,282 feet at Oxford Peak. The area's topography is typical of the region with steep sagebrush and grass slopes with patches of aspen and mountain maple. Narrow stands of Douglas-fir are found on northern slopes.

AVAILABILITY

Vegetation Treatment - No recent timber activity has occurred in the area.

Recreation - Recreation uses include OHV use, camping, and snowmobiling.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - One special use authorization exists for outfitting and guiding. No acres of State or private lands occur within the area.

Roads and Trails - The area has no system roads, but there are fifty-nine miles of motorized system trail.

CAPABILITY

Naturalness of the environment rates as "moderate," because of the presence of unimproved roads and livestock grazing.

Remoteness and Solitude rate "low," due to the area's size and minimal natural screening from valley developments.

Opportunities for primitive recreation and challenging experiences are considered "low" due to area's small size.

Special Features or Attractions – No special features or attractions have been identified for this IRA.

Manageability of the area is considered "poor" along inventoried boundaries, but a core area could be achieved by locating a boundary on natural features.

NEED

The area is rated "moderate" for unique landforms, and it has "high" value for non-motorized recreation opportunity. It has "moderate" values for wildlife needs. The nearest designated wilderness is Mt. Naomi. During the Forest Plan revision, limited public interest was expressed for recommending the area for wilderness. The area was included in the 1985 Forest Plan Settlement

Agreement, in which the Forest Service agreed to prohibit timber management activities until the year 2000.

PARIS PEAK ROADLESS AREA #04177 (8,815 ACRES)

Location and Access

The area lies in Bear Lake County, Idaho on the Cache National Forest administered by the Montpelier Ranger District. It is located six miles west of Bloomington, Idaho. Access on the north is by the Paris Canyon Road. The Bloomington Canyon and Middle Fork roads form the southern and western boundary. Harry's Hollow, Bloomington Canyon North Fork, and the Paris Flat roads also provide access to the area.

Setting

The lower reaches of the area are gently sloping, but Paris Peak rises sharply to 9,587 feet above sea level. The dominant vegetation cover is lodgepole pine and Douglas-fir. Aspen, mountain brush, sagebrush, and grass are found in the area.

AVAILABILITY

Vegetation Treatment - Most of the conifer stands have been selectively logged in the past.

Recreation - The primary recreation pursuits are snowmobiling, OHV use, skiing, hunting, and camping.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has a special use authorization for a water diversion for the town of Paris.

Land Uses - Special use authorizations for the area include a water diversion, a winter yurt, a powerline, and a communication site on Paris Peak. No State or private lands occur within the roadless area.

Roads and Trails - The area has no system roads, but there are three miles of motorized system trail.

CAPABILITY

Naturalness of the environment is rated "high," but portions of the area have been affected by timber harvest activities.

Remoteness and Solitude are considered "low," due to area's small size and road intrusions.

Opportunities for primitive recreation and challenging experiences are rated "low" due to area's small size and road intrusions.

Special Features or Attractions - No special features or attractions have been identified for this IRA.

Manageability is considered "poor," due to existing road intrusions. A small core area could be achieved if boundaries followed natural features.

NEED

The area is rated "moderate" for unique landforms and "low" for non-motorized recreation needs. It has "moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi. During Forest Plan Revision efforts, limited public interest was expressed for recommending the area for wilderness.

POLE CREEK ROADLESS AREA #04160 (3,660 ACRES ADMINISTERED BY THE CNF) (8,990 ACRES TOTAL)

Location and Access

Pole Creek Roadless Area is in Bonneville County, Idaho on the Soda Springs Ranger District and the Palisades Ranger District of the Caribou-Targhee National Forest. The Targhee portion of the IRA is managed under the Targhee Forest Plan. The area is located about twelve miles north of Wayan, Idaho. Road access to the area is by the Brockman Creek Road, the McCoy Creek Road, and the Brockman Ridge Road.

Setting

The area's topography is comprised of rolling hills with a few moderately steep slopes. The average elevation is 7,000 feet above sea level. Vegetation types include aspen and mountain brush with small stands of Douglas-fir and lodgepole pine on north and east-facing slopes.

AVAILABILITY

Vegetation Treatment - The 1989 Brockman Timber Sale occurs along the eastern boundary.

Recreation - Most of the area is managed for semi-primitive motorized experiences. Activities include snowmobiling and hunting.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - The area has one special use authorization for outfitting and guiding. No acres of State or private lands occur within the area.

Roads and Trails - The area has no system roads, but there are six miles of motorized system trail.

CAPABILITY

Naturalness of the environment is rated "low," because human activities are evident, including unimproved roads and timber harvest activities.

Remoteness and Solitude rate "low," due to the area's small size.

Opportunities for primitive recreation and challenging experiences are rated "low" due to small size and road intrusions.

Special Features or Attractions - No special features or attractions have been identified in this IRA.

Manageability of the area is considered "poor," due to the area's small size and motorized route.

NEED

The area is rated "low" for unique landforms and "low" for non-motorized recreation needs. It has "low" values for wildlife habitat. The nearest designated wilderness is Mt. Naomi. During Forest Plan Revision efforts, limited public interest was expressed for recommending the area for wilderness.

RED MOUNTAIN ROADLESS AREA #04170 (13,700 ACRES)

Location and Access

Red Mountain Roadless Area is in Bear Lake County, Idaho on the Montpelier Ranger District. The area lies four miles northwest of Geneva, Idaho and one mile west of the Idaho-Wyoming border. Access to the area is by the Elk Valley Road on the north, the Boulevard Road on the east, and the Crow Creek Road on the west.

Setting

The area's topography is comprised of gently sloping hills covered with sagebrush, grass, and mountain brush, rising to barren red rock cliffs near the summit of Red Mountain. Elevation ranges from 8,727 feet at Red Mountain to about 6,300 feet near Geneva. Small patches of Douglas-fir and lodgepole pine are found on north and east-facing slopes.

AVAILABILITY

Vegetation Treatment - No recent timber harvest activity has occurred in this area.

Recreation - Dispersed recreation use includes OHV use, snowmobiling, and camping.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - The area has no special use authorizations. No acres of State or private lands occur within the IRA.

Roads and Trails - There are no system roads, but there are fourteen miles of motorized system trails.

CAPABILITY

Naturalness of the environment is rated "very high," but evidence is present of grazing and unimproved roads.

Remoteness and Solitude are considered "low," because of the area's size and lack of natural screening.

Opportunities for primitive recreation and challenging experiences are rated "low" due to area's small size and lack of screening.

Special Features or Attractions include barren, red rock cliffs near the summit of Red Mountain.

Manageability of the area is considered "fair;" although an improved exploration road bisects the area.

NEED

The area is rated "moderate" for unique landforms and "low" for non-motorized recreation demands. It has "moderate" value for wildlife habitat. The nearest designated wildernesses are Mt. Naomi and Jedediah Smith Wilderness. During Forest Plan revision efforts, moderate public interest was expressed for recommending this area for wilderness, based on wildlife and non-motorized recreation values.

SAGE CREEK ROADLESS AREA #04166 (12,710 ACRES)

Location and Access

Sage Creek Roadless Area is in Caribou County, Idaho and administered by the Montpelier Ranger District and the Soda Springs Ranger District. This area is located ten miles southwest of Afton, Wyoming. The Timber Creek and Smoky Canyon roads access the area from the north. Pole Canyon, Sage Creek and Crow Creek roads approach the area from the east. Wells Canyon Road access the area from the southwest border. The Diamond Creek and Freeman Pass roads parallel the west border.

Setting

Elevations in the IRA range from 8,643 feet to 6,700 feet near Crow Creek. Vegetation on the north slopes includes Douglas-fir and lodgepole pine with aspen, mountain brush, sagebrush, and grass on west and south-facing slopes.

AVAILABILITY

Vegetation Treatment - Several timber sales have occurred in this area.

Recreation - OHV use and hunting are popular in the area.

Minerals - The area has no current oil or gas leases. Several phosphate leases and related special use authorizations exist in the area.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - The area has various phosphate activities, a phosphate slurry line and a powerline under special use authorization. No acres of State or private lands occur within the IRA.

Roads and Trails - There are no system roads, but there are twenty-five miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "low," with evidence of mining and timber harvest activities.

Remoteness and Solitude are rated "low," due to the area's small size, road intrusions, and mining activities.

Opportunities for primitive recreation and challenging experiences are considered "low" due to the area's small size and road intrusions.

Special Features or Attractions – No special features or attractions have been identified for this IRA.

Manageability of the area is considered "fair" along roadless boundaries. Road intrusions are present and adjacent mining activities are visible from the area.

NEED

The area is rated "low" for unique landforms and non-motorized recreation needs. It has "high" value for fish habitat. The nearest designated wilderness is Mt. Naomi. During Forest Plan Revision efforts limited public interest was expressed for recommending the area for wilderness.

SCHMID PEAK ROADLESS AREA #04163 (7,110 ACRES)

Location and Access

Schmid Peak Roadless Area is in Caribou County, Idaho on the Soda Springs Ranger District of the Caribou-Targhee National Forest. The area is about seventeen miles northeast of Soda Springs, Idaho. Road access from the north includes Mill Canyon, Mills Spring, Diamond Creek and Kendall Canyon roads. The Stewart Canyon Road parallels the south and west boundary. The Maybe Canyon Road provides access from the west.

Setting

The area's topography is moderately steep. Elevations range from 8,500 feet to 6,500 feet above sea level. West and south-facing slopes are covered with sagebrush, grass, mountain brush, and aspen. The north and east slopes support conifer stands.

AVAILABILITY

Vegetation Treatment - Recent timber harvesting activities have occurred in the area.

Recreation - The area is popular for camping, hiking, OHV use, and snowmobile use.

Minerals - The area has no current oil or gas leases. There are phosphate leases within the area.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - The area has three existing special use authorizations: one outfitter and guide, one powerline, and the phosphate slurry line. No acres of State or private lands occur within the IRA.

Roads and Trails - There are no system roads, but there are three miles of motorized system trail.

CAPABILITY

Naturalness of the environment is rated "low to moderate," with evidence of some unimproved roads, timber harvest, and mining activities.

Remoteness and Solitude are considered "low," because of road and mining intrusions.

Opportunities for primitive recreation and challenging experiences are rated "low" with road intrusions and mining activities.

Special Features or Attractions – No special features or attractions have been identified for this IRA.

Manageability of the area is considered "very poor," due to road intrusions and the narrow width of area.

NEED

The area is rated "low" for unique landforms and "low" for non-motorized recreation needs. It has "moderate" values for wildlife needs. The nearest designated wilderness is Mt. Naomi. During Forest Plan revision efforts limited public interest was expressed for recommending the area for wilderness.

SCOUT MOUNTAIN ROADLESS AREA #04152 (22,610 ACRES)

Location and Access

Scout Mountain Roadless Area is in Bannock County, Idaho, and is administered by the Westside Ranger District of the Caribou-Targhee National Forest. It is located approximately thirteen miles southeast of Pocatello, Idaho. Access roads include Mink

Creek, South Fork, and East Fork roads. Other lower standard access roads include Indian Creek, Goodenough Creek, Kinney Creek, Lead Draw, Camp Tedoy, and Scout Mountain roads.

Setting

Topography in the area is quite steep with brush and grass covered slopes. Aspen stands are common, and small stringers of Douglas-fir are found on north-facing slopes. Elevations range from 4,600 feet to 8,710 feet above sea level at Scout Mountain.

AVAILABILITY

Vegetation Treatment - Recent timber activity has occurred in the area.

Recreation - Dispersed recreational activities include motorized trail use, snowmobiling, and camping.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area supports a water diversion under a special use authorization.

Land Uses - Special use authorizations within the area include an outfitter and guide and an electronic site.

Roads and Trails - The area has no system roads, but there are twenty-six miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "moderate," because unimproved roads and timber harvest activities are evident in the area.

Remoteness and Solitude are considered "low," because of the area's size and minimal natural screening.

Opportunities for primitive recreation and challenging experiences are considered "moderate."

Special Features or Attractions – No special features or attractions have been identified in this IRA.

Manageability of the area is considered "poor," due to the area's small size and road intrusions. A substantial core area could be achieved by locating the boundaries on natural features.

NEED

The area is rated "moderate" for unique landforms and non-motorized recreation needs. It has "moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi. During Forest Plan revision efforts, limited public interest was expressed for recommending the area for wilderness.

SHERMAN PEAK ROADLESS AREA #04172 (7,760 ACRES)

Location and Access

The Sherman Peak Roadless Area is in Bear Lake County, Idaho on the Cache National Forest, administered by the Montpelier Ranger District. The area lies twelve miles south of Soda Springs, Idaho. Eightmile Creek Road provides access to the area from the northwest. The Skinner Canyon Road provides access from the east.

Setting

The area's topography varies from moderate to quite steep. Most of the area is covered in lodgepole pine, but some aspen, mountain brush, sagebrush, and grass occur in the area. Sherman Peak rises 9,686 feet above sea level; the area's low point is near Eightmile Creek at 6,500 feet above sea level.

AVAILABILITY

Vegetation Treatment - Timber harvesting activity has occurred in the IRA in the late 1980s.

Recreation - Dispersed recreation includes snowmobiling, OHV use, back-country skiing, and semi-primitive non-motorized summer use in the area's interior.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - The area has one communication site and a back-country yurt for avalanche forecasting under special use authorizations. No acres of State or private lands occur within the IRA.

Roads and Trails - There are no system roads, but there are eight miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "moderate," because human activities are evident in unimproved roads and past timber harvest activities.

Remoteness and Solitude are rated as "low," because of the area's small size and lack of natural screening.

Opportunities for primitive recreation and challenging experiences are considered "low" due to area's small size and lack of topographic and vegetative screening.

Special Features or Attractions – No special features or attractions have been identified in this IRA.

Manageability of the area is considered "fair" along the roadless area boundaries.

NEED

The area is rated as "low" for unique landforms and non-motorized recreation opportunities. It has "high" values for fish habitat, and "moderate" values for wildlife habitat. The nearest designated wilderness is Mt. Naomi. During Forest Plan revision, efforts limited public interest was expressed for recommending the area for wilderness.

SODA POINT ROADLESS AREA #04171 (23,130 ACRES)

Location and Access

The Soda Point Roadless Area is in Caribou and Bear Lake counties Idaho on the Cache National Forest, administered by the Montpelier District. It lies seven miles south of Soda Springs, Idaho. The Nelson Canyon Road provides access from the north, and the Eightmile Road provides access from the east. Cheatbeck and Cow Creek roads provide access to the area from the northwest. North Ant Canyon Road is on the southern boundary.

Setting

The area forms the northern tip of the Wasatch Range. The elevation varies from 8,921 feet at Soda Point to 6,600 feet near the Bear River. Southwest slopes are steep and rocky with juniper, sagebrush, and mountain mahogany. North and east slopes are gentle with lodgepole pine, Douglas-fir, aspen and mountain brush.

AVAILABILITY

Vegetation Treatment - One recent timber sale has occurred in the area.

Recreation - Activities include hiking, hunting, OHV use, and snowmobiling.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area supports one municipal water use for the town of Grace.

Land Uses - The area has one special use authorization for a communication site.

Roads and Trails - There are no system roads, but there are forty-one miles of motorized system trail.

CAPABILITY

Naturalness of the environment is rated as "moderate," because the area contains evidence of unimproved roads and timber harvest activities.

Remoteness and Solitude are considered "moderate," because of the area's moderate size and natural screening.

Opportunities for primitive recreation and challenging experiences are considered "low" due to lack of screening.

Special Features or Attractions include a Research Natural Area.

Manageability of the area is considered "poor" along inventoried boundaries. A core area could be achieved if boundaries were placed on natural features.

NEED

The area is rated "moderate" for unique landforms and non-motorized recreation opportunities. It has "moderate" values for fish and wildlife needs. The nearest designated wilderness is Mt. Naomi. During the Forest Plan revision process limited public interest was expressed for recommending the area for wilderness.

STATION CREEK ROADLESS AREA #04178 (9,680 ACRES)

Location and Access

The Station Creek Roadless Area is in Franklin County, Idaho on the Cache National Forest administered by the Montpelier Ranger District. It is eleven miles northeast of Preston, Idaho. Access roads include Birch Creek Road on the north and east, and Cub River Road on the south. The Worm Creek and South Canyon Roads cherry-stem into the roadless area on the west.

Setting

The area is on the west slope of the Wasatch Range. Slopes are quite steep, but large benches and basins occur at upper elevations. Elevations average about 7,000 feet above sea level. Dominant vegetation includes sagebrush, grass, mountain brush, aspen, maple and some stringers of conifer on the north slopes.

AVAILABILITY

Vegetation Treatment - Recent timber sales have occurred in this area.

Recreation - Recreation uses are high and include OHV use, snowmobiling, and hunting.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - One special use authorization exists for a power line. No acres of State or private lands occur within the area.

Roads and Trails - The area has no system roads, but there are sixteen miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "high," but the area has been affected by unimproved roads and livestock grazing.

Remoteness and Solitude are rated "low," due to the area's size and minimal natural screening.

Opportunities for primitive recreation and challenging experiences are considered "low" due to area's small size.

Special Features or Attractions – No special features or attractions have been identified in this IRA.

Manageability of the area is considered "very poor" along inventoried boundaries; the distance between roads rarely exceeds two miles.

NEED

The area is rated as "low" for unique landforms. It has "low" value for non-motorized recreation opportunities. It has "moderate" values for wildlife needs. The nearest designated wilderness is Mt. Naomi. During the Forest Plan revision effort limited public interest was expressed for recommending the area for wilderness.

STAUFFER CREEK ROADLESS AREA #04173 (6,400 ACRES)

Location and Access

Stauffer Creek Roadless Area is in Bear Lake County, on the Cache National Forest administered by the Montpelier Ranger District of the Caribou-Targhee National Forest. The area is 7 miles west of Georgetown, Idaho. Road access includes the Skinner Canyon Road, the South Stauffer Creek Road, the Mill Hollow Road, and the Meadow Creek Road.

Setting

Topography of the IRA is moderately sloping and vegetation cover is predominately lodgepole pine. The average elevation is 7,500 feet above sea level.

AVAILABILITY

Vegetation Treatment - The area has recent timber sales and past timber harvest is evident along the boundaries of the area.

Recreation - The area is popular for hunting, OHV use and snowmobiling.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - There are no special use authorizations within the area. No acres of State or private land occur within the area.

Roads and Trails - The area has no system roads, but there are thirty-seven miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "low;" the area has been affected by roads and timber harvest.

Remoteness and Solitude are rated "low," due to the area's size and minimal natural screening.

Opportunities for primitive recreation and challenging experiences are considered "low" due to area's small size and road intrusions.

Special Features or Attractions – No special features or attractions have been identified in this IRA.

Manageability of the area is considered "fair" along inventoried boundaries; boundary adjustments would be limited within the small area.

NEED

The area is rated as "low" for unique landforms. Stauffer Creek has "high" value for fish habitat. The nearest designated wilderness is Mt. Naomi. During the Forest Plan Revision effort limited public interest was expressed for recommending the area for wilderness.

STUMP CREEK ROADLESS AREA #04162 (97,300 ACRES)

Location and Access

The Stump Creek Area is in Caribou County, Idaho and Lincoln County, Wyoming on the Soda Springs Ranger District of the Caribou-Targhee National Forest. It is located twenty miles northeast of Soda Springs, Idaho and ten miles northwest of Afton, Wyoming. The Tincup Highway is the northern boundary of the area. Eastern access is on the Stump Creek Road. From the northeast side, Deer Creek, Limekiln Creek, and Water Canyon roads provide access to the area. The Smoky Canyon Road forms the southern boundary. Cabin Creek, Timothy Creek, Bacon Creek, and Brown Creek roads provide access to the area from the west.

Setting

Stump Creek is the largest roadless area on the Forest. Most of the acres are in Idaho. Only about 700 acres are in Wyoming. The area is located in the Caribou and Webster Mountain Ranges. The highest point in the IRA is Drainy Peak at 9,131 feet above sea level. The low point is around 6,000 feet above sea level near Star Valley, Wyoming. The area has moderately sloping hills covered with sagebrush, grass, and mountain brush with aspen and conifer at higher elevations.

AVAILABILITY

Vegetation Treatment - Recent timber sales have occurred in the area.

Recreation - The primary recreation pursuits are snowmobiling, OHV use, hunting, and camping.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water uses.

Land Uses - Special use authorizations include a power line and outfitting and guiding. No State or private land occurs within the roadless area.

Roads and Trails - There are no system roads, but there are one hundred and sixteen miles of motorized system trail.

CAPABILITY

Naturalness of the environment is rated as "high." Unimproved roads, livestock grazing, and recreation impacts are evident in some portions of the area.

Remoteness and Solitude are considered "very high," due to the area's large size and low development.

Opportunities for primitive recreation and challenging experiences are rated "high," due to the remoteness of portions of the area.

Special Features or Attractions include the Historic Lander Trail, a large expanse of land for semi-primitive recreation, and a Research Natural Area.

Manageability is considered "fair." A large core area could be achieved if boundaries followed natural features.

NEED

The area is rated as "moderate" for unique landforms and has "high" value for motorized and non-motorized recreation needs. It has "high" values for fish and wildlife habitat and research purposes. The nearest designated wildernesses are Mt. Naomi and Bridger.

During the Forest Plan Revision process, high public interest was expressed for recommending and against recommending the area for wilderness. This roadless area was identified in Proposal Number 4 of Senator McClure's Issue Update dealing with wilderness proposals in 1983. It was not recommended for wilderness designation in the Idaho wilderness legislation in 1984. The area was included in the 1985 Forest Plan Settlement Agreement in which the Forest agreed to prohibit timber harvest until the year 2000.

SWAN CREEK ROADLESS AREA #04180 (IDAHO PORTION 7,430 ACRES)

Location and Access

Swan Creek Roadless Area is in Bear Lake and Franklin counties, Idaho on the Cache National Forest administered by the Montpelier Ranger District. The Wasatch-Cache NF portion, about 9,569 acres, is managed under the Wasatch-Cache Forest Plan. The area is located about three miles west of Fish Haven, Idaho. Road access from the north and east is on the Fish Haven and Logan Canyon roads respectively. Access from the west is on the Beaver Creek Road. The Old Logan Road is the western boundary.

Setting

The area's topography is quite steep, but more rolling and gentle slopes appear at higher elevations. The average elevation is about 8,000 feet above sea level. Vegetation types include sagebrush, grass, mahogany, and maple on lower slopes, with aspen and fir types occurring at higher elevations.

AVAILABILITY

Vegetation Treatment - Recent timber sale activity has occurred in this area.

Recreation - Most of the area is managed for semi-primitive motorized experiences. Activities include snowmobiling and hunting.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - The area has no special use authorizations.

Roads and Trails - The area has no system roads, but there are eight miles of motorized system trails.

CAPABILITY

Naturalness of the environment is considered "moderate," because human activities are evident, including unimproved roads and timber harvest activities.

Remoteness and Solitude are rated "moderate," due to the area's size and some natural screening.

Opportunities for primitive recreation and challenging experiences are considered "moderate" due to area's size.

Special Features or Attractions – No special features or attractions have been identified in this IRA.

Manageability of the area is considered "poor," due to the area's small size and road intrusions.

NEED

The area is rated "low" for unique landforms and "low" for semi-primitive non-motorized recreation needs. It has "low" values for wildlife habitat. The nearest designated wilderness is Mt. Naomi. During the Forest Plan Revision effort, limited public interest was expressed for recommending the area for wilderness.

TELEPHONE DRAW ROADLESS AREA #04169 (4,920 ACRES)

Location and Access

Telephone Draw Roadless Area is in Bear Lake County, Idaho administered by the Montpelier Ranger District of the Caribou-Targhee National Forest. This area is located approximately seven miles east of Montpelier, Idaho. The northern boundary of the area is formed by Snowslide Canyon Road. U.S. Highway 89 forms the southern boundary. The area is accessible from the Montpelier Reservoir and the Crow Creek Road on the west.

Setting

The area's topography is comprised primarily of steep terrain. Average elevation is 7,000 feet above sea level. Sagebrush, grass, mountain brush, and aspen make up the vegetation cover in the area.

AVAILABILITY

Vegetation Treatment - No timber harvest activities have occurred in this area.

Recreation - OHV use and snowmobiling are popular recreation activities in the area.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized for most of the area.

Water - The area has no municipal water use.

Land Uses - The area has no special use authorizations.

Roads and Trails - There are no system roads, but there are four miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "high," with evidence of some unimproved roads.

Remoteness and Solitude are rated "low" due to the area's small size.

Opportunities for primitive recreation and challenging experiences are also rated "low" due to area's small size and lack of screening.

Special Features or Attractions – No special features or attractions have been identified in this IRA.

Manageability of the area is considered "poor" due to the area's small size.

NEED

The area is rated "low" for unique landforms and non-motorized recreation needs. It has "low" value for wildlife habitat. The nearest designated wilderness is Mt. Naomi. During Forest Plan Revision efforts, limited public interest was expressed for recommending the area for wilderness.

TOPONCE ROADLESS AREA #04153 (18,300 ACRES)

Location and Access

Toponce Roadless Area is in Bannock and Caribou counties, Idaho on the Westside Ranger District of the Caribou-Targhee National Forest. The area is located about twelve miles east of Pocatello, Idaho. Road access from the south includes Inman Creek and Toponce Creek roads.

Setting

The area's topography consists of gently sloping terrain and open valleys of grasses and forbs. Mountain slopes have brush and aspen cover with lodgepole pine and Douglas-fir on the north aspects. Elevations range from 8,000 feet to 5,500 feet above sea level.

AVAILABILITY

Vegetation Treatment - No recent timber activity has occurred in the area.

Recreation - The area is popular for hiking, skiing, and snowmobile use.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - Special use authorizations include one outfitter and guide, several back-country yurts and a phosphate slurry line. No acres of State or private land occur within the IRA.

Roads and Trails - There are no system roads, but there are two miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "high," even though the area displays evidence of human development, including several unimproved roads and old mining activities.

Remoteness and Solitude are rated "low" because of area's small size and lower valley development is visible from most of the area.

Opportunities for primitive recreation and challenging experiences are considered "moderate," and back-country skiing in the area can be challenging.

Special Features or Attractions include back-country ski experiences.

Manageability of the area is considered "good," due to the lack of development on surrounding lands.

NEED

The area is rated "low" for unique landforms and "high" for non-motorized recreation needs. It has "high" values for wildlife needs. The nearest designated wilderness is Mt. Naomi. During Forest Plan Revision efforts, limited public interest was expressed for recommending the area for wilderness. The area was included in the 1985 Forest Plan Settlement Agreement in which the Forest agreed to prohibit timber management activities till the year 2000.

WEST MINK ROADLESS AREA #04151 (20,650 ACRES)

Location and Access

West Mink Roadless Area is in Bannock and Power counties, Idaho and administered by the Westside Ranger District of the Caribou-Targhee National Forest. It is located approximately six miles south of Pocatello, Idaho. Access roads include the Mink Creek Road (Bannock Highway), which borders the area along the southeast. The area is also bordered on the west by the Fort Hall Indian Reservation and on the southwest by Bureau of Land Management administered lands.

Setting

The area's topography is steep with grass and brush covered slopes. Some patches of aspen and stringers of Douglas-fir occur on the north slopes. Elevations range from 5,000 feet to 7,000 feet above sea level.

AVAILABILITY

Vegetation Treatment - Recent timber sales have occurred in the area.

Recreation - Dispersed recreational activities include OHV use, hiking, snowmobiling, and cross-country skiing.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area supports a non-culinary water line for the City of Pocatello under a special use authorization.

Land Uses - Special use authorizations within the area include a powerline, a waterline, and outfitting and guiding.

Roads and trails - The area has no system roads, but there are twenty-seven miles of motorized system trail.

CAPABILITY

Naturalness of the environment is rated as "moderate," because unimproved roads and timber harvest activities are evident in the area.

Remoteness and Solitude are considered "low," because of the area's size, road intrusions, and minimal natural screening.

Opportunities for primitive recreation and challenging experiences are rated as "moderate," and back-country skiing in the area can be challenging.

Special Features or Attractions include areas for non-motorized recreation use, and two Research Natural Areas.

Manageability of the area is considered "poor," due to the area's small size and road intrusions. A substantial core area could be achieved by locating the boundaries on natural features.

NEED

The area is rated "low" for unique landforms but "high" for non-motorized recreation needs. It has "moderate" values for wildlife needs and research purposes. The nearest designated wilderness is Mt. Naomi. During Forest Plan revision efforts, limited public interest was expressed for recommending the area for wilderness.

WILLIAMS CREEK ROADLESS AREA #04174 (9,920 ACRES)

Location and Access

Williams Creek Roadless Area is in Franklin and Bear Lake counties, Idaho on the Cache National Forest administered by the Montpelier Ranger District. The area is about fifteen miles west of Montpelier, Idaho. The south boundary is State Highway 36. The eastern edge is deeply penetrated by Squirrel Hollow Road. The Williams Canyon Road forms the southwest boundary. The Post Hollow Road makes a deep corridor into the western boundary.

Setting

The topography of the area is moderately steep. Major vegetation cover includes maple, sagebrush, grass, and juniper with aspen and conifer on northern slopes. The average elevation is 7,400 feet above sea level.

AVAILABILITY

Vegetation Treatment - Several recent timber sales have occurred in the area.

Recreation - Dispersed recreation includes snowmobiling, OHV use, and camping.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water - The area has no municipal water use.

Land Uses - The area has two power lines under special use authorization. No acres of State or private land occur within the IRA.

Roads and Trails - The area has no system roads, but there are fourteen miles of motorized system trail.

CAPABILITY

Naturalness of the environment is considered "moderate," even though human activities are present, including unimproved roads and timber harvest activities.

Remoteness and Solitude are rated "low," because of the area's small size and lack of natural screening.

Opportunity for primitive recreation and challenging experiences is rated "low" due to area's small size.

Special Features or Attractions – No special features or attractions have been identified in the IRA.

Manageability of the area is considered "very poor" on the roadless area boundaries, due to road intrusions and the area's narrow width.

NEED

The area is considered "low" for unique landforms and non-motorized recreation opportunity. It has "low" values for fish habitat and for wildlife habitat. The nearest designated wilderness is Mt. Naomi. During the Forest Plan Revision process limited public interest was expressed for recommending the area for wilderness.

WORM CREEK ROADLESS AREA #04179 (42,440 ACRES)

Location and Access

The Worm Creek Roadless Area is in Franklin and Bear Lake counties, Idaho on the Cache National Forest administered by the Montpelier District. It is eight miles west of St. Charles, Idaho. The Bloomington Canyon and Paris Flat roads provide access to the area on the north, and Dry Creek, Worm Creek, Dry Canyon, and St. Charles Canyon roads provide access from the east.

Setting

The area includes flat to gentle-sloping hills to high elevation basins and steep, rocky mountain peaks. Glacial land types are evident. The elevation varies from 9,000 feet to 6,600 feet above sea level. Much of the higher elevations are exposed rock outcrops. Vegetation consists of large stands of Douglas-fir and lodgepole pine with meadow type vegetation in the high basins. Stands of aspen and maple add dramatic color in the fall.

AVAILABILITY

Vegetation Treatment - There has been recent timber sales in the area.

Recreation - Activities include hiking, hunting, OHV, and snowmobile use.

Minerals - The area has no current oil or gas leases.

Range - Livestock grazing is authorized on most of the area.

Water -The area has no municipal water use.

Land Uses - The area has no special use authorizations.

Roads and Trails - There are no system roads, but there are thirty-seven miles of motorized system trail

CAPABILITY

Naturalness of the environment is rated "very high," even though some evidence of unimproved roads and timber harvest activities exist.

Remoteness and Solitude are considered "moderate," because of the moderate size of the area and natural screening.

Opportunities for primitive recreation and challenging experiences are rated as "high" due to rocky, steep terrain at higher elevations.

Special Features or Attractions include Bloomington Lake and its non-motorized recreation setting in the summer, and a Research Natural Area.

Manageability of the area is considered "poor" along inventoried boundaries. A core area could be achieved if boundaries were placed on natural features.

NEED

The area is rated as "high" for unique landforms and non-motorized recreation opportunity. It has "moderate" to high values for fish and wildlife needs. The nearest designated wilderness is Mt. Naomi. During the Forest Plan revision process, considerable public interest was expressed for recommending and against recommending the area for wilderness. This area was identified in Proposal Numbers 2, 3, and 4 of Senator McClure's Issue Update dealing with wilderness proposals in 1983. The Administration recommended 16,000 acres of this area to Congress for wilderness designation as a result of Rare II. This roadless area was not listed in the State of Idaho's wilderness recommendations. The Idaho Forest Management Act, introduced in March 1984, included a 15,770-acre proposed wilderness in Worm Creek.

During the roadless area re-evaluation some support for wilderness designation was expressed by the Idaho Conservation Coalition. The group proposed 21,000 acres within the area for wilderness designation. A portion of the area was recommended for wilderness in the 1985 Forest Plan, in the 1987 McClure-Andrus Wilderness Proposal, in the 1992 Northern Rockies Ecosystem Protection Act Proposed Wilderness and in the 1992 Idaho Conservation League Wilderness Proposal. The area was included in the 1985 Forest Plan Settlement Agreement in which the Forest agreed to prohibit timber harvest till the year 2000.

• *Table C-1. Summary of Wilderness Characteristics Evaluation of Inventoried Roadless Areas.*

Characteristics	Bear Creek	Bonneville Peak	Caribou City	Clarkston	Deep Creek
Natural Environment	Moderate to Low	High	High	Moderate	Moderate
Solitude	Moderate	Moderate	High	Low	Low
Primitive Recreation	Moderate	Moderate	High	Low	Low
Challenge	Moderate	Moderate	High	Low	Low
Special Features	Elk Habitat	Back-country Ski	Historic Mining, Non-motorized hunt experience	Deer Habitat Research Natural Area	Deer Habitat
Manageability	Fair	Poor (Core area*)	Fair (Core area*)	Poor	Poor
Social Needs	Public Interest**	Public Interest**	Public Interest**	None Identified	None Identified
Biological Needs	Wildlife	Wildlife	Wildlife	Wildlife	Wildlife
Availability Concerns	Communication site	Motorized trail use Pebble Ck Ski Area Slurryline Inholdings	Historic area management Inholdings	Motorized trail use Inholdings Water lines	Motorized trail use Water lines

* Rating is based on IRA boundary; a core area could be achieved by placing boundaries on natural features.

** Public Interest in seeing an area recommended for Wilderness.

• *Table C-1. Summary of Wilderness Characteristics Evaluation of Inventoried Roadless Areas (Cont.)*

Characteristics	Dry Ridge	Elkhorn Mountain	Gannett-Spring Creek	Gibson	Hell Hole
Natural Environment	Moderate to Low	High	Moderate	Moderate	Moderate
Solitude	Low	Low	Low	Moderate	Low
Primitive Recreation	Low	Moderate	Moderate	Low	Low
Challenge	Low	Low	Low	Low	Low
Special Features	None Identified	Deer Habitat	Crow Creek Road Elk Valley Marsh (W&S)	Gibson Lakes	Deer Winter Range
Manageability	Poor	Poor (Core area*)	Poor (Core area*)	Fair	Poor
Social Need	None Identified	Public Interest**	Public Interest**	None Identified	None Identified
Biological Need	None Identified	Wildlife	Wildlife	Wildlife	None Identified
Availability Concerns	Motorized trail use Slurryline Phosphate leases	High motorized trail use Powerline	Motorized trail use	Motorized trail use	Motorized trail use

* Rating is based on IRA boundary; a core area could be achieved by placing boundaries on natural features.

** Public Interest in seeing an area recommended for Wilderness.

• *Table C.1. Summary of Wilderness Characteristics Evaluation of Inventoried Roadless Areas (Cont.)*

Characteristics	Huckleberry	Liberty Creek	Mead Peak	Mink Creek	Mount Naomi
Natural Environment	Low	Low	Moderate	Very High	Very High
Solitude	Low	Low	Moderate	Moderate	High
Primitive Recreation	Very Low	Low	Moderate	Moderate	High
Challenge	Very Low	Low	Moderate	Moderate	High
Special Features	None Identified	None Identified	Fish and Wildlife Habitat, Research Natural Area	None Identified	Large non-motorized area
Manageability	Poor	Poor	Poor (Core area*)	Poor (Core area*)	Poor (Core area*)
Social Need	None Identified	None Identified	None Identified	None Identified	Public interest **
Biological Need	None Identified	None Identified	Wildlife	None Identified	Fish and Wildlife
Availability Concerns	High motorized trail use Firewood	Motorized trail use Waterline Powerline	Motorized trail use Inholdings, Phosphate leases	Motorized trail use Waterline Powerline	Motorized trail use Inholding

* Rating is based on IRA boundary; a core area could be achieved by placing boundaries on natural features.

** Public Interest in seeing an area recommended for Wilderness.

• *Table C.1. Summary of Wilderness Characteristics Evaluation of Inventoried Roadless Areas (Cont.)*

Characteristics	North Pebble	Oxford Peak	Paris Peak	Pole Creek	Red Mountain
Natural Environment	Moderate	Moderate	High	Low	Very High
Solitude	Low	Low	Low	Low	Low
Primitive Recreation	Low	Low	Low	Low	Low
Challenge	Low	Low	Low	Low	Low
Special Features	None	None	None	None	Red Cliffs
Manageability	Good	Poor (Core Area*)	Poor (Core Area*)	Poor	Fair
Social Need	None Identified	None Identified	None Identified	None Identified	Public Interest**
Biological Need	Wildlife	Wildlife	Wildlife	None Identified	Wildlife
Availability Concerns	Slurry line, Powerline	High motorized trail use	Communication Site, Water line, Powerline	Motorized Trail Use	Motorized Trail Use

* Rating is based on IRA boundary; a core area could be achieved by placing boundaries on natural features.

** Public Interest in seeing an area recommended for Wilderness.

• *Table C.1. Summary of Wilderness Characteristics Evaluation of Inventoried Roadless Areas (Cont.)*

Characteristics	Sage Creek	Schmid Peak	Scout Mountain	Sherman Peak	Soda Point
Natural Environment	Low	Moderate to Low	Moderate	Moderate	Moderate
Solitude	Low	Low	Low	Low	Moderate
Primitive Recreation	Low	Low	Moderate	Low	Low
Challenge	Low	Low	Moderate	Low	Low
Special Features	None Identified	None Identified	None Identified	None Identified	Research Natural Area
Manageability	Fair	Very Poor	Poor (Core area*)	Fair	Poor (Core area*)
Social Need	None Identified	None Identified	None Identified	None Identified	None Identified
Biological Need	Fish Habitat	Wildlife	Wildlife	Fish and Wildlife	Fish and Wildlife
Availability Concerns	Motorized trail use Phosphate leases Slurryline Communication site	Some motorized trail use Phosphate leases Slurry line	Motorized trail use Communication site Developed and Dispersed recreation management	Motorized trail use A Yurt Communication site	High motorized trail use Communication site

* Rating is based on IRA boundary; a core area could be achieved by placing boundaries on natural features.

** Public Interest in seeing an area recommended for Wilderness.

• *Table C.1. Summary of Wilderness Characteristics Evaluation of Inventoried Roadless Areas (Cont.)*

Characteristics	Station Creek	Stauffer Creek	Stump Creek	Swan Creek Mountain	Telephone Draw
Natural Environment	High	Low	High	Low	High
Solitude	Low	Low	Very high	Low	Low
Primitive Recreation	Low	Low	High	Low	Low
Challenge	Low	Low	High	Low	Low
Special Features	None Identified	None Identified	Historic Lander Trail, Research Natural Area	None Identified	None Identified
Manageability	Very Poor	Fair	Fair (Core area*)	Poor	Poor
Social Need	None Identified	None Identified	Public Interest**	None Identified	None Identified
Biological Need	Wildlife	Fish	Fish and Wildlife	None Identified	None Identified
Availability Concerns	Motorized trail use Powerline	Motorized trail use	Historic Site Management High motorized trail use Phosphate leases Powerlines	Motorized trail use	Motorized trail use

* Rating is based on IRA boundary; a core area could be achieved by placing boundaries on natural features.

** Public Interest in seeing an area recommended for Wilderness.

• *Table C.1. Summary of Wilderness Characteristics Evaluation of Inventoried Roadless Areas (Cont.)*

Characteristics	Toponce	West Mink	Williams Creek	Worm Creek
Natural Environment	High	Moderate	Moderate	Very High
Solitude	Low	Low	Low	Moderate
Primitive Recreation	Moderate	Moderate	Low	High
Challenge	Moderate	Moderate	Low	High
Special Features	Back-country skiing Semi-Primitive Non-motorized area (summer)	Semi-Primitive Non-motorized area (year-round) Two Research Natural Areas	None Identified	Bloomington Lake, Research Natural Area
Manageability	Good	Poor (Core area*)	Very Poor	Poor (Core area*)
Social Need	None Identified	None Identified	None Identified	Public Interest**
Biological Need	Wildlife	Wildlife	None Identified	Unique Landforms
Availability Concerns	Slurryline Yurt system	Motorized trail use Powerline Waterline Inholdings	Motorized trail use Power lines	Motorized trail use Recreation Management at Bloomington Lake

* Rating is based on IRA boundary; a core area could be achieved by placing boundaries on natural features.

** Public Interest in seeing an area recommended for Wilderness.

Caribou-Targhee NF

Caribou-Targhee NF
1405 Hollipark Dr.
Idaho Falls, ID 83401
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Final Environmental Impact Statement

Caribou Revised Forest Plan
Appendix D—Wildlife, Rare Plants, Fisheries

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WILDLIFE ANALYSIS PROCESS

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Part 1 Wildlife Analysis Process

Species Richness/Hot Spots

Hot spots of high species richness can be produced for any group of interest (reptiles, birds, etc). Typically, hot spots are areas of high habitat diversity (Noss and Cooperrider, 1994). Species rich areas are important because they represent opportunities to protect large numbers of species efficiently. A map of vertebrate species in Idaho (Scott) shows that southeast Idaho has the highest diversity in the state (in Noss and Cooperrider, 1994). This is probably due to the highly complex pattern of habitats in this part of the state.

Stein, *et al,* (2000) suggest that using the species richness method has problems. Species that are widespread have a disproportionate affect on creating areas of high diversity. They recommend using overall species richness, but also factoring in the relative rarity of its species. This "rarity-weighted richness" approach tends to favor the identification of hot spot clusters that represent concentrations of limited-range species.

An analysis of species rarity and endemism and hot spots of biodiversity was completed as part of the Interior Columbia Basin broad-scale analysis (USFS, 1996). **While there were some areas identified in the state of Idaho, none were in the southeast part of the state that was analyzed in this analysis.**

The Nature Conservancy has been preparing eco-regional biological conservation assessments to aid them in conservation planning. These conservation plans are meant to be dynamic and responsive to changing conditions. The result of most ecoregional planning efforts is an identification of generalized areas of biodiversity significance. They are not meant to identify conservation sites where the targets, threats, and strategies/plans to abate threats have been analyzed with considerably more rigor than in ecoregional planning (Groves, *et al*, 2000).

The Utah-Wyoming Rocky Mountain Ecoregional Assessment was completed in July 2001. This plan has identified and prioritized megasites, which if managed sustainably, would contribute to conservation goals. The approach taken in this analysis is generally consistent with the approach the Nature Conservancy has taken. However, this assessment has placed more emphasis on the use of focal species to identify and prioritize megasites (Noss, *et al*, 2001).

The eastern part of the Caribou Forest has been analyzed in one of these broad-scale analyses, "A Biological Conservation Assessment for the Utah-Wyoming Rocky Mountains Ecoregion" (Noss, *et al*, 2001). They used a process where they incorporated special element mapping (fine-filter species), representation analysis (coarse-filter species) and focal species (umbrella concept). They then did modeling using the goals that they would 1) maintain 100 percent of viable occurrences of G1/G2 species (**Note:** G1= globally critically imperiled, G2= globally imperiled) and 2) maintain at least 10 percent occurrences of other species; and 3) protect habitat capable of supporting at least 50-70 percent of the population of each focal species.

Each of forty-three "megasites" was ranked according to irreplaceability and vulnerability. They then used these rankings to place each megasite in one of four quadrants. Those placed in Quadrant 1 are those megasites that are highly irreplaceable and highly vulnerable, giving them the highest priority for conservation. Megasites that include part of the Caribou National Forest and fell into Quadrant 1 are:

1) South Caribou/Grays Lake (Tincup north to McCoy)
2) Portneuf (Bannock Range and southwest side of Portneuf Range)

More information from Noss, *et al*, has been incorporated into the wildlife analysis for roadless areas in Appendix R. Management proposed in the Plan will not have any affect on known areas of species richness and rarity. The high biodiversity of the public lands on the Caribou will be maintained through managing vegetation towards proper functioning condition (see Comparison of Alternatives for movement towards PFC in Chapter 2 of the FEIS).

The South Caribou/Grays Lake Quadrant has been put into several different prescription areas in Alternative 7R. These include Recommended Wilderness, Caribou City Special Emphasis Area, Non-motorized Recreation and Wildlife Security, Semi-primitive – restoration, Rangeland Vegetation and Winter Range. Most of these prescriptions into a goal of "Maintain the natural role of ecological processes and disturbance regimes compatible with other resource goals." These prescriptions should allow conservation of habitats and species using these habitats and maintenance of potential linkage habitat to the Targhee NF.

The Portneuf Quadrant is a mix of many small, diverse prescription areas in Alternative 7R. These include a municipal watershed, two RNAs, Dispersed Camping, Forest Vegetation, Winter Range, Semi-primitive recreation, Semi-primitive restoration, Rangeland Vegetation, and Visual Quality Management. These prescriptions allow a mix of maintenance of natural processes, restoration treatments and movement towards PFC, and management for recreation. Because of the small size of these mountain ranges, and heavy development around the ranges, habitat for wide-ranging species like large carnivores (lynx, wolves, wolverine) is limited in this area. These prescriptions should allow conservation of habitats and species currently using these habitats.

References cited in above section:

Noss, R.F. and A.Y. Cooperrider. 1994. Saving Nature's Legacy: Protecting and Restoring Biodiversity. Island Press, Washington DC.

Noss, R., G. Wuerthner, K. Vance-Borland and C. Carroll. 2001. A Biological Conservation Assessment for the Utah-Wyoming Rocky Mountains Ecoregion. Conservation Science Inc. Corvallis, OR.

Stein, B.A., L.S. Tutner and J.S. Adams eds. 2000. Precious Heritage: the Status of Biodiversity in the United States. Joint Project of the Nature Conservancy and Association for Biodiversity Information. Oxford University Press, New York, NY.

USFS. 1996. Status of the Interior Columbia Basin: Summary of Scientific Findings. General Technical Report PNW-GTR-385. Portland, OR. USDA, Forest Service, Pacific Northwest Research Station; USDI, Bureau of Land Management. 144 pp.

Corridors

Corridors can be defined as avenues along which wide-ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas. A corridor can function at several scales (Samson, *et al*, 1997). Corridors may be used for dispersal from home ranges into new areas. Dispersal distances for some large or wide-ranging species are very large (lynx, wolverine). Corridors also act as migration routes between winter and summer ranges. Animals may also use corridors on a daily or weekly basis. Travel corridors are narrow paths similar to highways, that wildlife use to move from one area to another. Samson (n.d.) defines corridors as an area through which species can move from one place to another over time in response to changes in the environment.

In 1996, Terrestrial Protocols were developed by R1of the Forest Service and were later adopted by R4. These protocols include one developed for assessing connectivity. Connectivity refers to the abundance and spatial patterning of habitat and the ability of members of a population to move from patch to patch of similar habitat (Samson, *et al*, 1996). An approach to providing connectivity is through a corridor "a narrow strip, stepping stones or a series of stepping stones of hospitable territory traversing inhospitable territory, providing access from one area to another that were connected in historical time." They identified five categories of corridors.

Table 1. Types of Corridors Identified by Samson, *et al*, 1996.

Type of Corridor	Number of Species	Spatial Scale	Function of Corridor
Biogeographic	Many and often unrelated taxa	Continental, transcontinental	Evolution and distribution
Seasonal migration (linkage zone)	Groups of related species, single sp.	Continental, transcontinental to local and elevational	Behavioral and Physiological for ecological survival
Dispersal and emigration	Population	Varies by species	Use unoccupied habitat, maintain current habitat
Travel	Individual	Within a home range	Daily life history requirements
Invasive	Exotic and alien species	All scales	Extend ranges of non-native species

The process that they identified to assess connectivity includes the following steps:

1. Assess historic patterns in vegetation and relative connectivity
2. Assess current patterns in vegetation and relative connectivity including the impacts of human disturbance or physical barriers (highways, croplands, etc.)
3. Compare historic and current patterns and relative connectivity to determine if animal movement opportunities have been significantly interrupted.
4. Consider measures to restore historic animal movements using the following steps; review each of five corridor types when raised as an issue; consider the need for each type of corridor based on its ecological function as outlined; recommend application of the concept where an ecological function served by the corridor type can be clearly documented with minimal negative ecological consequences; and provide a consistent and well-documented justification for the application of the concept.

Mapping Efforts/Corridor Identification

Most of the efforts to date to map corridors have focused on large-scale dispersal corridors, generally from the Northern Rockies (Glacier NP) to the Greater Yellowstone Ecosystem. The USFWS, in efforts to conserve large carnivores in the Northern Rocky Mountains has developed the concept of linkage zones. The linkage zone is an area between habitat fragments able to support both movement and low-density occupancy. The distinction between a linkage zone and a corridor is the width of habitat- that is the ability to support low-density occupancy by species (Samson, *et al*, 1997).

Ruediger, *et al*, (2000) drafted a map titled "IGBC Wildlife Habitat Linkage in the Northern Rocky Mountains." This map also includes the northeastern portion of the Caribou in the mapped north-south linkage zone. Other agencies and groups have done mapping, as well. American Wildlands (2000) has mapped corridors in the Northern Rockies, but did not include the Caribou Forest.

In May 2000, a meeting was held with several state and federal agencies, as well as other interested groups, to discuss developing common criteria to help identify linkages of highest importance (Ruediger, 2000). They recommended factors to consider when identifying wildlife habitat linkages; 1) consider all scales, 2) landforms and topography are important, mountain passes, river bottoms and major ridges are often natural movement corridors, 3) vegetation is important, many species use forested areas for cover, 4) quality of habitat is important, 5) areas with low road densities and low levels of human use are important, 6) need data and 7) maintain large intact blocks of habitat (Ruediger, 2000).

In 2001, the Wildlife Spatial Analysis Lab of the University of Montana mapped "Priority Wildlife Linkage Habitat with Roads and National Forests." In this mapping exercise, no areas on or in the vicinity of the Caribou were identified as priority areas (www.fs.fed.us/r1/wildlife/igbc/Linkage/map).

The Wasatch-Cache National Forest in Utah looked at a north-south corridor passing through the Forest. They used McNab, *et al*, (1994) to identify Province M331 "Southern Rocky Mountain Steppe" as a main north-south corridor (Williams, Forest Biologist, pers. comm.). Part of this province (M331) passes through part of the Caribou NF (in the Caribou/Webster/Preuss subsections). This same area has been mapped as part of the Greater Yellowstone Ecosystem and was included on Ruedigers "IGBC Wildlife Habitat Linkages" map.

This "mountain range" is a combination of the Caribou, Webster and Preuss subsections. It has a wide variety of habitats. On the north end in the Caribou subsection, the vegetation is dominated by shrublands and aspen/conifer, with lesser amounts of mixed conifer (lodgepole pine, Douglas-fir, subalpine fir). This section has the lowest open route density of the three (approximately 0.6 mi/mi^2). This subsection also is adjacent to the Palisades area of the Targhee NF, which then moves up into Yellowstone and Grand Teton National Parks. In the middle section more mixed conifer stands are evident, but they are present in a patchy mosaic. This subsection has been more heavily developed, including phosphate mining and past timber harvest, and has the highest open route density of the three (approximately 1.4 mi/mi^2). On the southern end in the Preuss subsection, shrublands, aspen and aspen/conifer dominate the area. It has a more open nature, and open route densities are around 1.2 mi/mi^2. The eastern edge of this subsection connects to the Salt River Range on the Bridger-Teton NF.

An interagency meeting on January 25, 2002 identified and mapped possible lynx linkages for the state of Idaho. This mapping effort focused on highways as the major factor affecting lynx movements and dispersal, especially four-lane highways. Of special concern would be the conversion of existing two-lane

highways to four-lane highways. As a result of that mapping, there were two areas on or adjacent to the Caribou NF that were mapped as linkage areas across highways. These are Highway 34 along the Tincup Highway, and Highway 34 between Manson and Georgetown. (M. Orme, Forest Biologist, pers. comm.). These are shown on the attached lynx map.

Landscape level linkages have been identified as areas that could allow movement of lynx from the Greater Yellowstone Ecosystem on the north, to adjacent Forests to the south. On the Forest, areas that were considered as most important include 1) the south end of the Bear River Range that connects to the Wasatch-Cache NF to the south; 2) the Gannett Hills area that connects to the Bridger-Teton NF to the east and 3) the McCoy Creek area that connects to the Targhee NF on the north and the Bridger-Teton NF to the east. These are shown on Map 1. Mapping of potential lynx linkage habitat identified linkages that may be used by several of the carnivores.

Migration Corridors

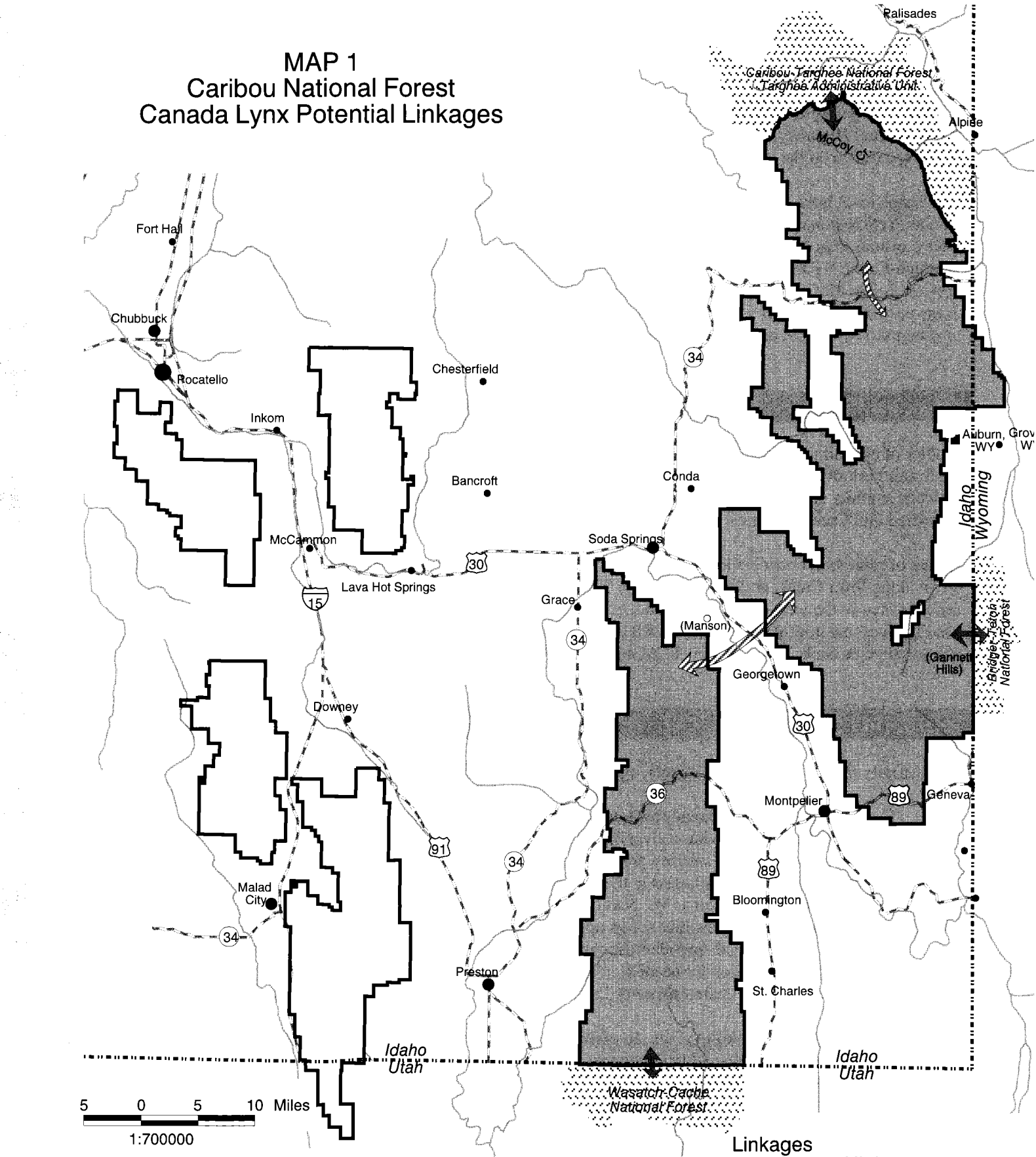
Studies of elk and mule deer that use the Diamond and Stump Creek areas in the summer have found that the South Fork of Fall Creek (on the Targhee NF) is an important migration corridor for animals moving between summer and winter range (Brown, 1981; Thomas, 2000; and Thomas, 1987). Thomas (2000) identified Fall Creek as critical autumn and spring habitat.

A map of migration corridors in Brown (1981) indicates that elk in his study moved from Fall Creek, down along Iowa Creek, and into the head of Tincup Creek and into Trail Creek. Another group of elk used the area to the west of Caribou Mountain and moved into the head of Tincup Creek. Other areas are used for seasonal migration corridors, such as movement of mule deer from the Aspen Range east to winter range on Soda Springs Hills (BLM and private).

Analysis of Effects

Connectivity or linkages on lands managed by the Caribou NF will be maintained due to several factors:

1) The Plan directs management towards upland and riparian vegetation towards proper functioning condition. This will provide a diversity of seral stages of all major vegetation types.
2) Several, larger, existing security areas (areas over 250 acres over one-half mile from an open motorized route) are maintained in the summer and winter through recommended wilderness or non-motorized prescriptions (Mt. Naomi, Caribou City, Bear Creek, Toponce and Meade Peak).
3) Open motorized route densities set an upper limit to the amount of new roads or motorized trails that could be developed, and identifies areas where reductions of existing open road and motorized trail densities are needed.
4) The Plan emphasizes maintenance or improvement of unique or highly used habitats, such as aspen and riparian.
5) The Plan includes wildlife goals, an objective and standard for land adjustments, and a Transportation goal that address connectivity (either directly or indirectly).
6) Any highway reconstruction across the Forest would go through site-specific environmental analyses and concerns over affects on wildlife movements would be addressed and/or mitigated. Conversion of two-lane to four-lane highways has been identified as a major concern during mapping of potential lynx linkages.


MAP 1
Caribou National Forest
Canada Lynx Potential Linkages
Palisades
Caribou-Targhee National Forest
Targhee Administrative Unit
McCoy Cr.
Alpine
Fort Hall
Chubbuck
Pocatello
Inkom
Chesterfield
Bancroft
McCammon
Lava Hot Springs
15
30
34
Conda
Soda Springs
Grace
(Manson)
Auburn, WY
Idaho
Wyoming
Bridger-Teton National Forest
(Gannett Hills)
Georgetown
Downey
36
Montpelier
89
Geneva
91
Malad City
Bloomington
St. Charles
Preston
Idaho
Utah
Wasatch-Cache National Forest
5 0 5 10 Miles
1:700000
Caribou National Forest
State Line
Major Rivers
Major Roads
Adjacent National Forests
Linkages
Across Highway
Adjacent National Forest
Linkage Areas
Not Considered Linkage

The following table compares criteria that may affect suitability of an area for use by some species. Off-route travel and high, open motorized route densities may affect species that are sensitive to human disturbance.

Table 2. Factors Affecting Suitability for Linkage Habitat.

Linkages	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Percent of Forest open to off-route travel *	33% (2)	38% (2)	38% (2)	0% (1)	3% (1)	0% (1)	2% (1)	2% (1)
OMRD**								
Caribou	0.6	0.6	0.6	0.6	0.5	0.2	0.6	0.6
Webster/Diamond	1.4	1.4	1.4	1.3	1.4	0.4	1.3	1.4
Pruess	1.2	1.2	1.2	1.2	1.1	1.0	1.2	1.2
	(2)	(2)	(2)	(2)	(2)	(1)	(2)	(2)
Acres in 1.3 and 3.1, where natural processes dominate ***	9,302 (4)	9,302 (4)	0 (5)	88,207 (2)	94,477 (2)	200,000 (1)	57,019 (3)	87,140 (2)
Movement towards PFC****	7 yrs (1)	60 yrs (2)	14 yrs (1)	60 yrs (2)	100 yrs (3)	Na (3)	45 yrs (2)	60 yrs (2)
Overall ranking	**4**	**5**	**2**	**3**	**3**	**1**	**3**	**2**

* In Alternatives 1-3, almost the entire middle subsection (Webster/Diamond) is open to off-route travel. In Alternatives 5-7 an area of the middle subsection would still be open to off-route travel.

** These numbers were calculated on boundaries drawn for big game analysis and were not drawn based on subsection lines, but they give the overall picture for the same overall area.

*** These acres are approximate but give a picture for the Caribou/Webster/Preuss ranges

**** "1"= fastest rate; "3" is slowest

None of the alternatives propose habitat type conversions; vegetation treatments will change seral status over the short-term, but over the long-term, vegetation will move towards proper functioning condition. This will maintain habitats in a condition that will allow continued use for dispersal and movement. The vegetation on the Caribou NF is naturally patchy (See next section in this Process Paper) and fragmentation from vegetation treatments is not expected to be an issue. Species using the area have adapted to naturally fragmented habitats. All of the alternatives would maintain potential for linkage habitat, with Alternative 6 ranked the highest, followed by Alternative 3 and Alternative 7R.

The major affects on animal movements are at lower elevations. The river valleys are fairly highly developed and include highways, towns, croplands, subdivisions, railroads etc. All of these developments may limit use of these lower areas for corridors.

Major drainages and ridges on the Forest have a much lower level of development. There are a few developed recreation sites and developed mines, where there is concentrated human activity, but over most of the Forest human activity is dispersed along road and trail corridors.

Maintenance of an area for use as a corridor does not require major limitations on land uses in the area. As outlined in the rationale for why connectivity would be maintained, human uses are a consideration, but do not limit suitability as corridors. Vegetation management, recreational use and access will continue across the Forest as outlined in the Plan.

References cited in above section:

American Wildlands. 2000. Corridors of Life: Weaving a web of wildlife habitat in the Northern Rockies. Brochure.

Ruediger, B. 2000. Report to the Interagency Grizzly Bear Working Group on Wildlife Habitat Linkages. USDA Forest Service, Region One, Missoula, MT. August 30, 2000.

Ruediger, B., J. Gore, J. Claar and M. Maj. 2000. IGBC Wildlife Habitat Linkage in the Northern Rockies. Map, draft #1.

Samson, F. n.d. Interim direction: Corridors. USDA Forest Service, Region one, Missoula, MT. P 10 - 14.

Samson, F., *et al*, 1996. Terrestrial Protocols: Connectivity. USDA Forest Service, Region One, Missoula MT. P. 51- 57.

Samson, F.B., *et al*, 1997. Terrestrial Protocols for Coarse Filter Analysis, Species-at-risk, Viability, Connectivity, and Modeling/monitoring. USFS, Region 1, Missoula, MT.

Patch Size Analysis

Vegetation types are very patchy on the Caribou NF, with vegetation maps revealing a mosaic of small patches across the Forest. Map 2 shows forested and non-forested cover types on the Caribou. To get an overall picture of what patch sizes actually are, a patch size analysis was done. Six relatively undisturbed watersheds were selected across the Forest. These watersheds are Toponce Creek in the Portneuf Range, Weston Creek in the Malad and Oxford area, St. Charles Canyon in the Bear River Range, and Horse Creek/Stump Creek, Rock Creek/Pine Creek and Preuss Creek in the Webster/Preuss Range, shown also on Map 2.

Five broad vegetation types were selected and average patch sizes were calculated for each of the six watersheds. This was done through the use of GIS and vegetation maps for each of the watersheds and patch size maps and associated data for each are found in the project record.

Table 3. Average Patch Sizes for Various Vegetation Types.

Watershed Name	Average Patch Size (acres)				
	Sagebrush	Aspen	Douglas-fir	Mixed conifer	Lodgepole pine
Horse/Stump	94	23	28	16	44
Preuss	229	35	26	20	20
Rock/Pine	294	56	48	8	na
Weston	95	18	43	na	na
St. Charles	56	29	27	27	22
Toponce	12	55	10	14	na

This analysis shows that average patch sizes are generally small. Some of the largest patches are in the sagebrush vegetation types.

To assess what patch sizes would look like if forested, and non-forested vegetation was lumped, the analysis was re-run. The following table shows average size, and a range of patch sizes for each of the six watersheds. Non-forested vegetation includes sagebrush, aspen/maple, grass/shrub, juniper, mahogany, maple and mountain brush. Forested vegetation includes both aspen and conifer types.

MAP 2
Caribou National Forest
Forested/Nonforested Vegetation
Watersheds (HUC6) Used for Patch Size Analysis

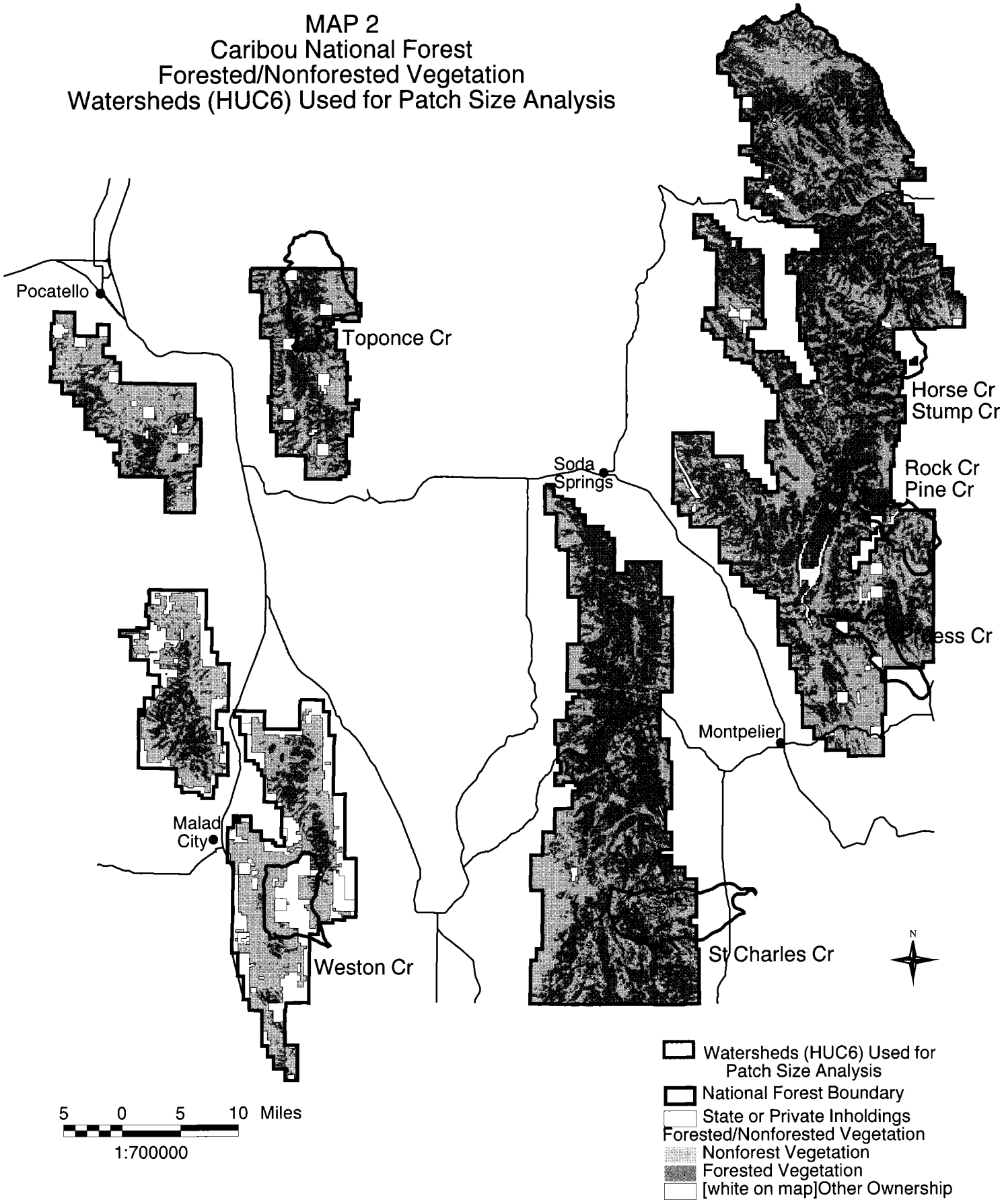


Table 4. Average and Range of Patch Sizes for Forested and Non-forested Vegetation.

Watershed Name	Non-forested Vegetation		Forested Vegetation	
	Average Patch Size (Acres)	Range (Acres)	Average Patch Size (Acres)	Range (Acres)
Horse/Stump	101	0-2,264	199	0-6,803
Preuss	229	0-4,644	83	0-1,228
Rockpine	420	0-5,899	204	0-1,498
St. Charles	80	0-3,161	256	0-9,898
Toponce	150	0-4,910	348	0-8,249
Weston	825	0-5,382	29	0-280

As expected, patch sizes are larger when vegetation is lumped into forested and non-forested, but they are still relatively small. The Plan includes a guideline under landbird management that recommends leaving contiguous patches of sagebrush 320 acres or larger, where possible. As the first table shows, this may not be possible in some cases because of the naturally small patch sizes. However, this guideline was left in because some area-sensitive birds need larger areas to successfully breed (Paige and Ritter, 1999).

The Plan also includes a guideline in the Vegetation section to manage mature and old growth forested vegetation in blocks of 200 acres or larger (200 acres used to tie to goshawk nest areas, goshawks are the MIS for mature/old forest). Again, this may not be possible in all cases, but was left in because a minimum patch size is required for many species using forested habitats.

Because of the naturally small patch size on the Caribou NF, it is expected that the vegetation treatments would not increase fragmentation or affect species using these habitats. Species using these Forests are adapted to naturally small, patchy habitats. The major areas of fragmentation on the Forest are a result of historic and current mineral development (approximately 7 percent of the Forest, mostly in the Webster subsection.

References cited for the above section:

Paige, C. and S. A. Ritter. 1999. Birds in a Sagebrush Sea: Managing Sagebrush Habitats for Bird Communities. Partners in Flight Western Working Group, Boise, ID.

Non-Forested Vegetation

Vegetation is very patchy on the Caribou NF. Since most of the sagebrush habitats are at lower elevations on the Forest (and off-Forest), and mix in with other types as elevation increases, they naturally are more broken on the Forest. To get an idea of patch sizes in sagebrush stands, six relatively undisturbed watersheds were selected from across the Forest. The average sizes in these six watersheds range from twelve acres up to 294 acres.

Currently, the overstory is denser with more than 40 percent of the area with canopy cover in greater than 15 percent. The amount of bare soil and soil loss has increased over the historical range of variation. It is desired that there would be around 30-50 percent with a canopy cover of greater than 15 percent To move toward this goal, vegetation treatments are proposed.

There are 365,200 acres of sagebrush on the Caribou NF (and around 63,300 acres of planted grasses). Assuming that proposed treatments are evenly distributed across the Forest, and that treatments treat sagebrush and mountain brush in the proportion that they are present (90 percent sagebrush, 10 percent mountain brush) this table shows acres treated by type, forest-wide.

Table 5. Non-forested Vegetation Treatments by Alternative.

Non-forested Vegetation	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Total acres treated	130,000	77,500	100,000	77,500	70,800	60,000	79,750	40,000
Acres sagebrush treated	117,000	69,750	90,000	69,750	63,720	54,000	71,775	36,000

Assuming that 50 percent of the sagebrush is currently in the greater than 15 percent canopy cover class, at the end of ten years, sagebrush canopy cover classes would be distributed as shown:

Table 6. Non-forested Vegetation at the End of Ten Years.

	EC*	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Percent Sagebrush in Less than 15% cc	50	65	52	57	52	50	47	52	43
Percent Sagebrush in Greater than 15% cc	50	35	48	43	48	50	53	48	57

* EC = existing condition

Based on the levels of treatments proposed in Alternatives 6 and 7R, sagebrush habitats would move further from DFCs. Increased canopy cover of sagebrush results in a decrease in understory species diversity and/or abundance. Species using denser sagebrush stands would be favored. Alternative 5 would maintain the current distribution of sagebrush canopy cover classes, and the rest of the alternatives would move towards PFC.

As mentioned above, based on the levels of treatments, Alternative 7R would move further from PFC. However, Alternative 7R differs from the rest of the alternatives in that wildfire acres that burn are in addition to planned acres treated. In the other alternatives, acres proposed for treatment would be reduced as wildfire "treats" acres. Based on this difference, the affected acres are expected to be higher than what is proposed for treatment in Alternative 7R. From 1970-2000, about 1,210 acres burned each year (See Table 3.16 in EIS). Assuming half is non-forested vegetation (approximate coverage on Forest), and 605 acres burned each year, there would be an additional 6,050 acres treated over the ten-year planning period. This would be about 42,050 acres treated, but still below what is needed to move towards PFC. Actual number of acres that would be affected are unknown.

The Forest Plan includes guidelines to maintain contiguous areas of sagebrush habitats in 320-acre patches or larger, where possible, to support area-sensitive species; to implement practices that stabilize or increase native grass and forbs cover in sagebrush habitats with 5-25 percent canopy cover; and to manage habitats to conceal nests through the first incubation period.

Noxious Weeds

Over time, many non-native plants have become established on the Forest. This may affect wildlife habitat in several ways. First, as native plant species are replaced, this may affect foraging habitat, nesting habitat and cover. Changes in small mammal densities could then affect use of the area by predators. When noxious weeds have replaced native species, they may affect functioning of riparian habitats, influencing those wildlife species using these areas. In addition, it may alter the natural processes (fire, water infiltration, etc.) of the plant community, affecting ways that wildlife use the plant community.

Dominant weed species on the Forest include musk thistle, Canada thistle and leafy spurge.
Musk thistle is thought to be unpalatable to wildlife. Even at low densities it results in loss of production of native species since the rosette can grow greater than three feet in diameter. Birds are known to use thistle seed. Canada thistle may be a minor component in the diet of mule deer, and there are more than 130 species, including pathogens, birds and over 80 insects known to feed on Canada thistle. Goldfinches are known to feed on thistle seeds, but it is not known how many seeds remain viable after being consumed (Fire Effects Information System). Leafy spurge is rated poor for palatability (for antelope, mule deer and elk), and is rated fair to poor for providing cover (big game, small mammals, game birds). All of these noxious weed species displace native plant species, reducing forage, cover and altering the plant communities and processes in the plant communities. These changes then affect the ways in which wildlife use them.

Noxious weeds are spread through various means, including vehicles, recreational use, livestock, wildlife and vegetation treatments. They are more likely to become established in areas where there has been disturbance and bare soil is exposed.

Table 7. Potential Factors in Weed Spread. (See EIS for more information.)

Noxious Weeds	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Forest open to Off-route travel	33%	38%	38%	0	3%	0	3%	3%
% Change in cattle AUM's	-7%	-7%	-6%	-24% to -31%	-30% to -38%	-65% to -66%	-19% to -26%	-17% to -24%
% Change in sheep AUM's	-7%	-5%	-6%	-7%	-7%	-59%	-5%	-4%
Potential Acres of non-forested Treatments	130,000	77,500	100,000	77,500	70,800	60,000	79,750	40,000

Forested Vegetation

Existing Condition

Forested vegetation is distributed across the Forest as displayed on Map 1. Based on GIS vegetation data, forested vegetation is distributed as shown in the following table. This data shows recent (within twenty years) harvest or wildfire, which are shown as early seral. There is an old growth layer, which shows in this table as old growth. Everything else is shown as mid-seral.

Table 8. Existing Seral Classes for Forested Vegetation.

Forest Type	Early Seral	Mid-Seral	Old Growth
Aspen	3,951 (3%)	140,109 (91%)	10,362 (6%)
Douglas-fir	2,132 (1%)	106,962 (77%)	30,417 (22%)
Conifer with seral aspen	1,205 (1%)	97,262 (89%)	10,336 (10%)
Lodgepole pine	12,919 (20%)	46,687 (71%)	6,345 (9%)
Mixed conifer	1,563 (2%)	56,878 (79%)	13,997 (19%)

Because of habitat associations of the wildlife species to be analyzed, the above habitat type groups were grouped further, into three categories. The first is aspen. The second is low-elevation conifer, which includes Douglas-fir types. The last category is high-elevation conifer, which includes the cooler and moister habitat types (mixed conifer with lodgepole pine, Englemann spruce and subalpine fir).

The VDDT model uses different age classes from what are found in the GIS vegetation layer. Forest vegetation specialists used existing stand data to determine how the GIS categories would be split to fit the VDDT model categories, which are grass/forb, seedling/sapling, immature, mature and old. The existing condition for mature and old forests and forest type groupings is shown in the table below.

Table 9. Existing Percent Mature/Old Forest (from VDDT Analysis).

Forest Type	Mature/Old
Aspen	57%
Low-elevation mixed conifer (Douglas-fir)	80%
High-elevation mixed conifer (lodgepole, spruce/fir)	70-80%

Treatments

The VDDT model incorporated acres and type of treatments (mechanical and fire), as well as what forest type the treatments would occur in. For a discussion of the model and assumptions used see the VDDT section.

Table 10. Percent Mature and Old Forest at the end of Ten Years, by Alternative.

Alt	Forest Types Treated	Aspen % Mature and old	Doug-Fir and Limber pine Low-elevation, % Mature and old	Mixed Conifer and Lodgepole Pine High-elevation, % Mature and old
1	All	68%	85%	79%
2	Mixed conifer, aspen/Douglas-fir, aspen	73%	85%	76%
3	Douglas-fir, lodgepole pine and mixed conifer	73%	83%	74%
4	Mixed conifer, aspen/Douglas-fir and aspen	72%	83%	77%
5	Mixed conifer, aspen/Douglas-fir and aspen	73%	85%	79%
6	Mixed conifer, aspen/Douglas-fir and aspen	74%	85%	80%
7	Mixed conifer, aspen/Douglas-fir and aspen	76%	85%	79%
7R	Mixed conifer, aspen/Douglas-fir and aspen	64%	82%	81%

The VDDT model was run to estimate percent mature and old at the end of 100 years. This information was used to determine how the alternative was moving towards desired future conditions.

Table 11. Percent Mature and Old Forest at the End of 100 Years, by Alternative.

Alt	Forest Types Treated	Aspen % Mature and old	Doug-fir and Limber pine Low-elevation, % Mature and old	Mixed Conifer and Lodgepole pine High-elevation, % Mature and old
1	All	85%	67%	71%
2	Mixed conifer, aspen/Douglas-fir, aspen	82%	61%	67%
3	Douglas-fir, lodgepole pine and mixed conifer	82%	61%	62%
4	Mixed conifer, aspen/Douglas-fir and aspen	53%	54%	66%
5	Mixed conifer, aspen/Douglas-fir and aspen	71%	76%	76%
6	Mixed conifer, aspen/Douglas-fir and aspen	84%	78%	78%
7	Mixed conifer, aspen/Douglas-fir and aspen	76%	60%	69%
7R	Mixed conifer, aspen/Douglas-fir and aspen	55%	61%	76%

Desired future conditions (DFC) have been established in Alternative 7R as 30-40 percent mature/old conifer and 20-30 percent mature/old aspen.

This information was used to assess habitat changes for species associated with forests. For more information, see analyses for individual species.

Snags and Cavity Nesters

General Ecology

Snags are distributed singly, by death of individual trees, or in clusters, by weather, fire, insect or disease. Continuous Forest Inventory (CFI) plots on the Forest found a range of 0 to 38.3 snags per acre across the Forest. Currently, pine beetle populations are at endemic levels across the Forest. In the early to mid-1980s there were epidemic levels of mountain pine beetle; in the early to mid-1990s there were localized epidemics of Douglas-fir beetle and in the mid-1990s SAF complex (complex of borers, drought and disease) was present at higher levels. Past timber harvest has generally focused on these areas, but only about 20-30 percent of the harvest has been of dead or dying trees (Padian, Forester, pers. comm.). Because of the current stand ages and structures, the potential for insect epidemics is considered high.

Many wildlife species depend on dead trees for nesting, roosting, denning, foraging, resting or shelter. Woodpeckers and nuthatches, known as primary cavity nesters, have the ability to excavate cavities in snags where they nest and roost. Because woodpeckers usually excavate a new nest cavity each year, old nest cavities are available for many secondary cavity nesters. Secondary cavity users, which include many species of birds and mammals, cannot excavate a cavity, but use existing ones for nesting, denning or shelter (such as boreal owl, flammulated owl and marten); some use broken-top snags (great-gray owl).

Seven species of woodpeckers are expected to be present on the Caribou NF (Stephens and Sturts, 1998). The following table shows the relative abundance by general forest habitat (Hejl, *et al*, 1995).

Table 12. Woodpecker Species on the Caribou NF.

Species	Mixed conifer*	Lodgepole pine	Spruce-fir	Aspen
Lewis' woodpecker	-	-	-	R
Red-naped sapsucker	U	R	C	C
Williamson's sapsucker	U	U	U	U
Downy woodpecker	R	-	C	C
Hairy woodpecker	C	U	C	C
Three-toed woodpecker	R	U	U	U
Northern flicker	C	C	C	C

* Mixed conifer is dominated by Douglas-fir

* A = abundant, C = common, R = rare, U = uncommon, and - = no information

Primary cavity nesting species excavate nest cavities in snags. Live trees may also provide nest sites, depending on the presence of infection or injury that would allow the birds to excavate nest cavities. Two of these primary cavity nesters require larger snags (12 inches or more) and provide larger nesting cavities that are important for several other species of animals.

Several Forests, including the Targhee NF, have used the concept of biological potential to measure cavity nester habitat, as outlined by Thomas (1979). This involved an assessment of the primary cavity nesters present (woodpeckers), primary forest types used by each, number of cavities used per year, the

size of territories, etc. All of this information was summarized, and the number of snags and live trees per acre were estimated that would meet varying levels of biological potential for cavity nesters.

The following tables were developed during the Targhee NF Forest Plan revision, as analyzed in Process Paper D of the Targhee NF Forest Plan Revision. Species and overall snag requirement levels differ slightly from the Targhee NF, as one species they analyzed (black-backed woodpecker) is not found on the Caribou NF. In addition, cottonwood has been dropped from the tables because of its very low level of occurrence on the Forest.

Table 13. Major Forest Types Used by Woodpeckers on the Caribou NF.

Major Forest Types Used (of types found on the Caribou NF)	Aspen	Mixed conifer and Douglas-fir and spruce/fir	Lodgepole pine
Lewis' Woodpecker	X	X	
Red-naped sapsucker	X	X	X
Williamson's sapsucker	X	X	X
Downy woodpecker	X	X	X
Hairy woodpecker	X	X	X
Three-toed woodpecker	X	X	X
Northern flicker	X	X	X

Table 14. Woodpecker Habitat Requirements.

	Snag DBH (inches)	Snag Height (feet)	No. of Cavities /Year	Territory Size (Acres)*	No. of Snags Per Acre for 100% Biological Potential*
Lewis woodpecker	12-27"	5-170'	1	0-15 (15)	.48-1.01 (1.01)
Red-naped sapsucker	9-47"	15+'	1	5.1-12 (10)	1.5 (1.5)
Williamson's sapsucker	12-37"	15+'	1	10-12 (10)	.33-1.5 (1.5)
Downy woodpecker	6-14"	6-50'	2	5-50 (10)	.16-5 (3)
Hairy woodpecker	9-29"	15+'	3	6-25 (25)	.6-1.92 (1.8)
Three-toed woodpecker	7-19"	15+'	3	35-200 (75)	.06-.6 (.59)
Northern flicker	10-51"	6+'	1	8-500 (40)	.38-.48 (.38)

* No. in ( ) indicates territory sizes and number of snags used for analysis purposes on the Targhee NF.

Table 15. Snag Requirements to Achieve 100% Biological Potential for Each Woodpecker Species per 100 Acres.

Species	Aspen	Douglas-fir, spruce/fir	Lodgepole pine
Lewis' woodpecker	101	101	na
Red-naped sapsucker	150	150	150
Williamson's sapsucker	na	150	150
Downy woodpecker	300	300	300
Hairy woodpecker	180	180	180
Three-toed woodpecker	59	59	59
Northern flicker	38	38	38
Total hard snags per 100 acres	828	978	877

Table 16. Snag Requirements for Maintaining Various Percentages of Biological Potential for Woodpecker Populations (Snags per 100 Acres).*

Percent BP	Aspen	Douglas-fir and spruce/fir	Lodgepole pine
100%	828	978	877
80%	662	782	702
60%	497	587	526
40%	331	391	351
20%	166	196	175

*For mixed stands, average the numbers for the dominant cover types (for mixed conifer, percentages would be 927, 742, 556, 371 and 185).

Bull, *et al*, (1997) reviewed snag densities. She discussed Thomas (1979) and some of the problems associated with the models that he used; did not include snags for foraging, newer research suggests larger home ranges for some species (one of which was analyzed in this analysis); the relationship between snags and cavity nesters may not be linear; and did not take into account some of the secondary cavity nesters that use features like loose bark. Because of these factors, they felt that snag densities should be adjusted upward.

They found only three studies in the interior Columbia River Basin that calculated both density of snags and woodpeckers in managed and unmanaged landscapes. One was done on ponderosa pine (not found on the Caribou NF), one was done on pileated woodpeckers in Oregon (not found on the Caribou NF) and the last was on the Payette NF. Evans and Martens (1995) recommended densities of snags for retention on the Payette NF based on their ecological value, encompassing soil health, seedling regeneration, moisture retention, nutrient recycling and wildlife use. Their recommendations are shown in Table 17.

Table 17. Snag Recommendations from Evans and Martens (1995) for Payette National Forest.

Forest Type	Number of Snags/Acre	Total Snags Per Acre Over 10 inches dbh
Spruce/fir	5.0	9.5
Mixed conifer <35% canopy closure	0.5	2.5
Mixed conifer >35% canopy closure	2.5	9.0
Lodgepole pine <35% canopy closure	3.5	4.5
Lodgepole pine >35% canopy closure	6.0	7.7

Existing Condition on the Caribou

Information from 197 Continuous Forest Inventory (CFI) plots from 1993 was used to calculate the existing snag levels and the number of snags/acre/year created through tree mortality. Because the Forest Plan has direction for snags over 12 inches dbh (diameter at breast height), and 12 inches or larger are needed to maintain habitat for all seven woodpeckers, information on snags in the 11- to 12.9-inch dbh and higher categories were used.

Table 18. Continuous Forest Inventory (CFI) Plots.

Forest Types	Number of Plots
Douglas-fir dominated	19
Lodgepole pine dominated	3
Subalpine fir – spruce/fir	22
Lodgepole pine/aspen	7
Mixed conifer 1 (SAF, DF, aspen)	69
Douglas-fir/aspen	42
Aspen dominated	35
Total	197

DOUGLAS-FIR

Of the CFI plots that were dominated by Douglas-fir, only six out of nineteen plots had any snags greater than 12 inches dbh. The range of snags was from 0/acre to 12.7/acre over 12 inches dbh. When averaged over the nineteen plots, there were an average of 1.9 snags per acre over 12 inches dbh. This equates to roughly 20 percent biological potential.

LODGEPOLE PINE

Of the CFI plots that were dominated by lodgepole pine (including LPP/SAF and LP/ASP), six out of ten plots had snags greater than 12 inches dbh. There was a range from 0 snags/acre up to 29.6 snags/acre over 12 inches dbh. When averaged over the ten plots, there were an average of 6.8 snags per acre over 12 inches dbh. Based on this information, the existing biological potential is around 78 percent. This was compared to the Payette NF recommendations. Since information on canopy closures is not available for the Caribou NF, the two categories from the Payette NF were averaged into one category, with their modified recommendation being 6.0 snags/acre greater than 10 inches dbh. The existing condition for the Caribou NF is above this recommendation, with 6.8 snags/acre greater than12 inches dbh.

SUBALPINE FIR/SPRUCE

Of the CFI plots that were dominated by subalpine fir/spruce, fifteen out of twenty-two plots had snags greater than 12 inches dbh. The range of snags was from 0 snags/acre up to 38.8 snags/acre greater than 12 inches dbh. When averaged over the twenty-two plots, there were an average of 8.2 snags per acre over 12 inches dbh. Based on this information, the existing biological potential is around 84 percent. The Payette NF recommendations are for 5.0 snags/acre over 10 inches dbh; the Caribou NF is well over this.

ASPEN

Of the CFI plots that were dominated by aspen, only two out of thirty-five had any snags greater than 12 inches (less than 10 percent BP). Snags/acre over 12 inches ranged from 0 to 20.1. There are nine plots with snags between 8 to10 inches, with an average of six snags/acre. This would provide about 72 percent BP for the smaller woodpeckers, while the two largest (Lewis and Williamsons) would still be less than 10 percent BP.

DOUGLAS-FIR/ASPEN

There were forty-two plots with a mix of Douglas-fir and aspen, with an average of 2.4 snags/acre greater than 12 inches dbh. The number of snags/acre over 12 inches ranged from 0 to 20.1. Using an average of the snag requirements for aspen and Douglas-fir and spruce/fir, the existing biological potential is around 27 percent.

MIXED CONIFER

Sixty-nine plots were mixed, with subalpine fir, Douglas-fir and aspen, with an average of 4.2 snags/acre. The number of snags/acre over 12 inches ranged from 0 to 38.3. Using an average of the snag requirements for aspen and Douglas-fir and spruce/fir, existing biological potential is about 47 percent.

Table 19. Percent of forested acres by cover type on the Caribou NF.

Cover Type	Percent of Total Forested Acres
Douglas-fir	23%
Lodgepole pine	10%
Mixed conifer	11%
Subalpine fir/spruce	1%
Aspen	50%
Aspen/conifer	5%

Table 20. Biological Potential for Woodpeckers over the Forest.

Cover Type	Percent of Total Forested Acres	B.P. from CFI Plots	Snag Management Level
Douglas-fir	23%	20%	5%
Lodgepole pine	10%	78%	8%
Mixed conifer	11%	47%	5%
Subalpine fir/spruce	1%	84%	1%
Aspen	50%	10% (72%*)	5% (36%*)
Aspen/conifer	5%	27%	1%
Total	100%	na	25% (56%*)

* Based on 10 inches+ dbh snags, rather than 12 inches.

Table 21. Existing Snag Levels by Watershed.

Watershed No.	Watershed Name	No. CFI plots	Average. Snags/Acre >12" dbh
1	Geneva	5	.9
2	Montpelier	6	4.1
3	Trail Canyon	10	1.5
4	Weston	3	0
5	Malad	4	4.2
6	Crow Creek	6	2.9
7	Stump Creek	14	6.3
8	Tincup Creek	12	4.0
9	Jacknife	6	5.8
10	McCoy Creek	11	11.3
11	Bear Lake	8	.3

Watershed No.	Watershed Name	No. CFI plots	Average. Snags/Acre >12" dbh
12	Bear Lake Outlet	27	2.6
13	Grace	11	1.6
14	Grays Lake	4	11.6
15	Cub River	2	4.1
16	Blackfoot River	30	2.9
17	Upper Portneuf East	11	2.4
18	Upper Portneuf West	3	5.9
19	Marsh Creek	4	3.2
20	Lower Portneuf	0	na
21	Rattlesnake	4	.2
22	Rock Creek	0	na
23	Buist	0	na
25	S. Fk. Rock Creek	0	na
26	Logan River	8	2.8

Effects of the Alternatives

Effects Common to All Alternatives

On the Caribou NF, in Douglas-fir types, natural mortality rates produced about .7 snags/acre/year. Information from Oregon (Cline, *et al*, 1980) suggests that longevity for most Douglas-fir snags in that area is around fifty years. The fall rate cited by Forbs, 1994 (in Evans and Marten, 1995) is 13 percent for Douglas-fir. Generally, biological potential would be high for forty years after a stand-replacing fire. It would then take around eighty years for the new stand to reach 7-8 inches at dbh, during which time the biological potential would be very low. Douglas-fir forests may fluctuate greatly over time in their biological potential for woodpeckers.

On the Caribou NF, in the lodgepole pine forest types, natural mortality produced about 1 snag/acre/year (from CFI plot data). A study of snag longevity following a fire in Montana (Lyon, 1977) found that lodgepole snags greater than 8 inches dbh fell at an annual rate of 2 percent for the first two years, then averaged an annual rate of 8.6 percent for the next thirteen years. However, rates were higher in the smaller diameter classes. In addition, these rates would be expected to be higher than what would occur on the Caribou NF under existing conditions. Snag loss would be expected to be higher in fire-killed stands, because there are no live trees to reduce wind velocities (Lyon, 1977). Studies on the west coast found fall rates for lodgepole pine snags to be about 52 percent (in Evans and Marten, 1995).

Generally, biological potential would be high for twenty years after a stand-replacing fire. It would then take sixty to seventy years for the new stand to reach seven to eight inches dbh, during which time the biological potential would be very low. Lodgepole pine forests may fluctuate greatly over time in their biological potential for woodpeckers. On the Caribou NF in the subalpine fir/spruce forest types, natural mortality produced about 2.4 snags/acre/year. In aspen stands surveyed, natural mortality produced only about .3 snags/acre/year.

Not all natural disturbances are stand replacing. Natural disturbances that do not result in stand replacement would tend to create fewer snags, but live replacement trees would exist and depending on mortality rates, these live trees would become snags over time.

Using projected timber harvest levels for the first decade, and Plan prescription direction for cavity nesting habitat, predicted changes in biological potential were calculated. Since harvest areas have not been identified as part of the alternatives, this discussion will not be site-specific.

Table 22. Comparison of Forest Harvest and Treatment by Alternative.

Alternative	Forested Acres Harvested (% of Forested Acres)	Emphasis on Even-aged Management	Total Forested Acres Treated (% of Forested Acres)	% Forested Acres Treated but Not Harvested
1	16,800 (3%)	High	16,800 (3%)	0
2	16,700 (3%)	Moderate	34,100 (6%)	3
3	21,900 (4%)	High	41,800 (7%)	3
4	7,100 (1%)	Low	57,000 (10%)	9
5	6,500 (1%)	Low	25,700 (4%)	3
6	4,950 (<1%)	Low	25,700 (4%)	3
7	7,000 (1%)	Moderate	34,100 (6%)	5
7R	14,000 (2%)	Moderate	49,000 (8%)	6

All alternatives rate high on insect hazard ratings and mod-high to high for wildfire risk (See Table 2.39 in EIS). Since there was very little difference between the alternatives in this respect, these factors were not included in the analysis.

Because the forest acres harvested would all have the same Forest Plan direction for snag management, the main difference between the alternatives is the emphasis on even-aged management. This may or may not be an issue, as the Plan direction for snags/100 acres is calculated over the prescription area, not a sale area. If snag densities are low in that prescription area, and snags are left in even-aged harvest units, they may be susceptible to windthrow and firewood harvest and would have a shorter lifespan. However, where there are adequate snags in the prescription area, snags may not be left in harvest units.

Acres treated but not harvested would maintain existing snags, but also create new ones as well, through prescribed burning and damage during mechanical treatments. Alternative 1 would not affect any acres, but Alternatives 2, 3, 5, and 6 would affect about 3 percent of the forested acres. Alternatives 7 and 7R would maintain or increase snags on 5-6 percent of the forested acres, while Alternative 4 would affect 9 percent of the forested acres.

Snag Management Levels for Alternative 7R

Levels of biological potential were assigned to prescription areas. These guidelines do not apply within 300 feet from an open road. Firewood harvest is expected to occur in these areas.

In Prescription Areas where timber harvest or vegetation treatments are allowed and products may be removed, guidelines for maintaining cavity-nesting habitat were assigned. In prescription areas such as recommended wilderness, where no product removal would occur, no guideline was established. It is assumed that the existing condition for cavity nesting habitat capability in these areas represents what can be expected during the next decade (100 percent BP). In management prescriptions where concentrated human use occurs, snags are usually removed due to safety concerns; in these areas the BP is zero.

Table 23. Prescription Areas on the Caribou NF.

Prescription	Acres	% Biological Potential Assigned
1.3	38,800	Natural levels
2.1.1 – 2.1.5	38,700	Natural levels
2.2, 2.5	7,100	Natural levels
2.7.1, 2.7.2	219,400	Natural levels
2.8.3	63,700	Greater than 80 percent
3.1	41,200	Natural levels
3.2	165,500	Greater than 60 percent
3.3	65,200	Greater than 60 percent
4.1, 4.2, 4.3	5,000	Not assigned (0)
5.2	160,900	Greater than 40 percent
6.2*	226,900	Greater than 40 percent
8.1, 8.1u, 8.2.2	9,800	Not assigned (0)

* While this prescription is rangeland vegetation management, the vegetation does include some forested stands.

Table 24. Snag Management Levels Across the Forest.

Biological Potential	Acres at BP Level (% of Total Acres)		Snag Management Level*
Natural levels (100%)	345,200 acres	(33%)	33%
Not assigned (0%)	14,800 acres	(1%)	0%
Greater than 40% BP	387,800 acres	(37%)	15%
Greater than 60% BP	230,700 acres	(22%)	13%
Greater than 80% BP	63,700 acres	(6%)	5%
Total			**66%**

* Snag management level = percent Biological Potential times percent of total acres (from Thomas, 1979)

Firewood Harvest

There is no Forest-wide direction for firewood harvest. Districts identify areas (may be exclusive or broad areas). A map is compiled and distributed with firewood permits. Generally, there are few restrictions on wood gathered. In areas open to off-route travel, snags are more vulnerable to harvest, while areas within 300 feet of open roads are available in restricted travel areas.

The following table evaluates the risk of losing snags to firewood harvesting. Because such a small part of the Forest is within 300 feet of a road, the risk is fairly low.

Table 25. Risk Factors for Snag Habitat.

Snags	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Forest open to off-route travel	33%	38%	38%	0	3%	0	2%	3%
% Forest within 300 feet of open roads*	4%	4%	4%	4%	4%	3%	4%	4%
Overall risk from firewood cutting	Mod	Mod	Mod	Low	Low	Low	Low	Low

* This overestimates vulnerability of snags to harvest, all road miles were used, and not split out by vegetation type that they access, and about ½ of the Forest is rangeland types.

CONCLUSION

Management direction in the Plan would allow a snag management level of 66 percent over the Forest. This should be adequate to maintain viability of woodpecker and other cavity nesting species, based on Figure 41 in Thomas, 1979.

While Bull, *et al*, (1997) identified concerns with Thomas' model in that the existing condition exceeds the recommendations from the Payette NF, which were referenced by Bull, *et al*. Forest Plan direction viability for woodpeckers and secondary cavity nesters is expected to be maintained.

Table 26. Biological Potential for Woodpeckers.

Forest Type	Recommended Snags/Acre Over 10 inches dbh*	Existing Condition Snags/Acre Over 10 inches dbh**
Spruce/fir	9.5	12.1
Mixed conifer	5.75	7.6
Lodgepole pine	6.1	11.0

* From Evans and Martens (1995): where they used canopy cover classes, these were averaged into one

** From Caribou CFI plot data (1993).

References cited in above section:

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Downed, Woody Debris

Logs and other woody debris, such as stumps, root wads, bark, and piles of limbs, occur on the floor of most forest ecosystems. These features provide diversity in the environment and are of varying significance as habitat for terrestrial wildlife (Thomas, 1979).

Logs can provide areas for foraging or provide cover. Insect-eating, fungus-eating, wood-eating and predaceous animals find food sources in and around logs. Besides cover, logs provide structure where animals can find stable temperatures and moisture for denning, feeding and food storage. Logs may also serve as places for sunning, courtship displays and for lookout posts. Small mammals also use logs as runways, and are often used under the snow as well. The size, distribution and orientation of logs are more important to wildlife than tonnage or volume (in Bull, *et al*, 1997). Slash piles remaining after harvest can benefit some wildlife like rodents, hares, and rabbits.

Wisdom, *et al*, (2000) reviewed the abundance of downed woody materials in different forest types in the Interior Columbia River Basin. They found that in low elevation, old forest, (dry Douglas-fir on Caribou NF), one issue was the decline in shrub and herb understories in response to increased density of small trees and **downed wood**, litter and duff. In broad-elevation, old forests (which I think applies to a lot of the Caribou NF), one issue they identified is the decline of late-seral forest attributes, including large downed logs. Wildlife species that use mosaics of forests were also noted as using downed logs as a special habitat feature.

The Draft Forest Plan included a guideline requiring an average of twenty-one logs per acre to be retained on at least 60 percent of the treatment acres. Since this direction was not specific to forest vegetation type, if was felt that this may not be sustainable over the Forest.

The USFS Intermountain Region (Region 4) Old Growth definition (Hamilton, *et al*, 1993) includes numbers of downed dead trees by forest type. The information from this analysis was used, because it was an attempt to define old growth and components from an ecological perspective. This was done using the best information available, and involved Forest Service personnel, university professors, state wildlife officials and privately employed professionals. They estimated that in **spruce/fir**, there are an average of five pieces/acre, 8 feet in length, and 20 inches in diameter. **Lodgepole** had an average of fifty pieces/acre, 8 feet long and 11 inches in diameter. For **aspen** they estimated ten pieces/acre, 10 feet in length and 8 inches in diameter. **Douglas-fir** had none.

Table 27. Downed, Woody Debris, by Forest Type, Based on R4 Old Growth Definition.

Forest Type	Downed Woody
Spruce/fir	Five pieces/acre, 8 feet in length, 20 inches in diameter
Douglas-fir	None
Aspen	Fifty pieces/acre, 8 feet in length, 11 inches in diameter
Lodgepole pine	Ten pieces/acre, 10 feet in length, 8 inches in diameter

Based on this information, the guideline for the Final Plan was modified to leave an average of eleven logs per acre over 60 percent of the area in decomposition classes 1, 2, and 3. Active management will be focused on conifer stands, with some aspen as a component. This number of downed dead trees meets the old growth criteria for spruce/fir, Douglas-fir and lodgepole pine forest types. Logs should be eleven inches in diameter and eight feet in length. This is measured as an average over the prescription area, and

logs might not be evenly distributed. Because this guideline is based on the best available information on levels of downed logs that would occur in old forests, meeting this guideline should provide sufficient downed logs to provide downed woody components used by many species.

References cited in above section:

Bull, E.L., C.G. Parks, and T.R. Torgersen. 1997. Trees and Logs Important to Wildlife in the Interior Columbia River Basin. USDA Forest Service, Pacific Northwest Research Station, PNW-GTR-391. La Grande, Oregon.

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Thomas, J.W. (ed). 1979. Wildlife Habitats in Managed Forests; the Blue Mountains of Oregon and Washington. Agriculture Handbook No. 553, USDA, Forest Service.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

Roads And Motorized Trails

General Effects on Wildlife

Wisdom, *et al*, (2000) did an extensive review of the effects of roads on wildlife, based on available literature and research. These effects include: snag and downed log reduction; habitat loss and fragmentation; edge effects; over-hunting, over-trapping, poaching and collection; harassment or disturbance; collisions; movement barriers or facilitators; displacement or avoidance; and chronic negative interactions with humans. They also reviewed what wildlife species may be affected by each of the effects. The following table summarizes these direct and indirect effects, and what species on the Caribou may be affected, and where these effects might occur.

Table 28. Road Effects on Wildlife.

Road-associated Factor	Species Potentially Affected	Where Effect May Occur
Snag and downed log reduction	Flammulated owl, boreal owl, great gray owl, three-toed woodpecker, wolverine, lynx	Forested habitats across the Forest.
Habitat loss and fragmentation	All species potentially affected by habitat loss	Habitat loss across all ownerships. Private lands and maybe wider, high-speed roads and highways on Forest for fragmentation.
Over-hunting, over-trapping, poaching, collection, recreational shooting	Wolverine, lynx, wolf, big game, marten, small mammals	Across all ownerships

Road-associated Factor	Species Potentially Affected	Where Effect May Occur
Harassment or disturbance	Wolverine, lynx, sage grouse, peregrine falcon, bald eagle, northern goshawk	Across all ownerships
Collisions	Wolves, amphibians, big game, birds feeding along roads,	High-speed roads or highways, or roads adjacent to amphibian and reptile breeding habitat
Movement barriers or facilitators	Noxious weeds, small mammals	Across all ownerships, along roads and trails
Displacement or avoidance	Wolves, elk, bald eagles	Across all ownerships
Chronic negative interactions with humans	Wolves upland bird leks	Across all ownerships
Erosion and sedimentation of adjacent streams	Amphibians	Across all ownerships

Snag and Downed Log Reduction

Firewood gathering can contribute to a loss of snags and downed logs. Woodcutters often take larger-diameter snags, which are the same ones that are beneficial to the most wildlife species (the larger the snag, the more species can use it; larger species need larger snags).

Habitat Loss and Fragmentation

Road construction and associated road maintenance can convert large areas of habitat to non-habitat (Wisdom, et al, 2000). Because roads affect more area than the actual road surface, they can reduce available habitat well beyond the road itself.

Travel Barriers

Habitat loss can result from the travel barriers caused by roads. For example, some researchers have found that some rodent species are reluctant to cross even the narrowest gravel roads (in USFS, 2000). This behavior can result in substantial habitat amounts of suitable habitat being unavailable to these species. In addition, habitat loss can fragment populations into smaller subpopulations through the loss of habitat connectivity, causing demography fluctuations, inbreeding, loss of genetic variability, and local population extinctions.

Travel Facilitation

The construction of roads introduces new edge habitat, and consequently, invasive species of plants, birds and animals can be introduced into environments where they previously did not occur. Ground disturbance associated with roads and with other activities enabled by roads provides additional opportunity for establishment or expansion of non-native invasive plant populations.

Human Disturbances

Roads facilitate human activities that disturb habitats and displace animals or cause them to avoid habitats that would otherwise be suitable. Other effects of human disturbances include loss of large trees, snags, poaching, recreational shooting, etc (For more information, see USFS, 2000).

Disturbance may cause behavioral and/or physiological responses to wildlife. These have been summarized in Joslin and Youmans (1999). Behavioral responses are influenced by the type of activity,

distance away, direction of movement, speed, predictability, frequency and magnitude) and location (above versus below, in the open versus screened by topography or vegetation). The most detrimental disturbances are those that are unanticipated. In circumstances where motorized use in predictable and localized (confined to routes), wildlife response to people afoot or skiing may be more pronounced than it is to motorized vehicles.

Behavioral responses range from avoidance, habituation and attraction. These responses may be of short duration (temporary displacement) or long-term, such as abandonment of preferred foraging areas.

Several species of birds have been found to be sensitive to disturbance. For example, harlequin ducks are sensitive while on breeding territories. Breeding territories are low-gradient streams with streamside shrub cover. Historically, many of these streams have had roads or trails constructed adjacent to them. These roads provide access to hikers, fishermen and floaters, all of which may cause displacement or abandonment of territories.

Thomas (2000) monitored movements of radio-collared elk from the Tex Creek winter range. Almost half of the elk marked in the study summered in the largely non-motorized area between Bald Mountain and Tincup Creek. He did an analysis and concluded that, "by far, the greatest concentration of elk is in the area least accessible to motorized vehicles."

Rowland, *et al*, (2000) monitored radio-collared elk over a three-year period in northeast Oregon. They found that selection ratios increased with increasing distance from open roads, and varied between seasons, but not among years or individuals. The elk consistently selected areas away from open roads in both spring and summer, confirming that roads have an influence on summer habitat selection. They did conclude that the effect of the densities was greatly influenced by the spatial patterns of the roads. Elk were able to use areas with relatively high road densities if there were still areas available that were away from roads.

Elk response to roads varies, by season and according to the size and location of the road, traffic volume and cover availability. Some of these responses are summarized in Frederick, 1991 and Joslin and Youmans, 1999. Elk may become habituated to some level of traffic; they may be less disturbed by fast-moving vehicles on a paved highway than by slow moving, infrequent traffic on lower-standard roads. Elk appear to associate a stopping vehicle with human harassment, particularly hunting, and are most disturbed by people in out-of-vehicle activity. In a number of studies, avoidance of roads by elk varied between seasons in response to hunting access and pressure. Unhunted animals may show greater tolerance to human activity. Elk can use areas in close proximity to large amounts of human activity, if it is a non-harassing type of activity.

Collisions

High-speed highways and surfaced roads have the greatest potential for collisions with wildlife. Birds foraging along right-of-ways fly up and are killed. Great gray owls, that move to lower elevations and more open country in the winter, forage low over open meadows and have been documented in collisions with vehicles.

Many studies have documented the large number of amphibians and reptiles that may be killed on roadways, but only a few studies have determined the impact of this mortality at the population level (Maxell and Hokit, 1999). The degree of impacts is related to proximity of the road to breeding or other seasonal habitats and migration movements.

MOTORIZED TRAILS

Most of these road-associated factors also apply to motorized trails. Motorized trails contribute to habitat loss; provide access for hunting, trapping, poaching and collection; provide movement corridors for weeds; cause harassment or disturbance; cause displacement or avoidance; increase potential for negative interactions with humans and increase erosion and sedimentation of streams. Snag and downed log reduction and collisions are not expected to be factors associated with motorized trails.

During the revision of the Targhee NF Forest Plan, there were interactions with Dr. Jack Lyon from the Intermountain Forest and Research Experiment Station. He felt that elk would respond to motorized use on trails the same as on roads. There are no scientifically controlled studies on the effects of motorized use on trails. However, because of all the road-associated factors that are still associated with motorized trails, they have been incorporated into an open motorized route density for this analysis.

CROSS-COUNTRY TRAVEL

As explained above, this type of use is unpredictable and irregular and may cause the largest amount of disturbance or displacement. It also results in loss of habitat due to loss of vegetative cover and forage, direct mortality of small mammals, reptiles, amphibians and birds through loss of adults or nests.

Conditions on the Caribou

There are different ways to measure road and motorized trails. One is the use of open motorized route densities. This measure looks at the miles of open motorized routes over a given area. They may be calculated using watersheds, elk herd ranges, management prescription areas, or other logical boundaries. OMRDs were calculated using a couple of different analysis areas. Larger analysis areas are more effective for looking at wide-ranging species such as elk, mule deer or wolverine. (See Map 3: Existing Open Motorized Route Densities by Mountain Range Block for locations.)

Table 29. Existing OMRDs (mi/mi^2) Calculated by Mountain Range "Blocks."

Mountain Range Block	OMRD Miles/square mile	Mountain Range Block	OMRD Miles/square mile
Caribou	0.6	Bear North	1.8
Diamond	1.4	Elkhorn	1.2
Portneuf	0.9	Bear South	1.4
Bannock	1.4	Malad North	1.1
Preuss	1.2	Malad South	1.1

OMRDs were also calculated by watershed. These watersheds were a combination of 5th and 6th HUC's (hydrologic unit codes). The Westside District stayed the same as shown above and Montpelier and Soda Springs watershed values are shown below. (See Map 4: Existing Open Motorized Route Densities by 5th and 6th Code Watersheds.)

Table 30. Existing OMRDs (mi/mi^2) for Soda Springs and Montpelier Watersheds.

Watershed	OMRD Miles/square mile	Watershed	OMRD Miles/square mile
Eightmile	1.8	Slug Creek	1.8
Emigration	2.0	Rasmussen	1.4
Cub River	1.4	Diamond Creek	1.8
Bloomington	1.2	Stump Creek	1.1
Logan River	1.2	Tincup	0.7
Crow Creek	1.2	Trail Creek	0.5
Georgetown	1.8	McCoy Creek	0.7

Wisdom, *et al*, (2000) mapped road densities across the Interior Columbia River Basin. They used categories of very low (0-0.1 mi/mi^2), low (0.1 – 0.7 mi/mi^2), moderate (0.7 – 1.7 mi/mi^2) and high (Greater than 1.7 mi/mi^2). The Portneuf and Bannock Ranges and the Webster/Preuss Range are located in the Snake Headwaters Ecological Reporting Units. They mapped the north end of the Webster/Preuss range as low (Less than 0.7 mi/mi^2) and the rest of the units as moderate (0.7 – 1.7 mi/mi^2).

They went on to map habitat abundance and road densities for terrestrial carnivores, including grizzly bear, gray wolf, wolverine and lynx. The north end of the Webster/Preuss range rated out high for relative habitat abundance and low road densities for all four of these species. They stated that managers interested in conserving the few large blocks of remaining habitats that are relatively secure from human disturbances for terrestrial carnivores would want to focus on maintenance and improvement of the seven areas that they identified (which Area 1 includes the north end of the Webster/Preuss range). These areas could be effective "building blocks" from which an overall network of habitat and human activity strategies could be devised to ensure a high probability of well-distributed, persistent populations of all four species in the basin.

OPEN MOTORIZED ROUTE DENSITIES (OMRD)

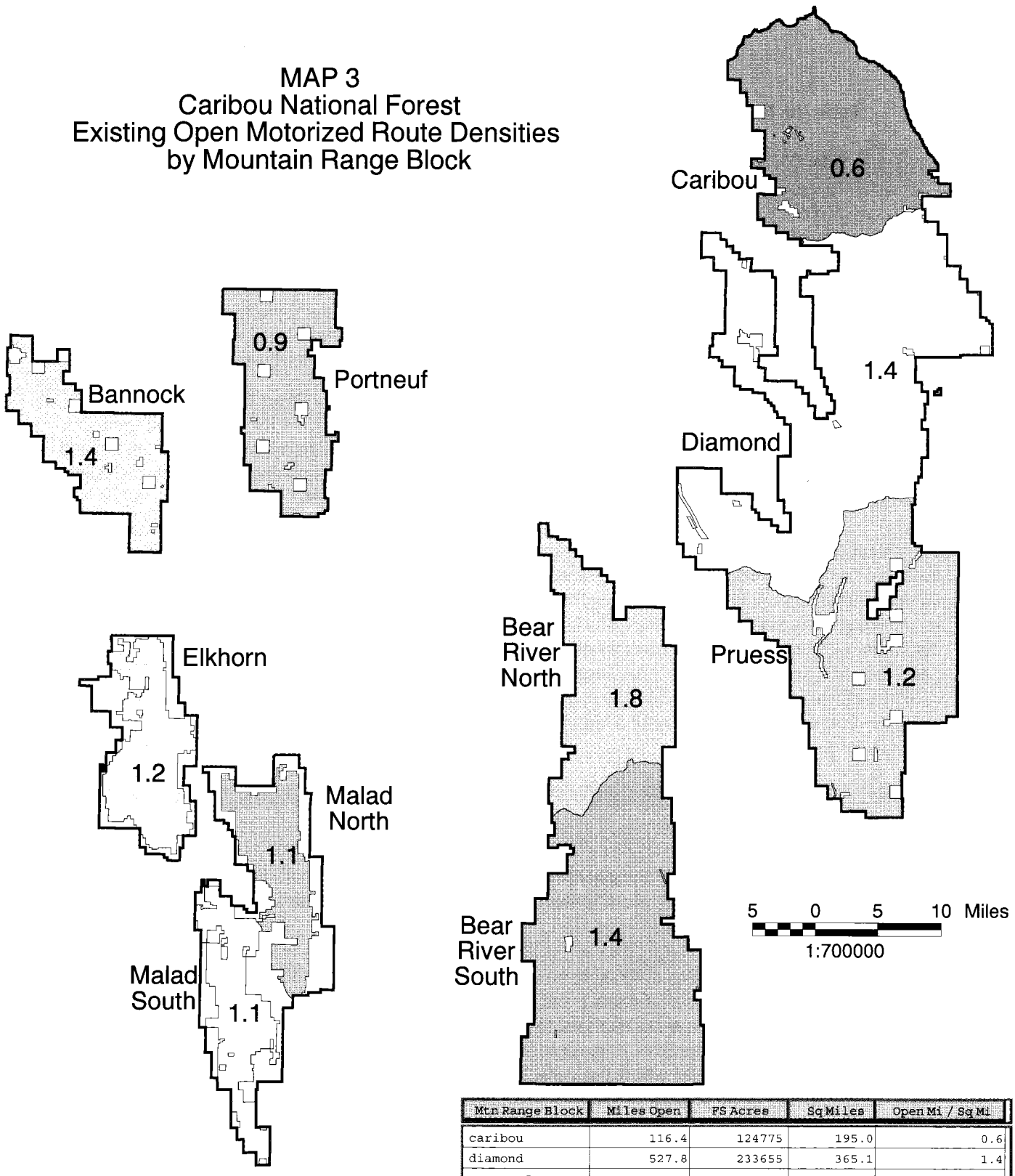
General

The decision was made that to be consistent with the Targhee NF Forest Plan, open motorized route densities would be determined by prescription areas. To establish the densities to be used for direction, available literature was reviewed.

Most of the research and studies done on open motorized route or road densities have been done for elk. The presence and motorized use of roads is the major impact on summer elk habitat effectiveness (Christensen, *et al*, 1993). For areas intended to benefit summer habitat and retain high use, habitat effectiveness should be greater than 70 percent or more. This equates to roughly an open motorized route density of 0.7 mi/mi^2. For areas where big game is one of the primary resource considerations, habitat effectiveness should be 50 percent or greater. This equates roughly to an open motorized route density of 1.9 mi/mi^2.

Because the available literature on open road densities is largely based on elk, these numbers were used roughly to also address the needs of other species as well. There are many species that avoid areas of human activity or are affected by roads, as shown above. As mentioned above, areas where elk habitat was to be maintained, open road densities should be less that .7 mi/mi^2. For this analysis, this was rounded up to 1.0 mi/mi^2. For areas that were to benefit elk, open road densities should be less that 1.9 mi/mi^2. This was rounded up to 2.0 mi/mi^2.

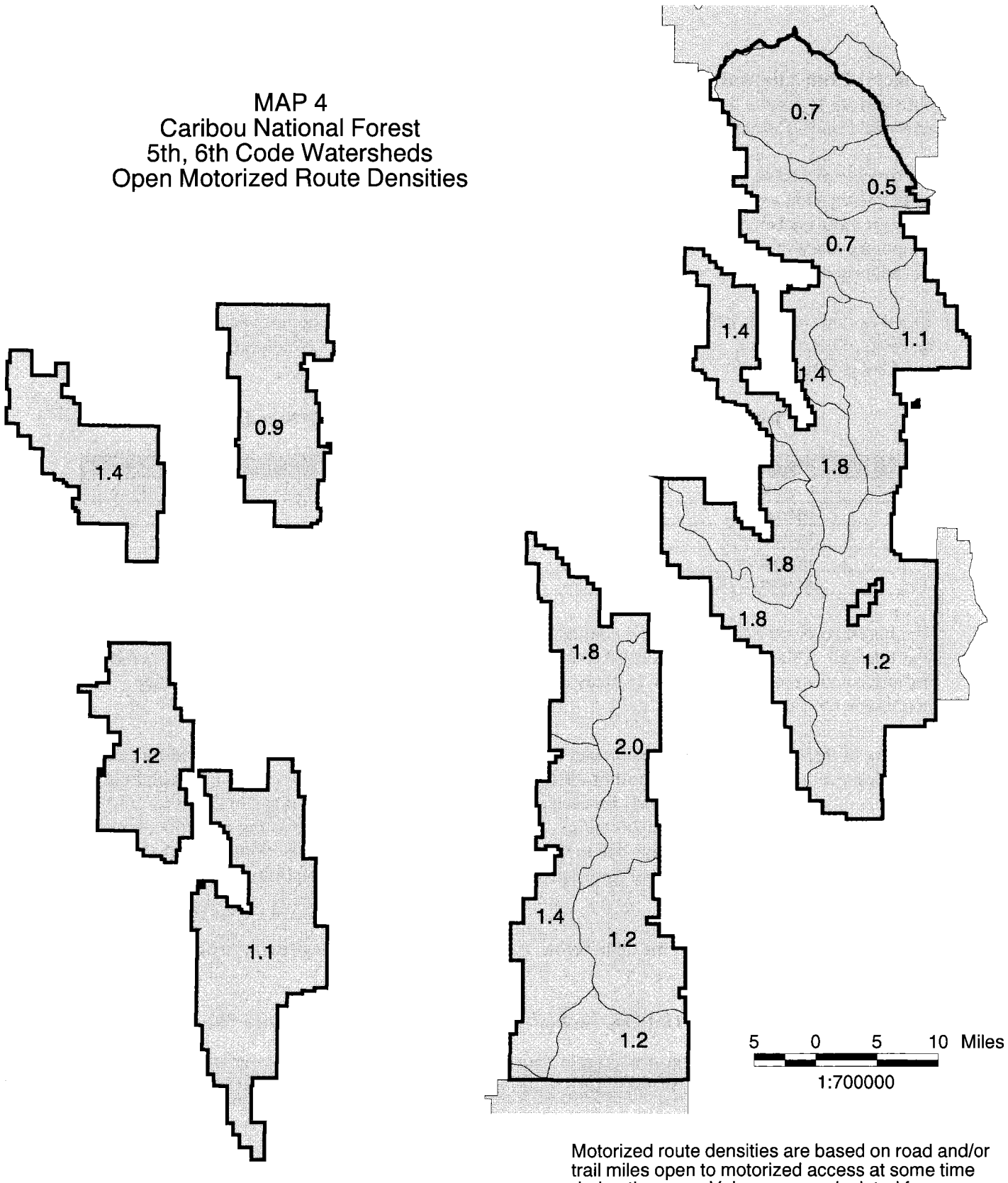
MAP 3
Caribou National Forest
Existing Open Motorized Route Densities
by Mountain Range Block



Mtn Range Block	Miles Open	FS Acres	Sq Miles	Open Mi / Sq Mi
caribou	116.4	124775	195.0	0.6
diamond	527.8	233655	365.1	1.4
portneuf	103.4	71706	112.0	0.9
bannock	131.5	61134	95.5	1.4
pruess	300.9	154796	241.9	1.2
bearn	250.9	87104	136.1	1.8
elkhorn	88.2	47691	74.5	1.2
bears	374.0	176307	275.5	1.4
maladn	69.9	41177	64.3	1.1
malads	68.2	40542	63.3	1.1

Road density figures are in miles of motorized roads and trails per square mile of FS land. Private land was excluded from area calculations, as were smaller isolated National Forest parcels. Mile figures are roads/trails open to motorized use at some time during the year. Roads/trails across private land were excluded from calculations.

MAP 4
Caribou National Forest
5th, 6th Code Watersheds
Open Motorized Route Densities



Motorized route densities are based on road and/or trail miles open to motorized access at some time during the year. Values were calculated from roads and trails only on Natl Forest ground and only that portion of the watershed on the Caribou.

Effects of the Alternatives

Alternatives 1, 2 and 3 leave road densities at current levels, and allow for the potential to increase motorized trails. Currently there are approximately 2,033 miles of roads and motorized trails.

Maximum open route densities have been set by prescription area in Alternatives 4 – 7 and 7R. There are some prescription areas that may see an increase in motorized routes in the future, but currently few new roads or trails are being built. Assumptions used were that there would be no net increase in roads (use of temporary roads for access to harvest areas), but there was an increase in motorized trails, based on what has happened over the last ten years.

Based on current information, there are several prescription polygons that are exceeding set open route densities. To meet these, miles of existing open roads and motorized trails would need to be closed, either yearlong or seasonally.

Table 31. Miles or Routes to be Closed to Meet OMRD Standards.

Alternative	Year-long Closures		Seasonal Closures
Alternative 4	157 miles	(8%)	0
Alternative 5	177 miles	(9%)	30 miles
Alternative 6	735 miles	(36%)	0
Alternative 7	129 miles	(6%)	13 miles
Alternative 7R	62 miles	(4%)	0

The Forest received numerous public comments on road and trail restrictions when the Draft EIS/Plan was released. Although open motorized route densities affect many species, elk were viewed as the reason for implementation of restrictions. In many areas of the Forest, elk numbers are at or above state population objectives.

Because of these concerns, the decision was made that in Alternative 7R access would be fairly close to the existing situation, except that most of the Forest would be closed to cross-country motorized use. The Final Plan includes OMRD standards for each specific prescription area, ranging from 0 mi/mi^2, 0.5 mi/mi^2, 1.0 mi/mi^2, 1.5 mi/mi^2 and 2.0 mi/mi^2. These were based largely on existing condition, but also included reductions in specific areas due to wildlife concerns. The largest reductions are in the south end of the Bear River range, where there were concerns for mule deer and connectivity to the Wasatch-Cache National Forest to the south.

The effects of this are shown in the table below, based on the mountain range units displayed at the beginning of this section.

Table 32. Alt 7R OMRDs (mi/mi^2) Calculated by Mountain Range "Blocks."

Mountain Range Block	OMRD Miles/square mile	Mountain Range Block	OMRD Miles/square mile
Caribou	0.6	Bear North	1.7
Diamond	1.4	Elkhorn	1.2
Portneuf	0.9	Bear South	1.3
Bannock	1.3	Malad North	1.1
Preuss	1.2	Malad South	1.1

Changes in open motorized route densities would be in the Bannock Range and in the Bear River Range. This would be a reduction of 62.3 miles of open routes over the Forest, or less than 4 percent of the current routes. Year-round and seasonal restrictions would be implemented.

For more information on effects on individual species, see the viability section.

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Management Indicator Species

Existing Forest Plan Direction

Management Indicator Species (MIS) were selected during the last Forest Planning process (1985). Regional direction stated that "wildlife, fish and plant species (or groups of species) shall be selected to assure the maintenance of viable populations," and "the number selected should be the minimum necessary to indicate the effects of management and to achieve wildlife and fish goals and objectives."

MIS were chosen because of general, wide public interest, or because the species has habitat requirements similar to other species for which it can serve as a biological barometer for the well being of specific habitats. Threatened and endangered species were automatically included as MIS. Species selected in 1985, and their associated habitat types are shown below.

Table 33. MIS in 1985 Caribou Forest Plan.

MIS SPECIES	ASSOCIATED HABITAT TYPES
Bald eagle	Snags, riparian by rivers and lakes
Mule deer and elk	Early forest succession, mountain brush, sage-grass
Goshawk	Old growth conifer
Hairy woodpecker	Snags, old or decadent conifer and aspen
Yellow-bellied (red-naped sapsucker)	Aspen and riparian
Sage grouse	Sage-grass

In the 1985 Forest Plan, there is one objective for MIS: Habitat diversity will be maintained and improved to support minimum viable populations of selected management indicator species (p. III-9).

Standards and guidelines specific to MIS: Consider the habitat requirements of MIS for all resource development projects (p. III-32). Guidelines outlined in "Guidelines for Maintenance of Sage Grouse Habitats" (Braun, *et al*, 1977) will be used as a basis to develop site-specific recommendations for any proposed sagebrush treatments on lands identified as containing sage grouse on the Forest (p. III-33). The Forest will work closely with the IDFG to identify important fish and wildlife habitats, and to develop procedures to maintain or improve them (p. III-33).

Current Situation And Need For Change

In general, inventory of MIS has been limited to TES species (bald eagles and goshawks) and hunted species (elk, mule deer and sage grouse). For the other species, basic and baseline data has never been collected. The lack of emphasis on inventory, analysis and monitoring is a direct result of budget and work priorities set by the Forest.

Many of the existing MIS are not effective as MIS, because they do not meet the criteria for selection as MIS (described in next section). Bald eagles are not widespread across the Forest. Mule deer and elk are habitat generalists, migratory and don't show direct responses to changes in habitats on NFS lands. Hairy

woodpeckers are forest generalists, using a wide variety of forest types and habitat components (live and dead trees) and are difficult to monitor and get any kind of population trend information.

Indicators should be chosen for specific habitats identified as being at risk through the Caribou Properly Functioning Condition process or the Interior Columbia Basin analysis, or where there is a high level of management activity, or where there is critical habitat for TES. Other habitats can be grouped under broad headings and monitored less intensively.

Process Used for Caribou Revision

Region One and Region Four Terrestrial Protocols

In 1997, the Region One/Four Terrestrial Protocols were approved. In Appendix D of that document, the key steps to identifying MIS are to select an indicator:

(1) of environmental/ecological conditions including native ecological processes;
(2) affected by management activities on NFS lands; and that is
(3) a native or restricted range species;
(4) a keystone species or habitat specialist;
(5) found on most or all of the administrative units in the planning area;
(6) a year-long resident of the planning units and vicinity;
(7) relatively easy to monitor for population levels and habitats;
(8) feasible to monitor populations and habitat conditions at similar scales; and for which
(9) baseline data (population trends and/or habitat conditions) is already in place.

An indicators response to environmental change is one based on an indicator's sensitivity, specificity and predictive value. A good indicator will be sensitive to the underlying condition of interest and will be specific to the condition of interest. Sensitivity and specificity, along with the ability to measure the response of the population being studied determine the indicators predictive value.

Table 34. Suggested MIS in R1/4 Terrestrial Protocols.

HABITATS POTENTIALLY INFLUENCED BY MANAGEMENT	MIS REFLECTING STAND AND/OR PATCH REQUIREMENTS
Single-story old growth	Flammulated owl
Fire-killed stands	Black-backed woodpecker*
Aspen	Red-naped sapsucker
Riparian shrub	Beaver
Sage	Sage grouse or Brewer's sparrow
Shortgrass prairie*	Prairie dog*
Mixed grass prairie*	Sharp-tailed grouse
Tallgrass prairie*	Greater prairie chicken*
Mountain mahogany	Mountain mahogany

• *Not found in the analysis area*

Caribou Proper Functioning Condition Assessment

Proper functioning condition (PFC) assessments were done at the Regional scale (1997) and at the Forest level (1999). This process was used to identify systems at risk of not being in proper functioning condition (resilient to perturbations to structure, composition, and processes of their biological or physical processes.

Table 35. Habitats and Degree of Departure from PFC.

Vegetation Type	Intermountain Region Degree of Departure	Caribou NF Degree of Departure	Rationale from Caribou PFC Analysis
Limber Pine	Moderate	Low	Balanced range of structures, size and age classes
Spruce/fir	High	**High**	Increased mature and old age classes, endemic insect and disease, non-lethal fire regimes are out of historic intervals
Aspen	High	**High**	Mostly old age aspen, conifers replacing aspen, fire regime outside historical range
Lodgepole pine	Moderate	Low	Structurally imbalanced, high seed-sap, very low pole. Extent has changed little and resilient after fire
Douglas-fir	Moderate	Moderate	Decrease in non-lethal fires has increased understory in stands, increased subalpine fir and allowed DF to become established in aspen, mountain brush and sagebrush
Maple	Not assessed	Moderate	Expanding into sagebrush and mountain brush communities, affects hydrologic conditions
Pinyon-juniper	**High**	**High**	Expanding into sagebrush, mountain brush and riparian areas. Affects hydrologic conditions
Mountain mahogany	Moderate	Moderate	Within historic range, but older plants with little regeneration.
Mountain brush	Low	Moderate	Lack of multiple vegetation layers and structural diversity, mostly older age classes
Tall forb	**High**	**High**	Species composition is out of balance, increased bare ground, soil loss
Sagebrush	High	Moderate	Structural stages out of balance, increase in bare soil and soil loss.
Riparian areas	**High**	**High**	Of assessed streams, only 30% in PFC, 60% FAR and 10% non-functioning

Idaho Partners in Flight

Idaho Partners in Flight prioritized habitats by looking at the number of birds that use a habitat as primary breeding habitat; and the numbers of high priority birds that use the habitats. They also considered the loss of habitat in quantity and quality, including the amount of habitat within the state and the amount that

is in management status that provides moderate to good protection from degradation. Based on these criteria, they identified their priorities as **riparian, non-riverine wetlands, sagebrush shrublands** and **ponderosa pine** (not found on the Caribou NF).

Interior Columbia Basin

Analysis for the Interior Columbia Basin study (Wisdom, *et al*, 2000) found that source habitats for most species declined strongly from historical to current conditions. Strongest declines were for species dependent on low-elevation, old forest habitats (ponderosa pine not found on the Caribou), for species depending on combinations of **rangelands or early-seral forests** and for species dependent on **native grassland and open-canopy sagebrush habitats**.

Widespread but less severe declines also occurred for most species dependent **on old forest habitats present in various elevational zones**; for species dependent on **early seral forests**; for species dependent on **native herbland, shrubland and woodland habitats**; and for species dependent on **native sagebrush habitats**.

Summary of habitats at risk (from all sources)

- Spruce/fir
- Aspen
- Pinyon-juniper (no pinyon on Caribou)
- Tall forb
- Riparian
- Non-riverine wetland
- Sagebrush shrublands (including open-canopy habitats)
- Grasslands
- Early seral forests
- Old forests at various elevations

Selection Of MIS For The Caribou Revision

HABITATS AT RISK

Of the habitats identified as being at risk, several will not have wildlife management indicator species identified for monitoring. Monitoring of vegetation structure, composition and distribution would be more effective for these habitats, as explained below:

1) **Non-riverine wetlands** are a minor component on the Forest. Elk Valley Marsh is the largest example and is being proposed as a Wild and Scenic River under the Recreation River category. Management direction specific to 2.5 should be adequate to address this habitat.

2) **Juniper**. This type is found on roughly 2 percent of the Forest. Juniper has increased beyond its historic range on the Forest (CNF 1999). This type is not at high risk and species associated with

this type are not at risk based on habitat considerations. Spotted towhees are associated with this type but are very secretive by nature and would be difficult to monitor. They do have distinctive vocalizations, but that would just give presence/absence information. There are other species associated with this type, but generally they are not strongly associated with this type, and are migratory, non-residents whose populations would not reflect changes in habitats. Any monitoring in this type should be of distribution and structure of the stands (agrees with R1/4 Terrestrial Protocols).

3) The **tall forbs** type has been identified as being at high risk. However, these sites have been highly modified by historic sheep grazing and it is unknown how many sites are actually in functioning condition. Other analyses have identified the pocket gopher and several bird species as being associated with this type. The birds are migratory, not strongly associated with this vegetation type and would not reflect changes in habitat (if there is any left). The pocket gopher would be easier to monitor but is found in a wide variety of types. These habitats should be monitored for vegetative species composition to see how well they fit historic species composition.

4) **Riparian**. The Draft Revised Plan identified beaver as the MIS for riparian habitats. However, after review it was decided that it would not be possible to determine population trends and be able to relate them to forest management. Amphibians were then considered as MIS; west-wide population declines have been attributed to many factors. Again, any changes in trends on the Forest, may not be tied directly to changes in forest management. Lastly, breeding bird complexes were considered as MIS. In general, breeding birds do not make good MIS because many of them are migratory, and they are exposed to many other factors that can affect populations. We considered monitoring the number of species of breeding birds and relate to changes in shrub riparian vegetation. However, this does not meet the intent of MIS and population trends of individual species could not be determined at this level. It was decided that riparian shrub vegetation would be monitored.

5) **Early seral forest structure**. Snowshoe hares are affected by management activities, and are yearlong residents. However, they are expected to be at such low densities that it would be impossible to determine population trends. Birds were also reviewed for use as MIS. Hutto (1995) identified about eighteen species that use variously cut forests, with Williamson's sapsucker as the one that best illustrates patterns of use in managed forests. This species is migratory, and is fairly shy and wary, making them harder to survey with any degree of accuracy. Recommend monitoring changes in amount of early seral forest rather than a particular wildlife species.

6) **Aspen**. The red-naped sapsucker is currently an MIS for the Caribou and was identified as a MIS in Region 1 and 4 Terrestrial Protocol. However, this is a widespread species and changes in abundance would be very difficult to correlate to changes in aspen habitats on the Forest. Recommend monitoring changes in aspen rather than a particular wildlife species.

PROPOSED CARIBOU MIS

Generally MIS are used to determine how changes in habitat would affect other species associated with those habitats. In some cases, it may be more appropriate to use species/habitat relationships to infer population trend. Some of the reasons that this may be done are:

1) the species is relatively common, and risk of extirpation is low;
2) habitat is known to be a primary factor influencing populations; and
3) valid studies are available that relate the species to habitat.

These criteria do not apply to riparian breeding bird complexes, red-naped sapsucker and snowshoe hare and other species that were considered to replace them. This was discussed in the previous section. For this reason, they have been dropped and habitat monitoring will be done in its place.

Table 36. Habitats At Risk and Suggested MIS.

HABITAT	SPECIES	RATIONALE
Grassland and open canopy sagebrush	Columbian sharp-tailed grouse	Only one of the SAR that is a yearlong resident that also has monitoring data. It is also a sensitive species.
Sagebrush	Sage grouse	Currently a MIS for the Caribou and was identified as a MIS in Region 1 and 4 Terrestrial Protocol. Some monitoring data exists.
Mature and Old Forest structure	Goshawk	Currently this is a sensitive species and some monitoring data exists. Goshawks use a variety of forest types and structural stages within their foraging areas.

* Finch 1989; Sanders and Edge, 1998; and Bradford, *et al*, 1998

The Columbian sharp-tailed grouse and goshawk are discussed as TES in that section of this process paper. Sage grouse are discussed in more depth, including documentation of habitat relationships in the MIS Viability section.

Selected Species, How They Meet Criteria And Monitoring

COLUMBIAN SHARP-TAILED GROUSE

This species is associated with grassland, and open canopy sagebrush. Both native and cultivated range and grasslands are used for nesting. In rangelands, most research indicates that this species shows a preference for nesting sites with shrubs. When available, sagebrush is the preferred nesting habitat, but other commonly used shrubs include snowberry, serviceberry, antelope bitterbrush and other mountain shrubs (Ulliman, 1995).

While there are numerous leks documented adjacent to the Forest, none are on National Forest system lands. Sagebrush and grassland habitats on the Forest may provide nesting, brood-rearing, and winter habitat. IDFG has been monitoring leks at irregular intervals for the last couple of decades. While population fluctuations are likely, due to habitat and climatic changes, long-term trends would reflect changes in habitat conditions.

While leks (where populations are most easily monitored) are not on Forest, changes in populations could reflect changes in habitat conditions on the Forest. Where trend data is available, a decline of 20 percent in the number of male grouse for three years would initiate a further analysis, done in cooperation with IDFG.

SAGE GROUSE

General Ecology

Sage grouse depend primarily on sagebrush habitat for much of the year, although meadows and mesic sites are seasonally important habitat components (Connelly, *et al*, 1988). Sage grouse prefer sagebrush

habitats year round, however other shrubs within the sagebrush community may be used (Braun, *et al*, 1977). During the winter months sage grouse rely almost exclusively on sagebrush with a relatively dense canopy for food and cover. Sagebrush provides nesting habitat in the spring; other shrubs in the community may be used but nest success is reduced. Sage grouse have higher nesting success in sagebrush communities with a dense canopy and tall grasses that result in lower predation rates (DeLong, *et al*, 1995).

Sage grouse are dependent on sagebrush for food from all to spring. During spring, the diet shits to forbs. Forbs and insects are a fundamental part of the diet of sage grouse chicks. During the early part of a chick's life insects (beetles and ants) predominate the diet. After this time, forbs become the most important food. In addition, forbs provide essential nutrients for pre-laying sage grouse hens, which may ultimately affect their reproductive success. Sage grouse hens consume fewer forbs and more shrubs as forbs begin to dry out.

Currently, there are several leks within four to five miles of the Forest boundary. While generally, the leks are not on the Forest, the Forest may be used by sage grouse for nesting, brood-rearing or winter habitat. Approximately 56 percent of the sagebrush on the Forest is within ten miles of known sage grouse leks.

For more information on sage grouse, see the sage grouse section of the Viability Analysis.

Use as MIS

This species is associated with sagebrush steppe. Current sage grouse management guidelines (Connelly, *et al*, 2000) identify breeding habitat as having sagebrush canopy cover of 15-25 percent, with perennial grasses and forbs in the understory.

While there is one lek documented on the Forest, there are many within several miles of the Forest Boundary. Sagebrush habitats within twenty kilometers of active leks may provide nesting, brood-rearing, and winter habitat for sage grouse. IDFG has been monitoring leks at irregular intervals for the last couple of decades. While population fluctuations are likely, due to habitat and climatic changes, long-term trends would reflect changes in habitat conditions.

Habitat management guidelines have recently been updated (Connelly, *et al*, 2000). These guidelines (nesting, brood-rearing and winter habitat) would be incorporated at the site-specific level where appropriate. While leks (where populations are most easily monitored) are not on Forest, changes in populations could reflect changes in habitat conditions on the Forest. A decline of 10 percent or more in the number of male grouse would initiate a further analysis in cooperation with IDFG.

NORTHERN GOSHAWK

Nest territories have been found over several areas of the Forest generally associated with mature to old aspen and coniferous forest. Known nesting territories are relatively easily monitored on a yearly basis to determine if active nesting is occurring. Though population fluctuations are likely due to climate, availability of prey, and other factors, long-term data should reflect habitat suitability.

Monitoring on a three-year rotation basis would document the number of active territories. Monitoring would occur on an annual basis in site-specific areas where mitigation measures are employed. A decline in active status of 20 percent of the known territories in a three-year period would constitute a concern requiring management action.

Consistency With Adjacent Forests

The Targhee NF Forest Plan depends mostly on TES for MIS. They use Bald eagle, trumpeter swan, spotted frog, common loon and harlequin duck for riparian MIS, elk, wolves and grizzly bears; three-toed woodpeckers for primary cavity nesters; forest owls, forest furbearers, northern goshawk and red squirrel for forest habitats and peregrine falcon for cliff habitats.

In the case of riparian MIS, the beaver meets the criteria for selection better than those of the Targhee NF. They are year-round residents, strongly associated with shrubby riparian, well distributed across the forest, and are relatively easy to monitor for presence/absence (dams and lodges). Species selected by the Targhee NF are not well represented on the Caribou NF. There are only two known bald eagle nesting areas, and scattered winter habitat (low levels of use). Swans, loons and harlequin ducks are not present on the Caribou.

Big game species do not meet the criteria for selection of MIS. While they are widespread, they use a variety of habitats and their populations depend on many variables (such as hunting). There is no way to make a direct correlation between changes in habitat and changes in populations. While the Caribou NF does not propose big game as MIS, they will be considered as a species of special interest.

There are several forest-associated species that were considered but not selected. The three-toed woodpecker has been documented on the Caribou, but no nesting has been documented (although suspected). We have no baseline data, they are not easy to monitor, populations fluctuate based on insect (prey) activity, all of which decrease their suitability as MIS. The forest owls (boreal, flammulated and great gray) are documented as being present across the Forest, but again, nest locations are not known. These species are more difficult to monitor (nocturnal, breeding season in early spring when accessibility is often limited) and overall forest suitability would be predicted based on goshawk monitoring. Old growth and snag requirements in the Revised Forest Plan would provide those habitat components.

The Wasatch-Cache NF is also revising their Forest Plan. They are considering several breeding birds as MIS (Brewer's sparrow and vesper sparrow for sagebrush, warbling vireo for sapling aspen, McGillivary's warbler for riparian shrub and ruby-crowned kinglet for spruce/fir). They recognize the problems associated with the use of breeding birds, but feel that they are already collecting data on these species, and will continue to gather data, so will try to make these work. In addition, they have goshawk for aspen/mixed conifer and snowshoe hare for pole/sapling conifer. The Caribou NF dropped the snowshoe hare because they are believed to be at such low densities that population trends would be very difficult to determine. Goshawks are MIS for both Forests.

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Terrestrial Wildlife Species Viability

Introduction

National Forest Management Act (NFMA) regulations require National Forests to provide habitat in order "to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." It goes on to define a viable population as "one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed throughout the planning area." The regulations (36CFR219.19) also direct that "habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning unit."

A Risk Assessment includes review of risks to species habitat or populations, a ranking of the level of that risk and an overall Risk Rating, based on the results of the risks associated with those activities occurring on Forest Service lands. Three levels of risk have been used: low, medium and high.

Low risk – there is a high likelihood that the populations would meet population viability criteria. Effects to individuals range from temporary displacement, short-term modification of habitat.

Moderate risk – there is an intermediate likelihood that populations would stabilize. Effects on individuals range from reduced productivity, displacement from important seasonal habitats that are limited in distribution.

High risk – it is highly unlikely that species populations would be maintained. Effects on individuals range from direct or indirect mortality of adults or young, elimination of habitat for a known population that has limited distribution, significant fragmentation of habitat where species dispersal is eliminated or significantly reduced.

To address the criteria that a species or habitat is "well-distributed" throughout the Planning area, geographic distribution of the species and its habitats need to be considered. The interpretation of "well-distributed" must be based on species' natural history and historical distribution, and the potential of the habitat, and recognition that habitat and population distribution are likely to be dynamic over time.

The regulations also direct management "to provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple use objectives. Forest planning shall provide for diversity of plant and animal communities and tree species consistent with the overall multiple-use objectives of the planning area."

Ecological sustainability means maintaining the composition, structure and processes of an ecological system. Species diversity and productivity can be preserved by maintenance of these, as well[1]. Composition refers to the biodiversity of an ecological system. Structure refers to the biological and physical attributes of sites and landscapes. Ecological processes include photosynthesis, nutrient cycling, energy flow, water movement, disturbance and succession.

Strategies that influence environmental use are often broad in scale and not focused on individual species. A community or broad-scale approach to the conservation of biological diversity is the coarse-filter approach. The process includes:

(1) delineating the planning area;
(2) comparing existing distribution of communities to pre-settlement patterns;
(3) describing changes in disturbance regimes;
(4) developing conservation measures to address community conditions and habitats for associated species; and
(5) comparing future community distribution after implementation.

This approach suggests that viable populations will be maintained when the communities in question are functioning within range of variability, including processes and structure.

The coarse-filter approach contrasts with the fine-filter approach of conserving individual species. The majority of strategies are developed for individual species are set up either because the species is endangered or because it is a game species.

General Process

An interregional process (FS Regions 1 and 4) was initially identified by the Forest Service to assess viability for species (R1/4 Terrestrial Protocols 1997). More recently, a national "White Paper on Managing Viable Populations" was prepared and evaluated through peer review and is currently being updated to incorporate new information and issues raised during the review (UDSA 2001). The White Paper viability process, involves several steps. The process used to address species viability includes the following steps:

1) Description of the ecological context;
2) Identification of species-at-risk and collection of information;
3) Description of key conservation elements for those species;
4) Development of Forest Plan alternatives;

[1] Committee of Scientists Report

5) Risk Assessment and Analysis of effects on viability of the Forest Plan alternatives; and
6) Monitoring.

A more recent paper (Andelman, *et al*, 2001) outlined nine general recommendations for conducting viability assessments. These nine recommendations have been incorporated as appropriate or possible. They also included four general recommendations for biologists at the Planning level, which have been incorporated into the following analysis:

- Adopt a systematic and consistent approach to identifying species-at-risk.
- Use broad-scale and quantified analyses where possible.
- Use structured, credible and repeatable approaches for eliciting, interpreting and using expert opinion.
- Make uncertainty and its implications explicit.

Description of the Ecological Context

Interior Columbia River Basin Assessment

When possible, approaches to species viability for broadly distributed species should incorporate any large-scale assessments available. Bioregional assessments are typically large-scale assessments that consider landscape patterns within similar biophysical boundaries. Bioregional assessments transcend land ownership patterns, and allow us to address issues of context relative to biophysical attributes that occur on Forest Service administered lands. They describe historic conditions, current status, and future trends of ecological, social and/or economic conditions and their relationship to the sustainability of the land base. They typically include both the causal processes and the resulting patterns, emphasizing the interactions among disturbance processes in creating patterns and the expected variability in them.

The northern part of the Forest is included in the Interior Columbia Basin assessment, and findings from that analysis have been incorporated. The southern part of the Forest has recently been analyzed in the Utah-Wyoming Rocky Mountain Assessment, by Noss for the Nature Conservancy. This report is briefly summarized in the Species Richness/Hot Spots section of this Process Paper.

For this analysis, Upper Columbia River Basin and Interior Columbia River Basin information was used. Information on pre-settlement conditions, current conditions, ecological integrity, habitat outcomes for species-at-risk, source habitats, and hot spot analysis was incorporated into different areas of the following analysis.

Ecological integrity was evaluated in ICBEMP (1996), where data was available. Forest integrity ratings for the Caribou NF was high for the Caribou/Diamond/Webster Unit, Rangeland integrity was low for the Westside units and Aquatic integrity was rated moderate for all of the Forest analyzed in CRB.

Dry forest potential vegetation types analyzed in UCRB that are found on the Caribou NF include the dry Douglas-fir types without ponderosa pine. Changes in structure and composition that have been identified include an increase in young tree stands, decrease in older, standing dead and downed trees, an increase in shade-tolerant species, and changes from open park-like stands to dense overstocked stands with multiple canopy layers. These changes are largely a result of timber harvest, livestock grazing (fuels reduction) and fire suppression. These changes make these types more vulnerable to insects and disease,

greater risk of severe fires and decreased diversity. These forest types are generally more accessible due to lower elevations and are generally more heavily roaded, increasing the potential for disturbance and displacement. They are also generally adjacent to the Forest boundary and may be affected by adjacent subdivisions. These types are also vulnerable to noxious weeds.

The **cold forest potential vegetation types** analyzed in UCRB that are found on the Caribou NF include spruce-fir, with or without aspen and lodgepole pine. Changes in structure and composition are less noticeable in these forest types because of longer fire intervals and fewer human-caused disturbances. These types have seen a general shift to dominance by shade tolerant species or a mixture of shade-tolerant and intolerant species. These changes result in higher fuel loads and increasing potential for lethal, stand-replacing fires. Much of the areas that have been harvested is highly susceptible to tree mortality from fire, insects, disease and stress.

The **dry shrub potential vegetation types** analyzed in UCRB that are found on the Caribou NF include antelope bitterbrush, basin big sage steppe and Wyoming big sage. The **cool shrub potential vegetation types** found on the Caribou include mountain big sage and mountain shrub types. These groups have a high departure from historical conditions due to agriculture, improper grazing, and changes in fire regimes. As a result, lower productivity, higher probability of severe events, and lower similarity to diversity (due to an increase in exotics and noxious weeds) is expected. Woodlands have also increased on cool shrublands and upland grasses and forbs have decreased.

UCRB identified three potential vegetation groups associated with **riparian** areas: woodlands, dominated by cottonwood, aspen and Douglas-fir); riparian shrub (dominated by alder and willow); and riparian herb (including sedges, forbs and grasses). Because of the long, linear nature and interspersion of types all of these types were lumped into one group, which corresponds to the riparian group above. Changes in riparian areas include increased fragmentation due agriculture, dams, urban development, decrease in the large tree component, increase in juniper woodlands, and exotic grasses and forbs. To a lesser extent, disturbances associated with recreational uses, urban development and mining have contributed to the decline in function of riparian areas.

Many **wetlands** on private lands have been greatly modified. Most of the remaining high quality wetlands in UCRB area are on public lands, primarily in alpine or subalpine environments or on other lands managed as National Wildlife Refuges. These types correspond to the non-riverine wetland group listed above.

Southeast Idaho wetlands were identified and classified by Jankovsky-Jones (1997). Class I sites represent high quality examples of plant communities and often provide habitat for high concentrations of state rare plant or animal species. There were none identified on the Caribou. Class II sites have good to excellent assemblages of common plant community types or the occurrence of a rare community type. Elk Valley Marsh was identified as a Class II site even though the area has been impacted by past grazing. Improved grazing management could enhance ecosystem function at this site. Other sites on the Forest that were identified as Reference or Habitat Sites include Crow Creek/Julies Fence, Horse Creek, Preuss Creek headwaters, Stump Creek Exclosure, Swan Lake and The Ponds. Application of Best Management Practices to these sites would provide for maintenance of habitat functions.

IDAHO BIRD CONSERVATION PLAN

Idaho Partners in Flight prioritized their habitats by looking at the number of birds that use a habitat as primary breeding habitat; and the numbers of high priority birds that use the habitats. They also considered the loss of habitat in quantity and quality, including the amount of habitat within the state and

the amount that is in management status that provides moderate to good protection from degradation. Based on these criteria, they identified their priorities as riparian, non-riverine wetlands, sagebrush shrublands and ponderosa pine.

Past impacts to riparian areas have resulted from channelization/diversion, (mostly at lower elevations), widespread removal of beaver, fire suppression, livestock grazing, recreational development, agriculture (off-Forest), road locations and past mining (IPIF, 2000). IPIF identified past activities that have affected sagebrush habitats as livestock grazing, sagebrush eradication to produce forage, seeding of non-native species, invasion by non-natives, conversion to agricultural and urban development, and recreation (hunting and increased use of off-road vehicles).

CARIBOU PROPER FUNCTIONING CONDITION ASSESSMENT

Proper functioning condition (PFC) assessments were done at the Regional scale (1997) and at the Forest level (1999). This process was used to identify systems at risk of not being in proper functioning condition (resilient to perturbations to structure, composition, and their biological or physical processes).

Table 37. Habitats and Degree of Departure from PFC.

Vegetation Type	Intermountain Region Degree of Departure	Caribou NF Degree of Departure	Rationale
Limber Pine	Moderate	Low	Balanced range of structures, size and age classes
Spruce/fir	High	**High**	Increased mature and old age classes, endemic insect and disease, non-lethal fire regimes are out of historic intervals
Aspen	High	**High**	Mostly old age aspen, conifers replacing aspen, fire regime outside historical range
Lodgepole pine	Moderate	Low	Structurally imbalanced, high seed-sap, very low pole. Extent has changed little and resilient after fire
Douglas-fir	Moderate	Moderate	Decrease in non-lethal fires has increased understory in stands, increased subalpine fir and allowed DF to become established in aspen, mountain brush and sagebrush
Maple	Not assessed	Moderate	Expanding into sagebrush and mountain brush communities, affects hydrologic conditions
Pinyon-juniper	High	**High**	Expanding into sagebrush, mountain brush and riparian areas. Affects hydrologic conditions
Mountain mahogany	Moderate	Moderate	Within historic range, but older plants with little regeneration.
Mountain brush	Low	Moderate	Lack of multiple vegetation layers and structural diversity, mostly older age classes
Tall forb	**High**	**High**	Species composition is out of balance, increased bare ground, soil loss
Sagebrush	High	Moderate	Structural stages out of balance, increase in bare soil and soil loss.
Riparian areas	**High**	**High**	Of assessed streams, only 30% in PFC, 60% FAR and 10% non-functioning

All of these analyses collected information on the amount and distribution of major vegetation types and their successional stages; amount and distribution of aquatic, wetland and riparian habitats; the type, intensity and frequency of major disturbance processes that shape ecosystems; and the condition of soil, water and air resources. Historical conditions of these elements were compared to current conditions to address sustainability.

Identification of Species-at-risk

The list of species-at-risk was compiled from several different sources. First, the existing threatened, endangered and sensitive species were incorporated. Next, the Conservation Data Center (CDC) lists were reviewed to incorporate Species of Special Concern (SSC). Then species from the Interior Columbia Basin (ICB) study and bird species from the Idaho Bird Conservation Plan (IPIF, 2000) were reviewed and incorporated as appropriate. Finally, the list of species of concern from the USFWS (9/00) was reviewed and incorporated as appropriate. Information from the CDC, regional specialists, the "Idaho Atlas of Wildlife" (Groves, *et al*, 1997) and "Idaho Bird Distribution" (Stephens and Sturts, 1998) was used to determine those species that may be present on the Caribou National Forest or vicinity.

The CDC only tracks their "Idaho Species of Special Concern" (SSC). This information is found on their website (www2.state.id.us/fishgame/ngconcrn). These species are ranked as Priority (A), Peripheral (B) and Undetermined Status (C). Information for any other species that are not tracked by CDC was taken from the "Idaho Atlas of Wildlife." Where state rank is shown: S1 = critically imperiled, S2 = imperiled, S3 = rare or uncommon, S4 = not rare, apparently secure and S5 = widespread, abundant and secure.

Appendix D of the ICB study (Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin, 1996) lists species with current outcomes of 4 or 5. These are species using patchy or poorly distributed habitats with a concern of extirpation or viability loss. This list was then reviewed against the "Idaho Atlas of Wildlife" to determine which species were likely to be present in southeast Idaho.

The Idaho Partners if Flight released their "Bird Conservation Plan" in January 2000. In it they identify high priority breeding bird species in Idaho. Factors used to identify vulnerability (high priority) include relative density, population trend, threats to breeding habitats, relative abundance, size of breeding range, size of non-breeding range and threats to species in non-breeding habitats. The species that were determined to be high priority breeding birds in Idaho are listed in Appendix 2 of that document and are incorporated here as appropriate. Primary breeding habitats are incorporated for these species.

Finally, the USFWS has identified species for which they have a concern about population status and long-term viability (9/1/2000). These species have been incorporated as appropriate.

The draft list was reviewed by Idaho herpetology and vertebrate specialists. Charles Peterson, Dept of Biological Sciences, Idaho State University, reviewed the amphibians and reptile section. Charles Harris, Principal Wildlife Research Biologist for IDFG Nongame and Endangered Wildlife Program (CDC) reviewed the rest of the list. His comments were also incorporated.

Existing information was collected on this Species-at-risk list (see Selection of SAR Process Paper). This included distribution, trends (where available), and habitat associations. Habitat amount, distribution and trend information was incorporated from existing vegetation data for the Forest, Proper Functioning Condition Analysis (1999) and Interior Columbia River Basin analysis. Information on habitat

specialization (generalist versus specialist) was gathered from Wisdom, *et al*, (2000), Hutto and Young (1999) and R4's Species-at-risk spreadsheet (McCarthy, 2001). Limiting factors/risk factors have been identified in some of these same documents. Information on significant long-term population declines or increases, based on Breeding Bird Surveys, has been incorporated where available (Saab and Rich, 1997).

AMPHIBIANS/REPTILES

▶*Northern leopard frog*

Historically common, and still numerous in some areas, but declining overall. Generally associated with heavily vegetated marshes, ponds, and streams and strongly associated with beaver ponds (Peterson, pers. comm.). N Am distribution is from Canada, south to Kentucky and New Mexico. In Idaho, they are found throughout much of the southern part of the state, following the Snake River Plain, and in the northern Panhandle. On the Caribou NF, they are currently only known in the Toponce Creek drainage. Ranked G5/S3. (Information taken from http://www.imnh.isu.edu/digitalatlas/ida_ecology). They are ranked as having a moderate degree of habitat specialization (McCarthy, 2000)

▶*Western (boreal) toad*

Generally widely distributed in Idaho, but identified as a species of concern for the Caribou based on survey results. Historically they were present in several areas of the Forest, now can only be found in the Tin Cup drainage. Peterson feels that this is the number one herpetological species of concern for the Caribou NF. Chytrid fungus has been identified as a potential factor contributing to their decline. Genetics have shown that this toad population is more similar to Utah and Colorado toads than to Yellowstone, Montana and northern Idaho toads. They are largely terrestrial but can generally be found within a fair proximity to water. Eggs are laid in water and larvae (tadpoles) are restricted to these habitats until metamorphosis. Ranked G4/S4. (Information taken from http://www.imnh.isu.edu/digitalatlas/ida_ecology). McCarthy ranks this species as having a low degree of habitat specialization.

▶*Common garter snake*

According to Peterson, this species used to be common, now common in "hotspots". Often associated with leopard frogs, as they are a common prey species. Usually found in habitats associated with water, such as streams, rivers and ponds. Idaho distribution is generally statewide. Ranked G5/S5. (Information taken from http://www.imnh.isu.edu/digitalatlas/ida_ecology). McCarthy ranks this species as having a moderate degree of habitat specialization.

MAMMALS

▶*Gray wolf*

T&E, experimental, non-essential. Scattered unconfirmed but probable reports over the years. Expected to increase as wolves disperse from Yellowstone. See TES Process Paper for more information.

▶*Lynx*

T&E. There are historical trapping records from several locations, including Webster Range (Georgetown), and Bear River range. There are ongoing detection surveys in the Webster Range. Harris reports that CDC has thirty-five records for lynx on the Caribou-Targhee NF. See TES Process Paper for more information.

▶*Spotted bat*
Now listed as sensitive species and ICB. According to Groves, *et al*, (1997) this species has only been found in southwest Idaho. Harris reports mist-netting a spotted bat on the Middle Fork of the Salmon River (August 1998), which greatly expands its known range in Idaho, but still not close to southeast Idaho. Has not been found in surveys on the Caribou, but is a difficult species to survey. A map showing locations shows that they have been found in south central Montana and down into western Wyoming. There is also one record from a city in Utah. The Caribou is between those points, and southwest Idaho, so the Caribou is within the species distribution. However, distribution is patchy and limited geomorphically, by roosting habitats. See TES Process Paper for more information.

▶*Western big-eared (Townsends) bat*
Forest Service sensitive species. This species has been found on the forest. See TES Process Paper for more information.

▶*Wolverine*
Now listed as a sensitive. Not listed as present in se Idaho by Groves, *et al*, (1997) but there are reported observations from the Bear River range, Portneuf range and south end of Preuss range (1992, 1993). See TES Process Paper for more information.

▶*Silver-haired bat*
Occurs in southeast Idaho, considered S4 by CDC. Has been found on surveys on the Forest. Forages on small to medium-sized insects over small water bodies in conifer forest. Roosts singly or in small groups in tree foliage, cavities, under loose bark or sometimes in buildings. Occurs throughout US and most of southern Canada. Distribution in Idaho is not well known, but is thought to be statewide in coniferous forests. Ranked G5/S4. McCarthy ranks this species as having a low degree of habitat specialization. Wisdom et al (2000) put this species in family group 2, which are species using broad-elevation old-forest. Species in this group use late-seral multi- and single-layered stages of the montane community as source habitat. Juxtaposition of early and late-seral stages is needed to meet all aspects of life functions for this species, which is identified as a "contrast species."

▶*Western small-footed myotis*
Occurs in southeast Idaho, considered S4 by CDC. USFWS identified concerns for this species. Found on surveys on the Forest. Range in from southwestern Canada through western US into Mexico. Distribution in Idaho is poorly known, but believed to be fairly widespread across the southern part of the state. Ranked G5/S3. In summer it roosts in rock crevices, under boulders, beneath loose bark and in structures in arid habitats. Known to winter in lava-tube caves in southern Idaho. McCarthy ranks this species as having a moderate degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 7, which are species using a complex pattern of forest, woodlands and sagebrush cover types.

▶*Long-legged myotis*
Distribution maps show that this species is found statewide, where suitable habitat exists, typically in montane coniferous forest and riparian habitats. This species has been found on the Forest. This is the most common bat in the western US, but distribution in Idaho is poorly known. Summer roosts include buildings, rock crevices and under bark. Ranked G5/S3. McCarthy ranks this species as having a low degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 7, which are species using a complex pattern of forest, woodlands and sagebrush cover types.

▶*Long-eared myotis*
Widespread from central BC south to Baja California. Distribution in Idaho is poorly known but information suggests that it is found statewide, where suitable habitat exists. Generally a forest-dwelling

bat that forages over water or among trees. An Idaho study found roosts always located near water. Roost in buildings, hollow trees, mines, caves and fissures. Has been found on surveys on Forest. Ranked G5/S3. McCarthy ranks this species as having a low degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 7, which are species using a complex pattern of forest, woodlands and sagebrush cover types.

▶*Pallid bat*

Ranges from British Columbia south to central Mexico. Distribution in Idaho includes southeast Idaho and area of Caribou NF where they are found in rocky, river canyons and cliffs near water. Usually forms in clusters in roosts in rock crevices or buildings, less often in caves, hollow trees or mines. Catches prey on ground after aerial searches. Ranked G5/S1. McCarthy ranks this species as having a low degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 7, which are species using a complex pattern of forest, woodlands and sagebrush cover types.

▶*Northern flying squirrel*

Occurs on the Forest. Prefers coniferous and mixed forests. Optimal conditions are cool, moist mature forest with abundant standing and downed logs. Distributed from Alaska east through Canada and south in Rockies, Great Lakes region and Appalachians. Distributed across Idaho in suitable habitats. Ranked G5/S4. McCarthy ranks this species as having a moderate degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 2, which are species using broad-elevation old-forest. Species in this group use late-seral multi- and single-layered stages of the montane community as source habitat. They are also dependent on snags for nesting/foraging, use large hollow trees and used downed logs for foraging on prey species.

▶*Pygmy rabbit*

USFWS has identified concerns for this species. Potentially occurs on the west side of the Forest in dense sagebrush stands. Harris reports 2 records for the Caribou NF vicinity, both from the 1930's; one in Trail Creek on the north end of the Bannock range and one from Pocatello Creek to the east of Pocatello (well off-Forest). Current distribution on west side of Forest is uncertain. Associated with sagebrush habitats with dense canopy cover and deep soils. Range from Great Basin north to southwest Montana. In Idaho, distribution is in the southern part of the state in sagebrush habitats. Ranked G5/S3. This species will be discussed individually.

▶*Marten*

Documented as occurring in the extreme north end of the Caribou NF (between Palisades and Grays Lake). Ranges throughout Canada and Alaska, and south through Rockies, Sierra Nevada, northern Great lakes and northern New England. In Idaho, range is generally northern, with small areas extending down into southeastern Idaho. Usually found in dense coniferous forest, in Idaho greatest use is in older stands of spruce-fir. Ranked G4/S4. This species will be discussed individually.

▶*Uinta chipmunk*

Distributional records are disjunct, but range extends from southwest Montana south to northern Arizona and from western Colorado into eastern California. Has been found in the Bear River range in southeast Idaho. Found in coniferous forests, often near logs and brush in open areas, and at edges of forests. Ranked G5/S1. McCarthy ranks this species as having a moderate degree of habitat specialization.

BIRDS

▶*Trumpeter swan*

Now listed as sensitive. Found around Grays Lake, Bear River. See TES Process Paper for more information.

▶*Cinnamon teal*
Breeds from southwest Canada, eastern Montana, Great Plains and Midwest, south to Mexico and breeds in across Idaho. Occupies ponds, lakes and streams at middle to lower elevations. Feeds on aquatic plants in shallow water areas, with small amounts of animal food. Nests on ground, near marsh. Ranked G5/S5. (Groves, *et al*, 1997) McCarthy ranks this species as having a high degree of habitat specialization.

▶*Redhead*
Widespread distribution across Canada and south to Southwest and Midwest, found across Idaho in suitable habitats. Breeds in southeast Idaho. In Idaho, prefers marshy ponds, lakes and potholes, except in winter when it uses deep waters. Feeds on leaves, and stems of aquatic plants and smaller amounts of invertebrates. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a high degree of habitat specialization.

▶*Bald eagle*
T&E. One nest site near Thayne, Wyoming. Other possible nest sites off-Forest (Bear River valley, Grays Lake). They are also known to winter in several areas of the Forest (Tincup, Diamond Creek, Narrow/Lane Creek, and Crow Creek). See TES Process Paper for more information.

▶*Peregrine falcon*
Has been delisted, now considered sensitive species. There are peregrine falcons in the vicinity of the Forest, around Grays Lake and Swan Valley, to the north. There are historic nesting cliffs on the Forest, and indications of recent nesting activity in the Grays range (1996, 97). See TES Process Paper for more information.

▶*Sharp-shinned hawk*
Breeds from Alaska, across Canada and south to South America. Breeds in southeast Idaho. Found in forests and open woodlands, but primarily coniferous forest in more northern portions of its range. Nests in trees. Will occupy urban areas with abundant prey. Eats small birds, taking prey from perch or mid-air. Individuals occasionally killed by larger raptors, species has suffered from pesticide contamination. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a low degree of habitat specialization.

▶*Northern goshawk*
Now listed as sensitive. Nesting documented in Bear River range, Bannock Range, Preuss Range, Grays Range, Portneuf Range. See TES Process Paper for more information.

▶*Swainson's hawk*
Breeds across Canada, and south to Mexico, including southeast Idaho. Uses more open types, tall trees used for perches, nest sites. In Idaho, prefers to nest in trees or shrubs near riparian zones adjacent to agricultural fields. During breeding season preys primarily on small mammals. A 1985 survey in southern Idaho indicated that they were still a widespread common nester in state. Ranked G4/S4. (Groves, *et al*, 1997). McCarthy ranks this species as having a moderate degree of habitat specialization.

▶*Ferruginous hawk*
Breeds across western US, including se Idaho. Uses flat or rolling landscapes in sagebrush and other arid shrublands, dry open prairie grasslands and badlands. Optimal habitat is extensive ungrazed or lightly grazed sites with broad views. Prefers to nest in tree or on rimrock or cliff ledge. Preys mostly on small mammals. Previously suffered population declines due to persecution, loss of native prairie habitats, reduced prey availability due to elimination of prairie dog and ground squirrel colonies. Overall stable to

increasing population trends since 1980. (Paige and Ritter, 1999). McCarthy ranks this species as having a high degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 10, which are species that use various shrublands, herblands and woodlands.

▶*Golden eagle*

Breeds from Alaska, east to Labrador and south to Mexico, including southeast Idaho. BBS shows a 6 percent population increase in ten-year period. In Idaho, prefers open and semi-open areas in both deserts and mountains. Builds stick nests on cliff or in trees. Jackrabbits are preferred prey in s ID. Positive correlation between breeding success and jackrabbit numbers. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a low degree of habitat specialization.

▶*Prairie falcon*

Breeds from southeast British Columbia across to central Canada and south to Baja, California and northern Mexico, including southeast Idaho. In Idaho, breeds in open habitats, including shrub steppe and dry mountain habitat, with availability of cliff nesting sites and a prey base of small mammals being important factors. Feeds on small mammals, lizards and birds. Nests on cliff, sometimes in old corvid or raptor nest. BBS data show population declines but small sample size makes reliability of trends low. In Idaho the species showed a negative response to moderate grazing in big sagebrush/bluebunch wheatgrass. Should benefit from protection of cliff nesting sites and maintaining grassland and shrubland habitats for other species of birds. Ranked G4/S5. (Paige and Ritter, 1999). McCarthy ranks this species as having a low degree of habitat specialization.

▶*Columbian sharp-tailed grouse*

Now listed as sensitive species. See TES Process Paper for more information.

▶*Ruffed grouse*

Breeds from central Alaska, across Canada south along Pacific coast, Rocky Mountains and Atlantic coast, including southeast Idaho. In southeast Idaho study, associated with early seral aspen year-round. Young eat insects and spiders; adults eat nuts, flowers, buds, and leaves of aspen, willow and rose. Predators include great-horned owls and northern goshawks. Shallow snow cover or icy crusts may reduce winter survival by limiting access to subnivean (below snow) habitats. Cold wet weather in May/June may cause high losses among broods. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a moderate degree of habitat specialization. A study in Montana (Hutto and Young, 1999) found that they were detected with the highest probability in aspen and other riparian cover types. They also suggest that livestock grazing and effects on understory vegetation, may affect suitability for display/breeding sites.

▶*Sage grouse*

Identified as a MIS. Breeds in southeast Idaho. For more information see the MIS process Paper.

▶*Whooping crane*

T&E. Now listed as experimental, non-essential. Harris reports that as there are only one or two birds left in Idaho, they should not receive emphasis. See TES Process Paper for more information.

▶*Sandhill crane*

Breeds from Alaska, across Canada, south to Nevada, Colorado, and southeastern US. Breeds in southeast Idaho. Found in open grasslands, marshes, marshy edges of lakes, ponds and rivers. Feeds on roots, tubers, seeds earthworms, insects etc. Usually builds nest on ground surrounded by water, or in undisturbed location. Often feeds and rests in fields and agricultural lands. Highest reported density is Grays Lake – 200 pairs/10,000 ha. Ranked G5/S5. (Groves, *et al*, 1997).

▶*Killdeer*
Breeds from Alaska east to Newfoundland, and south to Baja, Gulf coast and Florida, including southeast Idaho. BBS shows a 4percent decrease in twenty-six years and 10 percent decrease in ten years. Found in fields, meadows, pastures etc, foraging on small invertebrates. Nests in small depression on ground in a variety of habitats from unconcealed locations near human habitation to gravelly, camouflaged areas. In Idaho study, were more abundant in grazed than ungrazed riparian habitat. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a high degree of habitat specialization.

▶*Black-necked stilt*
Breeds from southern Oregon across to southern Colorado and Kansas, to Gulf coast and down through central America to southern Chile. Includes southern Idaho. Found in shallow water with soft, muddy bottom. May be at margins of ponds, lakes, and reservoirs. Feed mostly on invertebrates. Nest in small colonies. Ranked G5/S4. (Groves, *et al*, 1997). McCarthy ranks this species as having a high degree of habitat specialization.

▶*American avocet*
Breeds from southern Canada, south to California, Mexico, and to Texas. Includes southern Idaho. Found in lowland marshes, mudflats, ponds etc. Eat a variety of aquatic insects and larvae as well as seeds. Nest in depressions on ground, or on gravel, mud, or vegetation. Nests in loose colonies. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a high degree of habitat specialization.

▶*Long-billed curlew*
Breeds from southwest Canada, south to California, Colorado, and Texas, including Idaho. It breeds in shortgrass prairies, grazed mixed grass prairies and short open sagebrush. Prefer open areas with a wide view. Nest in open scrape, often near a rock, or other object. Nest predators include magpies, gulls, raptors and medium-sized mammals. Adults forage on insects and other invertebrates as well as amphibians and eggs and nestlings of other birds. Populations declined due to uncontrolled hunting through early 1900s. Arctic populations have recovered, but pesticide poisoning and agricultural conversion in central and western states has not allowed same recovery. Generally respond favorably to grazing before the onset of nesting. During the breeding season nests and nestlings may be vulnerable to trampling. Curlews may respond favorably to burning that created openings of short grass. BBS shows a 5 percent increase in twenty-six year period. Documented in Grays/Wooley Range area. Ranked G5/S3. (Paige and Ritter, 1999).

▶*Flammulated owl*
Now listed as sensitive. Found in surveys in the Bannock Range, Bear River range, Smoky Canyon area. For more information see TES Process Paper.

▶*Boreal owl*
Now listed as sensitive. High elevation mixed conifer breeding habitats. Surveys have documented them in Cold Spring (Bear Camp Gulch), Danish Flat, Mill Creek (Bear River Range) and Johnson Creek (Aspen range). See TES Process Paper for more information.

▶*Great gray owl*
Now listed as sensitive. Documented as present in southeast Idaho. Found in surveys in Bannock Range. Aspen Range, Bear River Range, Grays Range and Palisades. See TES Process Paper for more information.

▶*Short-eared owl*

Breeds from northern Alaska across to Labrador, and south to California, Colorado, parts of Midwest and Virginia. Also across southern Idaho. Open prairie, meadows and open shrublands. Strongly associated with ungrazed and undisturbed native grasslands and wetlands that support dense small mammal populations. Voles are primary prey. Nest in a depression on ground on dry site, mostly in short grasses. Because they are irruptive and nomadic, trend data is scarce. Ranked G5/S5. (Paige and Ritter, 1999). McCarthy ranks this species as having a moderate degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 10, which are species that use various shrublands, herblands and woodlands.

▶*Western burrowing owl*

Breeds in southwest Canada, south through western US, southern Florida, central Mexico to much of South America, including southern Idaho. They burrow/nest in grasslands, open sagebrush shrublands and agricultural lands (not in mountain meadows). Uses abandoned small mammal burrows (esp. prairie dog and ground squirrel). The presence of abandoned small mammal burrows in grazed, level areas is of primary importance. Badgers are the primary predator. Burrowing owls are opportunistic predators. Small mammal control and agricultural conversion have affected nesting and foraging habitat in many parts of its range. Predators, pesticides, shooting and vehicle collisions take a toll of birds as well. BBS does not adequately sample burrowing owls, but estimates for the west as a whole show an increase from 1968 to 1995. Ranked G4/S3. (Paige and Ritter, 1997). McCarthy ranks this species as having a high degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 10, which are species that use various shrublands, herblands and woodlands.

▶*Northern pygmy owl*

Breeds from British Columbia, south through western US, Mexico and Central America. Found across Idaho in suitable habitats. Present on the Forest. Found in dense forests or open woodlands, forages in forest openings. Glides/dives from elevated perch to capture prey (mice and insects). Uses abandoned or natural cavity in snag for nesting (secondary cavity nester). Tend to be solitary. Ranked G5/S4. (Groves, *et al*, 1997). McCarthy ranks this species as having a low degree of habitat specialization.

▶*Black-chinned hummingbird*

Breeds from southwest British Columbia, through Pacific Northwest, down Rocky Mountains, south to New Mexico. Found across Idaho in suitable habitats. Found in semi-arid habitat near water, canyons, slopes, brush, riparian and open woodlands. Nest in woody vegetation, forage on nectar and insects in air. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a low degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 6, which are species using montane and lower montane forests, riparian and upland woodlands, mountain brush, mountain mahogany and riparian shrublands. Special habitat features include nectar-producing flowers.

▶*Calliope hummingbird*

Breeds in mountains from British Columbia and Alberta, south along Pacific range and Rocky Mountains. Found across all of Idaho in suitable habitats. Found in mountain meadows, canyons and streams, in open montane forest, and in willow and alder thickets. BBS shows a 13 percent decrease in ten-year period. Nest in woody vegetation, forages on nectar (paintbrush, penstomen, columbine, gilia and elephantshead), insects and spiders. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a low degree of habitat specialization. Studies in Montana (Hutto and Young, 1999) found that males rely on shrubs in early successional patches and open riparian areas and use tall shrubs as perch and display areas. Females nest primarily in riparian streamside vegetation and road and forest edges.

▶*Rufous hummingbird*
Breeds from southern Alaska, southwestern Canada, south and west of Cascades to California and southern Idaho. Distributed across all of Idaho in suitable habitats. Found in coniferous forests. A study in north central Idaho found these hummingbirds more common in clearcut areas than in fragmented or continuous stands of coniferous forest. Nests in woody vegetation, feeds on nectar, insects and sap. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a low degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 6, which are species using montane and lower montane forests, riparian and upland woodlands, mountain brush, mountain mahogany and riparian shrublands. Special habitat features include nectar-producing flowers.

▶*Three-toed woodpecker*
Now listed as sensitive. Documented in Bear River Range and north end of Soda Springs RD, also in Manning Creek area. See TES Process Paper for more information.

▶*Lewis' woodpecker*
Breeds from southwestern Canada, across Rocky Mountains and Great Plain states. In Idaho found across the state in patchy areas. Found in southeast Idaho in Caribou County. Found in open forests and woodlands, and riparian woodlands. Primarily uses cavities excavated by other species. Feeds mainly on insects (ants, flies, grasshoppers). Ranked G4/S4. Wisdom, *et al*, (2000) put this species in family group 1, which is low-elevation, old forest species.

▶*Red-naped sapsucker*
Selected as MIS. Found across southeast Idaho. BBS shows a 12 percent increase in 26-year period. See MIS Process Paper for more information.

▶*Williamson's sapsucker*
Breeds from BC south along western states. In Idaho distribution is largely central and southeaster. Low elevation mixed conifer breeding habitats. Found in montane coniferous forests, especially fir and lodgepole pine. Nest in cavity in standing snag or hollow tree. Sometime returns to same tree, but not same cavity. Eats sap, cambium, insects. Ranked G5/S4. (Groves, *et al*, 1997). McCarthy ranks this species as having a moderate degree of habitat specialization. Wisdom et al (2000) put this species in family group 2, which are species using broad-elevation old-forest. Species in this group use late-seral multi- and single-layered stages of the montane community as source habitat.

▶*Olive-sided flycatcher*
Breeds from Alaska and Canada south across western states, part of Midwest and middle Atlantic states. Found across Idaho in suitable habitats. Found in forests and woodlands (especially burned areas with standing dead trees). An Idaho study found species responds positively in numbers to single-tree logging. BBS shows a 3 percent decrease in twenty-six years and 4 percent decrease in a ten-year period. Ranked G4/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a moderate degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 2, which are species using broad-elevation old-forest. Species in this group use late-seral multi- and single-layered stages of the montane community as source habitat.

▶*Willow flycatcher*
Breeds from BC across to Minnesota, and south across western states. Found across Idaho. Found in thickets, scrubby and brushy areas, open second growth and open woodlands. BBS shows a 3 percent decrease over a twenty-six year period and 4 percent decrease in ten-year period. Nests in shrubs or deciduous trees, forage on foliage or in air. Ranked G5/S4. (Groves, *et al*, 1977). McCarthy ranks this

species as having a high degree of habitat specialization. Studies in Montana (Hutto and Young, 1999) found this species strictly tied to riparian areas with adjacent shrub cover.

Hammond's flycatcher
Breeds from Alaska and south through western states. Found across Idaho in suitable habitats. Found in coniferous forests and woodlands. In Idaho/Mt study, found to be old growth associates, in DF/Ponderosa pine. Builds nests in trees, hunts insects from perch. Ranked G5/S5. Groves, *et al*, 1997. McCarthy ranks this species as having a moderate degree of habitat specialization. Wisdom, *et al*, (2000) put this species in family group 2, which are species using broad-elevation old-forest. Species in this group use late-seral multi- and single-layered stages of the montane community as source habitat.

Gray flycatcher
Breeds from central Oregon across Rocky Mountain states. In Idaho, distribution is limited to the southern part of the state. Found in arid woodlands and brushy areas. An Idaho study found species more abundant in old growth juniper stands than in burned or clearcut areas. BBS shows a 13 percent increase in ten years. Nest is shrub or tree, hunts from perch. Ranked G5/S2. (Groves, *et al*, 1997). McCarthy ranks this species as having a high degree of habitat specialization.

Dusky flycatcher
Breeds from Canada south across western U.S. Distribution across Idaho in suitable habitats. Found in brushy habitat, thickets, open coniferous forest, mountain scrub and aspen groves. Idaho/Mt study found the species associated with rotation aged Douglas-fir stands. Nests in shrub or tree, hunts from perch or forages on foliage. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a low degree of habitat specialization.

Western scrub jay
Resident from southwestern Washington, through southwestern U.S. (also southern Florida). Documented as occurring in extreme south central Idaho. Breeding habitats are pinyon/juniper and brush. Found in scrub (oak, pinyon, juniper), brush, chaparral and pine/oak. Nests in trees and shrubs. Forages on nuts, grains, fruits, insects, eggs, rodents and reptiles. Caches nuts. Ranked G5/S2. (Groves, *et al*, 1997). McCarthy ranks this species as having a moderate degree of habitat specialization.

Pinyon jay
Resident from central Oregon, to South Dakota, and south through Rocky Mountain states. In Idaho, distribution is limited to the southeastern part of the state. Found in pinyon/juniper woodlands, less frequently in pine. Documented south of Pocatello and around Malad City. Nests in juniper or pine. Breeds in loose, scattered colonies. Eat and cache pine seeds, berries, seeds, grains or insects. Ranked G5/S2. Groves, *et al*, 1997). McCarthy ranks this species as having a high degree of habitat specialization.

Brown creeper
Breeds across Alaska and Canada, south to Texas and portion of Midwest and eastern U.S. In Idaho, distribution is statewide in suitable habitats. Found in forests, woodlands and swamps. Northern Idaho study indicated species was more abundant in continuous old growth than in fragmented or selectively harvested stands. Hutto and Young (1999) also found this species fairly tightly restricted to old growth forest. Usually nests under bark on tree trunk. Forages on bark for insects/invertebrates. Ranked G5/S5. (Groves, *et al*, 1997). Wisdom, *et al*, (2000) put this species in family group 2, which are species using broad-elevation old-forest. Species in this group use late-seral multi- and single-layered stages of the montane community as source habitat.

▶*Rock wren*
Breeds from British Columbia, across western states and east to Texas. Found in arid or semi-arid habitat in shrubby areas in rocky canyons and cliffs, on rock slides and bouldery slopes. Feeds on insects and spiders. Nests in cavity under or near rocks. Ranked G5/S5. (Groves, *et al*, 1997). Hutto and Young (1999) found this species was detected in open sagebrush, grasslands, and post-fire habitats with rock outcrops or boulder-strewn slopes. High degree of habitat specialization.

▶*American dipper*
Resident from Alaska, western Canada, south in mountains to California, and South Dakota. Distributed across Idaho (except in the southwest portion) in suitable habitat Found up to treeline along montane streams, especially along swift-flowing water. Nests along swift-flowing streams, on rock in streams, on cliff faces, or behind falls. Walks, swims and dives while foraging. Ranked G5/S5. McCarthy ranks this species as having a high degree of habitat specialization.

▶*Sage thrasher*
Breeds from southern British Columbia, southeast to Wyoming, south to Texas. In Idaho distribution is limited to southern half of the state. Found in sagebrush steppe. Idaho study found big sagebrush used for nesting were taller than average, had greater foliar density, and most often faced easterly. Another study in southwest Idaho concluded distribution was influenced by both local vegetation cover and landscape features, such as patch size. Uses sage for nesting and security cover. Positively associated with shrub cover, bare ground and horizontal habitat diversity. Negatively associated with grass cover. Prey includes Mormon crickets, grasshoppers and other insects. BBS surveys have a low sample size, but population trends appear to be more or less stable across the west. Ranked G5/S5. (Groves, *et al*, 1997 and Paige and Ritter, 1999). Wisdom, *et al*, (2000) put this species into family group 11, which are species using sagebrush types (big sagebrush, low sagebrush and mountain big sagebrush). This species also uses upland woodlands.

▶*Loggerhead shrike*
Breeds across part of Canada, south to Great Basin, across Gulf coast and southern Florida. In Idaho, distribution is across the southern part of the state. Found in open country with scattered trees and shrubs and occasionally in open juniper woodlands. Open country with low vegetation for foraging (insects, small birds, rodents) and shrubs and trees for nesting and roosting. A study in se Idaho found nests in sagebrush, bitterbrush, and greasewood. An Idaho study found that shrikes directly lowered nesting success of sage and Brewer's sparrows and sage thrashers. BBS shows a 3 percent decrease in twenty-six year period. Ranked G4/S3. (Groves, *et al*, 1997 and Paige and Ritter, 1999). McCarthy ranks this species as having a low degree of habitat specialization. Wisdom, *et al*, (2000) put this species into family group 11, which are species using sagebrush types (big sagebrush, low sagebrush and mountain big sagebrush). This species also uses upland woodlands.

▶*Plumbeous vireo* (formerly solitary vireo)
Breeds across part of Canada, south to California and across to Texas. Also portions of Midwest and east. In Idaho, distribution is state-wide in suitable habitat. Found in mixed woodlands, humid montane forests, pine/oak, oak forests, and pinyon/juniper. Montana/Idaho study found they favored rotation-aged Douglas-fir stands over old growth. Nests in trees. Forages among foliage and branches. Ranked G5/S5. (Groves, *et al*, 1997). McCarthy ranks this species as having a low degree of habitat specialization.

▶*Virginia's warbler*
Breeds in Great Basin, in Idaho, distribution is limited to south-central/east Idaho. Breeds in deciduous woodlands on steep mountain slopes. Also found along mountain streams in sagebrush, or in cottonwood and willow. In Idaho, species is most closely associated with pinyon/juniper woodlands and nearby

riparian areas. Documented in Bannock Range. Nests concealed on ground. Forages on ground in thick brush. Ranked G5/S2. (Groves, *et al*, 1997). McCarthy ranks this species as having a moderate degree of habitat specialization.

▶*Yellow warbler*

Breeds from Alaska across Canada and south to Panama. Found across Idaho in suitable habitats. Found in open scrub, second growth woodlands, thickets, farmlands. Idaho studies have found this species to be a riparian habitat generalist. BBS shows a 2 percent decrease in ten-year period. Nests in shrubs. Most food taken from foliage. Ranked G5/S5. (Groves, *et al*, 1997). Hutto and Young (1999) list this species as being a riparian obligate, most common in riparian with well-developed shrub layers and large deciduous trees.

▶*Black-throated gray warbler*

Breeds from southwest British Columbia, through western states .In Idaho, distribution is limited to scattered areas in southern third of the state. Found in dry, open forests and woodlands, and in brushlands. In Idaho, this species is associated with juniper stands. Nests in coniferous and deciduous trees, forages in leaves, feeding on insects. Ranked G5/S3. (Groves, *et al*, 1997). McCarthy ranks this species as having a moderate degree of habitat specialization.

▶*MacGillivray's warbler*

Breeds from southeast Alaska and western Canada, south through western states. In Idaho, distribution is state-wide in suitable habitat. Riparian breeding habitats. Riparian habitat specialist, preferring dry, tall willow areas with grasses and forbs. Nests low in thick shrubs, foraging close to ground in dense vegetation. Ranked G5/S5. (Groves, *et al*, 1997). Hutto and Young (1999) found that this species was commonly found in open forest patches with dense shrub cover, although nest success is unknown.

▶*Western tanager*

Breeds from southeastern Alaska, through western Canada, and south through western U.S. Breeds mostly in coniferous and mixed mountain woodlands. Idaho/Montana study indicated that this species favored old growth over rotation-aged stands in Douglas-fir/ponderosa pine habitats. Nests on branches in conifer. Feeds on insects and fruits. Ranked G5/S5. (Groves, *et al*, 1997). Hutto and Young (1999) found this species was found over a wide range of coniferous forest types and were widespread and considered them habitat generalists. McCarthy ranks this species as having a low degree of habitat specialization.

▶*Grasshopper sparrow*

Breeds from eastern Washington east across U.S. to Maine, south to California, Texas and southeast U.S. In Idaho, distribution is mostly state-wide, except for northernmost part. Found in prairies, open grasslands, fields and savannas. Eats insects, grain and seeds. Builds nest on ground. Ranked G4/S3. Groves, *et al*, 1997). Hutto and Young (1999) found these species almost exclusively in grasslands. McCarthy ranks this species as having a high degree of habitat specialization.

▶*Brewer's Sparrow*

Breeds across portions of western Canada and south through western U.S. In Idaho, distribution is in the southern part of the state. Usually found in association with sagebrush. They prefer large, living sagebrush for nesting. A recent study in southwest Idaho concluded that their distribution was influenced by both local vegetation cover and landscape level features (patch size). Positively associated with shrub cover, bare ground and horizontal habitat diversity. Negatively associated with grass cover. Occassional cowbird hosts. Forages mostly on sagebrush leaves but also weevils, aphids and other insects, as well as seeds of grasses and forbs. Historically may have been the most abundant bird in the Intermountain west. BBS shows a 1 percent decrease in twenty-six year period and 4 percent decrease in ten-year period.

Ranked G4/S5. (Groves, *et al*, 1997 and Paige and Ritter, 1999). Wisdom, *et al*, (2000) put this species into family group 11, which are species using sagebrush types (big sagebrush, low sagebrush and mountain big sagebrush).

►Lark sparrow

Breeds from western Oregon, across upper Midwest, south to southwest and southeast U.S. In Idaho, distribution is in southern 2/3 of the state. Found in open situations with scattered bushes and trees such as prairies, forest edges, shrublands, cultivated areas, fields with brushy borders and savannas. Uses margins, varying structure, nests on ground or low in shrub. Nests in depression on ground or in shrubs or rock crevices. Feeds on seeds and insects. BBS shows a 3 percent decrease in twenty-six years. Ranked G5/S5. (Groves, *et al*, 1997 and Paige and Ritter, 1999).

►Sage sparrow

Breeds through northwest US and south through Great Basin/Rockies. In Idaho, distribution is through southern half of the state. Found in sagebrush, saltbrush brushlands, and chaparral. One Idaho study found nesting occurred where sagebrush coverage was sparse but clumped. A recent southwest Idaho study concluded that they were influenced by local vegetation cover and patch size. Use high sagebrush cover for nesting, large (250-acre +) patch size, and areas of low disturbance. Positively associated with shrub cover, bare ground and horizontal habitat diversity. Negatively associated with grass cover. Ranked G5/S4. (Groves, *et al*, 1997 and Paige and Ritter, 1999). Wisdom, *et al*, (2000) put this species into family group 11, which are species using sagebrush types (big sagebrush, low sagebrush and mountain big sagebrush).

►Red-winged blackbird

BBS shows a 1.5 percent decrease over twenty-six years, and 2.3 percent decrease over ten years. Breeds across U.S. and Canada, year-round resident in southern Idaho. Nest in grasses, reeds/cattails and shrubs.

►Brewers blackbird

Breeds across western and northern states and into Canada. Found across Idaho, year-round in western part, summers in eastern Idaho. Nest on ground, shrub, reed/cattails, deciduous shrubs and conifers. BBS shows a 1.3 percent decrease over twenty-six years, and 4.3 percent decrease over ten years.

►Western meadowlark

Breeds from British Columbia and south through western and midwestern states. Found in grasslands, shrubsteppe, cultivated fields and pastures. A study in southwest Idaho determined that landscape level features did not influence distribution of meadowlarks. Nest on ground. Forage on insects predominately, with lesser amounts of grains and seeds. BBS shows a 1 percent decrease in twenty-six year period and 4 percent decrease in ten-year period. Ranked G5/S5. (Groves, *et al*, 1997).

►Lesser goldfinch

Resident from Washington, through Pacific northwest. Mainly migratory in Rocky Mountain region. Rare breeder in Idaho, documented south of the Bannock Range. Found in partly open situations with scattered trees, and edges, where water is available. Nests in dense foliage in tree or shrub. Diet dominated by seeds, but also insects in summer. Ranked G5/S1. (Groves, *et al*, 1997). McCarthy ranks this species as having a moderate degree of habitat specialization.

Partners in Flight (Pashley, D.N., *et al*, 2000) has developed a "watch list" from individual state Bird Conservation Plans. These birds are not listed under ESA, but may warrant conservation attention. Some are common, but undergoing steep population declines, others are rare but increasing. Some are both rare and declining. None of the species considered here fall into their "extremely high priority". Species put

into the "moderately high" category that we are analyzing here are trumpeter swan (sensitive), flammulated owl (sensitive), rufous hummingbird, Lewis' woodpecker, and Virginia's warbler. Species put into the "moderate" category that we are analyzing here are sage grouse (MIS), long-billed curlew, sage sparrow, short-eared owl, and Brewer's sparrow.

Saab and Rich (1997) analyzed Breeding Bird Survey data and identified species of high concern to management in the Interior Columbia River Basin. These include Lewis' woodpecker, olive-sided flycatcher, willow flycatcher, loggerhead shrike, Virginia's warbler, lark sparrow, Brewer's sparrow, sage sparrow and western meadowlark.

Environmental Condition Outcomes

Environmental conditions are the combination of physical and biological factors that allow a species to utilize habitat. Well-distributed habitat indicates that habitat is not eroded at the edges of the range, and does not contain significant gaps that would prevent demographic and genetic interchange throughout the population, across multiple generations. In general, geographic range refers to the recent historical range (last 100 to 200 years) of the species. However, if substantial range contraction or fragmentation has occurred, not as a result of national forest management, the potential future (50-100 years) range may be used as a reference point. The following information follows the same process as that used in the Interior Columbia Basin broad-scale assessment (1996).

The second column shows habitat outcomes identified, by species, during the Columbia River Basin broad-scale assessment. The first number represents distribution of habitats historically (H), while the second number represents the current (C) distribution of habitats. The number relates to a habitat outcome, which are described below. Species outcomes were determined by expert panels, and numbers here have been rounded to the nearest whole number to give a picture of trends (Quigley, *et al*, 1996).

Outcome 1. Suitable environments are broadly distributed and of high abundance across the range of the species. The combination of distribution and abundance of environmental conditions provide opportunity for continuous or nearly continuous intraspecific interactions for the species.

Outcome 2. Suitable environments are either broadly distributed or of high abundance across the range of the species, but there are temporary gaps where suitable environments are absent or only present in low abundance. However, the disjunct areas of suitable environments are typically large enough and close enough to permit dispersal and interaction among subpopulations across the species range.

Outcome 3. Suitable environments are frequently distributed as patches or they exist at low abundance, or both. Gaps, where suitable environments are either absent or present in low abundance, are large enough that some subpopulations are isolated, limiting opportunity for interaction. There is opportunity for subpopulations in most of the species range to interact as a metapopulation, but some subpopulations are so disjunct or of such low density that they are essentially isolated from other populations. For species for which this is not the historical condition, reduction in overall species range from historical conditions may have resulted from this isolation.

Outcome 4. Suitable environments are highly isolated or they exist at very low abundance, or both. While some subpopulations associated with these environments may be self-sustaining, there is limited or no opportunity for population interaction. There has likely been a reduction in overall species range from historical conditions, except for some rare, local endemics that may have

persisted in this condition since the historical period. For species for which this is not the historical condition, reduction in overall species range from historical conditions may have resulted from this isolation.

Outcome 5. Suitable environments are highly isolated and exist at very low abundance, with little or no possibility of population interactions, resulting in strong potential for local or regional extirpation, and little likelihood of recolonization.

Additional analyses in the Interior Columbia Basin Analysis (Wisdom, *et al*, 2000) calculated changes in source habitats for many of the same species. A habitat trend category for those species analyzed is shown below in the third column (from Vol. 1, pg 44). Trend categories were identified where –2 was a decrease of more than 60 percent; -1 was a decrease between 20 percent and 60 percent; 0 was a decrease or increase of less than 20 percent and 1 was an increase of 20 percent and 60 percent.

Table 38. Habitat Outcomes and Changes in Source Habitats (from Wisdom, et al)

Species-At-Risk	Habitat Outcome	Change in Source Habitat
Northern leopard frog	H3/C5	na
Western toad	H2/C3	na
Common garter snake	H2/C3	na
Black-chinned hummingbird	H3/C3	0
Calliope hummingbird	na	na
Rufous hummingbird	H2/C3	-1
Willow flycatcher	H3/C3	na
Dusky flycatcher	na	na
American dipper	na	na
Yellow warbler	H2/C3	na
MacGillivray's warbler	na	na
Lesser goldfinch	na	na
Trumpeter swan	na	na
Harlequin duck	H3/C5	na
Peregrine falcon	na	na
Cinnamon teal	na	na
Redhead	H3/C3	na
Sandhill crane	H3/C3	na
Killdeer	na	na
Black-necked stilt	na	na
American avocet	H3/C3	na
Sage thrasher	H1/C2	-1
Pygmy rabbit	H4/C4	-1
Sage sparrow	H1/C2	-1
Brewer's sparrow	H1/C2	-1
Swainson's hawk	H2/C2	na
Loggerhead shrike	H2/C2	0
Burrowing owl	H1/C3	-1
Meadowlark	H1/C1	-1
Short-eared owl	na	-1
Pallid bat	na	-1
Lark sparrow	H1/C3	-1
Western small-footed myotis	H2/C3	-1
Spotted bat	H4/C4	na
Col. Sharp-tailed grouse	H1/C5	-1

Species-At-Risk	Habitat Outcome	Change in Source Habitat
Sage grouse	H2/C3	-1
Ferruginous hawk	H2/C3	-1
Gray flycatcher	na	na
Black-throated gray warbler	na	na
Plumbeous vireo	na	na
Western scrub jay	na	na
Pinyon jay	na	na
Virginia's warbler	na	na
Ruffed grouse	na	na
Sharp-shinned hawk	na	na
Northern pygmy owl	H1/C2	na
Silver-haired bat	H2/C3	-1
Lewis' woodpecker	H3/C4	0 (resident)
Williamsons' sapsucker	H2/C3	-1
Long-legged bat	H2/C4	0
Brown creeper	na	-1
Western tanager	na	na
Long-eared bat	H2/C4	na
Olive-sided flycatcher	H1/C3	0
Hammond's flycatcher	H2/C3	-1
N. flying squirrel	H2/C3	-1
marten	H2/C4	-1
Uinta chipmunk	na	na
Western Big-eared bat	na	na
Wolverine	H4/C5	0
Boreal owl	H3/C4	-2
Flammulated owl	H2/C4	-1
Great gray owl	H3/C4	0
Northern goshawk	H2/C3	-1
Three-toed woodpecker	H3/C3	1
Golden eagle	na	na
Prairie falcon	na	na
Rock wren	na	na

Based on a combination of outcomes and trends in habitats, there are a few species-at-risk that will be discussed individually, rather than in habitat associations. Besides the species that are already listed and analyzed as threatened, endangered, R4 Sensitive Species, and management indicator species, these are the leopard frog, pygmy rabbit, and marten. In addition, while the western (boreal) toad had a current outcome of 3, it has been raised as a concern on the Caribou NF. There is only one known breeding location that has been found on the Caribou NF. In addition, these toads appear to be genetically more similar to those from Colorado, than those in Yellowstone.

Coarse-Filter Analysis

Development of Species Groups

It is infeasible to consider all species-at-risk in detail in the planning process. Consequently, a process to identify subsets of species to focus conservation measures and analysis are needed. All threatened, endangered, sensitive and management indicator species will be discussed individually (fine-filter

analysis). Most of the other species-at-risk are discussed at the coarse-filter level. These species are all secure globally (ranked G4 or G5 by the CDC) and viability of the species is not an issue at the planning level. However, there were three that appeared to need more specific analysis based on habitat outcomes from ICB (2000). These species will be discussed individually (northern leopard frog, pygmy rabbit and marten) in the fine-filter analysis.

Because site-specific population information is lacking for most species, analysis based on inventories and projections of the amount and distribution of suitable habitat will be used for the coarse-filter species viability evaluation (SVE). This method assumes 1) attributes of suitable habitat are well known, 2) that amount, condition or quality of habitat reflects fitness of the species and 3) habitat is limiting so that changes in amount of suitable habitat are correlated with changes in population status (Viability White Paper, 1/26/01).

Evaluations relying solely on habitat have shortcomings: actual populations are not considered. In addition, the habitat (vegetation) information is broad-scale and has not been field-checked for accuracy. But this evaluation method is useful to demonstrate broadly if a species status is likely to decline, improve or remain unchanged. Because the species analyzed here are not at high risk (based on previous analysis above), this method is appropriate for these species.

The process used here groups species by breeding habitat association. Some species use several habitat types but have been grouped into habitats considered to be primary breeding habitat. Information used to determine primary breeding habitats was taken from several sources, including Idaho Bird Conservation Plan (IPIF, 2000), Paige and Ritter (2000), Wisdom, *et al*, (2000) and Groves, *et al*, (1997).

Table 39. Species-At-Risk and Habitat Associations.

Habitat	Species-At-Risk
Riparian	Lesser goldfinch, Western toad, common garter snake, black-chinned hummingbird, calliope hummingbird, rufous hummingbird, willow flycatcher, dusky flycatcher, American dipper, yellow warbler, MacGillivray's warbler
Non-riverine wetland	Cinnamon teal, redhead, sandhill crane, killdeer, black-necked stilt, American avocet, red-winged blackbird and Brewers blackbird
Sagebrush (closed canopy)	Sage thrasher, sage sparrow, Brewer's sparrow
Sagebrush (open canopy)	Swainson's hawk, loggerhead shrike, burrowing owl, meadowlark, short-eared owl
Sagebrush	Lark sparrow, Western small-footed myotis, pallid bat
Juniper/mountain mahogany	Ferruginous hawk, gray flycatcher, black-throated gray warbler, plumbeous vireo, western scrub jay, pinyon jay, Virginia's warbler
Aspen	Ruffed grouse
Low-elevation mixed conifer	Sharp-shinned hawk, northern pygmy owl, silver-haired bat, Lewis' woodpecker, Williamsons' sapsucker, long-legged bat, brown creeper, western tanager, long-eared bat
High-elevation mixed conifer	Olive-sided flycatcher, Hammond's flycatcher, northern flying squirrel, Uinta chipmunk
Cliff/rock outcrops/ talus	Golden eagle, prairie falcon, rock wren

DEVELOPMENT OF CONSERVATION APPROACHES

Many of the SARs have been identified as such due to habitat associations (i.e., Partners in Flight, ICRB). Conservation approaches for these species needs to focus on key conditions that caused these species to

be at risk; thus we focus on habitat based conservation measures. Ecosystem based approaches make a significant contribution to ecological conditions needed to sustain species viability.

Existing conservation strategies, Idaho Bird Conservation Plan and others may be a source for conservation approaches. While some of these may not be specific to subspecies found in Idaho, habitat conservation approaches may still be appropriate. Specific conservation strategies used include Idaho Partners in Flight Bird Conservation Plan (2000), Conservation Strategy for southeastern Idaho Wetlands (Jankovsky-Jones, 1997), HCAS for the Northern Goshawk (Patla. *et al*, 1995), HCAS for the Townsend's big-eared bat (Idaho State Conservation Effort, 1995), HCAS for Forest Carnivores in Idaho (IDFG, *et al*, 1995) and "Status, Ecology and Conservation of the Southwestern Willow Flycatcher" (Finch and Stoleson, 2000). These approaches may then serve as basis for Forest Plan standards or guidelines, or go into management area direction. Or they may be used simply to evaluate the effects of the alternatives in the EIS.

Development of conservation approaches may be aided by both broad management practices that provide for overall ecosystem composition and function, and more specific management practices directed at the needs of individual species. A separate approach is not needed for each individual species, but for groups where feasible. Managing habitat for proper functioning condition (PFC) where possible, including restoring natural disturbance regimes or emulating these ecosystem processes with management activities, will improve conditions for the conservation of neotropical migratory birds (Saab and Rich, 1997).

Riparian habitats

Overall goals for riparian habitats include: 1) no additional loss of habitat, 2) maintain and restore dynamic riparian ecosystems, using natural or artificial disturbances to achieve this, and 3) restore lost or degraded riparian habitats (IPIF, 2000). In addition, they identified habitat objectives of: 1) maintain the existing distribution and extent of each riparian system; and 2) by 2025, restore at least 10 percent of the historical extent of each riparian system within each ecoregion subsystem.

Non-riverine wetlands

The overall objective for non-riverine wetlands is a net increase in the number of acres of wetlands in Idaho (IPIF, 2000).

Sagebrush/grasslands

IPIF identified the greatest threats to these habitats is from the invasion of non-native species, loss of shrub cover due to wildfire, and changes due to livestock grazing. The overall goals for sagebrush/grassland habitats is to 1) maintain and restore dynamic ecosystems, 2) no net loss of sagebrush habitats, 3) restoration of fragmented and degraded habitats where condition and distribution close to historical patterns and 4) linkage of existing and restored sagebrush habitats (IPIF, 2000). Strategies identified for the ICB study include 1) identify and conserve large remaining areas of shrub-steppe vegetation, where integrity is relatively high, 2) restore native grass and forb understories to historic levels where the potential exists, and retard the spread of nonnative vegetation, 3) reduce/eliminate soil compaction and erosion, 3) restore microbiotic crusts where potential exists, 4) restore vegetation around springs, seeps, streams, meadows and other riparian areas, and 5) minimize the adverse impacts of human disturbance (Wisdom. *et al.* 2000).

Juniper/mountain mahogany

UCRB (Quigley, *et al*, 1996) identify changes that have resulted in expansion of juniper woodlands, including extensive livestock grazing, fire exclusion and maybe climate changes. Exotic species are also an issue in this type. Conservation measures for these types would be to bring them into proper functioning condition (species distribution, structure and species composition).

Low elevation mixed conifer
Strategies that have been identified include 1) where cottonwood/willow stands occur, maintain old forests, 2) retain all large diameter snags (cottonwood and Douglas-fir), and 3) reduce exposure to pesticides during nesting (Wisdom, *et al*, 2000).

High elevation mixed conifer
Strategies that have been identified include 1) increase the amounts of early seral forests, focusing on early-seral conditions that result from fire (olive-sided flycatcher), and 2) maintain existing late-seral forests and encourage development of habitat components (snags, downed woody debris, abundance of fungi and lichen) in mid-seral forests (northern flying squirrel) (Wisdom, *et al*, 2000).

Cliff/rock outcrops/talus
These sites and species using them are most affected by human activities or disturbances during nesting. Identification of areas where conflicts are occurring, and addressing those sites is the best conservation approach.

Bats
Strategies identified in ICB (2000) to address these forest-dwelling (i.e., long-eared and long-legged) species include 1) Manage for retention and recruitment of large-diameter snags in all forest cover types and structural stages, 2) protect all roosts and reduce human disturbance near roosts, 3) maintain and improve the conditions of riparian and wetland vegetation for bat foraging areas, 4) alleviate impacts of pesticides on bat populations, and 5) work with other agencies to search for hibernacula and protect those sites.

Strategies identified for shrubland associated species (pallid and western small-footed) include 1) maintain and improve the condition of native shrublands to provide foraging areas, 2) reduce human disturbance near known roosts, 3) alleviate impacts of pesticides, and 4) work with other agencies to search for hibernacula and protect those sites.

Incorporation Of Conservation Measures Into Alternatives And Effects Of The Alternatives On Habitats And Populations

Effects analysis should incorporate an evaluation of ecological sustainability, both over the short- and long-term. An uncertainty assessment includes acknowledging that there are unpredictable natural processes that may come into play. Other important sources of uncertainty stem from incomplete knowledge of species population status and habitat relations, incomplete vegetation data, unforeseen changes that may occur on private lands and many other factors not directly related to habitat.

For the species analyzed here, use of available broad-scale assessments is appropriate. These can be used, with information gathered during the planning process, to determine the historical, current and predicted future distribution of habitats.

RIPARIAN AND NON-RIVERINE WETLAND

The biggest impact to these habitats in the past has been from livestock grazing, beaver removal, recreational and road development, and fire suppression (See Chapter 3 of FEIS). The effects of these activities have been to alter vegetative composition and structure and to create disturbance during nesting.

Habitat components and features necessary for the identified species-at-risk include; shrubby vegetation for nesting and foraging for avian SAR; and shrub or forb streamside vegetation for stream shading (temperature regulation), insect habitat (foraging habitat) and cover from predators; and water quality for reproduction (amphibian species).

There are goals, objectives, standards and guidelines for Prescription 2.8.3 (Aquatic influence zone) that address the maintenance and restoration of riparian habitats (water quality, streamside vegetation), and human uses allowed in riparian areas. This direction addresses and incorporates the conservation approaches identified above for riparian and non-riverine wetland habitats.

There is also a Forest Plan objective to develop a plan in cooperation with IDFG to identify watersheds where beaver would benefit, and habitat conditions are suitable for beaver reintroduction. This objective would also benefit species like the northern leopard frog and common garter snake over the long-term, as they have been identified as being associated with beaver ponds.

All of the Action Alternatives incorporate some form of riparian utilization standards but vary in how long it would take to reach proper functioning condition.

Table 40. Riparian ranking for the alternatives (1 = best).

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Riparian Ranking	7	6	8	2	3	1	4	5

Alternatives 4-7 and 7R all move riparian and non-riverine wetlands toward proper functioning condition at a faster rate than Alternatives 1-3 (see Hydrology effects section). As a result, species distribution across the Forest is expected to improve in the Planning period, under Alternatives 4-7 and 7R. Alternatives 1-3 should maintain the current distribution.

The following Risk Assessment is based on risk factors identified by Finch and Stoleson (2000). There are a few unknowns such as parasites, disease, environmental toxins, and migratory and winter habitats for the migratory species that are not addressed.

Table 41. Risk Assessment for Riparian Habitats.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Movement out of PFC	Mod	Mod	Mod	Low	Low	Low	Low	Low
Cowbird parasitism*	Mod	Mod	Mod	Mod	Mod	Mod	Mod	Mod
Recreation**	Mod	Mod	Mod	Low	Low	Low	Low	Low

* The potential for cowbird parasitism stays the same because the presence of livestock on and adjacent to the Forest is similar in all alternatives.

** Recreation effects are a result of off-route travel, location of roads and trails (Forest plan guidance about location of future roads and trails, common to all alternatives).

Elk Valley Marsh, a large, high-elevation marsh (non-riverine wetland). It is a complex mix of water sedge, clustered field sedge, baltic rush, booth willow/beaked sedge community types. The adjacent terrestrial vegetation is silver sage and mountain big sagebrush. Elk Valley is being impacted by livestock grazing (Jankovsky-Jones, 1997). The marsh has a muskeg-like quality that has historically made it inaccessible to livestock. However, drought in the last few years has caused drying, and part of the area is now grazed, causing changes in plant species composition.

Elk Valley March is included in Prescription 2.5(b), which is for Wild and Scenic Eligible Recreation Rivers. This prescription includes a standard that says livestock grazing shall be phased out on an opportunity basis. Until that time, livestock forage utilization will be limited to levels allowed in the Forest-wide riparian direction.

SAGEBRUSH/GRASSLANDS

The biggest impact to these habitats in the past has been from livestock grazing, non-natives, and fire suppression. The effects of these activities have been to alter vegetative composition and structure.

The Forest Plan includes goals, objectives, standards and guidelines for shrublands in the Vegetation section, and the Grouse part of the Wildlife section. Generally, the conservation approaches outlined above are addressed through the incorporation of this Forest Plan guidance. The rate at which shrublands move into proper functioning condition varies by alternative, as does off-route travel and resultant effects from disturbance.

There are 365,200 acres of sagebrush on the Caribou. Assuming that proposed treatments are evenly distributed across the Forest, and that treatments treat sagebrush and mountain brush in the proportion that they are present (90 percent sagebrush, 10 percent mountain brush) this table shows acres treated by type, forest-wide.

Table 42. Acres of Non-forested Vegetation Treated Under the Alternatives.

Non-forested vegetation	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Total acres treated	130,000	77,500	100,000	77,500	70,800	60,000	79,750	40,000
Acres sagebrush	117,000	69,750	90,000	69,750	63,720	54,000	71,775	36,000

Table 43. Percent of Sagebrush in Canopy Cover Classes at the End of Ten Years.

Sagebrush at 10 years	EC*	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Sagebrush <15%cc	50	65	52	57	52	50	47	52	43
% Sagebrush >15%cc	50	35	48	43	48	50	53	48	57

* EC = Existing condition

Over the short-term (ten-year period), species using more open stands of sagebrush would be favored by Alternatives 1-4 and 7. Alternative 5 maintains the current structure and Alternative 6 would decrease habitat for species using more open stands. Alternatives 6 and 7R would favor species associated with denser stands of sagebrush.

Recommendations for sagebrush-associated species suggest that habitat patches need to be at least 320 acres to be effective for species requiring "interior" habitats (Paige and Ritter 2000). Vegetation is very patchy on the Caribou NF. Since most of the sagebrush habitats are at lower elevations on the Forest (and off-Forest) and mix in with other types as elevation increases, they naturally are more broken on the Forest. To get an idea of patch sizes in sagebrush stands, six relatively undisturbed watersheds were selected from across the Forest. The average sizes of sagebrush patches in these six watersheds range from 35 acres up to 294 acres. However, these averages are misleading. There are a few areas on the Forest that have more extensive coverage of sagebrush, with only small inclusions of other types. These areas are found around the Preuss Range and Westside Ranger District units. The Forest Plan contains a

guideline that outlines maintenance of sagebrush patches greater than 320 acres, where appropriate. This will insure that habitat patches are large enough to provide habitat for area-dependent species where it is possible.

The Plan also included guidelines to focus treatments in areas where sagebrush canopy cover is greater than 25 percent; these areas start to lose value as sage grouse nesting habitat as canopy cover increases over 25 percent. Additional guidelines are for use of practices that stabilize or increase native grass and forbs in sagebrush habitats with 5-25 percent canopy cover; and to manage herbaceous cover to conceal nests through the first incubation period.

Implementation of upland forage utilization standards on browse and herbaceous vegetation will improve habitat quality most in Alternatives 3-7 and 7R. Alternatives 1 and 2 would maintain current conditions. Where habitats lie in a big game winter range prescription (17 percent of the Forest), more residual vegetation would be retained after livestock grazing.

Table 44. Risk Factors to Sagebrush Habitats and Associated Species.

Risk Factors for Sagebrush	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Degree of departure from PFC based on treatments*	Low	Mod	Low	Mod	Mod	High	Mod	High
Upland utilization ranking[1]	3	2	1	1	1	1	1	1
% forest open to off-route travel	33%	38%	38%	0	3%	0	2%	2%
Overall ranking	**5**	**6**	**1**	**2**	**2**	**7**	**2**	**7**

*Based on how long it would take alternatives to reach PFC, see Vegetation section.
1 Ranking is based on "1" as best and "7" as worst.

These alternatives were ranked based on listed criteria. Alternative 3 has the lowest degree of departure from PFC and one of the best upland utilization standards. This alternative would provide for increased distribution of sagebrush as a result of treatments, as areas currently occupied by juniper and mountain mahogany are returned to sagebrush cover.

Alternatives 1, 4, 5 and 7 all rank next. These alternatives all have improved upland utilization standards, and understory grass and forb composition and structure should improve. This should improve security for nesting and foraging birds. Alternative 2, which has a low departure from PFC, has the lowest upland utilization ranking and there is expected to be no improvement in understory grass and forb composition and structure.

Alternative 6 and Alternative 7R rates last because of the high departure from proper functioning condition in sagebrush habitats. Over the long-term, Alternatives 6 and 7R move habitats further from PFC (30-50 percent of watershed with sagebrush in greater than 15 percent canopy cover class). This puts these habitats at risk from loss of understory diversity and wildfire, due to denser canopies. One feature that has been incorporated into Alternative 7R to address the departure from PFC is that wildfire acres burned are not included in the proposed treatment acres. This is different from the rest of the alternatives; the other alternatives include wildfire acres into the proposed treatment acres.

Risk assessment

Factors identified as risks for sagebrush-associated species include changes in sagebrush structural class distribution, livestock grazing utilization and residual cover; off-route travel and potential for nest destruction or disturbance to adults; connectivity of habitats for species with low dispersal potential; the size of patches for area-dependent species; loss of grass and forb understory; degradation of adjacent

riparian areas; and the potential for effects as a result of the use of pesticides (Paige and Ritter, 1999). Another risk factor identified was fragmentation (land conversion to annual grasses or croplands, mining and development). Development and land conversion are not issues on the Forest, and the potential for habitat loss due to mining is the same for all alternatives.

Table 45. Risk Assessment for Sagebrush-associated Species.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Departure from PFC	Low	Low	Low	Low	Low	Mod	Low	Mod
Livestock utilization and gr/fb understory	Mod	Low	Low	Low	Low	Low	Low	Low
Off-route travel	Mod	Mod	Mod	Low	Low	Low	Low	Low
Connectivity/size*	Low	Low	Low	Low	Low	Low	Low	Low
Pesticides**	Low	Low	Low	Low	Low	Low	Low	Low
Overall risk	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**

* Forest Plan guideline incorporates patch size criteria, common to all alternatives.

** Common to all alternatives, very little use of insecticides on Forest.

All alternatives are a low risk for sagebrush-associated species over the long-term. Viability of associated species will be maintained through maintenance of vegetation structure and composition, size of treatments of livestock utilization levels.

JUNIPER/MOUNTAIN MAHOGANY

Since these habitats have expanded beyond their historic range, treatments will be focused on returning some of these sites to their historic structure (sagebrush) and distribution. A Forest-wide objective is to create or maintain diversity in vegetation structure, composition, and patterns to meet proper functioning condition indicators.

Juniper and mountain mahogany are minor vegetation types on the Forest (1 percent and 2 percent, respectively). Rangeland vegetation treatments (sagebrush and mountain brush) may treat some of these types where they are adjacent to larger treatment areas. Number of acres treated for these types depends on location of other treatments and is a site-specific evaluation. However, incorporation of Forest-wide direction should move these types toward PFC (from current toward historic distribution) in all alternatives.

Species-at-risk associated with this type may see a decrease in available habitat, depending on where specific treatments are implemented. However, these habitat types have increased outside of their historical distribution. Any treatments proposed in these types would focus on areas where these species have moved outside of their historical (Forest Plan Vegetation guideline). Risk for species associated with these habitats is low.

ASPEN

Aspen has been identified as at high departure from historic conditions due to succession and heavy grazing. Most stands are older, with little successful regeneration. All of the alternatives address this concern, but to varying degrees. The effects of the harvest and fire treatments at the end of the decade, are shown in the table below (see Process Paper in the Appendix for more information).

Table 46. Percent Mature/Old Aspen at End of 10 and 100 years.

End of 10 years	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Mature/Old	57%	56%	56%	56%	55%	56%	56%	49%
End of 100 years								
Mature/Old	85%	82%	82%	53%	71%	84%	76%	59%

Table 47. Risk Factors for Aspen Habitats and Associated Species (1= best).

Risk Factors for Aspen	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Age structure at end of decade – ranking[1]	2	2	2	2	2	2	2	1
Success of aspen regen*	3	2	1	1	1	1	1	1
Distribution across planning area **	3	2	1	1	2	2	2	1
Overall ranking	**4**	**3**	**1**	**1**	**2**	**2**	**2**	**1**

1 Ranking is based on "1" as best.

* Based on upland browse and herbaceous utilization. It is assumed that less utilization will increase success of aspen regeneration.

** Based on assumption that as conifer stands are treated and age structure is improved, aspen clones will sucker and expand into adjacent areas, increasing amount of aspen habitats available over the long-term.

Overall ranking of the alternatives looked at all three factors. Alternatives 3, 4 and 7R ranked highest due to the expected distribution of age classes, improved success of regeneration due to improved upland utilization standards and an expected increase in distribution across the planning unit.

Alternatives 5, 6 and 7 rank next due to the expected distribution of age classes, improved success of regeneration due to improved upland utilization standards and an expected increase in distribution across the planning unit. Alternatives 1-3 rank lowest due to a combination of changes in distribution/age classes and decreased success of regeneration.

Risk Assessment.

Alternatives 3-7 and 7R have a low risk associated with them. Aspen should increase across the planning area and improve habitat conditions for associated species over the long-term. Alternatives 1and 2 would have a moderate risk associated with them, and species associated with aspen would continue to see a decline in suitable habitats.

FORESTED VEGETATION

Assessments for many species (fine-scale analysis) show an estimated age class distribution of forested habitats at the end of ten years. This type of assessment may overestimate amount of habitat, because not all acres of a particular age class have the same fine-scale attributes, like snags and downed, woody debris. This type of analysis is useful because it displays the relative differences between alternatives and trends in habitats through time. This process is used here, as well as an evaluation of expected stands structures in relation to PFC, at the end of 100 years. It is assumed that while the treatments will decrease suitable habitat for some species over the short-term, that managing towards PFC will be better in the long-term.

Table 48. Percent Mature/Old at End of 100 Years.

At 100 years, Meets or Does Not Meet PFC/DFC	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Aspen	85	82	82	53	71	84	76	59
Low-elevation mixed conifer	67	61	61	54	76	78	60	61
High-elevation mixed conifer	71	67	62	66	76	78	69	76

LOW-ELEVATION MIXED CONIFER FOREST

Snag retention is a key for conservation in these types. This has been addressed through Forest-wide objectives, standards and guidelines and is common to all alternatives.

Table 49. Percent Mature/Old Low Elevation Mixed Conifer Forest.

End of 10 years	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Mature/Old	85%	85%	83%	83%	85%	85%	85%	82%
End of 100 years								
Mature/Old	67%	61%	61%	54%	76%	78%	60%	61%

Over the short-term, Alternatives 3, 4 and 7R improve age class distribution the most. None of the alternatives is close to DFC, which is 30-40 percent mature/old for conifers.

Over the long term, Alternative 4 moves closest to DFC. Alternatives 1, 2, 3, 7 and 7R move toward DFC. Alternatives 5 and 6 are furthest from DFC and pose the greatest risk to low-elevation mixed conifer-associated species.

HIGH-ELEVATION MIXED CONIFER FOREST

The two main conservation strategies identified are addressed through vegetation treatments (which vary by alternative) that affect forest structure, and through Forest-wide objectives, standards and guidelines, which address stand components, such as snags and downed logs and size of mature/old blocks.

Table 50. Percent Mature/Old High Elevation Mixed Conifer Forest.

End of 10 years	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Mature/Old	79%	76%	74%	77%	79%	80%	79%	81%
End of 100 years								
Mature/Old	71%	67%	62%	66%	76%	78%	69%	76%

Over the short-term and long-term, Alternative 3 moves closer to PFC than the rest of the alternatives, followed closely by Alternatives 2, and 4. It is expected that species associated with these forest types would benefit most from implementation of one of these alternatives. Alternatives 1, 5, 6, 7 and 7R stay furthest from PFC or DFC.

Species associated with mature and old high-elevation mixed conifer forest would find more habitat than was predicted to occur under historical conditions, under all alternatives. Habitat would be available until such time as wildfire, or insect or disease epidemics regenerate stands.

BATS

All of the identified conservation approaches listed above have been addressed through Forest-wide goals, objectives, standards and guidelines except the use of pesticides and loss of snags to firewood cutters.

Table 51. Risk Assessment for Bat Species.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Disturbance at roosts, hibernacula*	Low	Low	Low	Low	Low	Low	Low	Low
Pesticides*	Low	Low	Low	Low	Low	Low	Low	Low
Shrubland foraging habitat in relation to PFC	Low	Mod	Low	Mod	Mod	High	Mod	High
Loss of snags	Mod	Mod	Mod	Low	Low	Low	Low	Low
Riparian foraging habitat in relation to PFC	Mod	Mod	Mod	Low	Low	Low	Low	Low
Overall risk	**Low**	**Mod**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**

* Low due to Forest Plan direction and low levels of use of pesticides.

The overall risk for bats is low for most alternatives, except Alternative 2. Risk is highest for bats associated with shrubland habitats. However, bats would be using these habitats for foraging, and nocturnal, flying insect populations may not be as affected by increases in sagebrush canopy cover. It is expected that insect populations would be adequate to provide foraging habitat for these bats.

CLIFFS/ROCK OUTCROPS/TALUS

These habitats will not be affected by any of the proposed actions and there is no risk associated with implementation of any of the alternatives.

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Fine Filter Analysis

Threatened, and Endangered Species

CANADA LYNX

(The following information is summarized from USFWS, 2000)

Habitat and Population Overview

In the contiguous US, the distribution of lynx is associated with southern boreal forest, comprising of subalpine, coniferous forest in the west. Lynx are most likely to persist in areas that receive deep snow, for which the lynx is highly adapted. Lynx in the contiguous US are part of a larger metapopulation whose core is located in the northern boreal forest of central Canada. At the southern margins of their distribution, habitat becomes naturally fragmented into patches of varying size as it transitions into other forest types. Some of these patches serve as sources, while others may function as sinks, where lynx mortality is greater than recruitment.

Lynx use large woody debris, such as downed logs and windfalls for denning sites with security and thermal cover for kittens. The age of the stand does not seem as important as the amount of downed woody debris available.

The size of the lynx home range varies by the animal's gender, abundance of prey, season and density of lynx populations. Preliminary research supports the theory that lynx home ranges at the southern extent of their distribution are generally larger compared to those in the north.

Lynx are highly specialized predators whose primary prey are snowshoe hares. Snowshoe hares use forests with dense understories that provide forage, cover to escape from predators and protection during extreme weather. Snowshoe hare provide the high quality prey necessary to support high-density lynx populations. Relative densities of snowshoe hares at southern latitudes are generally lower than those in the north.

ICB (Wisdom, *et al*, 2000) put lynx into the habitat generalist family, because they use subalpine forests, lower montane forests and riparian woodlands as source habitats. Downed logs are a special habitat feature because they serve as potential resting and denning sites.

Lynx were not abundant but were distributed throughout northern Idaho in the early 1940s. Anecdotal reports compiled by Lewis and Wenger (1998) indicated the occurrence of lynx in atypical habitats. Based on the time frames when collected, these records likely were dispersing transient individuals. Historic and current presence of resident lynx cannot be determined, nor is information on population trends available with current information.

Lewis and Wenger (1998) collected information on lynx sightings and records in Idaho. They found several records from the Caribou Forest; Skinner Canyon, Georgetown Canyon, Tincup Creek, Home Canyon, Trail Canyon area and Big Rattlesnake Canyon (Bear River, Preuss, and Caribou ranges). Most of these records have been on the east side of the Forest.

To date, no lynx hair samples have been identified in the on-going lynx hair snare grid survey on the Caribou NF (two years have been completed). To the north, on the Targhee NF, no lynx hair samples have been found either on four survey grids.

No critical habitat has been designated for the lynx.

Habitat Evaluation—Draft Lynx Analysis Unit Map

The lynx was listed as threatened in March 2000. In the Final Rule, the USFWS concluded that the factor threatening the continuous U.S. Distinct Population Segment is the inadequacy of existing regulatory mechanisms. The Lynx Conservation Assessment and Strategy (2nd edition) was released in August 2000. This document outlines risk factors and conservation measures to conserve lynx. It also provides objectives, standards and guidelines.

The LCAS (2000) identified southeastern Idaho as part of the Northern Rocky Mountain geographic area. As it is mapped, habitat on the Caribou NF connects to the Wasatch-Cache NF to the south (Figure 1 from LCAS).

The conservation measures are written at two levels. The programmatic plans provide broad direction for management activities. Direction is substantive and procedural. At the project level, Lynx Analysis Units (LAUs) are used to evaluate and monitor effects of land management on lynx habitat. Programmatic planning may entail consideration of all the LAUs within a given sub-basin or mountain range.

Draft LAUs were mapped for the Caribou NF (6/6/2000). There were eighteen LAUs identified, four of which are on the Westside Ranger District and have little to no primary or secondary habitat. Primary habitat included all mixed conifer 1 and mixed conifer 2 on the Caribou NF vegetation layer (subalpine fir

and Engelmann spruce intermixed with other species). Secondary habitat was all lodgepole pine, Douglas-fir, aspen and aspen/conifer on the vegetation layer. Areas dominated by dry Douglas-fir, and shrublands were not mapped as primary or secondary habitat.

Of the eighteen mapped Draft LAUs, thirteen had less than 10 percent primary habitat, and the other five had less than 20 percent primary habitat.

McKelvey and McDaniel (2001) studied snowshoe hare densities on the Island Park area of the Targhee NF in what they considered the best snowshoe hare habitat. They found low densities compared to other areas that have resident lynx populations. Based on this, and the fact that snowshoe hares is more limiting on the Caribou NF, densities of primary prey for lynx are expected to be very low on the Caribou NF.

The LCAS includes a guideline to determine where high total road densities (greater than 2 mi/mi^2) coincide with lynx habitat. When OMRDs were determined by draft LAU, all draft LAUs were less than 2 mi/mi^2. The following tables refer to the Draft LAUs which were dropped before Alternative 7R was developed (See following section).

Table 52. OMRD's in Draft Caribou LAUs.

OMRD	0-0.5 mi/mi^2	0.6-1.0 mi/mi^2	1.1– 1.5 mi/mi^2	1.6-2.0 mi/mi^2
Number of draft LAUs in OMRD category	1	3	9	5

Table 53. Comparison of Alternatives Based on Risk Factors When Caribou Had Draft LAUs.

Risk Factors for Lynx	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Acres of winter non-motorized	2,500	2,500	2,500	1,600	53,500	40,400	3,600
Maximum open route density (mi/mi^2)	None	None	None	2	2	2	2
% of Forest open to off-route travel	33%	38%	38%	0	3%	0	2%
Maintenance of corridors* in Caribou/Webster/Preuss	4	4	4	2	2	1	3
Overall ranking from forest age distribution	**2**	**2**	**1**	**1**	**2**	**2**	**2**

* See corridor evaluation.

Table 54. Ranking of Alternatives Based on Former Risk Factors.

Lynx Ranking	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Acres of winter non-motorized	4	4	4	5	1	2	3
Maximum open route density (mi/mi^2)	2	2	2	1	1	1	1
% of Forest open to off-route travel	3	3	3	1	2	1	2
Maintenance of corridors* in Caribou/Webster/Preuss	4	4	4	2	2	1	3
Overall ranking from forest age distribution	2	2	1	1	2	2	2
Overall Ranking	**1**	**3**	**3**	**2**	**1**	**1**	**2**

* See corridor evaluation.

Table 55. Risk Assessment for Lynx Based on Former Risk Factors.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7
Acres of winter non-motorized	Mod	Mod	Mod	Mod	Low	Low	Mod
Maximum open route density (mi/mi^2)	Mod	Mod	Mod	Low	Low	Low	Low
% of Forest open to off-route travel	Mod	Mod	Mod	Low	Low	Low	Low
Maintenance of corridors* in Caribou/Webster/Preuss	Mod	Mod	Mod	Low	Low	Low	Mod
Forest age distribution	Mod	Mod	Low	Low	Mod	Mod	Mod
Overall risk	**Mod**	**Mod**	**Mod**	**Mod**	**Low**	**Low**	**Mod**

* See corridor evaluation at end of the Wildlife section of this Appendix.

Habitat Evaluation—Final Lynx Analysis Unit Maps

A meeting was held on 9/5/2001 with the USFWS, Salmon-Challis, Bridger-Teton, and Caribou-Targhee National Forests, and BLM from Montana and Idaho. It was jointly decided by Caribou-Targhee and Fish and Wildlife Service personnel that primary vegetation types (lynx habitat) on the Caribou NF were too patchy and disjunct to provide suitable lynx habitat. A patch size analysis done for the Caribou NF found that in the watersheds reviewed, the average patch sizes for mixed conifer stands ranged from 14 to 27 acres, and 20 to 44 acres for lodgepole pine. At that meeting, it was agreed that the Caribou portion of the Caribou-Targhee National Forest would be dropped as suitable lynx habitat, and no lynx analysis units would be delineated on the Caribou NF. As a result of this meeting, Montpelier and Soda Springs Ranger Districts were identified as potential linkage habitat. The Westside Ranger District, including the Curlew National Grasslands would not be considered linkage habitat.

The Final Lynx Analysis Unit (LAU) map was amended by the Caribou-Targhee National Forest on September 18, 2001 to reflect these changes. The USFWS agreed (letter dated 2/5/02) that the final mapping met the habitat mapping requirements of the Lynx Conservation Assessment and Strategy (LCAS). The eastside districts (Montpelier and Soda Springs) will address LCAS conservation measures regarding lynx connectivity, movement, and dispersal.

A later interagency meeting on January 25, 2002 identified and mapped possible lynx linkages for the state of Idaho. This mapping effort focused on highways as the major factor affecting lynx movements and dispersal, especially four-lane highways. Of special concern would be the conversion of existing two-lane, to four-lane highways. As a result of that mapping, there were two areas on or adjacent to the Caribou NF that were mapped as linkage areas across highways. These are: Highway 34 along the Tincup Highway and Highway 34 between Manson and Georgetown. (M. Orme, Forest Biologist, pers. comm.). These are shown on Map 1: Canada Lynx Potential Linkages.

Landscape level linkages have been identified as areas that could allow movement of lynx from the Greater Yellowstone Ecosystem on the north, to adjacent Forests to the south. On the Forest, areas that were considered as most important include 1) the south end of the Bear River Range that connects to the Wasatch-Cache NF to the south; 2) the Gannett Hills area that connects to the Bridger-Teton NF to the east and 3) the McCoy Creek area that connects to the Targhee NF on the north and the Bridger-Teton NF to the east. These are shown on Map 1: Canada Lynx Potential Linkages.

The Targhee NF has mapped Lynx Analysis Units adjacent to the Caribou NF. The Palisades country has cooler, moister habitats and the amount of primary habitat increases greatly over what is found to the south.

The Bridger-Teton NF has mapped LAUs adjacent to the Caribou NF, as well. They used information from two radio-collared lynx to help determine suitable habitat, as well as used recommendations of the lynx Biology team to include slopes over 40 percent as suitable. According to Timm Kaminski (Forest Biologist, pers. comm.), their LAUs have around 45 to 80 percent primary habitat. This contrasts with the Caribou NF, where all eighteen previously mapped LAUs had less than 20 percent primary habitat.

The Wasatch-Cache NF had previously mapped Draft LAUs in the Bear River Range adjacent to the Caribou NF. However, LAUs are in the process of being remapped on three Forests in Utah, and the Bear River Range may not have LAUs, due to the low amount of primary habitat (R. Williams, Forest Biologist, pers. comm.). They have identified the Logan Canyon Highway 89 as a potential barrier to lynx movements along the Bear River Range.

Risk Factors

The LCAS identifies range-wide risk factors to lynx movement; these include highways, railroads and utility corridors; land ownership patterns and ski areas and large resorts. Other large-scale risk factors associated with movements include dispersal across shrub-steppe habitats and habitat degradation by non-native invasive plant species. Risk factors affecting movement specific to the Northern Rockies include highways and associated developments and private land development. There are no ski areas or large resorts on Montpelier or Soda Springs Ranger Districts, so this risk factor does not apply to the Caribou NF.

Analysis of Conservation Measures and How They Were Addressed

For the Caribou Forest Plan Revision, standards and guidelines were used from the LCAS (Ruediger, *et al*, 2000), and the Ecology and Conservation of Lynx in the United States (Ruggiero, *et al*, 1999) as the basis for the analysis.

The following table lists the programmatic and project level objectives, standards and guidelines for lynx movements and dispersal from the LCAS. These conservation measures were developed to address the risk factors that were outlined in the previous section.

Table 56. Lynx Conservation Measures and How They Are Addressed in the Caribou NF Revised Forest Plan.

Conservation Measures to Address Movement and Dispersal	Analysis
Programmatic Planning Objective	
Maintain, and where necessary and feasible, restore habitat connectivity across forested landscapes.	Habitat connectivity is defined as vegetation in sufficient quantity and arrangement to allow for the movement of lynx. The Caribou is a natural mix of vegetation types, with about half forest and half rangeland vegetation. Patch sizes are very small, less than forty acres for all vegetation types except sagebrush (which are larger). Vegetation treatments will follow natural patterns, will be designed to move towards desired future conditions and native vegetation will become reestablished after treatments. There may be a short-term loss of cover following treatment, but over the long-term, connectivity will be maintained. As previously documented in the Project Description of this BA, forest vegetation treatment will affect less than 9 percent of the total forested vegetation, and 8 percent

Conservation Measures to Address Movement and Dispersal	Analysis
	of the non-forested vegetation. During winter lynx were observed traveling through silviculturally thinned stands with 420-640 trees/ha (170-259 trees/acre) (Koehler, 1990 as reported in Aubry, *et al*, 1999). From these observations, Koehler and Brittell (1990 as reported in Aubrey, *et al*, 1999) speculated that lynx avoid open areas where security cover is lacking but that 420-640 trees/ha (170-259 trees/acre) could provide adequate travel cover; during snow free periods, shrub habitat may also be used for travel by lynx. Our knowledge of lynx dispersal indicates that the vegetation treatments proposed in the Revised Plan would not be barriers to lynx movement through the Caribou NF.
Programmatic Planning Standards	
Identify key linkage areas that may be important in providing landscape connectivity within and between geographic areas, across all ownerships.	Potential landscape level linkages have been identified as areas that could allow movement of lynx from the Greater Yellowstone Ecosystem on the north, to adjacent Forests to the south. On the Forest, areas that were considered as most important include 1) the south end of the Bear River Range that connects to the Wasatch-Cache NF to the south; 2) the Gannett Hills area that connects to the Bridger-Teton NF to the east and 3) the McCoy Creek area that connects to the Targhee NF on the north and the Bridger-Teton NF to the east. Currently there are no four-lane highways crossing Montpelier or Soda Springs Ranger Districts. There are two sections of two-lane highway on or adjacent to the Caribou that were mapped as areas that could be of concern as potential linkage areas. These are Highway 34 along the Tincup Highway, and Highway 34 between Manson and Georgetown. There is little evidence that roads represent a significant disturbance or mortality factor for lynx (Aubry, *et al*, 1999). Studies documented that four of five lynx that dispersed in Montana, Washington, and Minnesota crossed two- or four-lane highways and major rivers (Aubrey, *et al*, 1999). Although we know little about the indirect effects of roads or trails on lynx, none of the eighty-nine lynx studied with radio telemetry in Washington, Montana, Wyoming, the southern Canadian Rockies, Minnesota, or Nova Scotia were killed in vehicle collisions (Aubry, *et al*, 1999). From analysis of sequential telemetry locations for lynx in Washington, McKelvey, *et al*, (1999) concluded that selection or avoidance of roads could not be inferred. Mowat, *et al*, (1999) reported similar observations concerning roads in northern boreal forest; lynx appeared to tolerate

Conservation Measures to Address Movement and Dispersal	Analysis
	moderate levels of snowmobile traffic, readily crossed highways, and established home ranges in proximity to roads. Several studies of lynx in the taiga have been conducted in areas of relatively dense rural human populations and agricultural development, suggesting that lynx can tolerate moderate levels of human disturbance (Aubrey, *et al*, 1999). The Caribou Forest Plan Revision does not change any existing highway conditions, nor affect the potential key linkage areas in any way that would prevent lynx movements.
Develop and implement a plan to protect key linkage areas on federal lands from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project.	Vegetation treatments are to help move conditions toward proper functioning condition, providing suitable movement and dispersal areas over the long-term. Upland and riparian livestock utilization levels will improve habitat for small mammals, improving foraging habitat for dispersing lynx. In addition, a couple of security areas were made non-motorized yearlong (Bear Creek and Meade Peak). None of the proposed activities would create a barrier to movement.
Evaluate the potential importance of shrub-steppe habitats in providing landscape connectivity between blocks of lynx habitat. Livestock grazing within shrub-steppe habitats in such areas should be managed to maintain or achieve mid seral or higher condition, to maximize cover and prey availability. Such areas that are currently in late seral conditions should not be degraded.	Sagebrush habitats will be managed to move towards the desired future condition of having 50 percent in canopy cover greater than15 percent. As treatments occur on about 8 percent of the non-forested vegetation, there would be short-term changes in cover and changes in prey species composition, abundance and distribution. However, over the long-term, sagebrush habitats will be maintained across the Forest, and associated-species should benefit. Foraging habitat for dispersing lynx will be maintained over the long-term. Upland livestock forage utilization levels would maintain upland vegetation health and vigor. There would be no major changes in plant species composition and seral conditions as a result of livestock grazing.
Programmatic Planning Guidelines	
Where feasible, maintain or enhance native plant communities and patterns, and habitat for potential lynx prey, within identified linkage areas. Pursue opportunities for cooperative management with other landowners.	Most vegetation treatments and the forage utilization standards are all planned to maintain or enhance native plant communities. Landscape patterns would not be affected, as vegetation is already very patchy on the Caribou NF. Management direction that provides for suitable habitat for maintaining linkages for lynx on the Forest is located in the following places in the Revised Forest Plan: ♦ Vegetation Desired Future Conditions ♦ Vegetation, Goals 1-6 ♦ Vegetation, Standard 2

Conservation Measures to Address Movement and Dispersal	Analysis
	♦ Wildlife, Goals 2 and 6 ♦ Lands, Objective 1 ♦ Lands and Land Exchanges, Standard 1
Highways	
Programmatic Planning Objective	
Ensure that connectivity is maintained across highway rights-of-ways.	The Revised Forest Plan has an objective to "Identify land adjustments and right-of-ways to improve management, public access, and/or wildlife connectivity annually."
Programmatic Planning Standards	
Federal land management agencies will work cooperatively with the Federal Highway Administration and State Departments of Transportation to address the following within lynx geographic areas: a) identify land corridors necessary to maintain connectivity of lynx habitat and b) map the location of "key linkage areas" where highway crossings may be needed to provide habitat connectivity and reduce mortality of lynx.	A meeting on January 25, 2002 mapped lynx linkages for the state of Idaho. This mapping effort focused on highways as the major factor affecting lynx movements and dispersal. Of special concern would be the conversion of existing two-lane, to four-lane highways. Currently there are no four-lane highways crossing Montpelier or Soda Springs Ranger Districts. As a result of that mapping, there were two areas on or adjacent to the Caribou NF that were mapped as linkage areas across two-lane highways. These are Highway 34 along the Tincup Highway, and Highway 34 between Manson and Georgetown. (M. Orme, Forest Biologist, pers. comm.). There is little evidence that roads represent a significant disturbance or mortality factor for lynx (Aubry, *et al*, 1999). Studies documented that four of five lynx that dispersed in Montana, Washington, and Minnesota crossed two- or four-lane highways and major rivers (Aubrey, *et al*, 1999). Although we know little about the indirect effects of roads or trails on lynx, none of the eighty-nine lynx studied with radio telemetry in Washington, Montana, Wyoming, the southern Canadian Rockies, Minnesota, or Nova Scotia were killed in vehicle collisions (Aubry, *et al*, 1999). From analysis of sequential telemetry locations for lynx in Washington, McKelvey, *et al*, (1999) concluded that selection or avoidance of roads could not be inferred. Mowat, *et al*, (1999) reported similar observations concerning roads in northern boreal forest; lynx appeared to tolerate moderate levels of snowmobile traffic, readily crossed highways, and established home ranges in proximity to roads. Several studies of lynx in the taiga have been conducted in areas of relatively dense rural human populations and agricultural development, suggesting that lynx can tolerate moderate levels of human disturbance (Aubrey, *et al*, 1999). The Caribou Forest Plan Revision does not change any existing highway conditions, nor affect the potential key linkage areas in any way that would

Conservation Measures to Address Movement and Dispersal	Analysis
	prevent lynx movements. Any highway realignments or upgrades on the Forest would go through an Environmental Analysis. Needs for special wildlife crossings would be identified at that time.
Programmatic Planning Guidelines	
Evaluate whether land ownership and management practices are compatible with maintaining lynx highway crossings in key linkage areas. On public lands, management practices will be compatible with providing habitat connectivity. On private lands, agencies will strive to work with landowners to develop conservation easements, exchanges or other solutions.	All of the Tincup Highway linkage area is managed by the Caribou-Targhee NF. Vegetation is very patchy in this area, with only small amounts of suitable habitat within a mile of the highway. All proposed management activities in Alt 7R would be compatible with providing habitat connectivity. The section of Highway 34 between Manson and Georgetown is largely private land, with smaller amounts of state land. According to the Adjacency Analysis (Rine, 2001), Bear Lake County is in the process of revising its land use plan and ordinances, due to the counties rapid development. Lands managed by Department of State Lands are dedicated to timber harvest or grazing. Crossing this linkage involves crossing more than seven miles of open country, with agricultural lands, livestock grazing, subdivision, the Bear River, a railroad, as well as the Highway.
Project Planning Standards	
Identify, map and prioritize site-specific locations, using topographic and vegetation features, to determine where highway crossings are needed to reduce impacts on lynx.	As previously stated above, there are two two-lane highways that exist. Current studies as cited above indicate that these highways are currently not barriers to lynx movement. Any highway realignments or upgrades on the Forest would go thru an Environmental Analysis. Needs for special wildlife crossings would be identified at that time.
Within the range of lynx, complete a Biological Assessment for all proposed highway projects on federal lands. A land management agency biologist will review and coordinate with highway departments on development of the Biological Assessment.	This is already done as standard operating procedure. No additional direction is needed.
Project Planning Guidelines	
Dirt and gravel roads traversing lynx habitat should not be paved or otherwise upgraded in a manner that is likely to lead to significant increases in traffic. When such upgrades are proposed, a thorough analysis should be conducted on the potential direct and indirect effects to lynx and lynx habitat.	Current studies as cited above indicate that dirt and gravel roads are not barriers to lynx movement. In the Facilities-Transportation System section of the Revised Plan, Goal 2 states, "The Forest transportation system will be developed and maintained at the minimum level necessary to effectively and efficiently manage natural resources, provide user access, protect capital investments, provide for user health and safety, and protect the environment." It is standard operating procedure to conduct an analysis anytime a road is upgraded.
Land Ownership	
Programmatic planning objective	
Retain lands in key linkage areas in public ownership.	The Revised Forest Plan has the following Objective in the Lands section: "Identify land adjustments and

Conservation Measures to Address Movement and Dispersal	Analysis
	rights-of-ways to improve management, public access, and/or wildlife connectivity annually." The following Standard is in the Lands and Land Exchanges section: "Priority shall be given to acquiring lands having special importance or unique characteristics such as riparian areas, historic sites, habitat for federally listed species, recreation sites, etc."
Programmatic planning standards	
Identify key linkage areas by management jurisdictions in management plans and prescriptions.	Potential linkage areas were mapped as previously discussed in this BA, and are shown on the map. The management direction contained in the Revised Plan (Forest-wide Goals, Objectives, Standards and Guidelines, and Management Prescriptions) provide suitable habitat for the movement of lynx.
Programmatic planning guidelines	
In land adjustment programs, identify key linkage areas. Work towards unified management direction via habitat conservation plans, conservation easements or agreements and land acquisition	Potential linkage areas were mapped as previously discussed in this BA, and are shown on the map. The Revised Forest Plan has the following Objective in the Lands section: "Identify land adjustments and rights-of-ways to improve management, public access, and/or wildlife connectivity annually." The following Standard is in the Lands and Land Exchange section: "Priority shall be given to acquiring lands having special importance or unique characteristics such as riparian areas, historic sites, habitat for federally listed species, recreation sites, etc."
Project Planning Standards	
Develop and implement specific management prescriptions to protect/enhance key linkage areas	See Programmatic planning Standards above.
Evaluate proposed land exchanges, land sales and special use permits for effects on key linkage areas.	Potential linkage areas were mapped as previously discussed in this BA, and are shown on the map. The Revised Forest Plan has the following Objective in the Lands section: "Identify land adjustments and rights-of-ways to improve management, public access, and/or wildlife connectivity annually." The following Standard is in the Lands and Land Exchange section: "Priority shall be given to acquiring lands having special importance or unique characteristics such as riparian areas, historic sites, habitat for federally listed species, recreation sites, etc."
Other Large-scale Factors	
Fragmentation and Degradation of Refugia	The LACS describes refugia as large areas of high-quality habitat. There are no LAUs mapped on the Caribou NF based on the low quality of habitat, and there are no refugia on the Caribou NF.
Lynx Movement and Dispersal Across Shrub-steppe Habitats	Sagebrush habitats will be managed to move towards the desired future condition of having 50 percent in canopy cover greater than 15 percent. As treatments occur on about 7 percent of the non-forested

Conservation Measures to Address Movement and Dispersal	Analysis
	vegetation, there would be short-term changes in cover and changes in prey species composition, abundance and distribution. However, over the long-term, sagebrush habitats will be maintained across the Forest, and associated-species should benefit. Foraging habitat for dispersing lynx will be maintained over the long-term. Upland livestock forage utilization levels would maintain upland vegetation health and vigor. There would be no major changes in plant species composition and seral conditions as a result of livestock grazing.
Non-invasive Plant Species	Forest Plan direction seeks to prevent the establishment of new populations, control the spread of existing infestations, provide information to the public and cooperate with other agencies and landowners. This is consistent with the LCAS. No additional direction is needed.

Determination of Effects

Implementation of this alternative may effect, but is not likely to adversely affect lynx or lynx habitat. The rationale for this is based on inclusion of standards and guidelines into the Revised Forest Plan that address identified risk factors for lynx movement and dispersal. The Caribou NF will continue to provide potential linkage habitat for lynx moving across the Northern Rocky Mountain lynx geographic area.

In addition, the vegetation treatments proposed will move aspen, conifer and sagebrush types towards desired future conditions. This will improve understory conditions for prey species and maintain its potential for lynx dispersal over the long-term. Implementation of upland and riparian livestock grazing utilization standards will improve understory vegetation conditions, improving foraging habitat and cover for dispersing lynx. The Revised Forest Plan includes management direction that provides habitat for maintaining linkages for lynx on the Forest and has an objective to complete hair snare surveys on Montpelier and Soda Springs Ranger Districts. Additional site-specific level analysis will consider and analyze effects on lynx movements and dispersal when specific projects are proposed.

Cumulative Effects

Most suitable habitat is southern Idaho is located on higher elevation forested lands, often publicly managed lands. All public land managers will incorporate guidance from the LCAS. Impacts and risk factors for lynx movement and dispersal that could occur on private lands have been incorporated into the discussion of direct and indirect effects. The list of reasonably foreseeable future actions was reviewed for those that would affect the risk factors identified for lynx movement and dispersal, on adjacent private lands. These have already been incorporated into the above table.

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Bureau of Land Management, and USDI National Park Service. Forest Service Publication #R1-00-53, Missoula, MT. 142 pp.

U.S. Fish and Wildlife Service. 2000. Final Rule, Determination of Threatened Status for the Contiguous U.S. Distinct Population Segment of the Canada Lynx. March, 24, 2000. p. 16052 – 16086.

Wisdom, M.J., *et al*, 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

ROCKY MOUNTAIN WOLF

(Most of the following information is summarized from USFWS, 1994).

Population Overview

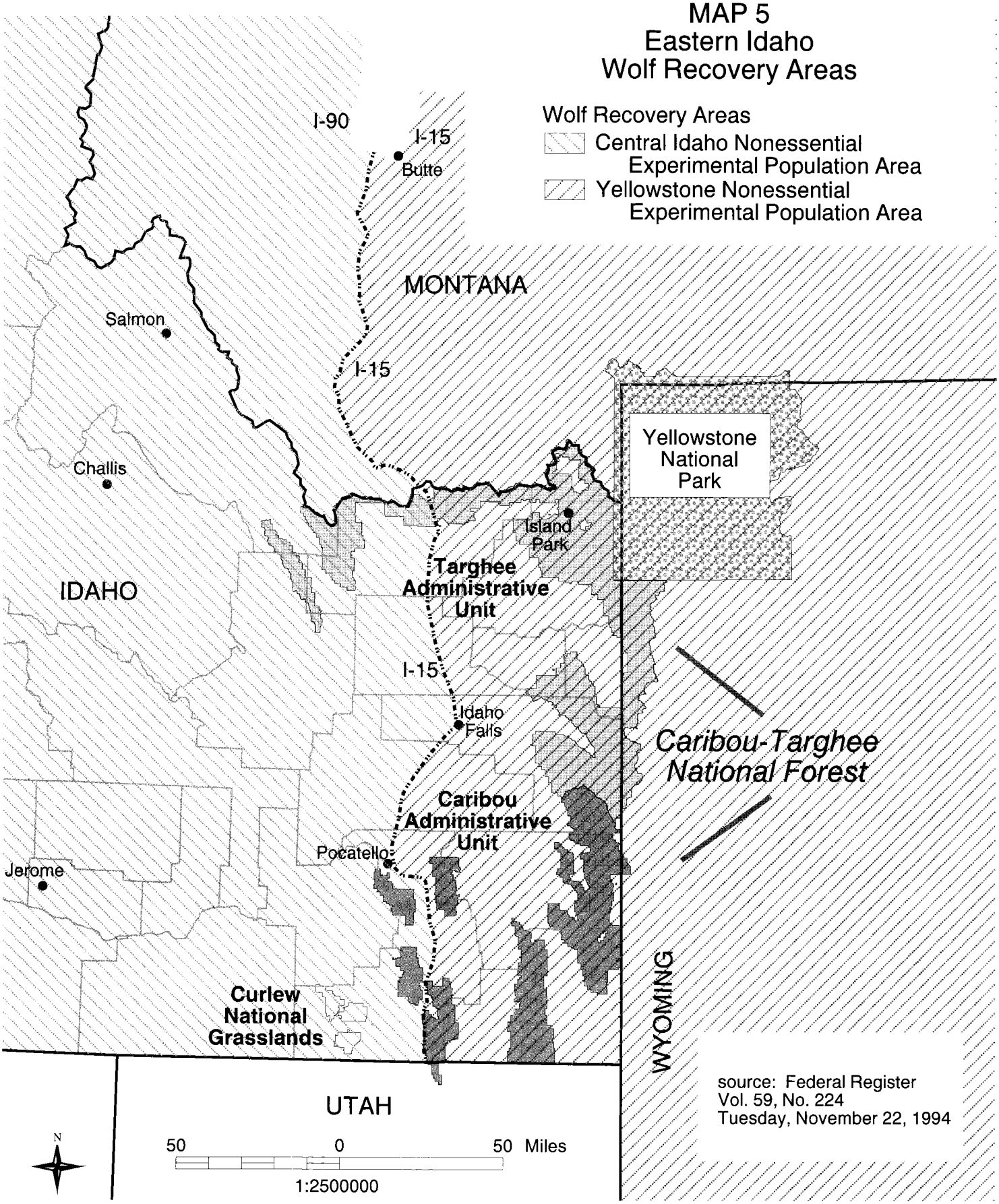
The gray wolf was listed as endangered in 1978. For fifty years prior to 1986, no detection of wolf reproduction was found in the Rocky Mountain portion of the United States. Then in 1986, a wolf den was discovered near the Canadian border near Glacier National Park. A revised recovery plan was approved by the USFWS in 1987. It identified a recovered wolf population as being at least ten breeding pairs of wolves, for three consecutive years, in each of three recovery areas (northwestern Montana, central Idaho and Yellowstone). This has recently been modified to mean thirty breeding pairs, about evenly distributed between the three recovery areas (Ed Bangs, Wolf Recovery Project Leader, USFWS, pers. comm.). In 1994, the USFWS signed the decision to reintroduce wolves into Yellowstone and central Idaho as nonessential experimental populations (USFWS, 1994).

The division between the central Idaho and Yellowstone populations is U.S. Interstate I-15. As a result, the Caribou National Forest is split between the two recovery areas. See Map 5: Eastern Idaho Wolf Recovery Areas. By the end of 1999, at least 118 wolves were present in the GYA. Reproduction was confirmed in eleven of sixteen packs, but pup survival was low. In central Idaho, reproduction was confirmed in twelve packs, with generally high pup survival. However, when factoring in pack and pup survival at the end of the year, the number of packs/breeding pairs is somewhat lower:

Table 57. Number of Breeding Pairs in the Central Idaho and Yellowstone Recovery Areas.

Recovery Area	1995	1996	1997	1998	1999	2000	2001
Yellowstone	2	4	9	6	8	13	13
Central Idaho	-	3	6	10	10	9	14

In July of 2000, the USFWS began the yearlong process to reclassify, de-list wolves over much of the United States. The Western population would be reclassified from endangered to threatened. The non-essential, experimental status of wolves in Yellowstone and central Idaho would remain (USFWS, 2000). No critical habitat has been designated for the wolf.


MAP 5
Eastern Idaho
Wolf Recovery Areas
Wolf Recovery Areas
Central Idaho Nonessential Experimental Population Area
Yellowstone Nonessential Experimental Population Area
I-90
I-15
Butte
MONTANA
Salmon
I-15
Challis
Yellowstone National Park
Island Park
Targhee Administrative Unit
IDAHO
I-15
Idaho Falls
Caribou-Targhee National Forest
Caribou Administrative Unit
Pocatello
Jerome
Curlew National Grasslands
WYOMING
UTAH
source: Federal Register
Vol. 59, No. 224
Tuesday, November 22, 1994
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Wolf Biology and Ecology

The basic social unit in wolf populations is the pack. A pack consists of two to thirty wolves (average of ten), which have strong social bonds to each other. Breeding within the pack usually occurs only between the top-ranking alpha male and female. Wolves breed in Yellowstone any time from late January to late February. Pregnant wolves dig dens a few weeks before birth of pups. They are usually burrows in the ground, but they will also use hollow logs, rock caves or abandoned beaver lodges. Some den sites are used traditionally, and there may be several den sites within their territory that are used in different years. By the time pups are six to ten weeks of age (late May to early July), they will move to a first rendezvous site. This is usually within one to six miles of the natal den and often consists of open meadows and adjacent forest with surface water close by. A succession of rendezvous sites is used through fall.

Wolves die from a variety of causes: malnutrition, disease, debilitating injuries, interpack strife and human exploitation or control. The USFWS's Annual Reports show mortalities for each recovery area.

Table 58. Known Mortalities and Causes (from USFWS Annual Wolf Reports).

Recovery Area	Natural Causes	Human-caused	Unknown	Total
Yellowstone 1999	21	10	1	32
Central Idaho 1999	6	11	8	25
Yellowstone 2000	6	9	5	20
Central Idaho 2000	1	17	5	23
Yellowstone 2001	3	13	0	16
Central Idaho 2001	1	10	5	16

In general, wolves depend upon ungulates for food year round. In northwestern Montana since the mid-1980s, about 63 percent of kills were deer, 30 percent were elk and 7 percent were moose; in Yellowstone elk made up 89 percent of kills made during winters over a three-year period; near Salmon, elk made up an estimated 90 percent of the wolf kills (Draft Idaho Wolf Conservation Management Plan, 2000). On an average, wolves eat nine pounds of meat per day during the winter. The frequency of kills by a wolf pack varies tremendously, depending on many factors, including pack size, diversity, density, and vulnerability of prey, snow conditions, and degree of utilization of carcasses.

Use on Forest

Sightings of suspected wolves have been reported across the east side of the Forest over the last twenty years. These have all been of lone, individual animals. All of these sightings were in the vicinity of Montpelier and Soda Springs Ranger Districts. One of these animals was taken in a control action (Nove, 2000) as a result of livestock depredations. At this time, there are no breeding pairs or packs of wolves on the Caribou NF.

Effect of Open Road Densities on Wolves

Originally, wolves lived in every habitat in North America that supported large mammals, their main prey. When wolves were persecuted the only populations left were those in inaccessible and heavily forested areas. Early research showed that in Wisconsin, Michigan and Minnesota, wolf populations generally inhabited only areas with road densities less than .23 km^2 (.4 mi/mi^2), because higher road densities allowed human access, which led to illegal, accidental, or incidental wolf deaths (USFWS, 1994).

Given legal protection, wolves have adapted to human developments. Current land management in national forests places restrictions on human use in important ungulate seasonal ranges (winter range,

calving areas). These restrictions occur at the same time and in habitats similar to those that would be used by denning wolves.

The relationship between roads, wolf survival and wolf habitat use is more complicated than road density alone. Terrain, topography, cover, traffic, road distribution and the ability, opportunity and desire of people to kill wolves affect wolf vulnerability. Wolf packs have survived in some areas of high road densities, but most wolf mortality has been associated with road access. Illegally killed wolves continue to be a problem in both recovery areas. While it is unlikely that road density guidelines are needed to support wolf recovery, they do benefit big game, which are important as prey.

Threats or Risks to Wolves

In the Final Rule (Federal Register, Vol. 59. Number 224) it says, "There are no conflicts with current management actions of the Forest Service". Potential threats were listed as hunting, trapping, animal damage control activities and high-speed roads and highways. The Final Rule outlines how wolves depredating on livestock will be managed and this has been incorporated into the Forest Plan. Risks identified by Witmer, *et al*, (1998) include risks due to increased accessibility of humans; trapping, shooting and predator control activities; and activities that decrease prey (big game) populations.

Several measures of access are shown below, reflecting vulnerability to hunters and trappers. OMRDs for the Caribou/Webster/Preuss range is shown, as that is where the majority of the sightings have been reported and is the major linkage from the Greater Yellowstone Ecosystem to the north.

Comparison of Alternatives

Table 59. Ranking of Alternatives Based on Risk Factors from Final Rule.

Wolf Rankings (1=best)	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Forest open to off-route travel	2	2	2	1	1	1	1	1
Ranking of OMRD For Caribou/Diamond/Preuss	4	4	4	3	2	1	3	4
Ranking based on acres where natural processes dominate	3	3	4	2	2	1	3	2
Ranking on winter big game distribution*	3	2	2	1	1	2	1	1
Ranking based on AUM's	2	2	2	1	1	1	1	1
Overall ranking	**3**	**3**	**3**	**2**	**1**	**1**	**2**	**2**

* Assumption that winter ranges in Rx 2.7 will be in better condition and receive more use from wintering big game

Table 60. Risk Assessment Based on Risk Factors.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Maximum open route density (mi/mi^2)	Mod	Mod	Mod	Low	Low	Low	Low	Low
% of Forest open to off-route travel	Mod	Mod	Mod	Low	Low	Low	Low	Low
Maintenance of corridors* in Caribou/Webster/Preuss	Mod	Mod	Mod	Low	Low	Low	Mod	Mod
Livestock AUM's on forest and potential for predation	Mod	Mod	Mod	Low	Low	Low	Low	Low
Overall Risk	**Mod**	**Mod**	**Mod**	**Low**	**Low**	**Low**	**Low**	**Low**

Determination of Effects

Risks identified by Witmer, *et al*, (1998) include risks due to increased accessibility of humans; trapping, shooting and predator control activities; and activities that decrease prey (big game) populations.

Table 61. Risk Assessment Based on Factors Identified in the Final Rule and Witmer, *et al*, (1998).

Risk Assessment	Alt 7R, the Preferred Alternative
Travel Management and accessibility to humans.	Motorized use would be restricted to designated routes year-round over 98 percent of the Forest. OMRDs would be maintained at just below current levels once travel planning is updated and implemented. Risk of shooting or trapping would not increase over current conditions, based on OMRDs as outlined in the project description section.
Prey availability	Alt7R would improve suitability of habitat for mule deer and elk and no decrease in abundance or major changes in distribution are expected as a result of implementation of this alternative. Winter ranges are managed through upland livestock forage utilization levels, winter travel management and vegetation treatments. All of these activities will benefit big game and maintain a prey base for wolves.
Predator management	Predator control activities are done by Wildlife Services under existing regulations. Implementation of any of the alternatives would not affect predator control activities.
Highway mortality	Highways across the Forest are all two-lane and generally lower speed highways (due to grade, alignment, visibility etc) than those found in the valleys. Any highway reconstruction, re-alignment or improvement that crosses federal lands would be assessed in a site-specific analysis and mitigation would be incorporated as needed.
Overall Risk	**Low**

The Final Rule states: "Management of wolves in the experimental population would not cause major changes to existing private or public land use restrictions after six breeding pairs are established in the recovery area". Before six wolf pairs are established, temporary restrictions on human access near active den sites may be required between April 1 and June 30." Since there are well over six breeding pairs established in both of the recovery areas, protection around den sites is not required.

A Standard has been incorporated into the Forest Plan that addresses restriction of human disturbances around den sites and rendezvous sites, if the number of breeding pairs drops below six in either of the recovery areas.

Alternative 7R is not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat (no critical habitat has been identified). Wolf populations have met recovery goals for breeding pairs for the last two years in both the Central Idaho and Yellowstone Recovery Areas. The Caribou may contribute to the conservation of this species by providing habitat for wolves dispersing from either the Central Idaho or Yellowstone Recovery Areas.

Cumulative Effects

Wolves are wide-ranging species and the potential for conflicts with humans and livestock is higher on private lands where livestock is concentrated in smaller areas. All of these potential problems are dealt with on a site-specific basis, by Wildlife Services. As wolves move into more open areas, with more access, they also become more vulnerable to shooting. The potential for highway mortality, due to more traffic at higher speeds would increase at lower elevations off the Forest. In addition, there are several areas where subdivisions are increasing adjacent to the Forest. The potential for conflicts due to depredations on pets etc will increase.

In 2001, in the Yellowstone Recovery Area, there were thirteen documented human-caused mortalities, or 6 percent of the total population. In the Central Idaho Recovery Area there were ten documented human-caused mortalities, or 4 percent of the population (USFWS, 2002). In spite of the human-caused mortalities, populations are continuing to increase.

References cited for above section:

Idaho Legislative Wolf Oversight Committee. 2000. Draft Idaho Wolf Conservation Management Plan. April 2000. Boise, ID.

US Fish and Wildlife Service. 1994. The Reintroduction of Gray Wolves to Yellowstone National Park and Central Idaho, Final Environmental Impact Statement. USFWS, Helena, MT.

US Fish and Wildlife Service. 1994. Establishment of a Nonessential Experimental Population of Gray Wolves in Yellowstone National Park. Federal Register, Vol. 59, No. 224. p. 60252 – 60281.

US Fish and Wildlife Service. 2000. News Release. Gray Wolves Rebound; US Fish and Wildlife Service Proposes to Reclassify, Delist Wolves in much of the United States. July 11, 2000.

US Fish and Wildlife Service. 2000. Gray Wolf Recovery Status Reports, Week of 12/8 – 12/15/2000.

US Fish and Wildlife Service. 2000. Rocky Mountain wolf Recovery 1999 Annual Report. USFWS, Nez Perce Tribe, National Park Service and USDA Wildlife Services.

US Fish and Wildlife Service, Nez Perce Tribe, National Park Service, and USDA Wildlife Services. 2002. Rocky Mountain Wolf Recovery 2001 Annual Report. T. Meier, ed. USFWS, Ecological Services, 100 N. Park, Suite 320, Helena, MT. 43 pp.

Witmer, G.W., S.K. Martin and R.D. Sayler. 1998. Forest Carnivore Conservation in the Interior Columbia River Basin: Issues and Environmental Correlates. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-420. Portland, OR. 15 p.

WHOOPING CRANE

Habitat and Population Overview

Whooping crane breeding grounds consist of marshes, sloughs, prairie potholes, and lake margins with abundant emergent vegetation in isolated, undisturbed areas. They also forage in upland areas.

During the 1970s the USFWS tried to establish a flock of whooping cranes at Grays Lake National Wildlife Refuge by "cross-fostering", allowing sandhill cranes to hatch and raise young whooping cranes, but to date, the whooping cranes have shown no evidence of pairing or breeding. The "cross-fostering" program was terminated in 1989, because the birds were not pairing, and mortality was too high to establish a self-sustaining population. In 1997, the USFWS designated the Rocky Mountain population of whooping cranes as an experimental, nonessential population (USFWS, 1997).

Numbers of whooping cranes have declined over the years and the probability of whooping crane occupancy on the Forest is very low. In 1992, twelve whooping cranes returned to the Refuge. By the spring of 1995, only four returned, and only one of which remained there for the summer. By 1997,

numbers in the Rocky Mountain population had dropped to three non-breeding birds. One bird was sited in July 2000 on private lands between Soda Springs and Blackfoot Reservoir.

There may be one whooping crane left, but it was not seen in the spring of 2001 in the San Luis Valley, and it is not known if it is still alive. If it is alive, it is expected to stopover once in Idaho in the spring and not at all in the fall (T. Stehn, Whooping Crane coordinator, USFWS). Whooping cranes will be removed from consultation lists and project impacts will not need to be addressed for whooping cranes, once this happens (T. Stehn, Whooping Crane coordinator, USFWS, 4/17/02).

Habitat Evaluation

Reported sightings of whooping cranes on the Forest will be verified. Whooping cranes have periodically been observed on the Forest in the past (Stump and Slug Creek areas). If observations continue over a period of time or nesting territories are established, consultation with USFWS will be initiated. Until a pair of whooping cranes has been observed to use a Forest habitat for at least two consecutive years or has established a nesting territory on the Forest, they are not considered Forest residents.

Determination of Effects

None of the alternatives are likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat (no critical habitat has been identified). There are no risks to whooping cranes based on the low potential for use on the Forest.

Cumulative Effects

None.

References for the above section:

Stehn, T. 2002. E-mail correspondence dated 4/17/02, titled Idaho Whooping Crane Status.

US Fish and Wildlife Service. 1997. Final Rule to Designate the Whooping Cranes of the Rocky Mountains as Experimental Nonessential. Federal Register, July 21, 1997, Volume 62, Number 139, pages 38832-38838.

BALD EAGLE

Habitat Overview

During the breeding season, bald eagles eat mainly fish. They also forage on waterfowl, shorebirds, upland birds and small mammals. Eagles are very opportunistic predators, especially during the winter. The will eat whatever is available, including fish, waterfowl, small mammals and carrion.

Nesting habitat on or adjacent to the Caribou NF is associated with rivers, lakes and reservoirs. Nests are commonly found in large trees, mainly conifers and cottonwoods. Because eagles need large trees to support their large, heavy nests, they are often found in multi-storied, late successional stands with open canopies.

Wintering bald eagles tend to congregate near bodies of open water and roost communally. Major rivers and large lakes constitute the majority of winter habitats used, although temporary presence of high quality foods may entice eagles to areas far removed from aquatic zones (Greater Yellowstone Bald Eagle Working Group 1996). Considerations in the winter include the abundance of food usually associated with open water, availability and distribution of foraging perches and availability of secure night roost sites and the potential for human disturbance around all three habitat components.

Population Overview

The Caribou National Forest is part of the Pacific Recovery Region. The Pacific States Bald Eagle Recovery Plan was developed in 1986 (USFWS, 1986). Due to accomplishments of achieving recovery goals, the USFWS reclassified the bald eagle from endangered status to threatened status in the lower 48 States, in 1995 (USFWS, 1995).

The USFWS continues to move forward with plans to de-list the bald eagle and they are now working on addressing post de-listing population monitoring and continued protection of habitat once the population is delisted. There is no projected date for a decision at this time (Jane Jewett, USFWS, pers. comm.). If they are delisted, monitoring will continue, management plans will be followed, and birds themselves would continue to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. If the bald eagle is delisted, USFWS will work with state wildlife agencies to monitor status of the species for a minimum of 5 years. If it becomes evident that protection is needed, the Service will relist the species.

The Caribou National Forest is within three bald eagle management zones, as identified in the Recovery Plan; Caribou/Green River in the southern part of the Forest, the Greater Yellowstone in the northeast part, and Great Basin on the northwestern part of the Forest. The Recovery Plan established habitat and population goals for these zones. The habitat management goals are considered the minimum number of territories needed to provide secure habitat for the recovered population (pg 30). These goals include all land ownerships.

Bald Eagle Populations in Management Zones

No territories have been documented in the Idaho portions of the Caribou/Green River and Great Basin Zones during the last several years (IDFG 1993 to 1999). Monitoring information from the Idaho portion of the Greater Yellowstone is shown below. One of these nests (Grays Range) is found on Caribou National Forest lands.

Table 62. Idaho Portion of the Greater Yellowstone Zone.

YEAR	# OCCUPIED	# SUCCESSFUL	# OF YOUNG
2000	51	31	45
1999	45	20	31
1998	43	26	32
1997	40	27	47
1996	43	29	43
1995	40	22	37
1994	38	30	44
1993	35	18	24

The 1999 Idaho Bald Eagle Nesting Report (Beals and Melquist, 1999) found that although the number of occupied territories in Idaho continues to increase, several statewide monitoring categories indicate slight downward trends (occupancy, and success and productivity). Both of these categories showed upward trends in 2000 (Beals and Melquist, 2001).

Bald Eagle Populations on and Adjacent to the Caribou NF

In 2000, bald eagles on the Caribou-Targhee NF and adjacent lands had their third highest productivity year since 1981. Twenty-five out of forty-five young produced in southeast Idaho and adjacent Wyoming were from Caribou-Targhee NF nest territories (USFS, 2001).

There are two nesting territories on or adjacent to the Caribou National Forest. One is located near Thayne, Wyoming. Much of the following information was taken from the Bald Eagle Nest Area Management Plan (Brassfield, 1998). The Nest Management Plan has been approved by the USFWS and includes land management recommendations for different zones.

The Thayne territory has been occupied since 1977 and includes at least three nest sites, two of which are on Forest lands. Nesting in the territory was documented during 1977, 1980-84, and 1991-98. The nesting pair produced one or two fledglings in 1991-97. In 1994 the nest was occupied, but the pair failed to produce fledglings. Surveys in 1999 and 2000 observed eagles in the area, but no nesting was documented. The territory is considered occupied but inactive for those two years (S. Patla, Wildlife Biologist, Wyoming Game and Fish, pers. comm.).

Access to the nests is by foot only and the nearest bridge to cross the Salt River is privately owned and one-half mile from the nest, so the nests are relatively secluded from human activity. Wyoming Game and Fish has been trying to gain access to the general area for eleven years (Rine, 2001). The riverbanks and valley bottom are mostly privately owned, and the eagles spend much of their time on or above private lands. In 1994, the male bald eagle of the nesting pair was shot, and no young were fledged. Shooting is known to be a frequent cause of bald eagle mortality throughout the west (USFWS, 1986). Urban development along the riparian areas of the Salt River may also be affecting the productivity of the eagles.

In the summer various types of boats are used to float the Salt River for recreational purposes. The nests on Forest lands are part of the Stump Creek cattle allotment. Grazing by cattle in the nesting zone is light due to the steep terrain. There has been one large timber sale in the area, roughly four miles north of the nests, in the late 1960s or early 1970s. Several small sales were sold in the vicinity prior to 1980. Currently, most human activities in the area occur during the fall big game hunting seasons.

The other nest territory on or adjacent to the Caribou is found on Grays Range. The Grays Range nesting area is mostly off-forest, but one nest tree may be located on the Forest. The Grays Range nest was observed in 1996 and 1997, but first shows up in the 1998 Idaho Bald Eagle Nesting Report. In that year, they were successful in raising one young. In 1999 they were successful in raising three young and two young in 2000 (Beals and Melquist, 2001). An objective has been added to prepare a nest management plan for the Grays Range Nest territory, and any other new territories that may become established. These Plans will include management direction by zone (nest, primary use area and home range), as described in the Forest Plan.

Table 63. Bald Eagle Nesting Territories on the Caribou NF.

Territory Name	Nest Site Occurs On Forest	Portion Of Territory On Forest	Number Of Years Occupied
Thayne[1]	2 of 3	Yes	16 years since 1977
Grays Lake	1 of 2	Yes	1996 - 1999

1 Information taken from the Nest Management Plan and updated from Susan Patla, Wyoming Game and Fish.

In addition to the two nest territories, there are others that have been reported in the vicinity of the Caribou. One nest was confirmed at Blackfoot Reservoir for one year, and one nest at Alexander Reservoir in 1999. Efforts to relocate the nest in 2000 were unsuccessful (Carl Anderson, IDFG, pers. comm.). In addition, there were reports of nests around Thatcher (1998) and Sulphur Canyon (1995).

Both of these reports were followed up on, but no nesting could be confirmed (Carl Anderson, IDFG, pers. comm.).

Four areas of known bald eagle winter use have been surveyed once yearly since 1986. These areas are Tincup (nine eagles over fifteen years), Diamond Creek (two eagles in twelve years), Narrows/Lane Creek (eight eagles in thirteen years) and Crow Creek (sixteen eagles in fifteen years).

Risks Identified for Bald Eagles

Risks to eagles involve exposure to lead poisoning, secondary poisoning from insect and predator control programs, collision and electrocutions associated with power transmission, and loss of perching, foraging and roosting opportunities due to human disturbance or activities (GYBEWG, 1996)

Overview of Effects

(This overview is summarized from the Greater Yellowstone Bald Eagle Working Group, 1996.)

Poisoning/Contaminants

Wildlife Services carries out control activities within existing regulations. In addition, the Plan includes a Guideline about predator management activity within nest zones and primary use areas. The Plan also incorporates a Guideline about the use of herbicides and pesticides within the Home Range zone.

Collision/electrocution

The Plan includes a Standard in nest zones and primary use areas to reduce the potential for effects from powerlines.

Human activity

Although direct impacts occur, frequencies are unexpectedly low because eagles are modifying their activities to avoid direct impacts and are less sensitive that anticipated. Bald eagles clearly respond to the proximity of humans by modifying activity and movements to avoid encounters.

Responses of eagles to human activities may vary from ephemeral, temporal and spatial avoidance of activity to total reproductive failure and abandonment of breeding areas. Relationships of human activity and eagle responses are highly complex, difficult to quantify and often individual for site-specific. Responses vary depending on type of activity, intensity, duration, timing, predictability and location of human activity. The ways in which these variables interact depend on age, gender, physiological condition, sensitivity, residency, and mated status of affected eagles. Prey base, season, weather, geographic area, topography and vegetation in the vicinity of the activity also influence eagle responses.

In a study along the Snake River in Wyoming, fewer eagles flushed when human activity was over 200 meters (656 feet) but most did when human activity was within 150 meters (492 feet). Some pairs primary use areas were on the most heavily impacted sections of the river. However, they shifted their activity patterns to very early morning and evening, to periods when their presence would be least obvious to humans.

In a study along the Snake River in Idaho, only 6 percent of the encounters between recreating humans and bald eagles resulted in a flush response, but eagles chose perches insulated from recreational activity by vegetation or distance. These eagles are excluded from prime foraging at these times, but used these areas heavily when recreational activities were absent.

Some eagles are more tolerant of human activity than others. Mean distance at which resident eagles flushed from human activity was greater when relative exposure to human activity was less. Thus, eagles in the vicinity of continuously inhabited areas of high human density may become habituated to human presence and tolerant of certain human activities more than those using more isolated locations. Whether individual eagles become more tolerant of human activity over time, or if areas subjected to excessive human activity are occupied by more tolerant eagles is unknown.

Both known nest locations on or adjacent to the Caribou are in areas that are fairly inaccessible to the general public. They are both within one to two miles of main roads. The site near Thayne is within two miles of Highway 89, which receives heavy traffic. The highway near the Grays Range nest site receives much less traffic. There may some activities on adjacent private lands, but would probably be at fairly low levels. Current levels of human activity do not appear to be affecting use of these nest territories, especially the Grays Range site. The Thayne site has been occupied but inactive, but no clear reason has been identified for this.

Vehicular traffic traveling along prescribed routes or within strict spatial limits and at relatively predictable frequencies is least disturbing to bald eagles. Snowmachines and all terrain vehicles are more disturbing, due to random, unpredictable movements, loud noise and visibility of operators.

All four monitored winter use areas are located adjacent to main access routes. Other roost sites will also probably be adjacent to main roads, since road locations often follow major riparian corridors. There is the potential for disturbance, but if the traffic stays on the road, they may become habituated to it and not be displaced.

Determination of Effects

Identified risk factors are summarized and the potential for effects is shown in the following table.

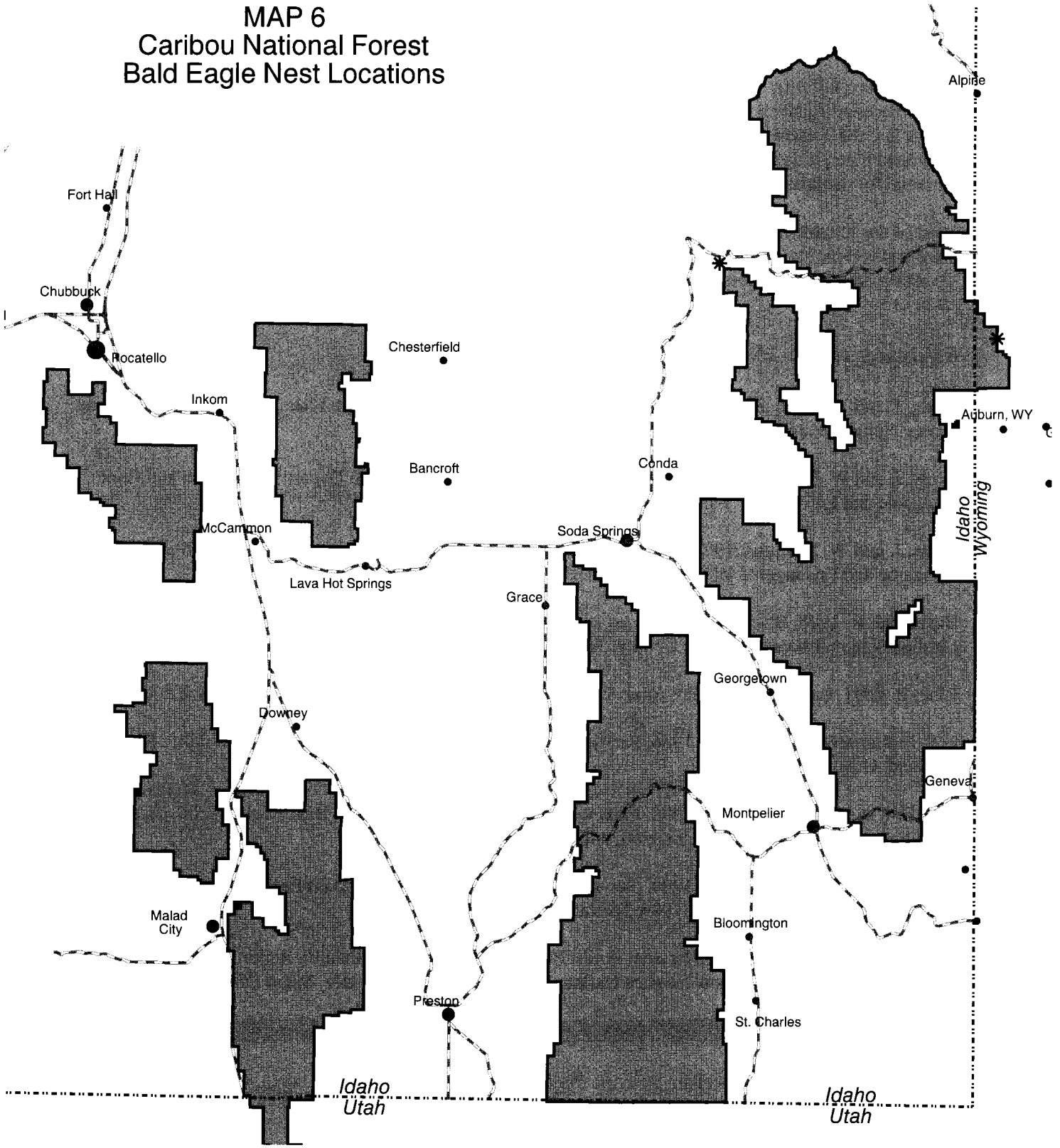
Table 64. Risk Assessment for Bald Eagles.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Poisoning/contaminants	Low	Low	Low	Low	Low	Low	Low	Low
Collision/electrocution	Low	Low	Low	Low	Low	Low	Low	Low
Human activities around nest*	Low	Low	Low	Low	Low	Low	Low	Low
Habitat alteration around nest stands*	Low	Low	Low	Low	Low	Low	Low	Low
Overall risk	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**

* All low due to Forest-wide Plan direction and implementation of Nest Management Plans

All of the alternatives "may affect, but are not likely to adversely affect" bald eagles or habitat. Bald eagle goals, objectives, standards and guidelines are presented in the Forest-wide Plan direction. These apply to all existing territories and any new territories that become established. In addition, an objective has been added to the Plan that requires the development of a Nest Management Plan for the Grays Range nest site, and any new nest site that may become established in the future.

MAP 6
Caribou National Forest
Bald Eagle Nest Locations



Bald Eagle Nest Locations
State Line
Major Roads

Caribou National Forest

5 0 5 10 Miles

1:700000

Cumulative Effects

The Adjacency Analysis (Rine, 2001) identifies that Wyoming Game and Fish has been trying to get access into the Thayne area. If access to the nest area around Thayne, Wyoming is gained in the future, the Forest Plan guidance and direction in the Nest Management Plan should be adequate to address the potential for disturbance to nesting birds.

Most of the suitable habitat for bald eagles is found off-Forest along the major river corridors and around lakes and reservoirs. The risk factors identified above also relate to bald eagle habitat off-Forest. Currently bald eagle numbers are increasing and current management appears to be compatible with bald eagle use.

References cited in above section:

Beals, J. and W. Melquist. 2001. Idaho Bald Eagle Nesting Repor for 2000. Idaho Department of Fish and Game, Nongame and Endangered Wildlife Program, Boise, Idaho.

Beals, J. and W. Melquist. 1999. Idaho Bald Eagle Nesting Report. Idaho Department of Fish and Game, Nongame and Endangered Wildlife Program, Boise, Idaho.

Beals, J. and W. Melquist. 1998. Idaho Bald Eagle Nesting Report. Idaho Department of Fish and Game, Nongame and Endangered Wildlife Program, Boise, Idaho. October 1998.

Brassfield, R. 1998. Bald Eagle Nest Area Management Plan, for the Soda Springs Ranger District, Caribou National Forest, Lincoln County, Wyoming.

Rine, B. 2001. Caribou Adjacency Analysis. Prepared for the Caribou National Forest, March 2001.

U.S. Fish and Wildlife Service. 1986. Pacific Bald Eagle Recovery Plan. U.S. Fish and Wildlife Service, Portland, Oregon. 163 p.

U.S. Fish and Wildlife Service. 1995. Endangered and Threatened Species; Bald Eagle Reclassification, Final Rule. Federal Register, Volume 60, number 133, pp 36000-36010.

U.S. Fish and Wildlife Service. 1999. News release, Proposal to Remove Bald Eagles from the Endangered Species List. July 2, 1999, Portland, OR.

USFS. 2001. Caribou-Targhee National Forest Plan Monitoring and Evaluation Report 2000-2001. USDA Forest Service, Caribou-Targhee National Forest, Supervisors Office, Idaho Falls, ID.

YELLOW-BILLED CUCKOO

The following information is taken from the Petition Finding (USFWS 2001).

Population Overview

The yellow-billed cuckoo was petitioned for listing in 1998, and in 2000 the USFWS concluded that the petition presented information to indicate that listing may be warranted.

In Idaho, the yellow-billed cuckoo was considered a rare and local summer resident. In Northern and Central Idaho, there have been only four records of yellow-billed cuckoo over the last century. The most

recent record for this area comes from the South Fork of the Snake River in 1992. Saab (1998) found them in five of her fifty-seven survey patches on the South Fork Snake River. In southwestern Idaho, the yellow-billed cuckoo has been considered a rare, sometimes erratic visitor and breeder in the Snake River valley. The breeding population in Idaho is likely limited to a few breeding pairs.

Biology and Ecology

Western yellow-billed cuckoos breed in large blocks or riparian habitats, especially woodlands with cottonwoods and willows. Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where they have been studied in California. Western yellow-billed cuckoos appear to require large blocks of riparian habitat for nesting.

This species is strongly associated with relatively large expansive stands of mature cottonwood-willow forests. They appear to be dependent on a combination of a dense willow understory for nesting, a cottonwood overstory for foraging and large patches of habitat in excess of twenty hectares (about fifty acres). The species will occupy a variety of marginal habitats, particularly at the edge of their range, but is not known to use non-native vegetation in the majority of its range.

Habitat Evaluation

The National Wetlands Inventory (1980) only identified about fifty acres of deciduous forest riparian areas, with no differentiation between aspen or cottonwood. Conversations with District personnel confirmed that cottonwood/willow riparian habitat types are very limited on the Forest. If they do occur in small places, they are well below the fifty-acre minimum patch size to be considered suitable habitat.

Determination of Effects

No effect. Because of the lack of suitable habitat for this species on the Caribou NF, implementation of any of the alternatives will have no affect on yellow-billed cuckoos or critical habitat.

Sensitive Species

SUMMARY

This analysis serves as the Biological Evaluation for Sensitive Species. An overview of habitat associations and trends, as well as species distribution, population trends and expected changes as a result of the alternatives is shown. The analysis includes a risk assessment for each species, with risk factors used to determine the risk of each alternative. A summary of determinations for all sensitive species is given in the following Table 65, below.

The boreal owl is rated at moderate risk due to the departure of suitable habitat from PFC over the long-term. As explained in the following section, stand conditions will favor this species over the short term, as mature and old forest stands provide suitable nesting and foraging habitat.

The sage grouse and pygmy rabbit are both rated at moderate risk due to the departure of sagebrush habitats from PFC. Again, sagebrush stand conditions will favor these species over the short term, as more closed stands provide nesting and winter habitat for sage grouse, and year-round habitat for pygmy rabbits.

Wolverines are rated at moderate risk due to a couple of factors. These include lack of large, remote areas and the potential for disturbance during denning. See the following analysis for more information.

Table 65. Determinations and Risk Assessment for Sensitive Species, MIS and SAR (Alternative 7R).

SPECIES	DETERMINATION*	RISK ASSESSMENT
Peregrine falcon	MIIH	Low
Boreal owl	MIIH	Moderate
Flammulated owl	MIIH	Low
Great Gray Owl	MIIH	Low
Trumpeter swan	MIIH	Low
Harlequin duck	MIIH	Low
Three-toed woodpecker	MIIH	Low
Columbian sharp-tailed grouse	MIIH	Low
Northern goshawk	MIIH	Low
Spotted bat	MIIH	Low
Spotted frog	NI	NA
Townsends big-eared bat	MIIH	Low
Wolverine	MIIH	Moderate
Sage grouse (MIS)	-	Moderate
Northern leopard frog	-	Low
Boreal toad	-	Low
Pygmy rabbit	-	Moderate
Marten	-	Low

MIIH May impact individuals or habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species.

NI No impact.

* Determinations are only made for sensitive species

PEREGRINE FALCON

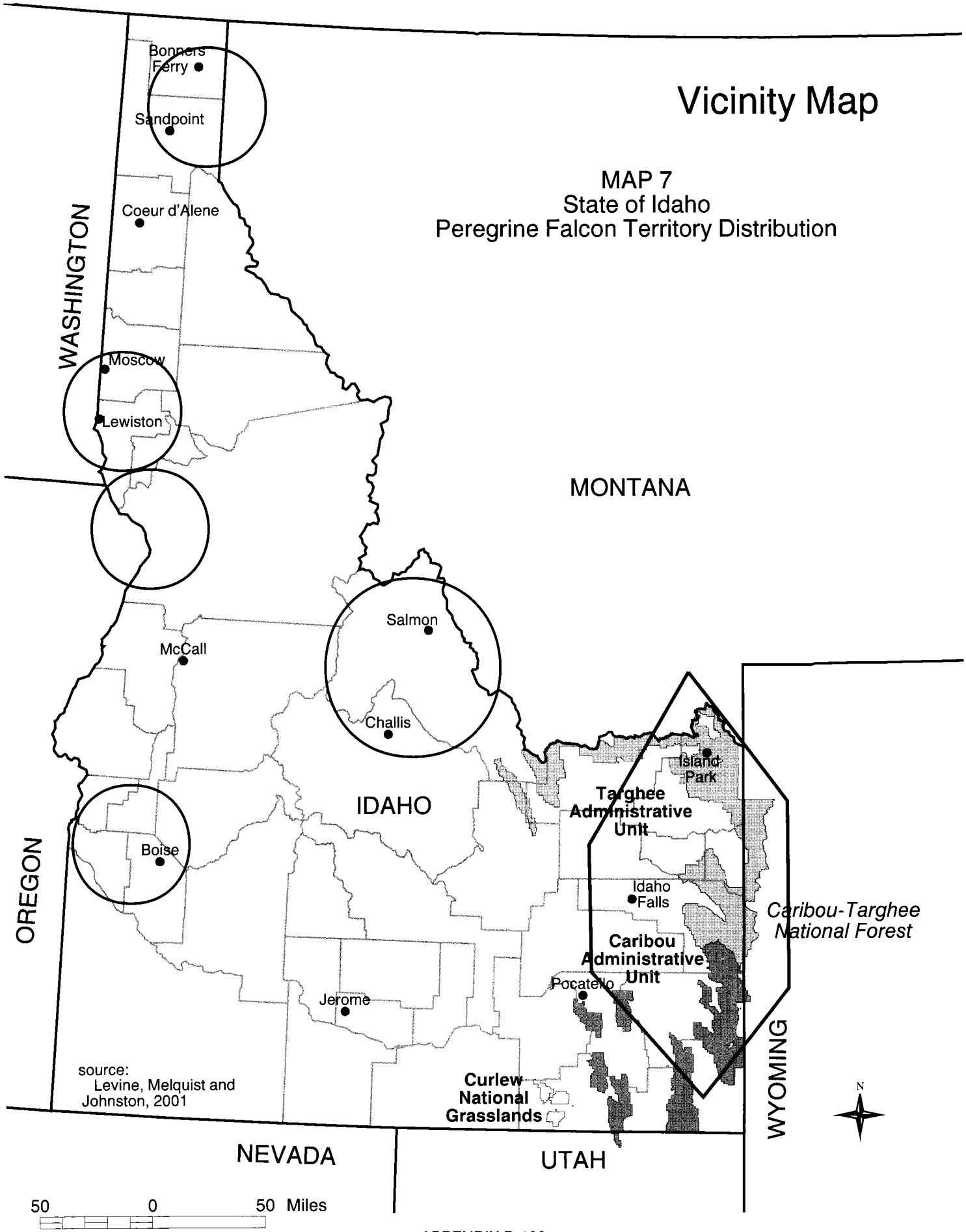
American Peregrine Falcon Recovery Plan and Recovery Status

The peregrine falcon occurs throughout most of North America as three races or subspecies. The subspecies or race *Falco peregrinus anatum* appears throughout the western United States from Mexico to the arctic tundra. It was this subspecies that underwent the most dramatic decline from the 1950s to 1970s (USFWS 1977, 1984).

The Forest is within the American Peregrine Falcon Recovery Plan area, the Rocky Mountain/Southwest Population. In 1991 there were 363 known pairs within the Recovery Area. By 1994 there were 559 breeding pairs in the Rocky Mountain/Southwest Population, exceeding the recovery goal. Other objectives for recovery included an average production of 1.25 young per pair and an eggshell thickness objective.

By 1999, there were at least 1,650 peregrine breeding pairs in the United States and Canada, well above the recovery goal of 631 pairs. At this time the peregrine falcon was removed from the Endangered Species list (USFWS, 1999). The Service decided to monitor the peregine falcon for thirteen years with surveys occurring once every three years, allowing for five surveys, to provide data that will reflect the status of at least two generations of peregrines. If it becomes evident during this period that the bird again needs the Act's protection, the Service will re-list the species.

In Idaho, the number of occupied territories has fluctuated from year to year, but is generally increasing (Levine, *et al*, 2001). Distribution of territories across Idaho are shown on Map 7.


Vicinity Map
MAP 7
State of Idaho
Peregrine Falcon Territory Distribution
Bonners Ferry
Sandpoint
Coeur d'Alene
WASHINGTON
Moscow
Lewiston
MONTANA
Salmon
McCall
Challis
IDAHO
Island Park
Targhee Administrative Unit
Idaho Falls
Caribou-Targhee National Forest
Caribou Administrative Unit
Pocatello
Boise
OREGON
Jerome
Curlew National Grasslands
WYOMING
NEVADA
UTAH
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Levine, Melquist and Johnston, 2001
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MAP 8
Caribou National Forest
Historic, Potential, and Current
Peregrine Falcon Habitat

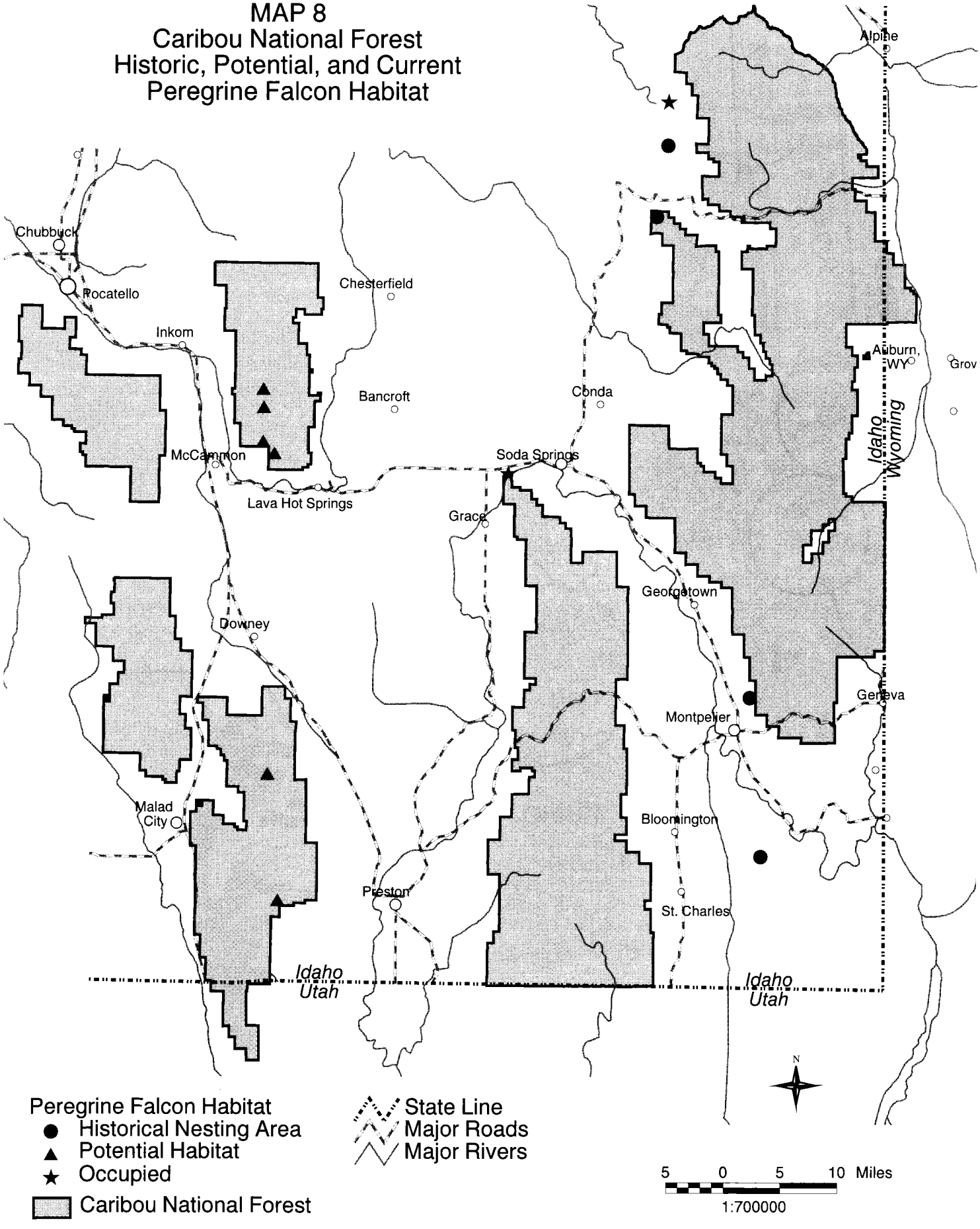


Table 66. Peregrine Falcon Occupied Territories in Idaho (Levine, *et al*, 2001).

Year	Number Occupied Territories	Year	Number Occupied Territories
1990	16	1996	19
1991	18	1997	21
1992	25	1998	30
1993	30	1999	22
1994	20	2000	36
1995	16		

The following table shows the number of new territories, and number of young fledged at five-year intervals from 1990 to 2000.

Table 67. Peregrine Falcon Productivity in Idaho.

	1990	1995	2000
New territories	6	1	2
Number of young fledged	16	16	36

Peregrine Falcon Occurrence on the Forest and Adjacent Lands

Historic peregrine nesting cliffs were found at Grays Range, Joe's Gap. Potential cliffs include Harkness Canyon, Robbers Roost, West Bob Smith and Big Canyon drainages in the Portneuf Range. Sightings have been reported along the south end of the Portneuf Range, Oxford Range, around Joe's Gap and the vicinity of Grays Lake NWR.

An evaluation of potential habitat was done in 1991. IDFG Region 5 (which includes the Caribou) was described as follows:

> "This area has limited potential nesting habitat but what is available appears excellent. Over 40 percent of all known historical nest sites in Idaho are within this region. Much of the habitat is on the Caribou and Sawtooth National Forests, BLM or private lands. The only release site within this region is at Gray's Lake, which was occupied by a pair during 1991. There are significant populations developing in Yellowstone to the northeast and in northern Utah, to the south. It is feasible that recruitment from these populations could pioneer unoccupied habitat in this region."

Areas on the Forest were surveyed in 1991 by IDFG and include Swan Lake/Oxford Ridge, Weston Canyon and Grays Ridge. No peregrines were observed at that time (Levine, *et al*, 1991). In 1992 surveys include Joe's Gap, Grays Ridge, and Weston Canyon. No peregrines were observed at that time. The Grays Lake tower, on the Wildlife Refuge, has been occupied almost yearly, except for 1999.

In 1996 a new nest site was found on the Forest, Grays Lake South (Grays Range). Nest was on a cliff and produced one young. In 1997 this site produced two young. In 1998 the site was unoccupied. In 1999, the site was occupied but produced no young. In 2000 one young was produced (Levine, *et al*, 2001).

In 1999 another nest site was found near the Forest close to Soda Springs on BLM lands. One young was produced but not successfully fledged (Levine et al, 1999). In 2000, three young were produced (Levine et al, 2001).

Historical, potential and currently occupied nesting cliffs are shown on Map 8.

Habitat Overview

Peregrine falcons occupy a wide range of habitats, typically found in open country near rivers, marshes, lakes and coasts. They capture prey by striking from above with their talons after a high-speed dive. Foraging habitat includes wetlands and riparian habitats, meadows and parklands, croplands such as hayfields and orchards, gorges and mountain valleys and lakes which support good populations of small to medium terrestrial birds, shorebirds and waterfowl.

Cliffs are preferred nesting sites, although reintroduced birds now regularly nest on man-made structures such as towers and high-rise buildings. Peregrines may travel more than eighteen miles from the nest site to hunt for food, however a ten-mile radius around the nest is an average hunting area, with 80 percent of foraging occurring within a mile of the nest.

Peregrine falcons do not breed until two years of age. Paired peregrine falcons arrive at their eyries around mid-March. Eggs re laid directly on the cliff substrate starting in early to mid-April. Clutches can range from one to six eggs, average of three to four. Both adults may incubate though the female performs most of this duty and the male performs most of the foraging. Fledging occurs from mid-June to mid-July, about forty-two days after hatching. Juvenile birds stay in the area several weeks after hatching. Little is known about post breeding habitat.

Overview of Effects

Much of the following information has been summarized from USFWS, 1994. Peregrine falcons numbers declined sharply in North America following WWII. Research implicated organochlorine pesticides, which caused eggshell thinning. Other contaminants may also affect peregrines, but appear to be relatively minor in comparison, and are not well documented. Use of DDT was restricted in Canada in 1970 and in the United States in 1972. Consequently, reproductive rates improved and numbers began to increase.

Other known negative factors, such as illegal shooting and collisions with wires, fences, cars, and buildings, are much less significant to the western birds, at the population level. On an individual, nest-site basis, human-caused disturbance or habitat alterations close to an active peregrine falcon nest can be a problem. Breeding season closure of rock-climbing cliffs in close proximity to nests has shown to prevent adverse effects. Powerlines may cause mortality; but rates appear to be low as many birds nest successfully near powerlines. Land use practices adjacent to nesting cliffs that do not result in extensive habitat changes or excessive disturbance sometimes appear to have little adverse effect on nesting success. Generally, the recent apparent increase in the number of pairs of peregrine falcons in the west provides evidence that significant adverse factors affecting the western subspecies are being alleviated or have been reduced.

Determination of Effects

The Plan includes a Guideline to survey for the presence of sensitive species in suitable habitats within a project area prior to or during project development. If nest sites are found, Forest Plan direction for peregrine falcons would be implemented.

The Forest Plan contains guidance to limit human activities and herbicide and pesticide use around peregrine falcon nests during the nesting period. Proposed management activities would do little if anything to affect nesting habitat, which consists typically of cliffs. Based on this Plan direction, there is a low risk to birds/young during the breeding season.

All alternatives could indirectly affect this species as a result in changes in habitat for small birds, which are prey for peregrines. Improved riparian conditions would improve habitat for birds and foraging conditions should improve.

Table 68. Ranking of Alternatives Based on Predicted Improvements in Riparian Habitats (1=best).

Foraging Habitat	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Improved riparian habitat	2	2	2	1	1	1	1	1

Due to the low number of peregrines currently using the Forest (one pair), the habitat changes and prey abundance changes would be insignificant and effects immeasurable. There is no risk associated with any of the proposed activities in any of the alternatives.

As discussed above, there are historical but currently unoccupied nesting cliffs, as well as other potentially suitable nesting cliffs on the Forest. As numbers of peregrines increase in Idaho, some of these cliffs may become occupied. The Caribou has the potential to contribute to further increases in peregrine falcon populations in southeastern Idaho.

Cumulative Effects

Much of the suitable foraging habitat for this species is found at lower elevations, over meadows, river bottoms and openings, where prey is available. Activities on or adjacent to cliff nesting sites have the greatest potential for disturbance, whether on public or private lands. Numbers of peregrines have risen to the point where they have been de-listed, and habitat (both nesting and foraging) is assumed to be adequate.

References cited for above section:

Levine, E., J.J. Johnston, E. Atkinson and M. Parker. 1991. Idaho Peregrine Falcon Survey, Nest Monitoring and Release Program – 1991. Idaho Department of Fish and Game, Boise, ID.

Levine, E., W. Melquist and J. Johnston. 1999. Idaho Peregrine Falcon Survey and Nest Monitoring, 1999 Annual Summary. IDFG, Boise, ID.

Levine, E., W. Melquist and J. Johnston. 2001. Idaho Peregrine Falcon Survey and Nest Monitoring, 2000 Annual Summary. IDFG, Boise, ID.

U.S. Fish and Wildlife Service. 1994. Addendum to the Pacific Coast and Rocky Mountain/Southwest American Peregrine Falcon Recovery Plans. Portland, OR. 40 pp.

BOREAL OWL

(The general habitat information is summarized from Hayward and Verner, 1994).

Habitat and Population Overview

This owl is a secondary cavity nester, relying on cavities that would be built by hairy woodpeckers, northern flickers and sapsuckers, in this part of its range. The distribution of this species is tied to the distribution of boreal forest, and at the southern end of their range, distribution of habitat is very patchy (See copy of Map 2 from Hayward and Verner). On the Caribou NF, they have mapped most of the Bannock Range, part of the southern end of the Bear River Range, and a small part of the Preuss Range as habitat.

A review of the literature suggests that preferred habitat for the boreal owl on the Caribou would be mature to old growth Douglas-fir, mixed conifer, spruce-fir and aspen forests. In Idaho, nesting occurs in mid-April to late May.

Mature forests are needed for nesting because the owls require large nesting cavities (three-inch diameter opening and twelve- to fifteen-inch diameter tree). Nesting habitat structure consists of forests with a relatively high density of large trees, open understory and multi-layered canopy.

Boreal owls prey primarily on small mammals. Red-backed voles make up the largest proportion of their diet. They are, however, opportunistic and also eat insects, birds, pocket gophers, and shrews. Boreal owls are closely associated with high elevation spruce-fir forests due to their dependence on this forest type for foraging year-round.

In the Intermountain Region, the boreal owl may occur as island populations (USFS, 1991). Hayward and Verner (1994) state that in the southern part of their distribution, breeding populations occur as islands of habitat linked through long-distance dispersal through areas without breeding habitat. This is shown on the map mentioned previously.

Population trend data is not available for this species. Before 1979, boreal owls were not thought to occur south of Canada (Hayward and Verner, 1994). By 1987, after beginning surveys, they were found in high elevation conifer forests south to New Mexico. Wisdom, *et al*, (2000) predict that population trends are declining due to changes in habitat across the Interior Columbia Basin. Boreal owls exhibit low density and low rates of population growth. Summer home ranges average about 2,900 acres, and winter home ranges average about 3,600 acres. The largest size nest stands recorded in the literature are thirty acres.

The boreal owl is considered to be a year-round resident on the Caribou NF. All of the Caribou NF is mapped as suitable habitat in Groves, *et al*, (1997) and Stephens and Sturts (1998) show all of southeast Idaho as suspected breeding habitat. Surveys have been done in a few areas of the forest. Boreal owls have been detected in McPherson Canyon 10/93 and Smoky Canyon 5/99. These observations are from the east side of the Forest, where forested cover is more continuous. The CDC reports four observation records from the vicinity of the Forest. See Map 9 for a map showing forested vegetation and known boreal owl locations.

Habitat Evaluation

ICB (Wisdom, *et al*, 2000) put boreal owls in Family 2, which are species using broad-elevation old forest. They use late-seral multi- and single layered stages of the montane community. Important habitat components include snags for nesting and downed logs for foraging for prey species. Late-seral source habitats used by the boreal owl may be negatively affected by increased fragmentation.

Conservation strategies for species in this group include (1) disturbance processes that create/maintain these habitats considered when determined where habitats are to be maintained. In Upper Snake and Snake Headwaters ERU's it may be necessary to identify mid-seral forests in lower montane communities that could be brought to late-seral condition; (2) maintain all large diameter (21 inches dbh) snags and trees, preferably in clumps, and provide opportunities for snag recruitment; (3) maintenance of old forest attributes, like coarse woody debris; (4) increase connectivity; (5) minimize or avoid road construction in late-seral forests; and (5) evaluate wildfire and prescribed fire policies (Wisdom, *et al*, 2000).

Comparison of Alternatives

Vegetation types are very patchy on the Caribou NF, with vegetation maps revealing a mosaic of small patches across the Forest. To get an overall picture of what patch sizes actually are, a patch size analysis was done. Six relatively undisturbed watersheds were selected across the Forest.

Table 69. Average Patch Size in Acres, by Habitat Type.

Watershed	Aspen	Doug-fir	Mixed conifer	Lodgepole pine
Preuss	35	26	20	20
Weston	18	43	na	na
Toponce	55	10	14	na
Rock/Pine	56	48	8	na
St. Charles	29	27	27	22
Horse	23	28	16	44

Even when lumping the vegetation into forested and non-forested vegetation, patch sizes were relatively small. Average patch sizes in forested vegetation were between 84 and 348 acres in these six drainages.

Based on this information, in combination with analysis of vegetation patterns as displayed on maps, it is apparent that the Forest has naturally small patch sizes and fragmentation as a result of timber harvest or burning is not expected to have measurable impacts on this species.

Over the short-term, conversion to early-aged stands will decrease habitat for this species. However, mature/old aged stands are found over a greater proportion of the Forest than what occurred historically. It is assumed that those treatments that move forest types toward PFC would be more beneficial to boreal owls over the long term.

Table 70. Percent Mature and Old at the End of Ten Years, by Alternative.

Alt	Forest Types Treated	Aspen % Mature and Old	Low-elevation, % Mature and Old	High-elevation, % Mature and Old
1	All	57%	89%	79%
2	Mixed conifer, aspen/Douglas-fir, aspen	56%	85%	76%
3	Douglas-fir, lodgepole pine and mixed conifer	56%	83%	74%
4	Mixed conifer, aspen/Douglas-fir and aspen	56%	83%	77%
5	Mixed conifer, aspen/Douglas-fir and aspen	55%	85%	79%
6	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	80%
7	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	79%
7R	Mixed conifer, aspen/Douglas-fir and aspen	49%	82%	81%

The risk assessment focused on higher-elevation mixed conifer forests, since generally mesic forest is considered primary habitat.

MAP 9
Caribou National Forest
Forested and Non-forested Vegetation
Boreal, Flammulated, and Great Gray Owl Observations

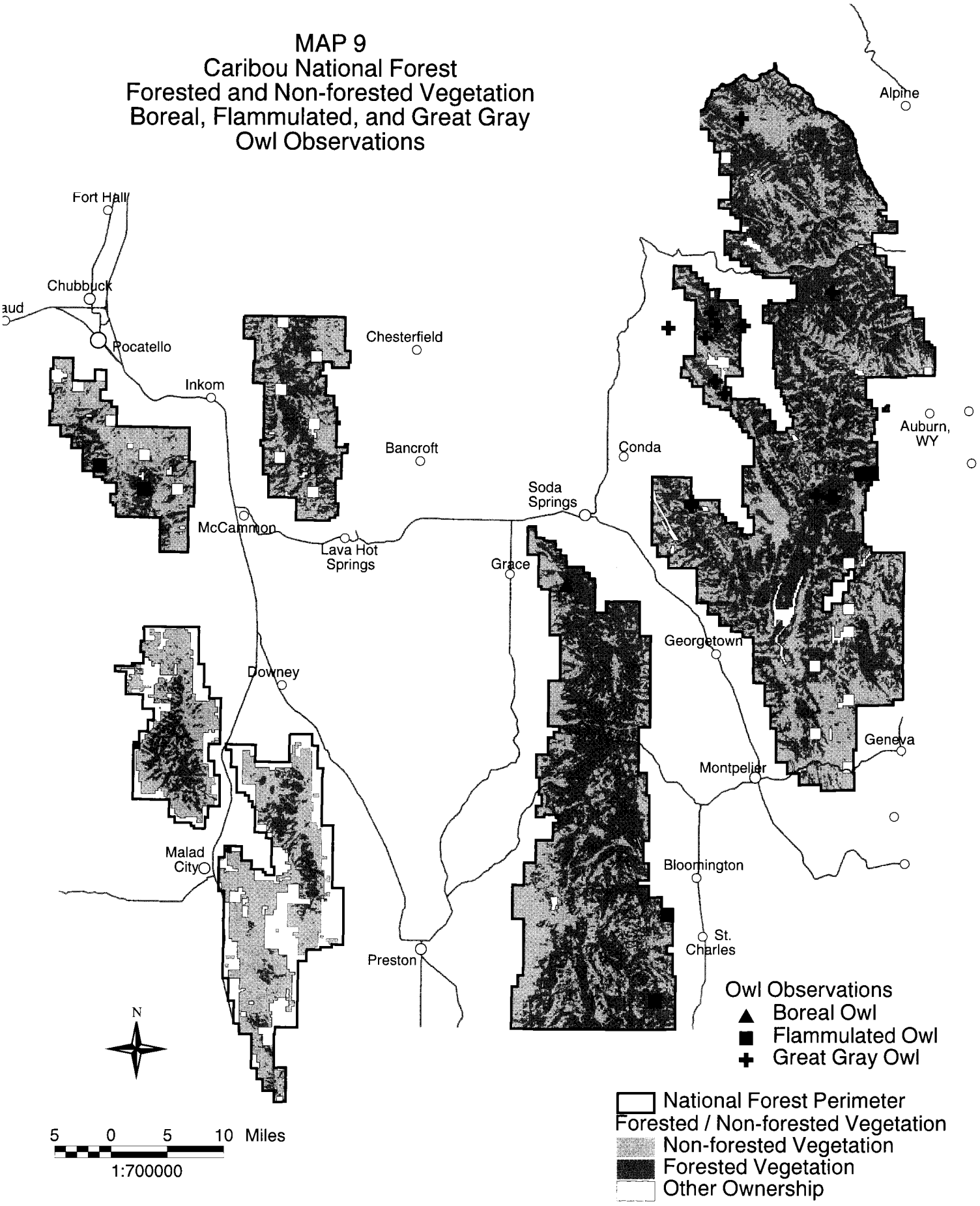


Table 71. Risk Assessment for Boreal Owls, by Alternative.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
PFC at 10 years*	Mod	Low	Low	Low	Mod	Mod	Mod	Mod
PFC at 100 years*	Low	Low	Low	Low	Mod	Mod	Low	Mod
Loss of snags, downed woody debris	Mod	Mod	Mod	Low	Low	Low	Low	Low
Fragmentation	Low	Low	Low	Low	Low	Low	Low	Low
Overall risk	**Mod**	**Low**	**Low**	**Low**	**Mod**	**Mod**	**Low**	**Mod**

* Emphasis on high-elevation mixed conifer as primary habitat

Determination of Effects

Snag and downed woody debris retention are both addressed through forest-wide standards and guidelines (see Process Paper). Implementation of this Forest Plan guidance addresses these components and should maintain foraging and nesting habitat where overstory conditions are suitable.

The Forest Plan also includes objectives and guidelines for boreal owls. These require pre-project surveys and retention of mature forest structure around known nests, if any are found.

Alternatives 2, 3, 4 and 7 provide the lowest risk for boreal owls, based on short-term and long-term habitat provided, as well as the predicted availability of snag nesting trees. The rest of the alternatives have a moderate risk. Alternative 7R proposes to treat about 8 percent of the forested vegetation over the next ten years. While the forested stands are further from PFC, the preponderance of mature and old stands will provide nesting and foraging habitat. Populations would stay the same or increase across the planning area, until such time as a stand-replacing fire, insect or disease outbreak or other natural disturbance changed stand structures.

The Caribou NF will continue to provide areas of suitable habitat across the Forest. These areas will contribute to the dispersal and distribution of the island populations found at the southern edge of their distribution, as discussed in Hayward and Verner (1994).

Cumulative Effects

Most of the habitat for this species is found at higher-elevations, in forested habitats, which are often public lands. Since the boreal owl is considered a regional sensitive species in Regions 1 and 4, every project is reviewed for effects. Actions affecting boreal owl habitats on the Forest have been analyzed in the direct and indirect effects.

References for the above section:

Hayward, G.D. and J. Verner, tech eds. 1994. Flammulated, boreal and great gray owls in the United States: A Technical Conservation Assessment. General Technical Report RM-253. Ft. Collons, CO. USDA, Forest Service, Rocky Mountain Forest and Range Experiment Station. 215 p.

Stephens, D.A. and S.H. Sturts. 1998. Idaho Bird Distribution. Idaho Museum of Natural History, Special Publication Number 13. Second edition.

US Forest Service. 1991. Threatened, Endangered and Sensitive Species of the Intermountain Region. Forest Service, Intermountain Region, Ogden, UT.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

FLAMMULATED OWL

(The general habitat information is summarized from Hayward and Verner, 1994).

Habitat and Population Overview

Flammulated owls are almost exclusively insectivorous, preying on small to medium sized moths, beetles, caterpillars and crickets. They also eat spiders, scorpions, and other arachnids (USFS, 1991). This species is thought to be migratory, but show high site-fidelity for nesting territories.

They can be found in mixed pine forests, from pine mixed with oak and pinyon at lower elevations to pine mixed with spruce and fir and higher elevations. They have also been found in aspen and second growth ponderosa pine. However, they prefer mature ponderosa pine/Douglas-fir forests and mixed conifer forests with open canopies. A distribution map (Map 1 in Hayward and Verner) shows a distribution across most of the mountainous areas of the western US. This map shows most of the Caribou NF as suitable, based on vegetation. A review of the literature suggests that preferred breeding habitat on the Caribou NF would be mature to old growth Douglas-fir, although other species may be used.

This owl is a secondary cavity nester, relying on nest cavities that would be built my hairy woodpeckers, northern flickers and sapsuckers in this part of its range. Dead trees with cavities having nest holes with a 2.7-inch entrance hole diameter are important nest site characteristics. They avoid foraging in young dense stands where hunting is difficult.

Population trend data is not available for this species. Wisdom, *et al*, (2000) predict that population trends are declining due to changes in habitat across the Interior Columbia Basin. The entire home range for a flammulated owl pair is about 30 acres (One study in Colorado found the home range to be 14 ha). Surveys in Idaho have reported densities up to 1.25 males/40 ha.

Flammulated owls are known to be present in the summer on the Caribou NF and are expected to migrate south for the winter. They have been documented at Clark Mine on Worm Creek (nest in dead aspen) 7/93, Left Fork Fish Haven Canyon 8/92 (dead in water trough), Smoky Canyon 5/99, head of East Fork Mink Creek 7/89, Porcelain pot Gulch (Bannock Range) 7/89. See Map 9 for forested vegetation and known flammulated owl occurrences.

Habitat Evaluation

ICB (Wisdom, *et a*l, 2000) put flammulated owls in Family 2, which are species using broad-elevation old forest. They use late-seral multi- and single layered stages of the montane community. Important habitat components include snags for nesting and downed logs for foraging for prey species.

Conservation strategies for species in this group include (1) disturbance processes that create/maintain these habitats considered when determined where habitats are to be maintained. In Upper Snake and Snake Headwaters ERUs it may be necessary to identify mid-seral forests in lower montane communities that could be brought to late-seral condition; (2) maintain all large diameter (21 inches dbh) snags and trees, preferably in clumps, and provide opportunities for snag recruitment; (3) maintenance of old forest attributes, like coarse woody debris; (4) increase connectivity; (5) minimize or avoid road construction in late-seral forests; and (5) evaluate wildfire and prescribed fire policies (Wisdom, *et al*, 2000).

Comparison of Alternatives

It is assumed that those treatments that move forest vegetation types toward PFC would be more beneficial to flammulated owls over the long-term. This includes both the effects of regeneration and intermediate harvests. Stand conditions after intermediate treatments may be similar to those effects from historic fire patterns (mature/old overstory, fairly open spacing, with a grass/forb/shrub understory).

Table 72. Percent Mature and Old at the end of Ten Years, by Alternative.

Alt	Forest Types Treated	Aspen % Mature and Old	Low-elevation, % Mature and Old	High-elevation, % Mature and Old
1	All	57%	85%	79%
2	Mixed conifer, aspen/Douglas-fir, aspen	56%	85%	76%
3	Douglas-fir, lodgepole pine and mixed conifer	56%	83%	74%
4	Mixed conifer, aspen/Douglas-fir and aspen	56%	83%	77%
5	Mixed conifer, aspen/Douglas-fir and aspen	55%	85%	79%
6	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	80%
7	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	79%
7R	Mixed conifer, aspen/Douglas-fir and aspen	49%	82%	81%

The risk assessment focused on aspen and lower-elevation mixed conifer forests, since generally lower-elevation forest is considered primary habitat.

Table 73. Risk Assessment for Flammulated Owls, by Alternative.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
PFC at 10 years*	Mod	Mod	Low	Low	Mod	Mod	Mod	Low
PFC at 100 years*	Low	Low	Low	Low	Mod	Mod	Low	Low
Loss of snags, downed woody debris	Mod	Mod	Mod	Low	Low	Low	Low	Low
Overall risk	**Mod**	**Mod**	**Mod**	**Low**	**Low**	**Mod**	**Low**	**Low**

* Emphasis on aspen and low-elevation mixed conifer as primary habitat.

Determination of Effects

The Forest Plan contains objectives and guidelines that apply to the flammulated owl. These include pre-project surveys, and restrictions on timber or firewood harvest within a thirty-acre area around known nests. Snag and downed woody debris retention are both addressed through forest-wide standards and guidelines (See Process Paper). Implementation of this Forest Plan guidance addresses these components and should maintain foraging and nesting habitat where overstory conditions are suitable.

Alternatives 4, 5, 7 and 7R provide the least risk to flammulated owls and their habitat. Alternative 7R proposes to treat about 8 percent of the forested vegetation over the next ten years, with an emphasis on regenerating aspen. While total nesting habitat may decrease, over the short-term with vegetation treatments, the quality of some stands may be improved (intermediate harvest and non-lethal fire). Over the long-term, habitats closer to PFC would be most suitable. Habitat and populations would be expected to be maintained or increase across the planning area. The Caribou NF will continue to contribute to the conservation of this species by providing suitable nesting habitat in southeastern Idaho, but this is a very small part of the total breeding habitat (See map).

Cumulative Effects

Some of the habitat for flammulated owls is found at lower-elevations, and more suitable habitat is found on privately owned lands. Much of these stands have been impacted by logging, fire-exclusion, and conversion to other uses. Fire-exclusion may be having the major impact. As fire is excluded, understory vegetation and fuels build up so that when fires do occur, they often are stand-replacing rather than underburns. The increase in understory vegetation also limits suitability for foraging.

References for the above section:

Hayward, G.D. and J. Verner, tech eds. 1994. Flammulated, boreal and great gray owls in the United States: A Technical Conservation Assessment. General Technical Report RM-253. Ft. Collins, CO. USDA, Forest Service, Rocky Mountain Forest and Range Experiment Station. 215 p.

US Forest Service. 1991. Threatened, Endangered and Sensitive Species of the Intermountain Region. Forest Service, Intermountain Region, Ogden, UT.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

GREAT GRAY OWL

(The general habitat information is summarized from Hayward and Verner, 1994).

Habitat and Population Overview

Great gray owls prey primarily on voles and pocket gophers throughout the year. They use mixed coniferous and hardwood forests usually bordering small openings or meadows. They forage along edges of clearings. Semi-open areas, where small rodents are abundant, near dense coniferous forests, for roosting and nesting, are optimum for great grays. In Idaho, owls nesting near clearcuts were found to have greater proportions of pocket gophers in their diet. They hunt from a perch and capture food on the ground.

In the Intermountain Region, great grays occur primarily in the lodgepole pine/ Douglas-fir/aspen zone and in ponderosa pine. They do not build nests, but use existing platforms such as old stick nests built by northern goshawks or red-tailed hawks. They may also nest on platforms formed by dwarf mistletoe brooms, on the flat top of a broken–off tree, or on artificial platforms. In Idaho, they are found at lower elevations and agricultural areas in winter, coniferous forest is summer, most commonly near meadows or openings.

Population trend data is not available for this species. Wisdom, *et al*, (2000) predict that population trends are stable based on available habitat across the Interior Columbia Basin. The largest home range recorded for great gray owls is about 1,600 acres. Nest sites average 156 yards from the nearest opening. In an Idaho study, home range per pair was 2.6 sq. km. Predation by great horned owls was the greatest mortality factor in several studies.

The great gray owl is a year-round resident on the Caribou. They have been documented across the Forest, in the Bannock, Webster, Bear River, and Grays Ranges. See Map 9 for forested vegetation and known great gray owl locations.

Habitat Evaluation

ICB (Wisdom, *et al*, 2000) put great gray owls in Family 2, which are species using broad-elevation old forest. They use late-seral multi- and single layered stages of the montane community. Important habitat components include snags for nesting and downed logs for foraging for prey species. Juxtaposition of early and late-seral stages is needed to meet all aspects of life functions for the great gray owl, which is identified as a "contrast species."

Conservation strategies for species in this group include (1) disturbance processes that create/maintain these habitats considered when determined where habitats are to be maintained. In Upper Snake and Snake Headwaters ERU's it may be necessary to identify mid-seral forests in lower montane communities that could be brought to late-seral condition; (2) maintain all large diameter (21 inches dbh) snags and trees, preferably in clumps, and provide opportunities for snag recruitment; (3) maintenance of old forest attributes, like coarse woody debris; (4) increase connectivity; (5) minimize or avoid road construction in late-seral forests; and (5) evaluate wildfire and prescribed fire policies (Wisdom, *et al*, 2000).

Determination of Effects

The Revised Forest Plan contains objectives and guidelines that apply to the great gray owl. These include pre-project surveys, and maintenance of mature/old forest around known nests. Snag and downed woody debris retention are both addressed through forest-wide standards and guidelines (see Process Paper). Implementation of this Forest Plan guidance addresses these components and should maintain nesting habitat where overstory conditions are suitable.

It is assumed that those treatments that move forest types toward PFC would be more beneficial to great gray owl over the long term. This includes both the effects of regeneration and intermediate harvests. Stand conditions after intermediate treatments may be similar to those effects from historic fire patterns (mature/old overstory, fairly open spacing, with a grass/forb/shrub understory). Great gray owls forage in more open areas, and treatments may benefit this species by improving foraging habitat.

Table 74. Percent Mature and Old at the end of Ten Years, by Alternative.

Alt	Forest Types Treated	Aspen % Mature & Old	Low-elevation % Mature and Old	High-elevation % Mature and Old
1	All	57%	85%	79%
2	Mixed conifer, aspen/Douglas-fir, aspen	56%	85%	76%
3	Douglas-fir, lodgepole pine and mixed conifer	56%	83%	74%
4	Mixed conifer, aspen/Douglas-fir and aspen	56%	83%	77%
5	Mixed conifer, aspen/Douglas-fir and aspen	55%	85%	79%
6	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	80%
7	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	79%
7R	Mixed conifer, aspen/Douglas-fir and aspen	49%	82%	81%

The risk assessment focused on all forest types, since the great gray owl uses all types.

Table 75. Risk Assessment for Great Gray Owl, by Alternative.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
PFC at 10 years*	Mod	Mod	Low	Low	Mod	Mod	Mod	Low
PFC at 100 years*	Low	Low	Low	Low	Mod	Mod	Low	Low
Loss of snags, downed woody debris	Mod	Mod	Mod	Low	Low	Low	Low	Low
Overall risk	**Low to Moderate**	**Low to Moderate**	**Low to Moderate**	**Low**	**Low to Moderate**	**Low to Moderate**	**Low to Moderate**	**Low**

* Emphasis on all types (aspen and conifer) as primary habitat.

** These alternatives ranked low to moderate. While ranking leads more to a moderate rank, this species often uses goshawk nests for nesting and all alternatives are rated low risk for goshawks, based on wide variety of types used, and Forest Plan S&G.

Alternatives 4 and 7R have the lowest overall risk to great gray owls, based largely on vegetation treatments. Alternative 7R proposes to treat about 8 percent of the forested vegetation over the next ten years. Other alternatives have a slightly higher risk over the long-term, as the potential for stand-replacing fires increases as the percent mature/old increases. All alternatives should maintain habitat and distribution of this species across the planning area. The Caribou NF will continue to contribute to the conservation of this species by providing suitable habitat in southeastern Idaho.

Cumulative Effects

A part of the habitat for great gray owls is found at lower-elevations, especially in the winter. Actions affecting habitat for the species are the same, but there are a few more risks at lower elevations. They forage in open areas because they need more room to maneuver. This species has been noted to forage around meadows, fields and highways and collisions with vehicles has been noted as a concern (Joslin and Youmans, 1999). None of the alternatives would increase risk to birds wintering at lower elevations.

References for the above section:

Hayward, G.D. and J. Verner, tech eds. 1994. Flammulated, boreal and great gray owls in the United States: A Technical Conservation Assessment. General Technical Report RM-253. Ft. Collins, CO. USDA, Forest Service, Rocky Mountain Forest and Range Experiment Station. 215 p.

US Forest Service. 1991. Threatened, Endangered and Sensitive Species of the Intermountain Region. Forest Service, Intermountain Region, Ogden, UT.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

Habitat and Population Overview

A conservation assessment of trumpeter swans was completed in 1995 (Shea, 1995). Much of the following information is summarized from this document.

Trumpeter swans occurring in the Greater Yellowstone Ecosystem are members of the Rocky Mountain population. Trumpeter swan nesting habitat consists of marshes, lakes, beaver ponds and oxbows and backwaters of rivers. They prefer quiet, shallow water with dense aquatic plant and invertebrate growth. Tall emergent vegetation is essential for cover for both adults and broods. In winter, trumpeter swans require ice-free rivers with available aquatic vegetation.

Trumpeter swans form pair bonds in their second or third year, but do not nest until four or five years of age. Pairs usually stay together year-round and mate for life. Nests are built in dense mounds of aquatic vegetation in late April or early May. Clutches contain two to seven eggs and hatch in June. Cygnets fledge at fourteen to seventeen weeks; family bonds are strong and the subadult siblings may stay together up to their third year, rejoining their parents after the nesting period.

From 1988 to 1992 trumpeter swans were translocated from areas to the north, into areas adjacent to the Caribou NF (Bear River, Fort Hall and Grays Lake). However, there are no reported observations of swans on the Forest.

Habitat Evaluation

Table 76. Comparison of Alternatives for Trumpeter Swans.

Trumpeter Swans	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Riparian Ranking	7	5	6	3	1	1	3	3

Determinations of Effects

The Forest Plan includes standards and guidelines for maintenance of potential habitats like Elk Valley Marsh. This direction is found in 2.5 (Wild and Scenic Eligible Recreation River) and 2.8.3 (Aquatic Influence Zone) prescriptions.

Alternatives 4-7R all move riparian and non-riverine wetlands toward proper functioning condition at a faster rate than alternatives 1-3 (See Hydrology Effects section). As a result, potential habitat across the Forest is expected to improve in the Planning period under Alternatives 4-7R. Alternatives 1-3 may maintain habitats in current conditions.

Table 77. Risk Assessment Based on Riparian Conditions.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Movement out of PFC	Low	Low	Low	Low	Low	Low	Low	Low

All alternatives have a low risk for this species, as they have not been documented on the Forest. While Alternatives 4-7 and 7R improve riparian habitats at a faster rate, the probability of use by trumpeter swans is very low under every alternative. The Caribou NF has little potential to contribute towards the conservation of this species.

Cumulative Effects

Most of the primary habitat for this species lies at lower elevations off the Forest. This species has a high public profile, is easily observed, and of high interest. Many of the most suitable habitats are in public ownership (state and federal wildlife refuges). Management at these sites favors this species, and other waterfowl, as described in the Caribou NF Adjacency Analysis (Rine, 2001). These areas include Grays Lake National Wildlife Refuge, Bear Lake National Wildlife Refuge, and Oxford Slough Waterfowl Production Area.

References for the above section:

Rine, B.B. 2001. Caribou-Targhee National Forest – Caribou Adjacency Analysis. USFS, Caribou-Targhee National Forest, Supervisors Office, Idaho Falls, ID.

Shea, R.E. 1995. Conservation Assessment for the Rocky Mountain Population of Trumpeter Swans. 1995. USDA, Forest Service, Northern and Intermountain Regions.

HARLEQUIN DUCK

(Most of the following information was taken from Clark, *et al*, 1989)

Habitat and Population Overview

Harlequin ducks winter along both the Atlantic and Pacific coasts of the US. On the Pacific coast, they are found from the Aleutians south to central California. This western population is stable at 2-300,000 (Waterfowl, 2000). They are a small duck, with very distinctive markings. Breeding pairs form on the wintering areas and they arrive on their breeding grounds by late April and show fidelity to their nesting areas. They have been documented to nest in parts of Idaho, western Montana and northwest Wyoming.

Recent harlequin duck monitoring in northern Idaho estimated the minimum population of forty-four pairs, while in 1995 the estimate was of forty-two pairs, which is not significantly different (www2.state.id.us/fishgame/info/nongame).

Specific habitat requirements include streams with gradients of less than three degrees, greater than fifty percent streamside shrub cover and less than three loafing sites (mid-stream boulders, log jams) every thirty-three feet of stream. Harlequins will use turbulent stream sections for security and feeding activities. Harlequins feed on benthic aquatic insects, crustaceans, mollusks and fish. Females lay eggs in nests located on riverbanks or islands of mountain streams, usually under low, dense shrubs. Incubation lasts about thirty days with hatching in mid-June through late-July. The young fledge in six weeks.

Studies have repeatedly shown that harlequin ducks are very sensitive to disturbance in breeding territories. Adjacent roads, trails, fishermen, and rafting have all been shown to have effects (Joslin and Youmans, 1999).

Habitat Evaluation

Harlequins have been documented in the Palisades area to the north. In the Palisades area of the Targhee they are known to breed on several drainages on the east side of Palisades Reservoir. There is one reported sighting on McCoy Creek from 5/13/89 near the boundary between the Caribou and Targhee National Forests (Cassirer and Groves, 1990). CDC feels that it would be highly unlikely for harlequins to be found on the Caribou (C. Harris, Principal Wildlife Research Biologist for CDC, pers. comm.).

Determination of Effects

The only area that has been identified as potentially providing habitat for harlequin ducks is McCoy Creek, immediately south of Palisades. One observation has been reported on the boundary between the Caribou and Targhee National Forests, but there has been no evidence of breeding. McCoy Creek Road follows McCoy Creek fairly closely, but there are a few sections that may be suitable due to security provided by distance from the road, heavy vegetative cover, or topographic cover. The Plan includes an objective to complete surveys of McCoy Creek within two years to determine use. The Plan also includes a guideline to avoid any new developments within 300 feet of any stream with breeding activity and to do pre-project surveys for sensitive species.

Because of the types of riparian habitats they use, potential habitat is generally not affected by livestock grazing. The low gradient streams that they use, are generally rocky with abundant, shrubby streamside vegetation, both of which make the areas inaccessible to livestock. With incorporation of Forest Plan guidance outlined above, none of the alternatives will affect habitat suitability.
Because of the low potential for harlequins to be present, and the presence of Forest Plan guidelines, implementation of any of the alternatives would have a low risk to this species. The Caribou has little potential to contribute toward conservation of this species.

Cumulative Effects

Past actions (road and trail locations) may have reduced suitability of many streams in the west. Because of the nature of the breeding habitats used, these stretches have often been developed historically (roads and trails). However, there is no historical data to base any conclusions on. These habitats may only get more developed in the future, and suitable habitat on public lands may be of increased importance.

References for the above section:

Cassirer, E.F. and C.R. Groves. 1990. A Summary of Harlequin Duck Sightings in Idaho, 1989. Idaho Department Fish and Game, Natural Heritage Section, Nongame and Endangered Wildlife Bureau, Boise, ID.

Clark, T.W., A.H. Harvey, R.D. Dorn, D.L. Genter, and C. Groves, eds. 1989. Rare, sensitive and threatened species of the Greater Yellowstone Ecosystem. Northern Rockies Conservation Cooperative, Montana Natural Heritage Program, The Nature Conservancy, and Mountain West Environmental Services. P. 82-83.

Groves, C.R., B. Butterfield, A. Lippincott, B. Csuti and J.M. Scott. 1997. Atlas of Idaho's Wildlife; Integrating Gap Analysis and Natural Heritage Information. Cooperative Project of Idaho Conservation Data Center, Nature Conservancy, University of Idaho and US Geological Survey. Boise, ID.

Joslin, G. and H. Youmans, coord. 1999. Effects of Recreation on Rocky Mountain Wildlife: A Review for the Montana Committee on Effects of Recreation on Wildlife, Montana Chapter of the Wildlife Society. 307 p.

Stephens, D.A. and S.H. Sturts. 1998. Idaho Bird Distribution. Idaho Museum of Natural History, Special Publication Number 13. Second edition.

Most of the following information is summarized from Clark, *et al*, (1989) and Groves, *et al*, (1997).

Habitat and Population Overview

Three-toed woodpeckers are found in northern coniferous and mixed forest types up to 9,000 feet. Their distribution is roughly the same as the distribution of spruce. They use forests of spruce, ponderosa pine, and lodgepole pine. Nests are found in spruce, pine and aspen trees, where they excavate cavities in standing trees or snags. Nests are also found in willow riparian, in high elevation aspen groves, in swamps and burned over coniferous forest.

Both live and dead trees are used for foraging substrate. They forage by scaling, which involves prying off layers of bark by probe-tapping to get at insects beneath the bark. About 75 percent of their diet is wood-boring insect larvae, mostly beetles, but they also eat moth larvae, spiders, berries and cambium. They are major predators of the spruce bark beetle, especially during epidemics.

In the northeastern United States, seventy-four acre territories are documented. In Oregon, home range size varied from 52–300 ha, depending on the quality of habitat. Three-toed woodpeckers remain on their territories year-round.

Population trend data is not available for this species. Wisdom, *et al*, (2000) predict that population trends are increasing due to changes in habitat across the Interior Columbia Basin.

Three-toed woodpeckers have been documented in the Grays Range (Gravel Creek Campground) and Webster Range (Manning Creek, 1996). Groves, *et al*, (1997) shows the Bear River range as potential habitat. Map 10 shows the distribution of forested vegetation and known sighting of this species across the Caribou NF.

Habitat Evaluation

ICB (Wisdom, *et al*, 2000) put three-toed woodpeckers in Family 2, which are species using broad-elevation old forest. They use late-seral multi- and single layered stages of the montane community. Important habitat components include snags for nesting and foraging and downed logs for foraging for prey species. Stand-replacing, large burns and other beetle-infested stands provide high concentrations of prey (wood-boring beetles and larvae). Hutto and Young (1999) found that three-toed woodpeckers were most often detected in post-fire habitats as well as spruce/fir stands, and concluded that post-fire habitats were important for this species.

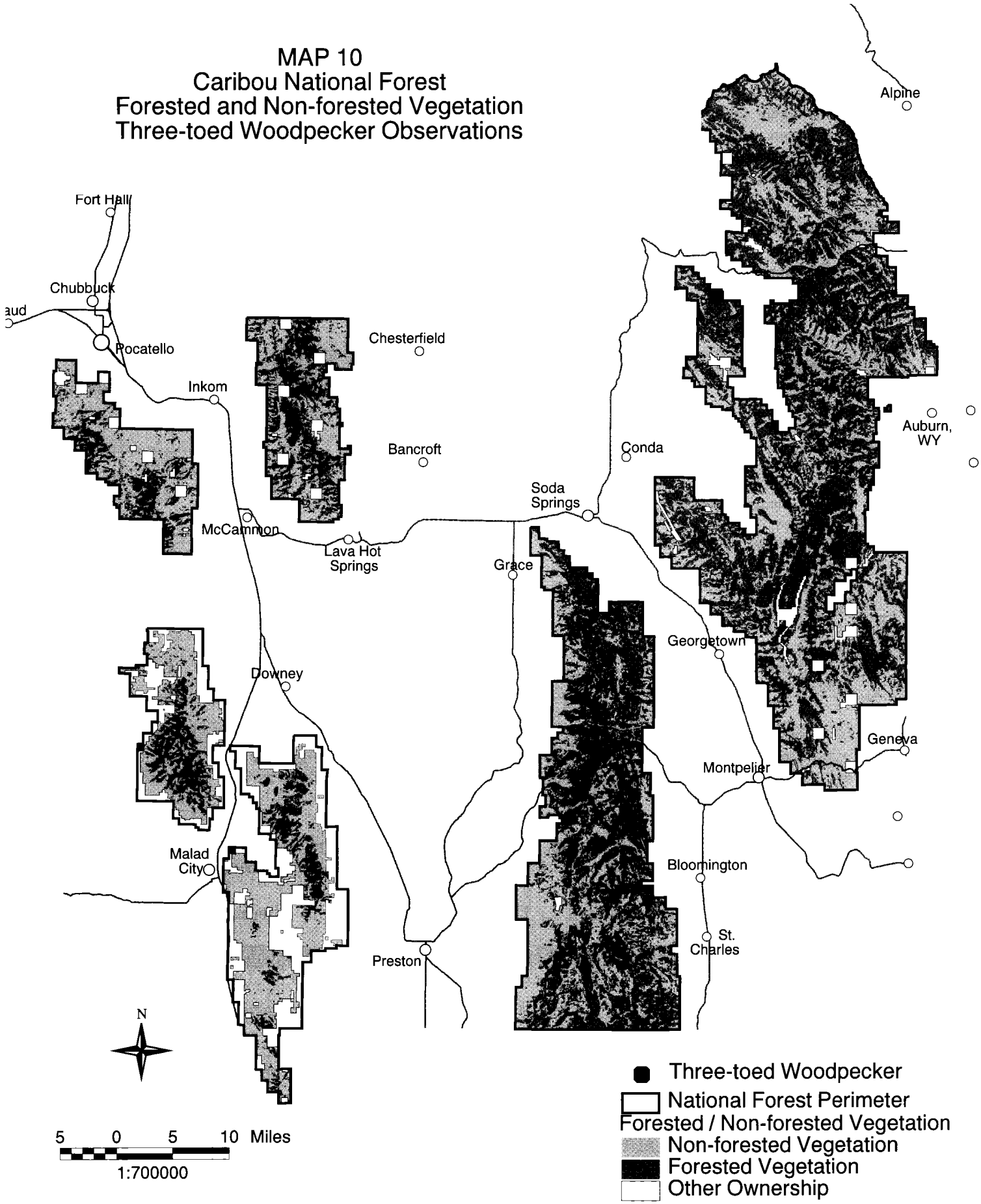
Conservation strategies for this species include stand-replacing fires as a disturbance process. Stand-replacing wildfires are of particular benefit to three-toed woodpeckers (Wisdom, *et al*, 2000).

Determination of Effects

Snag and downed woody debris retention are both addressed through forest-wide standards and guidelines (See Process Paper). Implementation of Forest Plan guidance addresses these components and should maintain foraging and nesting habitat where overstory conditions are suitable.

Because they require snags for feeding, perching, nesting and roosting, they are threatened by loss of standing dead trees, through timber harvest or firewood gathering. Fire suppression has also decreased the availability of standing dead trees. Post-fire logging may be in conflict with the needs of the species (Hutto and Young, 1999).

MAP 10
Caribou National Forest
Forested and Non-forested Vegetation
Three-toed Woodpecker Observations



Currently, pine beetle populations are at endemic levels across the Forest. In the early to mid-1980s there were epidemic levels of mountain pine beetle; in the early to mid-1990s there were localized epidemics of Douglas-fir beetle and in the mid-1990s SAF complex (complex of borers, drought and disease) was present at higher levels. Past timber harvest has generally focused on these areas, but only about 20-30 percent of the harvest has been of dead or dying trees (B. Padian, Forester, pers. comm.). Stands on the Caribou NF are now rated as being at high risk for insect epidemics, due to the stand ages.

It is assumed that those treatments that move forest types toward PFC would be more beneficial to three-toed woodpeckers over the long term. However, the current situation of high risk to insect epidemics benefits this species over the short-term, as they can take advantage of concentrated foraging habitats.

Table 78. Percent Mature and Old at the End of Ten Years, by Alternative.

Alt	Forest Types Treated	Aspen % Mature and Old	Low-elevation % Mature and Old	High-elevation % Mature and Old
1	All	57%	85%	79%
2	Mixed conifer, aspen/Douglas-fir, aspen	56%	85%	76%
3	Douglas-fir, lodgepole pine and mixed conifer	56%	83%	74%
4	Mixed conifer, aspen/Douglas-fir and aspen	56%	83%	77%
5	Mixed conifer, aspen/Douglas-fir and aspen	55%	85%	79%
6	Mixed conifer, aspen/Douglas-fir and aspen	56%	895	80%
7	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	79%
7R	Mixed conifer, aspen/Douglas-fir and aspen	49%	82%	81%

There is no Forest-wide direction for firewood harvest. Districts identify areas (may be exclusive or broad areas), and a map is compiled and distributed with firewood permits. Generally there are few restrictions on wood gathered. In areas open to off-route travel, snags are more vulnerable to harvest, while areas within 300 feet of open roads are available in restricted travel areas.

Salvage harvest is allowed on over 90 percent of the Forest as outlined in the Plan Prescription direction. There is direction in the Plan to do pre-project surveys for sensitive species prior to development.

Table 79. Risk Assessment for Three-toed Woodpeckers, by Alternative.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Vegetation in relation to PFC*	Low	Low	Low	Low	Mod	Mod	Low	Mod
% Forest open to off-route travel, snag retention	Mod	Mod	Mod	Low	Low	Low	Low	Low
Retention of fire, insect, disease standing dead	Mod	Mod	Mod	Low	Low	Low	Low	Low
Overall risk	**Mod**	**Mod**	**Mod**	**Low**	**Low**	**Low**	**Low**	**Low**

* Based on high-elevation mixed conifer

Alternatives 4 –7 and 7R are low risk to three-toed woodpeckers over the long-term. Over the short-term all alternatives would improve habitat and abundance of this species across the planning area. Natural events, such as wildfire and insect and disease would provide a three to five year increase in foraging habitat when beetles and other insects move into dead or stressed trees. Salvage harvest could decrease the amount of foraging habitat, depending on insect populations at time of harvest. In the last planning period, only about 20-30 percent of the harvest has been of dead or dying trees. Loss of foraging habitat for this species due to salvage harvest is expected to be minimal.

Current stand ages favor endemic levels of insects across large areas. As a result, foraging habitat is spread over larger areas. In the future, epidemic levels of insects and stand-replacing fires will provide concentrated foraging habitats. The Caribou NF is expected to contribute towards the conservation of this species, based on this and incorporation of Plan direction.

Cumulative Effects

Past timber harvest on the Caribou NF has generally focused on these areas, but only about 20-30 percent of the harvest has been of dead or dying trees (B. Padian, Forester, pers. comm.). BLM and adjacent Forests have been harvesting areas of dead trees. BLM is currently working on a plan to remove Douglas-fir killed trees in the Samaria/Pleasantville Mountains (to the east of the Caribou NF). The Wasatch-Cache NF has plans to treat areas of spruce-beetle killed trees on the Bear River Range (Rine, 2001).

While concentrated areas of beetle-infestations vary in space and time, current stand ages favor endemic levels of insects across large areas. As a result, foraging habitat is spread over larger areas. In the future, epidemic levels of insects and stand-replacing fires will provide concentrated foraging habitats.

References for the above section:

Clark, T.W., A.H. Harvey, R.D. Dorn, D.L. Genter, and C. Groves, eds. 1989. Rare, sensitive and threatened species of the Greater Yellowstone Ecosystem. Northern Rockies Conservation Cooperative, Montana Natural Heritage Program, The Nature Conservancy, and Mountain West Environmental Services. P. 82-83.

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Hutto, R.L. and J.S. Young. 1999. Habitat Relationships of Landbirds in the Northern Region, USDA Forest Service. General Technical Report RMRS-GTR-32.USDA Forest Service, Rocky Mountain Research Station. 72 p.

Rine, B. 2001. Caribou Adjacency Analysis. Prepared for the Caribou National Forest. March 2001.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

Habitat and Population Overview

Over the last decade concern has increased regarding sharp-tailed grouse populations in Idaho, the western United States, and southern Canada. They have undergone significant range-wide declines; the species now occupies less than 10 percent of its former range. The loss and/or degradation of native grassland and shrubsteppe habitats from agricultural expansion, fire, invasion of non-native annual vegetation and overgrazing by livestock are cited as contributing to this decline (Ulliman, 1989).

Idaho has the best remaining populations, with 75 percent of the remaining birds (Paige and Ritter, 1999). Populations in Idaho are currently increasing, in part due to the Conservation Reserve Program (CRP). In southeastern Idaho, the largest concentrations of sharp-tailed grouse are in Fremont, Bonneville and Oneida counties (Ulliman, 1995). Birds from the area around the Curlew National Grasslands have been used to transplant into other areas of Idaho and out-of-state.

Sharp-tailed grouse are habitat generalists and can adapt to many different habitats (Apa, 1998). Summer and brood-rearing habitat generally consists of shrub-steppe vegetation with 20-40 percent shrub cover interspersed with a high diversity of forbs and bunchgrasses, generally comprised of 60-80 percent grass/forbs cover. Summer habitat use generally consists of grasslands or habitat edges during the morning hours, moving to shrub cover during mid-day, then move back to more open vegetation types towards the evening (Ulliman, 1995).

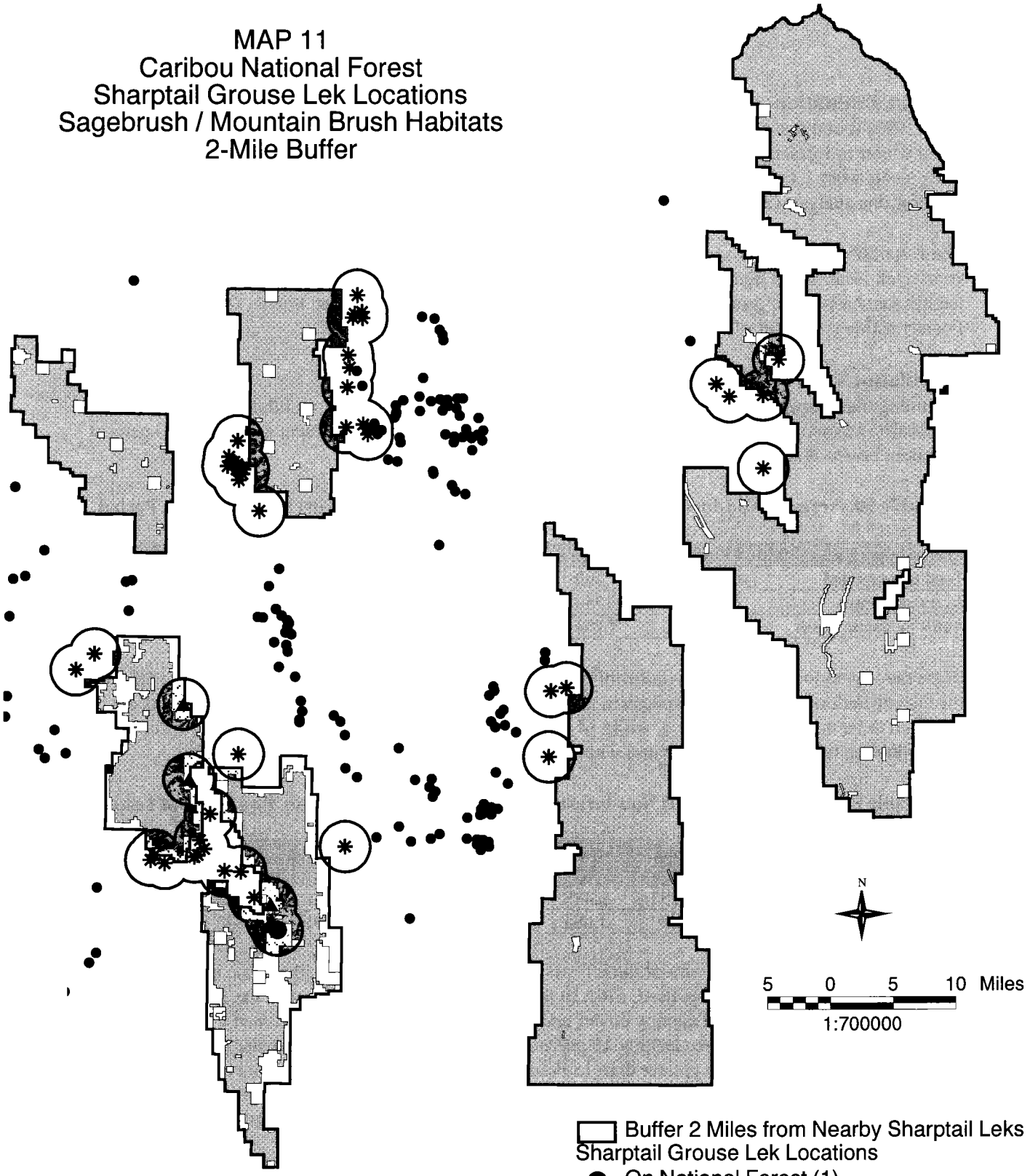
During winter, sharp-tailed grouse exhibit a close association with deciduous trees and mountain shrubs in upland and riparian areas, because they provide the only adequate food source and shelter from weather and predators. Severity of the winter influences habitats used. Unless forced by heavy snows, birds do not move out of summer/fall habitat (Ulliman, 1993).

Sharp-tailed grouse favor lek (traditional breeding grounds) locations having low, mottled or sparse vegetation with good visibility. Leks tend to be used year after year and are focal points in population surveys and monitoring. In the fall a hunting season for sharp-tailed grouse occurs in southeast and eastern Idaho. Apa (1998) found that females moved about 1,400 meters (or about one mile) from lek of capture to nest location.

The sharp-tailed grouse was petitioned for listing under the Endangered Species Act, in 1995. In October 2000, the U.S. Fish and Wildlife Service found that they were not warranted for listing. Their review showed that while smaller, isolated populations may currently be at risk, there are numerous larger populations that are relatively secure and possibly increasing.

Survey data for lek attendance on leks adjacent to the Caribou NF is very patchy. For example, in 1986, two leks were surveyed; in 1992 there were seventeen leks surveyed; and in 1998 there were seven leks monitored. There are or have been forty-nine leks known within two miles of the Forest, but none has long-term data. Because of the lack of data, it is not known how many of these are currently active. Because of the very limited data, no attempt will be made to talk about population trends in the vicinity of the Caribou NF. However, as mentioned previously, populations in southeastern Idaho are being used to transplant into other areas of Idaho and other states.

MAP 11
Caribou National Forest
Sharptail Grouse Lek Locations
Sagebrush / Mountain Brush Habitats
2-Mile Buffer



Vegetative Types for Sharptail Grouse Habitat
- Sagebrush/MtnBrush Habitats on Natl Forest
- Sagebrush/MtnBrush Habitats on Other Ownership
- National Forest Perimeter

Ownership
- Caribou National Forest
- Private or State Inholdings

- Buffer 2 Miles from Nearby Sharptail Leks

Sharptail Grouse Lek Locations
- On National Forest (1)
- On Private Inholding (4)
- Within 2 Miles of Natl Forest
- Other Nearby Leks

Habitat Evaluation

Apa (1998) found that sharp-tailed grouse hens would move up to one mile from the lek to nest, and that mean winter movements from lek to winter habitat was two miles. He found that during a typical winter, movements were 2.1 miles for females and 1.2 miles for males. A two-mile area from known leks was used for this analysis (See Map 11).

There are 365,200 acres of sagebrush on the Caribou NF, of which 18,304 acres are within two miles of known lek locations (5 percent). The sagebrush habitats within two miles of the leks may provide summer habitat for sharp-tailed grouse. In addition, there are 5,492 acres of mountain brush (14 percent of total on Forest) within two miles of known leks that may provide winter habitat.

Calculation Used for Effects

Assuming that proposed treatments are evenly distributed across the Forest, and that treatments treat sagebrush and mountain brush in the proportion that they are present (90 percent sagebrush, 10 percent mountain brush) this table shows acres treated by type, forest-wide.

Table 80. Acres of Non-forested Vegetation Treated by Alternative over the Planning Period.

Non-forested Vegetation	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Total acres treated	130,000	77,500	100,000	77,500	70,800	60,000	79,750	40,000
Acres sagebrush	117,000	69,750	90,000	69,750	63,720	54,000	71,775	36,000
Acres mountain brush	13,000	7,750	10,000	7,750	7.080	6,000	7,975	4,000

Since the vegetation types are not uniformly distributed across the forest, treatment acres were calculated for the vegetation within the two-mile area around leks. Five percent of the sagebrush treatments are expected to be in this two-mile area, while 14 percent of the mountain brush acres are within this area. The following table shows acres treated within the two-mile area, by alternative.

Table 81. Predicted Acres of Non-forested Vegetation Treated, Within Two Miles of Leks.

Areas within Two Miles of Leks	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Acres sagebrush treated	5,850	3,488	4,500	3,488	3,186	2,700	3,589	1,800
Acres mountain brush treated	1,820	1,085	1,400	1,085	991	840	1,117	560

To calculate what the age/structure of these types would be expected to look like at the end of ten years, there are a couple of assumptions used. First, in the sagebrush types, 50 percent of the acres are assumed to be in greater than 15 percent canopy cover, and 50 percent of the acres are assumed to be in less than 15 percent canopy cover. Approximately 15 percent of the sagebrush that is in greater than 15% canopy cover will never move into the greater than 15 percent canopy cover, due to soils, site conditions, etc. (1,373 acres). Finally, about 5 percent of the acres in less than 15 percent canopy cover (390 acres) moves into the greater than 15 percent canopy cover each year. This means that 9,152 acres – 1,373 acres = 7,779 acres times 5 percent = 390 acres per year.

Acres in less than 15 percent canopy cover:

Starting acres (50 percent of 18,304 acres) + acres treated – acres moving up x 10 years

Acres in greater than 15 percent canopy cover:

Starting acres (50 percent of 18,304 acres) – acres treated + acres moving in x 10 years

Alternative 1
<15% cc: 9,152 ac + 5,850 – 390(10) = 11,102
>15% cc: 9,152 ac – 5,850 + 390(10) = 7,202

Alternative 2
<15% cc: 9,152 ac + 3,488 – 390(10) = 8,740
>15% cc: 9,152 ac – 3,488 + 390(10) = 9,564

Alternative 3
<15% cc: 9,152 ac + 4,500 – 390(10) = 9,752
>15% cc: 9,152 ac – 4,500 + 390(10) = 9,564

Alternative 4
<15% cc: 9,152 ac + 3,488 – 390(10) = 8,740
>15% cc: 9,152 ac – 3,488 + 390(10) = 9,564

Alternative 5
<15% cc: 9,152 ac + 3,186 – 390(10) = 8,438
>15% cc: 9,152 ac – 3,186 + 390(10) = 9,866

Alternative 6
<15% cc: 9,152 ac + 2,700 – 390(10) = 7,952
>15% cc: 9,152 ac – 2,700+ 390(10) = 10,352

Alternative 7
<15% cc: 9,152 ac + 3,589 – 390(10) = 8,841
>15% cc: 9,152 ac – 3,589 + 390(10) = 9,463

Alternative 7R
<15% cc: 9,152 ac + 1,800 – 390(10) = 7,052
>15%cc: 9,152 ac – 1,800 + 390(10) = 11,252

Table 82. Sagebrush Canopy Cover Classes within Two Miles of Leks at End of Ten Years.

	Existing Condition	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Sagebrush Acres in Less than 15%cc	50%	61%	48%	53%	48%	46%	43%	48%	39%
% Sagebrush Acres in Greater than 15%cc	50%	39%	52%	47%	52%	54%	57%	52%	61%

In the mountain brush types, only 175 acres forest-wide show recent disturbance (GIS), which is 3 percent early seral and 97 percent late seral. These disturbances are fairly recent, and early seral acres would not be expected to move to late seral in the ten-year planning period.

Table 83. Mountain Brush Seral Status in Acres within Two Miles of Known Leks at the End of Ten Years.

Seral Status	Existing Condition (Percent of Acres)	Existing Condition (Acres)	Alt 1 (Acres)	Alt 2 (Acres)	Alt 3 (Acres)	Alt 4 (Acres)	Alt 5 (Acres)	Alt 6 (Acres)	Alt 7 (Acres)	Alt 7R (Acres)
Early	3%	165	1,985	1,250	1,565	1,250	1,156	1,005	1,282	725
Late	97%	5,327	3,507	4,242	3,927	4,242	4,336	4,487	4,210	4,767

Table 84. Mountain Brush Seral Status (%) within Two Miles of Known Leks, at the End of Ten Years.

Seral Status	Existing Condition	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Early seral mtn brush	3%	36%	23%	28%	23%	21%	18%	23%	13%
% Late seral mtn brush	97%	64%	77%	72%	77%	79%	82%	77%	87%

Determination of Effects

Implementation of upland forage utilization standards on browse and herbaceous vegetation will improve habitat quality most in Alternatives 3-7 and 7R. These alternatives will benefit nesting and brood-rearing habitat by providing residual cover. Alternatives 1 and 2 would maintain current conditions. Where habitats lie in a big game winter range prescription, more residual vegetation would be retained after livestock grazing.

The Plan also includes direction for pre-project surveys, about the use of current species management guidelines when developing site-specific projects, and these site-specific projects will consider proximity to active lek locations during planning and environmental analysis.

Sagebrush treatments would be prioritized in areas with canopy closure greater than 25 percent (Plan guideline); since sharp-tailed grouse nest and raise their broods in a variety of habitats, vegetation treatments should not affect suitability for nesting.

Mountain brush treatments have the potential to affect winter habitat. The alternatives range from 64 percent to 87 percent late seral mountain brush. Alternatives 6 and 7R would retain the most late seral mountain brush habitats within the two-mile area of known leks.

Table 85. Risk Assessment for Columbian Sharp-tailed Grouse, by Alternative.

Factor	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Livestock forage utilization	Mod	Low	Low	Low	Low	Low	Low	Low
Sagebrush treatments	Low	Low	Low	Low	Low	Low	Low	Low
Mountain brush treatments	Mod	Low	Low	Low	Low	Low	Low	Low

There is a low level of risk for implementing Alternatives 2-7 and 7R. Because sharp-tailed grouse are habitat generalists, and these alternatives maintain or improve habitat conditions, sharp-tailed grouse habitat use on the Forest should remain the same or increase. Alternative 1 has higher utilization standards, leaving less cover the nesting and brood-rearing, and would leave only 64 percent of the mountain brush in late-seral condition. These factors give this alternative a moderate risk.

The Caribou NF provides only a small part to conservation of this species. Most of the habitat for this species is off-Forest, but the Caribou NF will continue to provide potential nesting, brood-rearing and winter habitat in southeastern Idaho.

Cumulative Effects

Most habitat is located on private, state or BLM lands and the Forest contributes only a portion of potential habitat. Since this species is a habitat generalist, and uses a wide variety of modified habitats, like CRP, it is doing well in southeastern Idaho. Only Alternative 1 has the potential to negatively affect use on the Forest, shifting use onto adjacent lands in other ownerships.

References for the above section:

Apa, A.D. 1998. Habitat Use and Movements of Sympatric Sage and Columbian Sharp-tailed Grouse in southeastern Idaho. PhD dissertation, University of Idaho. 199 pgs

Paige, C. and S.A. Ritter. 1999. Birds in a Sagebrush Sea: Managing sagebrush habitats for bird communities. Partners in Flight, Western Working Group, Boise, ID

Ulliman, M.J, A. Sands and T. Hemker. 1998. "Conservation Plan for Colombian Sharp-tailed Grouse and its Habitat in Idaho." Draft document on file at the Headquarters Office in Idaho Falls, ID. 36 pp.

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Ulliman, M.J. 1995. Winter Habitat Ecology of Columbian Sharp-tailed Grouse in Southeastern Idaho. M.S. Thesis, University of Idaho, Moscow, ID. 123 pgs.

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NORTHERN GOSHAWK

(The following information is summarized from Reynolds, *et al*, 1992 except where noted otherwise).

Habitat and Population Overview

The northern goshawk is a forest habitat generalist that uses a variety of forest types, forest ages, structural conditions, and successional stages. It preys on small to medium-sized birds and mammals, which it captures on the ground, in trees or in the air. Forests within goshawk nesting home ranges should be an interspersed mosaic of structural stages to increase the diversity of habitat for goshawks and their many prey species. The goshawk is found across the western US, most of Canada, and into the northeastern US.

Patla (1997) studies goshawks on the Targhee NF to the north. She found nest stands in Douglas-fir, mixed conifer and lodgepole pine cover types. More than half had some degree of past timber harvest in the area. The six most important prey categories she found were snowshoe hare, Uinta ground squirrel, ruffed grouse, blue grouse, unidentified grouse sp, and red squirrel.

The USFWS received a petition to list the northern goshawk as threatened or endangered in the western United States. In 1997, they determined that the petition presented substantial information indicating that listing may be warranted. A further evaluation of the assertions made in the petition was done, and all of

the factors reviewed lead them to the conclusion that listing was not warranted. The Service found no evidence to support the contention that the goshawk was in danger of extinction, or that the species is likely to become endangered in the foreseeable future.

Population trend data is not available for this species. Wisdom, *et al*, (2000) predict that population trends are declining due to changes in habitat across the Interior Columbia Basin. The Caribou-Targhee NF Monitoring and Evaluation Report (2000-2001) summarized data from goshawk nest territory monitoring. Nest occupancy rates were down in 1998 compared to the early 1990s. Patla (2000) believes that this trend is due to a variety of factors, including possible cyclic populations, weather patterns, monitoring methods, management, etc.

Accipiter surveys were conducted in the Sulphur Canyon Area of the Aspen Range in the late 1970s. In the 20 square miles that were surveyed, twelve goshawk nest territories were found – six of which were active in 1978, and four in 1979. Of these nests, elevations ranged from 6,600 to 7,300 feet; about 71 percent were located on north, northeast and northwest slopes; and about 82 percent were located in aspen (Chase, 1984). Map 12, showing current known goshawk nest territories shows only one in the Aspen Range, however this is most likely a reflection on lack of survey information as opposed to decreases in goshawks in that area.

Nest Areas

Nest areas include one or more forest stands, several nests, and several landform characteristics. Nest areas are occupied by breeding goshawks from early March until late September, and are the focus of all movements and activities associated with nesting. The size (20-25 acres) and shape of nest areas depend on topography and the availability of patches of dense, large trees.

Nest areas are often used more than one year, and some are used intermittently for decades. Many pairs of goshawks have two to four alternate nest areas within their home range. All previously occupied nest areas may be critical for maintaining nesting populations because they contain the habitat elements that attracted the goshawks originally. Additionally, replacement nest areas are required because goshawk nest stands are subject to loss from catastrophic events and natural decline.

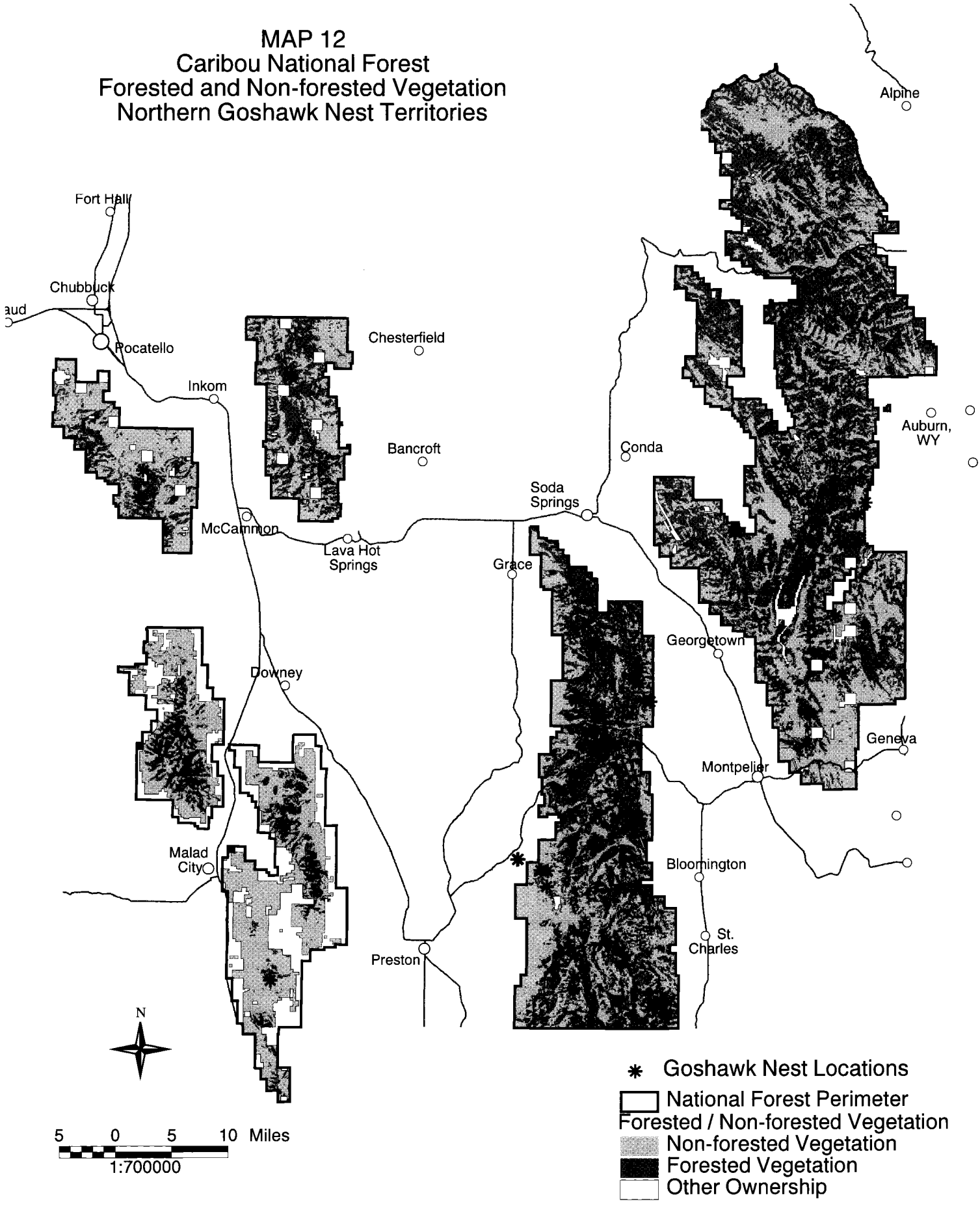
Goshawk nest stands have a relatively high tree canopy cover, a high density of large trees and are usually classified as mature or older forested stands. Studies suggest that the dense vegetation in these stands provide relatively mild and stable microclimates, as well as protection from predators.

Nest trees surveyed by Patla (1997) were largely in Douglas-fir, with minor amounts in lodgepole pine, aspen and spruce. Douglas-fir trees tend to have stout, lateral branches that provide good structural support for nests. Most of the nests were found on mid- to lower slope positions. The average size of the nest area was 80 ha. Mature conifer was the dominant cover type (but with a large range between stands), with smaller amounts of young sawtimber, seedling stands, sage/shrub, and open areas.

Post-fledging Family Area (PFA)

PFAs include the area used by the adults and young from the time the young leave the nest until they are no longer dependent on the adults for food. The PFA surrounds the nest area, and although it generally includes a variety of forest conditions, the vegetation structure resembles that found within nest stands. PFAs vary in size from 300-600 acres. PFAs provide the young hawks with cover from predators, and sufficient prey to develop hunting skills and feed themselves in the weeks before juvenile dispersal. Forests in the PFA should contain understories with a canopy cover greater than 50 percent and well-developed understories and habitat attributes critical in the life histories of goshawk prey species.

MAP 12
Caribou National Forest
Forested and Non-forested Vegetation
Northern Goshawk Nest Territories



Patla (1997) found that the PFAs (160 ha) also had a large range of mature forests present, but only two territories had PFAs with less than 40 percent mature forest cover. Patla (1997) calculated a mean fledging date of July 15, with a range of July 1 to August 3. This was based on thirty-seven successful breeding pairs from 1989 to 1994.

Foraging Area

Goshawks prey on birds and mammals in the larger body-size class available to forest dwelling hawks. Generally speaking, because larger species of vertebrates have less dense populations than smaller species, predators of large prey must hunt over large areas in order to meet their energy requirements. Goshawks foraging areas are about 5,000 to 6,000 acres.

Limited studies suggest that goshawks prefer mature forests for foraging. Additional information on the composition and structure of goshawk foraging habitat was gleaned from information on the habitat requirements of goshawk prey species. Raptor populations are often limited by prey populations, and choice of foraging habitat is somewhat restricted by prey abundance and accessibility.

The foraging area comprises the largest portion of the goshawk nesting home range and therefore typically includes a greater diversity of landforms, forest cover types and vegetation structural stages. Important habitat components include snags, downed logs, woody debris, openings, large trees, herbaceous and shrubby understories, and interspersion of vegetation structural/successional stages.

Monitoring on the Caribou-Targhee NF

Monitoring of goshawks on the Targhee NF portion of the Caribou-Targhee NF has occurred at varying levels over two decades. In 2000, only 31 percent of surveyed territories were occupied, compared to 80 percent occupancy rate in 1992. This trend may be due to a variety of factors, including naturally cyclic populations, weather, monitoring methods, habitat management, etc (Caribou-Targhee Forest Plan Monitoring and Evaluation Report, 2000-2001). In 2001, Patla found 38 percent of surveyed nest territories were occupied.

In 1999, goshawks on monitored nests produced only two young, the lowest number recorded. In 2000, nine young were produced, which is about average. In 2001, about 25 percent of the nests were successful and produced nine young (Patla, 2002).

Patla (2002) suggested that low occupancy rates in 2000 and 2001 were not a result of failed nesting attempts, but rather failure of pairs to return to known nesting areas. She found that in some years, low adult survival might be affecting occupancy rates the following season.

Use on the Caribou NF

Goshawk monitoring on the Forest has identified goshawk territories, some of these are historic and some are active. See the attached map for generalized locations of goshawk nest territories in relation to forested vegetation across the Caribou. Not all of the Forest has been inventoried or monitored for goshawks, therefore additional territories are sure to exist. There are also goshawks on adjacent lands on the Targhee NF to the north and the Bridger-Teton NF to the east. The following table shows an overview of known nest territories on the Forest.

Table 86. Known Goshawk Nest Territories on the Caribou NF (through 2001).

DISTRICT	# KNOWN TERRITORIES	YEARS ACTIVE/ YEARS MONITORED
Soda Springs	6	3/11
Montpelier	32	37/84
Malad	1	0/2
Pocatello	7	7/22

Habitat Evaluation

ICB (Wisdom, *et al*, 2000) put goshaws in Family 2, which are species using broad-elevation old forest. They use late-seral multi- and single layered stages of the montane community. Important habitat components include snags for nesting and downed logs for foraging for prey species.

An assessment of goshawk habitat in the state of Utah was done in 1999 (Graham, *et al*, 1999). They concluded that to ensure the goshawks continued existence in Utah, habitat restoration and protection of natural processes were important. Based on their mapping, the Bear River range on the Caribou NF is contiguous to an area of high value habitat in Utah.

In 1998, an analysis of vegetative composition within one mile of known goshawk nest trees was completed (S. Feltis). Of the thirty territories considered, twenty-seven were analyzed further (three had less than 10 percent outside of Forest, with no vegetation data available). Of these twenty-seven areas, major (greater than 10 percent) vegetation types found within one mile of the nest included aspen, aspen/maple, aspen/conifer, Douglas-fir, lodgepole pine, mixed conifer, mountain brush and sagebrush. The following table shows the number of territories with more than 10 percent of specific vegetation types present. It also shows the average percent of vegetative cover for each type on those territories where it is present. For example, nine of the twenty-seven territories analyzed had greater than 10 percent sagebrush cover within one mile of the nest. Of these nine territories, the average percent of sagebrush canopy cover is 22 percent. Basically, this reflects the fact that vegetation is very patchy on the Caribou NF, and goshawks are still able to find suitable nesting habitat.

Table 87. Vegetative Cover within One Mile of Known Goshawk Territories (Feltis, 1998).

Vegetation Type	Number of Territories with Greater Than 10 Percent of Vegetation Type	Average Percent Cover
Aspen	9	29%
Aspen/conifer	6	18%
Aspen/maple	17	46%
Douglas-fir	17	18%
Lodgepole pine	8	19%
Mixed conifer	5	25%
Mountain brush	11	29%
Sagebrush	9	22%

Comparison of Alternatives

Table 88. Percent Mature and Old at the End of Ten Years, by Alternative.

Alt	Forest Types Treated	Aspen % Mature and Old	Low-elevation % Mature and Old	High-elevation % Mature and Old
1	All	57%	89%	79%
2	Mixed conifer, aspen/Douglas-fir, aspen	56%	85%	76%
3	Douglas-fir, lodgepole pine and mixed conifer	56%	83%	74%
4	Mixed conifer, aspen/Douglas-fir and aspen	56%	83%	77%
5	Mixed conifer, aspen/Douglas-fir and aspen	55%	85%	79%
6	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	80%
7	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	79%
7R	Mixed conifer, aspen/Douglas-fir and aspen	49%	82%	81%

Analysis of Effects

The Revised Forest Plan includes a table that includes standards and guidelines for management around active goshawk nest territories. The following analysis incorporates the standards and guidelines from this table and other Plan direction where noted. In addition, the Plan has a guideline requiring pre-project surveys, and upland livestock utilization levels that will maintain habitat for small mammals (prey species).

Nest Areas

The Southwest Guidelines were used to develop the guidelines used for the Targhee NF Plan. They were modified somewhat based on monitoring done on the Targhee NF. Instead of having 630-acre nest sites in a goshawk nesting territory, they used one 200-acre nest area. This is a large contiguous area, which includes alternate nest sites and replacement nest sites. This modification of the Southwest Guidelines was incorporated into the Caribou Revised Forest Plan. In addition, the management season of October to March was changed from September to March. This was based on monitoring from the Targhee NF that showed most of the young had fledged by early August and were mobile by September. This will allow vegetation treatments, such as prescribed burning for aspen regeneration, to occur in the September period.

Of the forty-one known nesting territories on the Caribou NF, there is a wide range of forest cover within the 200-acre nest area. This is displayed in the table below. There are also five nest areas with over 50 percent grass/shrub types, one with over 75 percent rock, and four with over 50 percent maple. But, overall, almost 75 percent of the nest areas were found in areas with over 76 percent forested cover.

Table 89. Forested Cover within 200-acres Around Known Goshawk Territories.

Percent of Forest Cover	0-25%	26-50%	51-75%	76-100%
Number of 200-acre nest areas	3	5	3	30
Percent of total nest areas	7%	12%	7%	73%

Focusing on just those thirty nest areas that were found in areas with over 76 percent forested cover, two had less than 75 percent pole-sized or larger trees, while the other twenty-eight are dominated by pole-sized and larger trees. The guidelines in the Plan call for retaining 100 percent of the forested stands within the 200-acre nest area in mature to old stands. While thinning is allowed within this 200-acre area, it will be done to maximize diversity of the stand and will retain mature/old trees.

Post-fledging Area

On the Targhee NF the majority of all existing territories have more than 60 percent mature forest cover within the post-fledging area (Patla, 2001). This contrasts with territories on the Caribou NF, where 20 percent of the territories had less than 40 percent mature forested cover within the PFA.

The standards and guidelines in the Revised Plan call for a size class distribution of less than 20 percent seedling, sapling or pole and over 40 percent mature/old within the PFA. Under existing conditions, 20 percent of the known territories would not meet these criteria (have less than 40 percent mature/old) but management in the future would maintain these at current levels, and would not move further from the 40 percent guideline.

Foraging Area

Management in the 5,400-acre foraging area follows the Southwest guidelines and the Targhee NF. The guidelines are displayed in Table 3.5 in the Revised Plan.

Determination of Effects

Problems or threats facing the goshawk were summarized in Idaho's Habitat Conservation Assessment and Strategy for the Northern Goshawk (*Accipiter gentiles*) (Patla, *et al*, 1995). These include modification of habitat at the local and landscape scales, over-utilization, disease, predation, competition and absence of regulatory mechanisms to prevent degradation of habitat.

Patla, *et al*, (1995) also identified risk factors for goshawks. Besides the risks analyzed below, there are others. Others listed included over-utilization (commercial, recreational, scientific); disease, predation and competition; and the absence of regulatory mechanisms to prevent the decline of species or habitat. This last risk factor has been addressed in great detail in the Revised Forest Plan. The Revised Forest Plan includes objectives, standards and guidelines for goshawks. There are specific standards for the nest area, the post-fledging area and the larger foraging area. None of the alternatives has any of the former risk factors associated with them.

Table 90. Risk Assessment for Management of Goshawk Territories.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Habitat modification around nest	Mod	Low	Low	Low	Low	Low	Low	Low
Habitat modification in PFA	Mod	Low	Low	Low	Low	Low	Low	Low
Wildfire suppression*	Mod	Low	Low	Low	Low	Low	Low	Low
Aspen out of PFC	Mod	Mod	Mod	Low	Mod	Mod	Mod	Low
Alteration of riparian habitats	Mod	Mod	Mod	Low	Low	Low	Low	Low
Overall risk	**Mod**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**

* Based on whether the alternative allows wildfire for resource benefit.

Because of forest-wide direction for management around known goshawk nests and improvements in nesting and foraging habitats, all alternatives, except Alternaitve1, No Action, would have a low risk to goshawks. Habitats should be sufficient to maintain populations across the planning area. The Caribou NF and southeastern Idaho is only a very small portion of its total range, but with its mix of forested vegetation, can contribute towards the conservation of this species.

Cumulative Effects

It is not known to what degree some of the other risk factors may be occurring off of National Forest lands (shooting, predation etc). Habitat modification is occurring, but based on the variety of habitats used, this may not be a high risk. Proposed actions on National Forest lands should not contribute to actions on private lands to increase this risk.

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SPOTTED FROG

Habitat and Population Overview

Spotted fogs are found near permanent water such as marshy edges of ponds or lakes, algae-grown overflow pools of streams and near springs with emergent vegetation during the breeding period. They may move to mixed conifer and subalpine fir forest, grasslands, and brushlands of sage and rabbitbrush.

This species is thought to hibernate in holes near springs or other areas where water is unfrozen and constantly renewed. The spotted frog breeds from late February to early July. They may be locally abundant when congregating to breed in the spring. Eggs are deposited in ponds or quiet water in clusters.

They are considered opportunistic feeders, preying on a variety of insects, mollusks, crustaceans and arachnids. The demise of the spotted frog is believed to be a result of interspecific competition with the northern leopard frog and bullfrogs, and loss of riparian habitat.

To date, amphibian surveys on the Caribou NF have found four species of amphibians, but no spotted frogs (Burton and Peterson, 1998). According to Peterson (pers. comm.) this species is not found in southeast Idaho. A segment of the Great Basin population is found in the southwest part of the state. This population is of concern and has been identified as a "Species of Special Concern" by CDC. It is also a candidate species for federal listing. The northern population, which includes the Yellowstone population to the north of the Caribou NF, has not been identified as a concern and is also not found in the Planning area.

Determination of Effects

None of the alternatives would have any effects or any risk associated with them.

References cited for above section:

Burton, S. and C.R. Peterson. 1998. Distribution, Relative Abundance, and Habitat Associations of Amphibians in Caribou National Forest, Idaho. Dept. Biological Sciences, Idaho State University, Pocatello, ID. 15 Sept 1998. 72 pp plus appendices.

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SPOTTED BAT

(The following information is summarized from Clark, *et al*, 1989).

Habitat and Population Overview

The spotted bat is known from the northeastern portion of the Greater Yellowstone area in Montana and Wyoming. Spotted bats use a variety of habitats including open ponderosa pine, desert scrub, pinyon-juniper, and open pasture and hay fields. They roost alone in rock crevices high up on steep cliff faces. Cracks and crevices ranging in width from .8 to 2.2 inches in limestone and sandstone cliffs are critical roosting sites. Spotted bats are rare and maybe limited by suitable roosting habitats. The food habits are

poorly known but previous studies have shown that they forage primarily on moths. Spotted bats are thought to migrate south for the winter, but information on seasonal movements and winter activity is very limited.

Groves, *et al*, (1997) indicate that extensive surveys in Idaho have only recently located this species in the southwestern part of the state. Surveys on the Caribou NF have not documented this species in the area, but it is a difficult species to detect in standard bat surveys.

Wisdom, *et al*, (2000) determined that habitat conditions across the Interior Columbia Basin had remained constant.

Habitat Evaluation

Roosting habitat for this species (rock crevices on cliffs) are fairly secure and disturbance at roosts is not expected to be an issue. Foraging habitat for this species is open, arid country and associated riparian areas. It is assumed that shrublands and riparian habitats in proper functioning condition provide the best habitat for insect populations, providing prey.

Table 91. Comparison of Alternatives, Based on Changes in Foraging Habitat.

Foraging Habitat	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Years to meet PFC in shrublands	<10	60	14	60	Static	Never	45	Never
Riparian ranking	7	5	6	3	1	1	3	3

Determination of Effects

Table 92. Risk Assessment, Based on Changes in Foraging Habitat.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Shrublands in relation to PFC	Low	Low	Low	Low	Low	Mod	Low	Mod
Riparian ranking	Mod	Mod	Mod	Mod	Low	Low	Low	Low
Overall risk	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**

All alternatives have a low risk for this species. Roosting habitat is secure, and foraging habitats will be maintained or improved in all alternatives. The Plan includes a guideline for pre-project surveys if suitable habitat is present. If spotted bats are found on the Caribou NF, the Revised Plan includes an objective to develop management plans for habitats where this species is found. Proposed management will maintain suitability of habitat.

Cumulative Effects

One unknown risk is the level of pesticide use in southeastern Idaho, and the effects of pesticide use on insect prey, and bats preying on these insects.

References cited in above section:

Clark, T.W., A.H. Harvey, R.D. Dorn, D.L. Genter and C. Groves. 1989. Rare, Sensitive and Threatened Species of the Greater Yellowstone Ecosystem. Northern Rockies Conservation Cooperative, Montana Natural Heritage Program, The Nature Conservancy, and Mountain West Environmental Services. 153 pp.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

WESTERN BIG-EARED BAT (TOWNSENDS)

(The following information is summarized from Clark, *et al*, 1989)

Habitat and Population Overview

Western big-eared bat is found throughout much of western North America. This species is not abundant anywhere and is uncommon to rare over much of its wide range. They are known from several locations in Yellowstone and Grand Teton National Parks to the northeast and the Craters area to the northwest. There are two known maternity roosts in Idaho at Craters of the Moon (Idaho Conservation Effort, 1995). Population trends are not well documented, but the most serious factor leading to perceived population declines is the loss and/or disturbance of suitable breeding habitat. This is a result of recreational caving and abandoned mine closures (Idaho Conservation Effort, 1995). Wisdom, *et al*, (2000) determined that habitat trends have remained constant across the Interior Columbia Basin.

This species occupies moist forests as well as arid savannah and shrub-steppe. It has been found foraging over sagebrush-grasslands, riparian areas, open pine forests, and arid scrub within the Greater Yellowstone Ecosystem. They forage well after dark and selectively forage for nocturnal moths and occasional flies and beetles.

These bats will occasionally take shelter in buildings, but do not tolerate a hot, dry roost environment for long periods. Males are solitary or occur in small groups while females form maternity colonies in suitable warmer caves. Hibernation occurs in local caves that range from 42.8–53.6 degrees F.

Cave and abandoned mine surveys have found Townsends big-eared bats present. These structures are being used for both summer roosts and winter hibernacula. Use has been documented in the Bear River range, Preuss Range, Portneuf Range and Elkhorn Mountains. Of eighteen caves and mines surveyed on the Montpelier Ranger District during the winter, eleven were found to have low numbers of western big-eared bats (Lengas, 1996). Of twelve caves and mines surveyed in the summer, five had low numbers of western big-eared bats (Lengas, 1995). No large concentrations were found in any season.

Habitat Evaluation

ICB (2000) put Townsends big-eared bat in family 7 that are species that use a complex pattern of forest, woodlands and sagebrush cover types. This species uses cliffs, mines, and buildings for day roosts and hibernacula. Suitable roosting structures often limit bat distribution and population size. Distribution of big-eared bats is closely tied to the presence of caves and cave-like structures because they roost in large colonies and require a ceiling-like substrate for hanging (Idaho State Conservation Effort, 1995). Because this species is a habitat generalist, habitat changes have not had substantial changes in extent of source habitats. The primary issue for this species is related to human impacts on special habitat features used for roosting (Wisdom, *et al*, 2000). Conservation measures for this species include: (1) protect all known roost sites; (2) reduce levels of human activities around known roosts; and (3) maintain/improve condition of foraging habitats.

Determination of Effects

Several studies have shown that this species is very sensitive to human disturbance. Summer roosts and hibernacula are particularly vulnerable to disturbance, which leads to abandonment and increased mortality. Bosworth (1994) looked at winter activity of Townsends big-eared bats in southeastern Idaho.

Both entering the hibernaculum and handling bats induced changes in normal activity patterns. Entering the hibernaculum induced premature arousal in bats near the end of a torpor bout. Lasting effects from this disturbance were not detected. However, alteration of normal behavior by human disturbance to hibernacula has been implicated in the decline of this species.

Abandoned mines, which have been closed for human safety, have been surveyed for use by bats. Where use has been documented, closures have been done with grated openings or culverts, which still allow access to bats and permit airflow.

The Revised Forest Plan includes an objective for development of management plans for known occupied sites, and guidelines for access into occupied sites, and for surveys prior to closure of abandoned mines.

Table 93. Risk Assessment for Western Big-eared Bats, by Alternative.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Abandoned mine closure	Mod	Low	Low	Low	Low	Low	Low	Low
Recreational caving*	Mod	Low	Low	Low	Low	Low	Low	Low
Renewed mining at historic sites	Mod	Low	Low	Low	Low	Low	Low	Low
Use of pesticides	Low	Low	Low	Low	Low	Low	Low	Low
Rangeland conversion to monotypic grasses	Low	Low	Low	Low	Low	Low	Low	Low
Grazing effects on foraging habitat	Mod	Mod	Mod	Low	Low	Low	Low	Low
Overall risk	**Mod**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**	**Low**

* Access is already regulated at known cave location.

Because of Forest-wide direction incorporated into the Plan, all alternatives, except Alternative 1, No Action, would have a low risk to this species. While Alternative1 would have no Plan direction, this species is still a sensitive species and these factors will be addressed at the site-specific project level. Based on current information provided by surveys, the Caribou NF provides summer and winter habitat for small numbers of this species. No large over-winter hibernacula or maternity colonies have been found. Because of this, the Caribou NF may contribute small areas of habitat for this species.

Cumulative Effects

Because of the types of habitats used for roosting, maternity colonies and hibernacula, risks are mostly associated with disturbances at these sites. Many known sites are on lands where they are monitored (Forest Service, BLM, and other areas like INEEL) and access is restricted. Another risk that is unknown is the level of pesticides used in southeastern Idaho, and effects on insect prey and bats preying on them.

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WOLVERINE

(The following overview was summarized from Ruggerio, *et al*, 1994)

Habitat and Population Overview

Researchers have generally agreed that wolverine habitat is probably best defined in terms of adequate year-round food supplies in large, sparsely inhabited areas, rather than in terms of topography or vegetation. Wolverine populations have generally been pushed into the least developed habitats and the perception has resulted that wolverines are high-elevation species. Home ranges are very large, with male home ranges typically larger than those of females.

Wolverines are generally described as opportunistic omnivores in summer and primarily scavengers in winter. Studies have shown the importance of large mammal carrion and the availability of large mammals underlies the distribution, survival and reproductive success of wolverines. During the snow-free periods diets are more varied and include berries, small mammals, squirrels, and insect larvae.

Wolverines breed during the summer but because of delayed implantation, don't give birth until late winter/early spring. Natal dens are excavated in snow and usually are found in areas with snow-covered tree roots, log jams, or rocks and boulders.

In 1987, the Idaho Fish and Game reviewed the status of wolverine in Idaho (Groves, 1987). In the 1960 to 1987 time period, there were only ten confirmed reports of wolverines in Idaho, none of which were in southeast Idaho. There were probable reports of wolverines (one each in Bonneville, Caribou and Bannock counties) for the Caribou NF. The lack of wolverine reports was attributed to roadless nature, and resultant lower density of people (especially biologists and trappers).

Wolverine are not commercially trapped in Idaho, but are susceptible to leg-hold trapping as non-target species (Copeland and Hudak, 1995). Trapping accounts for a high proportion of wolverine mortality, affecting even populations that are locally protected (Ruggerio, *et al*, 1994).

Ruggerio, *et al*, (1994) mapped wolverine observations from 1961 to 1982 and 1983 to 1993 across the western United States. Between these periods, numbers of sighting decreased in Washington, Oregon, California, Colorado, and Yellowstone, increased in Central Idaho, but stayed about the same in southeast Idaho.

In 1999, the distribution of wolverines in northwest United States was reviewed (Edelmann and Copeland, 1999). While the focus of the study was in west-central Idaho, the sightings map shows seven locations in southeast Idaho. While this is a first step in identifying subpopulations in the northwest, additional information on 1) reproducing subpopulations, 2) source-sink habitat patches, 3) movement corridors and 4) movement patterns between subpopulations is necessary to understanding regional population status.

From the scattered sightings it appears that a sparse wolverine population may exist, or at least travel throughout southeastern Idaho and northern Idaho. In the early 1990s motion/activated cameras at bait stations were placed in the Bear River Range, but again, were not successful in locating wolverine. In 1995, camera/bait station surveys were conducted in the Franklin Basin area of the Bear River Range (Groves, 1987). No wolverines were documented during these surveys.

After reviewing these results, it was decided to use aerial surveys during late winter (Feb-May). To identify areas to survey, a GIS query was run over the Bear River Range, based on elevation, and landtypes with rock features. This mapping exercise identified areas around Soda Peak, Sherman Peak, and then areas from Copenhagen Basin south to the Forest Boundary.

In March of 1996, aerial surveys for wolverines were done within selected lands of the Bear River Range (Bissonette, 1997). Four potential track sightings were documented at that time. Some of the higher peaks appeared to provide talus communities consistent with central Idaho denning habitat, but potential denning sites within the survey area were not extensive. While there may be adequate habitat to support wolverine denning, it would likely occur only in the absence of snowmachine disturbance. It is possible that the survey area may provide useful wolverine habitat outside of the denning period (Bissonette, 1997).

Aerial surveys were again conducted in late winter/early spring 2002. These surveys documented wolverine trails in the Bear River Range and the mountains east of Soda Springs (M. Orme, Forest Biologist, pers. comm.).

There was a confirmed wolverine sighting in Hillyard Canyon of the Bear River Range in 10/93. Another report is from Wood Canyon on the south end of the Preuss Range, in 5/92. In 1992 there was also a sighting in the Pebble Guard Station area of the Portneuf Range. See Map 13, Wolverine Observations and Wildlife Security Areas.

Female wolverines appear to be extremely sensitive to disturbance during pre-weaning, and kit-rearing periods. Recreational activities (cross-country skiing and snowmobiling) may displace wolverines from potential denning habitat or cause den abandonment (Copeland and Hudak, 1995). In an ongoing study in the Tetons, six wolverines have implanted transmitters, and two of the females appeared to be denning (M. Orme, Forest Wildlife Biologist, pers. comm.) Researchers will try to look at denning locations in relation to winter recreation.

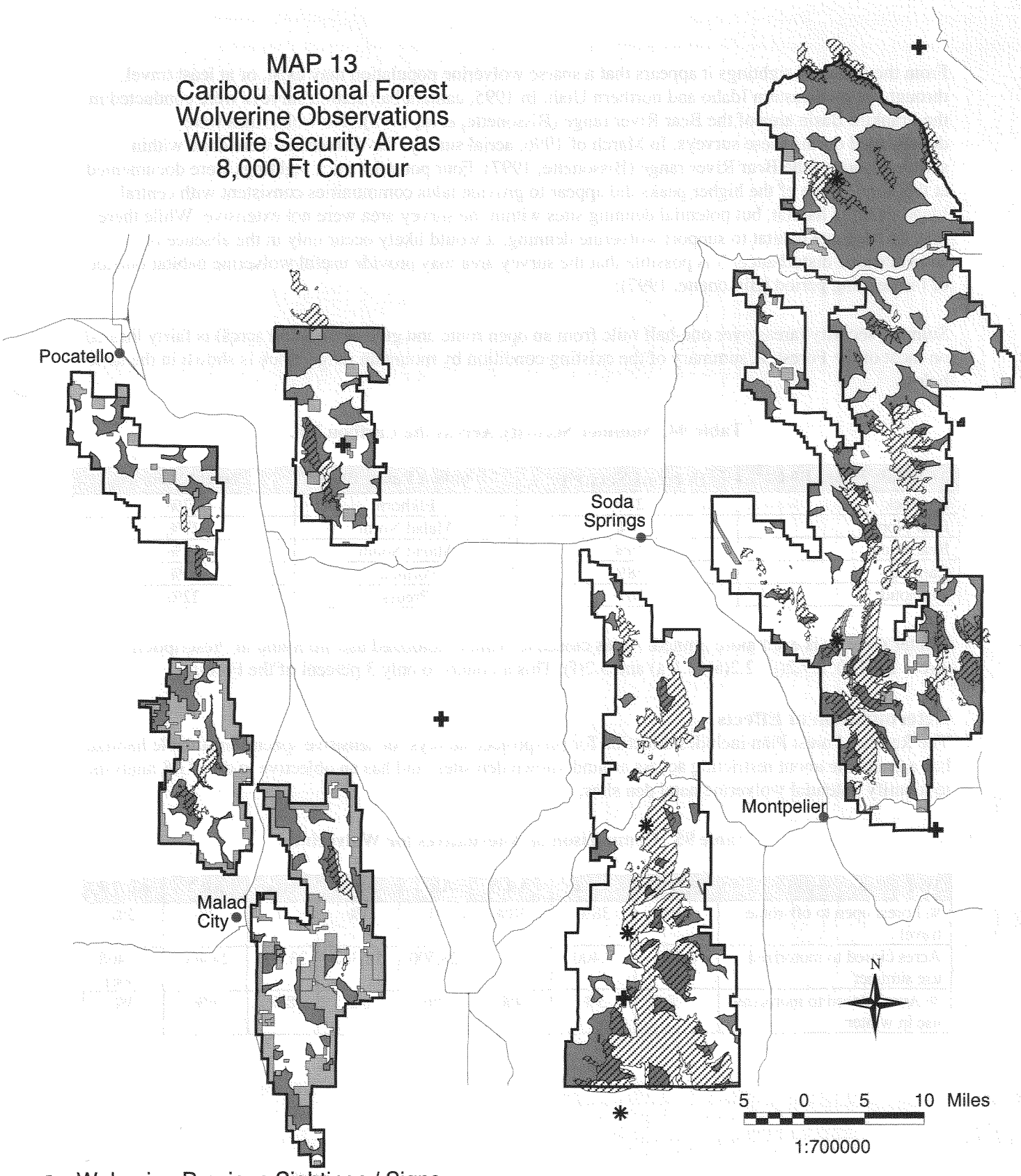
Habitat Evaluation

ICB (Wisdom, *et al*, 2000) put wolverine into the habitat generalist family, because they use subalpine forests, lower montane forests and riparian woodlands as source habitats. Downed logs are a special habitat feature because they serve as potential resting and denning sites. In addition, wolverines use talus slopes as denning sites and talus is considered a special habitat component for this species.

Strategies for the wolverine include (1) provide large areas with low road densities and minimal human disturbance; and (2) manage for wolverines in a metapopulation context, and provide adequate linkages among existing populations.

Witmer, *et al*, (1998) list three major issues for wolverines in the Interior Columbia Basin. One is maintenance of large, remote areas. If populations become too fragmented, low reproductive potential could lead to local extinctions. Coarse, woody debris and rocky habitat are important, fine-scale components for denning. Other lesser issues are prey populations (big game) and incidental trapping.

MAP 13
Caribou National Forest
Wolverine Observations
Wildlife Security Areas
8,000 Ft Contour



✚ Wolverine Previous Sightings / Signs
✱ Wolverine Observations by Aber, 2000
National Forest Perimeter
Elevation 8,000 ft +
Security Areas
Other Ownership

For security areas --
Motorized roads and trails were buffered 1/2 mile.
Private land was not excluded, nor were roads/trails on private land.

1/30/03,mm
../cnf_plan/wildlife/procpaper/wolverine_8X11.apr

From the scattered sightings it appears that a sparse wolverine population may exist, or at least travel, throughout southeastern Idaho and northern Utah. In 1995, camera/bait station surveys were conducted in the Franklin Basin area of the Bear River range (Bissonette, *et al*, 1995). No wolverines were documented during these surveys. In March of 1996, aerial surveys for wolverines were done within selected lands of the Bear River range (Bissonette, 1997). Four potential track sightings were documented at that time. Some of the higher peaks did appear to provide talus communities consistent with central Idaho denning habitat, but potential denning sites within the survey area were not extensive. While there may be adequate habitat to support wolverine denning, it would likely occur only in the absence of snowmachine disturbance. It is possible that the survey area may provide useful wolverine habitat outside of the denning period (Bissonette, 1997).

Summer security (areas over one-half mile from an open route and greater than 250 acres) is fairly limited on most of the Forest. A summary of the existing condition by mountain range block is shown in the table below.

Table 94. Summer Security Across the Caribou NF.

Mountain Range Block	Percent Security	Mountain Range Block	Percent Security
Bannock	21%	Elkhorn	27%
Bear North	9%	Malad North	27%
Bear South	19%	Malad South	19%
Caribou	58%	Portneuf	40%
Diamond	16%	Preuss	22%

Winter security is even more limited. Areas closed to winter motorized use are found in Prescription Areas 2.7.1(f), 2.7.2(f), 2.2(a), 3.1(a) and 3.2(f). This amounts to only 3 percent of the Forest.

Determination of Effects

The Revised Forest Plan includes direction for pre-project surveys for sensitive species in suitable habitat, has a guideline about restricting access around known den sites, and has an objective to do a GIS analysis to identify potential wolverine natal den sites.

Table 95. Comparison of Alternatives for Wolverine.

Wolverine	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Forest open to off-route travel	33%	38%	38%	0	3%	0	2%	2%
Acres closed to motorized use summer	8,400	8,400	0	28,500	52,300	33,600	24,400	95,468 (9%)
% Acres closed to motorized use in winter	3%	3%	4%	7%	8%	8%	6%	3%

Table 96. Risk Factors for Wolverine, by Alternative.

Linkages	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Forest open to off-route travel *	33%	38%	38%	0%	3%	0%	2%	2%
OMRD**								
Caribou	0.6	0.6	0.6	0.6	0.5	0.2	0.6	0.6
Webster/Diamond	1.4	1.4	1.4	1.3	1.4	0.4	1.3	1.4
Preuss	1.2	1.2	1.2	1.2	1.1	1.0	1.2	1.2
Acres in 1.3 and 3.1, where natural processes dominate ***	9,302	9,302	0	88,207	94,477	200,000	57,019	80,000
Overall ranking	**4**	**4**	**4**	**2**	**2**	**1**	**3**	**2**

* In Alts 1-3, almost the entire middle subsection (Webster/Diamond) is open to off-route travel. In Alts 5-7R an area of the middle subsection would still be open to off-route travel.

** These numbers were calculated on boundaries drawn for big game analysis and were not drawn based on subsection lines, but they give the overall picture for the same overall area.

*** These acres are approximate but provide a picture for the Caribou/Webster/Preuss ranges

Table 97. Risk Assessment for Wolverine, by Alternative.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Loss of large, remote areas	Mod	Mod	Mod	Mod	Low	Low	Mod	Mod
Connectivity	Mod	Mod	Mod	Low	Low	Low	Mod	Mod
Denning habitat components	Low	Low	Low	Low	Low	Low	Low	Low
Potential for disturbance during denning	High	High	High	High	High	High	High	High
Potential for incidental trapping*	Low	Mow	Low	Low	Low	Low	Low	Low
Overall risk	**Mod**	**Mod**	**Mod**	**Low**	**Low**	**Low**	**Mod**	**Mod**

* Ranked low because this has not been a problem in Idaho.

There is suitable denning habitat on the Forest, but it is not known what affect snowmobile activity has on attempts at denning. Tracks have been seen during the denning season, but no dens have been found. While the potential for disturbance during denning is high in all alternatives (Alt 7R allows snowmobile use on 97 percent of the Forest), it is not known what affect movement of den sites has on kit survival.

Access to trappers, and resultant potential for incidental trapping as non-target species is associated with winter motorized access to trappers. In the last twenty years, there were only three known wolverines trapped and/or killed incidental to other activities in Idaho. While there are probably others that have gone unreported, they are probably not more than a few (J. Copeland, Wolverine Research Biologist, pers. comm.). Incidental trapping does not appear to be an issue in Idaho, or in this analysis area.
The Caribou NF provides habitat in southeast Idaho, and linkage to the Targhee NF to the north, and Wasatch-Cache NF and Bridger-Teton NF to the south and east.

Cumulative Effects

One of the greatest threats to wolverine is the loss of linkages to isolated populations. To move from some areas of the Forest, significant barriers must be crossed. Wide valley bottoms, with associated agricultural uses, towns and highways are inhospitable habitat. The best strategy is to work with other agencies and groups to identify key linkages for large carnivores and work on providing more hospitable

crossings. See corridor section in this paper for more information on potential linkages for large carnivores.

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Groves, C. 1987. The Distribution of Wolverine (*Gulo gulo*) in Idaho, 1960-1987. Idaho Natural Heritage Program, Idaho Department of Fish and Game.

Ruggerio, L.F., K.B. Aubry, S.W. Buskirk, L.J. Lyon and W.J. Zielinski, technical editors. 1994. The Scientific Basis for Conserving Forest Carnivores: American Marten, Fisher, Lynx and Wolverine in the western United States. US Forest Service, General Technical Report, RM-254. Ft Collins, CO. Rocky Mountain Range and Experiment Station. 184 p.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

Witmer, G.W., S.K. Martin and R.D. Sayler. 1998. Forest Carnivore Conservation in the Interior Columbia River Basin: Issues and Environmental Correlates. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-420. Portland, OR. 15 p.

Management Indicator Species (MIS)

Two MIS have already been discussed as Sensitive Species. For information on Columbian sharp-tailed grouse and northern goshawk, see the Sensitive Species sections. Between the draft and final Plan, several proposed MIS were dropped. For rationale, see the Selection of MIS section of this Appendix. Sage grouse is the only additional MIS species discussed here.

SAGE GROUSE

Habitat Overview

Sage grouse depend primarily on sagebrush habitat for much of the year, although meadows and mesic sites are seasonally important habitat components (Connelly, *et al*, 1988). Sage grouse prefer sagebrush habitats year round, however other shrubs within the sagebrush community may be used (Braun, *et al*, 1977). During the winter months sage grouse rely almost exclusively on sagebrush with a relatively dense

canopy for food and cover. Sagebrush provides nesting habitat in the spring; other shrubs in the community may be used but nest success is reduced. Sage grouse have higher nesting success in sagebrush communities with a dense canopy and tall grasses that result in lower predation rates (DeLong, *et al*, 1995).

Sage grouse are dependent on sagebrush for food from all to spring. During spring, the diet shifts to forbs. Forbs and insects are a fundamental part of the diet of sage grouse chicks. During the early part of a chick's life insects (beetles and ants) predominate the diet. After this time, forbs become the most important food. In addition, forbs provide essential nutrients for pre-laying sage grouse hens, which may ultimately affect their reproductive success. Sage grouse hens consume fewer forbs and more shrubs as forbs begin to dry out.

Population Overview

Available data indicate that sage grouse have declined throughout their range. Long-term data from nine western states show breeding populations have declined from 17 percent to 47 percent from the long-term average (Connelly and Braun, 1997). Based on their analysis, populations in Idaho have decreased by 40 percent.

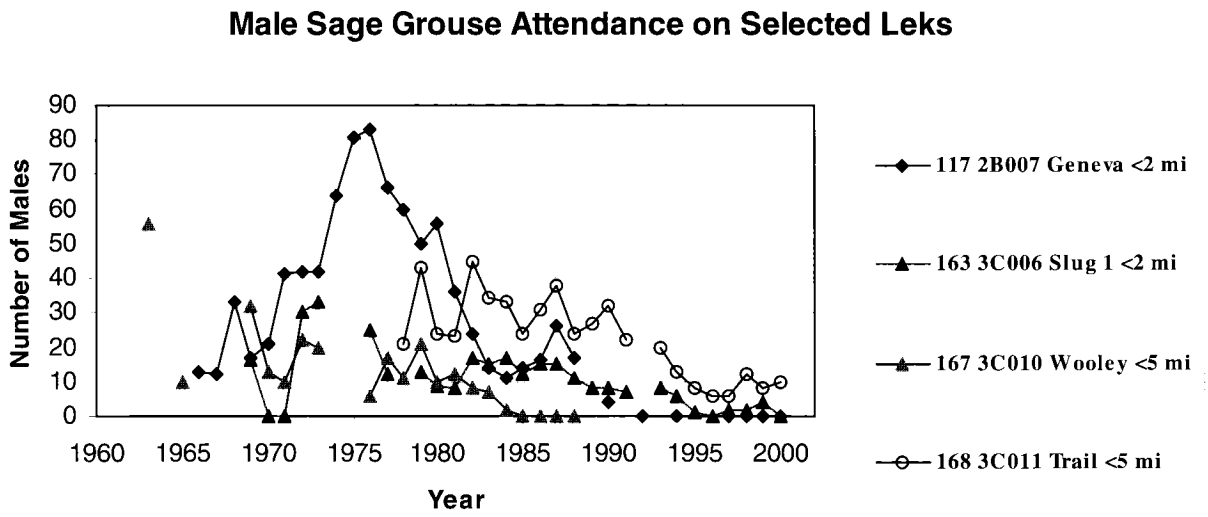
Because of the declines in sage grouse numbers in Idaho, the IDFG developed a sage grouse management plan (Idaho, 1997) and have implemented it through a Memorandum of Agreement. In 2001, a Memorandum Of Understanding (MOU) was signed between the Western Association of Fish and Wildlife Agencies, Forest Service, Bureau of Land Management, and the U.S. Fish and Wildlife Service.

The Washington population of sage grouse was petitioned for listing in 1999. In 2001, the U.S. Fish and Wildlife Service found that listing was warranted but precluded by higher priority listing actions (USFWS, 2001). There was a petition for listing the Mono County, California sage grouse population, but the U.S. Fish and Wildlife dismissed the petition. The greater sage grouse (includes birds in Idaho) was petitioned for listing in July 2002.

Only one lek has been documented on the Forest, but there are many within several miles of the Forest boundary (See Map 14). Sagebrush habitats within 20 kilometers (twelve miles) of active leks may provide nesting, brood-rearing and winter habitat for sage grouse (Connelly, *et al*, 2000). IDFG has been monitoring leks at irregular intervals for the last couple of decades, but monitoring efforts have increased over the last couple of years. While population fluctuations are likely, due to habitat and climatic changes, long-term trends may reflect changes in habitat conditions.

There are two known leks within two miles of the Forest Boundary that have long-term data, Geneva and Slug 1. In addition, there are two other larger leks within five miles that have long-term data, Wooley and Trail.

The graph suggests a declining population trend for sage grouse. However, there were only four leks reported and monitored before 1977, while in year 2000 there were fourteen leks monitored. Because of the difference in survey intensity, it is difficult to get a clear picture of overall trends. Of those fourteen leks surveyed in 2000, only three are larger (over twenty males) leks.



Factors Potentially Affecting Populations

Activities such as sagebrush treatments, hunting, wildfire, livestock grazing, fences, powerlines, and predation, along with adverse weather, are factors identified by Connelly and Braun (1997) that may have contributed to the decline of sage grouse range-wide.

Habitat Evaluation

ICB (Wisdom, *et al*, 2000) put sage grouse in family 11 with species that use big sagebrush, low sage and mountain big sagebrush. A special habitat feature for sage grouse is riparian meadows (brood-rearing habitat). Conservation measures identified in ICB include: (1) identification and conservation of remaining core areas where ecological integrity is high; (2) retard spread of non-native vegetation like cheatgrass; (3) restore native grass, forb and shrub components; (4) manage livestock grazing; (5) maintain or restore riparian vegetation; (6) minimize adverse impacts of human disturbance; and (7) focus short-term restoration of watersheds on those that are in high departure from historic conditions.

There are 365,200 acres of sagebrush on the Caribou NF, of which 203,459 acres are within ten miles of known lek locations (56 percent). The sagebrush habitats within ten miles of the leks are predicted to provide summer nesting and brood-rearing and winter habitat for sage grouse.

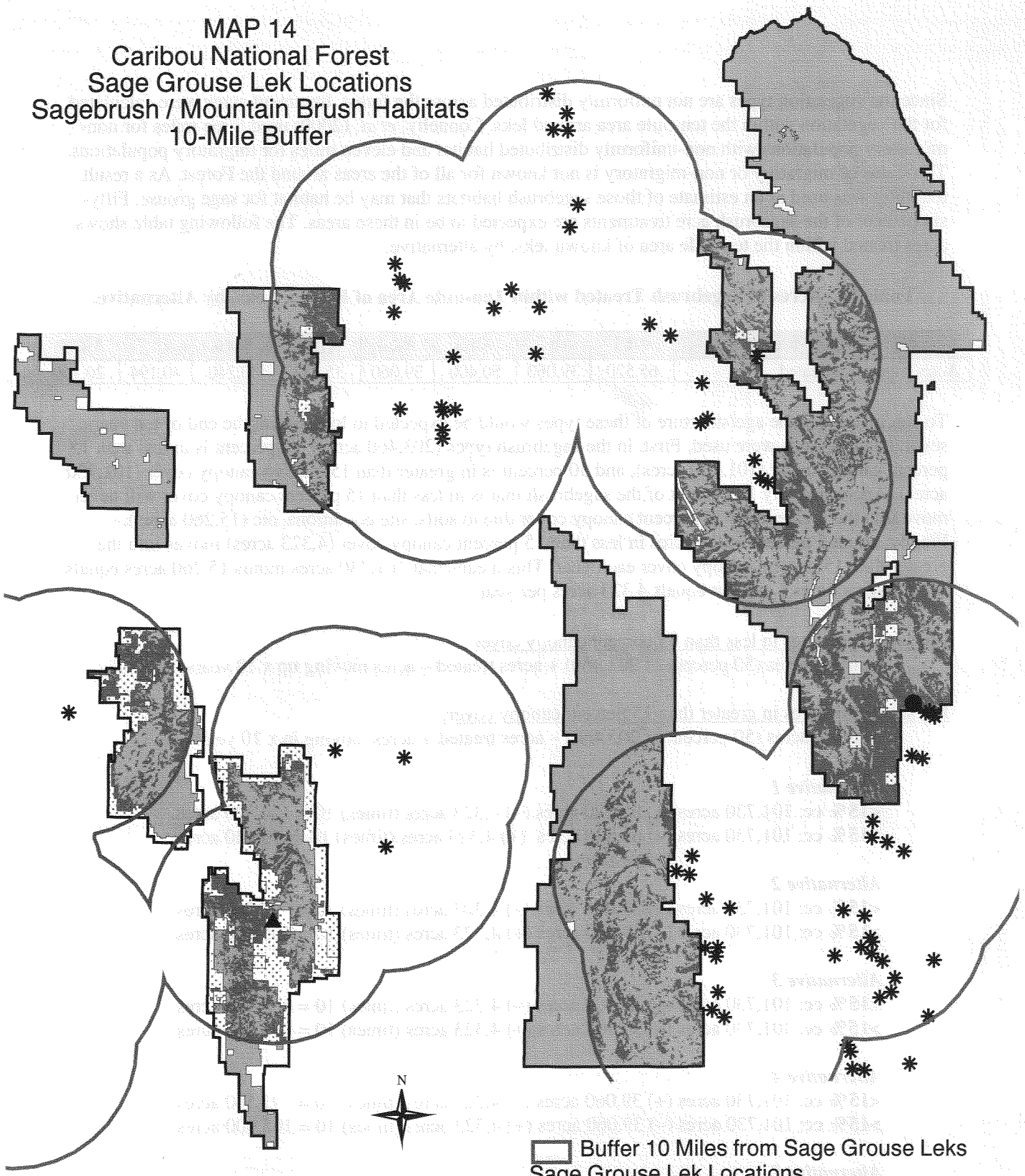
Analysis of Alternatives

Assuming that proposed treatments are evenly distributed across the Forest, and that treatments treat sagebrush and mountain brush in the proportion that they are present (90 percent sagebrush, 10 percent mountain brush), this table shows acres treated by type, forest-wide.

Table 98. Acres of Non-forested Vegetation and Sagebrush Treated, by Alternative.

Non-forested Vegetation	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Total acres treated	130,000	77,500	100,000	77,500	70,800	60,000	79,750	40,000
Acres of sagebrush treated	117,000	69,750	90,000	69,750	63,720	54,000	71,775	36,000

MAP 14
Caribou National Forest
Sage Grouse Lek Locations
Sagebrush / Mountain Brush Habitats
10-Mile Buffer



Buffer 10 Miles from Sage Grouse Leks

Sage Grouse Lek Locations

- On Caribou National Forest (1)
- On Private Inholding (1)
- Adjacent to the National Forest

National Forest Perimeter

Vegetative Types for Sage Grouse Habitat

- Sagebrush/MtnBrush on Natl Forest
- Sagebrush/Mtnbrush on Other Ownership

Ownership

- Caribou National Forest
- Private or State Inholdings

5 0 5 10 Miles

1:700000

Since the vegetation types are not uniformly distributed across the forest, treatment acres were calculated for the vegetation within the ten-mile area around leks. Connelly, *et al*, (2000) used three miles for non-migratory populations with non-uniformly distributed habitat and eleven miles for migratory populations. The status of migratory or non-migratory is not known for all of the areas around the Forest. As a result ten miles was used as an estimate of those sagebrush habitats that may be habitat for sage grouse. Fifty-six percent of the sagebrush acre treatments are expected to be in these areas. The following table shows acres treated within the ten-mile area of known leks, by alternative.

Table 99. Acres of Sagebrush Treated within Ten-mile Area of Known Leks, by Alternative.

Acres Within Ten Miles of Leks	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Acres sagebrush treated	65,520	39,060	50,400	39,060	35,683	30,240	40,194	20,160

To calculate what the age/structure of these types would be expected to look like at the end of ten years, several assumptions were used. First, in the sagebrush types (203,460 acres), 50 percent is in less than 15 percent canopy cover (101,730 acres), and 50 percent is in greater than 15 percent canopy cover (101,730 acres). Approximately 15 percent of the sagebrush that is in less than 15 percent canopy cover will never move into the greater than 15 percent canopy cover due to soils, site conditions, etc (15,260 acres). Finally, about 5 percent of the acres in less than 15 percent canopy cover (4,323 acres) moves into the greater than 15 percent canopy cover each year. This means that 101,730 acres minus 15,260 acres equals 86,470 acres times 5 percent equals 4,323 acres per year.

For sagebrush acres in less than 15 percent canopy cover:

Starting acres (50 percent of 203,460) + acres treated – acres moving up x 10 years

For sagebrush acres in greater than 15 percent canopy cover:

Starting acres (50 percent of 203,460) – acres treated + acres moving in x 10 years

Alternative 1

<15% cc: 101,730 acres (+) 65,520 acres (–) 4,323 acres (times) 10 = 124,020 acres
>15% cc: 101,730 acres (–) 65,520 acres (+) 4,323 acres (times) 10 = 79,440 acres

Alternative 2

<15% cc: 101,730 acres (+) 39,060 acres (–) 4,323 acres (times) 10 = 97,560 acres
>15% cc: 101,730 acres (–) 39,060 acres (+) 4,323 acres (times) 10 = 105,900 acres

Alternative 3

<15% cc: 101,730 acres (+) 50,400 acres (–) 4,323 acres (times) 10 = 108,900 acres
>15% cc: 101,730 acres (–) 50,400 acres (+) 4,323 acres (times) 10 = 94,560 acres

Alternative 4

<15% cc: 101,730 acres (+) 39,060 acres (–) 4,323 acres (times) 10 = 97,560 acres
>15% cc: 101,730 acres (–) 39,060 acres (+) 4,323 acres (times) 10 = 105,900 acres

Alternative 5

<15% cc: 101,730 acres (+) 35,683 acres (–) 4,323 acres (times) 10 = 94,183 acres
>15% cc: 101,730 acres (–) 35,683 acres (+) 4,323 acres (times) 10 = 109,277 acres

Alternative 6
<15% cc: 101,730 acres (+) 30,240 acres (–) 4,323 acres (times) 10 = 88,740 acres
>15% cc: 101,730 acres (–) 30,240 acres (+) 4,323 acres (times) 10 = 114,720 acres

Alternative 7
<15% cc: 101,730 acres (+) 40,194 acres (–) 4,323 acres (times) 10 = 98,694 acres
>15% cc: 101,730 acres (–) 40,194 acres (+) 4,323 acres (times) 10 = 104,766 acres

Alternative 7R
<15% cc: 101,730 acres (+) 20,160 acres (–) 4,323 acres (times) 10 = 78,660 acres
>15% cc: 101,730 acres (–) 20,160 acres (+) 4,323 acres (times) 10 = 124,800 acres

Comparison of Alternatives

Table 100. Percent in Sagebrush Canopy Cover Classes at the End of Ten Years.

Canopy Cover	Existing Condition	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Sagebrush acres <15%cc	50%	61%	48%	53%	48%	46%	43%	48%	39%
% Sagebrush acres >15%cc	50%	39%	52%	47%	52%	54%	57%	52%	61%

Habitat management guidelines have recently been updated (Connelly, *et al*, 2000). These guidelines (nesting, brood-rearing and winter habitat) would be incorporated at the site-specific level where appropriate. While most leks (where populations are most easily monitored) are not on Forest, changes in populations could reflect changes in habitat conditions on the Forest.

Implementation of upland forage utilization standards on browse and herbaceous vegetation will improve habitat quality most in Alternatives 2-7 and 7R. Alternative 1 would maintain current conditions. Where habitats lie in a big game winter range prescription, more residual vegetation would be retained after livestock grazing.

Sage grouse are habitat specialists and depend on closed canopy sagebrush. In the short-term, all alternatives, except Alternatives 1 and 3, maintain or improve habitat conditions. Sage grouse habitat use on the Forest should remain the same or increase under these alternatives. However, at some point, as canopy cover increases, understory grasses and forbs decrease, decreasing suitability of the stand. As a result, overall effects are based on short-term changes, and longer-term departure from PFC.

To focus treatments on sagebrush that has lower potential for use by nesting sage grouse, the objective for sagebrush treatments has been changed to focus on canopy cover in greater than 25 percent, rather than the 15 percent that was in the Draft Plan.

Patch sizes/treatment sizes are listed in the sage grouse guidelines. Vegetation types are very patchy on the Caribou NF, with vegetation maps revealing a mosaic of small patches across the Forest. To get an overall picture of what patch sizes actually are, a patch size analysis was done. Six relatively undisturbed watersheds were selected across the Forest. Initially, three broad vegetation types were selected and two watersheds that had a good representation of one of the three vegetation types (sagebrush, aspen and conifer).

Table 101. Average Sagebrush Patch Size (in acres) for Relatively Undisturbed Watersheds.

Watershed Name	Average Sagebrush Patch Size (acres)
Preuss	229
Weston	95
Toponce	35
Rock/Pine	294
St. Charles	56
Horse	94

Naturally, patch sizes vary widely with a few areas of the Forest being made of larger patches while the rest of the Forest is in smaller patches. The Forest Plan includes a guideline to manage for a minimum of 320-acre patches, where possible.

The potential for disturbance during nesting is greatest in areas where off-route travel is allowed. In areas where vehicles are restricted to roads and trails, the birds are able to adjust to the predictable disturbances. The table below shows the major areas of potential sage grouse habitat and how off-route travel is dealt with in each alternative.

Table 102. Potential Sage Grouse Habitat and Travel Management.

Sage Grouse Habitat Area	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Portneuf	C	C	C	C	C	C	C	C
Malad District	C	C	C	C	C	C	C	C
Bear River Range	O/C	O/C	O/C	C	C	C	C	C
Preuss Range	O	O	O	C	C	C	C	C
Aspen/Grays/Webster	O	O	O	C	C/O	C	C/O	C/O

C = Closed to cross-country motorized travel.
O = Open to cross-country motorized travel.

Table 103. Risk Assessment for Sage Grouse, by Alternative.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Loss of mature sage, 10-years	Mod	Low	Mod	Low	Low	Low	Low	Low
Departure from PFC	Low	Mod	Low	Mod	Mod	High	Mod	High
Loss in grass/forb understory*	Mod	Low	Low	Low	Low	Mod	Low	Mod
Decline in wet sites	Mod	Mod	Mod	Low	Low	Low	Low	Low
Loss of tall sage winter habitats	Mod	Low	Mod	Low	Low	Low	Low	Low
Disturbance during nesting	Mod	Mod	Mod	Low	Low	Low	Low	Low
Overall risk	**Mod**	**Mod**	**Mod**	**Low**	**Low**	**Mod**	**Low**	**Mod**

* Based on a combination of forage utilization levels and sagebrush canopy cover.

Determinations of Effects

Implementation of Alternatives 4, 5, and 7 would have a low risk to sage grouse. Alternatives 1, 2, 3, 6 and 7R rank moderate based on a combination of the risk factors. While Alternative 7R has low risk over the short-term due to the low levels of treatments, it moves farther away from PFC and may be negative over the long-term.

The Revised Forest Plan includes direction for the use of the most current guidelines in development of site-specific projects, consideration of proximity to leks during project proposals, and potential for

disturbance during the breeding and nesting periods. In addition, there are several other guidelines for sagebrush habitat management found in the "Landbird" section.

The most suitable habitat was historically found at the lower elevations. The Revised Forest Plan direction will ensure that habitat suitability for sage grouse is maintained on the Caribou NF.

How the Revised Forest Plan Addressed the Most Current Sage Grouse Guidelines

The most current guidelines for management of sage grouse habitat are found in Connelly, *et al*, (2000). The habitat management guidelines were used, rather than the habitat restoration guidelines, as overall habitats on the Caribou NF are in suitable condition.

Table 104. Comparison of Forest Plan Direction to Guidelines in Connelly, *et al*, 2000.

CONNELLY 2000 GUIDELINES	REVISED FOREST PLAN DIRECTION
Breeding Habitat	
1. Manage to support 15-25 percent canopy cover of sagebrush, understory averaging greater than 18 cm in height, with greater than 15 percent cc of grasses and greater than 10 percent forbs	Guideline for treatments in sagebrush as been changed to prioritize treatments in canopy cover greater than 25 percent; implementation of forage utilization standards will leave more residual cover, especially on big game winter ranges; and guidelines in landbird section address understory vegetation
2. Protection of suitable habitats within buffer from lek (distance depends on seasonal use status)	Guideline for use of current guidelines in development of site-specific projects; consideration of distance to active lek locations during site-specific project planning
3. Management during drought	Upland utilization standards will still be in effect. In bad years, livestock will leave the Forest early, as they do now.
4. Suppression of wildfires in breeding habitats	Plan includes an objective to map functional and degraded sage grouse nesting and winter habitat and identify opportunities to increase the quality or quantity of habitat
5. Timing of activities	Two guidelines for management activities in relation to grouse breeding and nesting habitat
Summer-late Brood-rearing Habitat	
1. Avoid practices that reduce soil moisture effectiveness	Soils standards
2. Buffer sage grouse foraging areas (wet meadows)	Riparian buffers and riparian forage utilization standards
3. Discourage use of very toxic organophoshorus and carbamate insecticides	This is not addressed here. Done in a separate analysis with Wildlife Services
4. Maintain free water and wet meadows if developing springs.	Addressed in grazing guideline for returning water to point of origin after livestock leave unit
Winter Habitat	
1. Over the landscape, allow access to sagebrush stands with 10-30 percent canopy cover and 25-35 cm tall	Plan includes an objective to map functional and degraded sage grouse nesting and winter habitat and identify opportunities to increase the quality or quantity of habitat
2. Protect patches of sagebrush within burned areas	Not addressed here. Will be addressed at the site-specific project level.

Cumulative Effects

Only one of the known leks is located on the Forest. The majority of the land within ten miles of these leks is in other ownerships and current sagebrush management is unknown. Other risk factors like predation, hunting, powerlines and weather vary widely by area and by year.

References cited in above section:

Braun, C.L., Britt, T. and R.O. Wallestad. 1977. "Guidelines for Maintenance of Sage Grouse Habitats" Wildlife Society Bulletin 5:99-106.

Connelly, J.W. and C.E. Braun. 1997. Long-term changes in sage grouse populations in western North America. Wildlife Biology. 3: 123-128.

Connelly, J.W., M.A. Schroeder, A.R. Sands and C.E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin. 28(4): 967-985.

DeLong, A.K., Crawford, J.A. and D.C. DeLong, Jr. 1995. "Relationships between vegetational structure and predation of artificial sage grouse nests". Journal of Wildlife Management 59: 88-92.

Idaho. 1999. Idaho Sage Grouse Management Plan". Idaho Department of Fish and Game. Boise, ID.

USFWS. 2001. Notice of 12-month petition finding. Federal Register. May 7, 2001. Volume 66, Number 88.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

Other Fine-Filter Species-At-Risk

NORTHERN LEOPARD FROG

In Idaho the leopard frog lives in marshes, wet meadows from low valleys to mountain ridges (IDFG 1994). C. Peterson (pers. comm.) has found that this species is often associated with beaver ponds. They eat vertebrates as well as invertebrates and winter in the bottoms of ponds and lakes.

Within the last twenty to twenty-five years northern leopard frog populations have declined and been extirpated from large portions of the area from the western plains of Colorado, Wyoming, Montana, and Alberta westward to Oregon and Washington (Maxell, 2000). Suggested causes of declines include loss of wetlands and natural hydrologic regimes, introduction of game fish, mosquito fish and bullfrogs; application of pesticides and herbicides; and drought. While it is likely that all of these factors have played a role in the decline and extirpation of local populations, many of the declines and extirpations were apparently associated with regional mass mortality events between 1973 and 1982 because declines were observed in relatively pristine areas as well (Maxell, 2000).

In 1992, IDFG conducted a mail survey to get information on amphibian population trends in Idaho (Groves and Peterson, 1992). While there are problems associated with this survey and its results, about 78 percent of the respondents that commented on northern leopard frogs felt that populations were decreasing.

The northern leopard frog was historically found on Pocatello Ranger District, but was not observed during 1996 and 1997 surveys of Scout Mountain and Clifton Creek. They were only found in Toponce Creek area but were locally abundant (Burton and Peterson, 1998). They concluded that the Toponce Creek drainage is an important area for this species.

More recently, Burton (2001) looked at the Mink, Pebble and Toponce Creek drainages – the biggest threat in Mink and Pebble drainages was identified as successional changes in wetlands after disappearance of beaver. In Toponce Creek, beaver created 75 percent of northern leopard frog breeding ponds; of these, 25 percent of these were active and 75 percent were inactive. He concluded that restoration of breeding habitat is dependent on reestablishment of beaver in these drainages.

Habitat Evaluation

Based on the National Wetlands Inventory[2] for the Caribou NF, there are 7,150 acres of wetlands. Of these, 2,702 acres (38 percent) are categorized as shrub riparian.

Riparian habitats are mapped on the Caribou NF. This mapping identifies 4,100 acres. Currently 24 percent of riparian habitat is in proper functioning condition, 69 percent is functioning-at-risk and 7 percent of riparian is in non-functioning condition. Of the functioning-at-risk streams, about 86 percent are at moderate to high risk.

Determination of Effects

There is a Revised Forest Plan objective to develop a plan in cooperation with IDFG to identify watersheds where beaver would benefit, and habitat conditions are suitable for beaver reintroduction. This objective would also benefit species like the northern leopard frog over the long-term, as they have been identified as being associated with beaver ponds.

The Plan also includes an objective to "Repeat amphibian surveys at ten-year intervals to determine habitat and population trends. Add new surveys into unsurveyed but potential habitat."

Based on the riparian utilization standards in each of the alternatives, the following shows the relative ranking of the alternatives, with a ranking of "1" being the best. Alternatives 4-7 and 7R are the lowest risk and should improve habitats the most.

Table 105. Ranking of Alternatives Based on Riparian Habitat Conditions.

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Ranking (1= best)	7	5	6	3	1	1	3	3

Northern leopard frogs are found across the western United States, and the Caribou NF is only a small part of their range. However, improved riparian habitats and restoration of beaver could help to increase the distribution of this species across the Forest and southeast Idaho.

Cumulative Effects

More work will need to be done to identify the causes of declines of populations, both on and off the Forest. Suggested causes of declines in northern leopard frog populations in this and other areas of the country included loss of wetlands and natural hydrological regimes, introductions of game fish, mosquito fish, and bullfrogs; application of pesticides and herbicides, and drought (Maxell, 2000).

[2] USDI 1991. National Wetlands Inventory. USDI, Fish and Wildlife Service, Office of Biological Services, Portland, OR.

References cited in above section:

Burton, S.R. 2001. Amphibian Declines in Southeast Idaho: Using Modeling to Assess the Habitat Loss Hypothesis. PhD Thesis, Idaho State University, Pocatello, ID.

Burton, S. and C.R. Peterson. 1998. Distribution, Relative Abundance and Habitat Association of Amphibians in Caribou National Forest. Idaho State University, Pocatello, ID.

Groves, C.R. and C. Peterson. 1992. Distribution and Population Trends of Idaho Amphibians as Determined by Mail Questionnaire. Idaho Fish and Game, Boise, ID.

IDFG. 1994. Idaho's Amphibians and Reptiles: Description, Habitat and Ecology. IDFG, Nongame and Endangered Wildlife Program, Nongame Wildlife Leaflet No.7, Boise, ID.

Maxell, B.A. 2000. Management of Montana's Amphibians: A review of factors that may present a risk to population viability and accounts on the identification, distribution, taxonomy, habitat use, natural history and the status and conservation of individual species.

BOREAL TOAD

Boreal toads are found in a wide variety of habitats including wetlands, forests, woodlands, sagebrush, meadows and floodplains in the mountains and mountain valleys. Adults and juveniles are freeze intolerant and over winter in rodent burrows (Maxell, 2000). Breeding may take place in shallow areas of large and small lakes, beaver ponds, temporary ponds, slow-moving streams and backwater channels of rivers. Females lay strings of eggs around emergent vegetation or in loose clumps. Adults and dispersing juveniles may move up to 2.5 miles from breeding and natal sites.

Population Status

Within the last twenty-five years populations have undergone declines in Colorado, Utah, southeast Wyoming and New Mexico. Surveys in the late 1990s in the northern Rocky Mountains found that they were absent from a large number of their historic localities and only occupied a small part of the available habitat (Maxell, 2000).

Groves and Peterson (1992) did a mail questionnaire about the status of amphibian populations in Idaho. Although there are problems with this survey, half of the respondents that addressed boreal toads felt that populations were decreasing.

The boreal toad is ranked as not rare and apparently secure, both globally and statewide (CDC 2002). Boreal toads were historically found in several areas of the Forest. In recent surveys they were found only in the Tincup drainage (Burton and Peterson, 1998). These surveys in 1996 and 1997 found them in four of 185 sites surveyed, and only one breeding site was found. They concluded that the Tincup Creek drainage is an important area for this species.

Habitat Evaluation

Based on the National Wetlands Inventory[3] for the Caribou NF, there are 7,150 acres of wetlands. Of these, 2,702 acres (38 percent) are categorized as shrub riparian.

[3] USDI 1991. National Wetlands Inventory. USDI, Fish and Wildlife Service, Office of Biological Services, Portland, OR.

Riparian habitats are mapped on the Caribou. This mapping identifies 4,100 acres. Currently 24 percent of riparian habitat is in proper functioning condition, 69 percent is functioning-at-risk and 7 percent of riparian is in non-functioning condition. Of the functioning-at-risk streams, about 86 percent are at moderate to high risk.

Determination of Effects

There is a Revised Forest Plan objective to develop a plan in cooperation with IDFG to identify watersheds where beaver would benefit, and habitat conditions are suitable for beaver reintroduction. This objective would also benefit species like the boreal toad over the long-term, as beaver ponds have been identified as breeding habitat.

The Plan also includes a guideline that states, "Ensure habitats in the Tincup Creek drainage and other known toad breeding locations are managed to maintain or improve the existing population and distribution of boreal toads." The Plan also includes an objective to "Repeat amphibian surveys at ten-year intervals to determine habitat and population trends. Add new surveys into unsurveyed but potential habitat."

Based on the riparian utilization standards in each of the alternatives, the following shows the relative ranking of the alternatives, with a ranking of "1" being the best. Alternatives 4-7 and 7R are the lowest risk and should improve habitats the most.

Table 106. Ranking of Alternatives Based on Riparian Habitat Conditions.

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Ranking (1= best)	7	5	6	3	1	1	3	3

The boreal toad is distributed across the western part of the United States, and the Caribou NF provides only a small part of the habitat within their range. However, improved riparian habitats could potentially help increase distribution across the Forest and southeast Idaho.

Cumulative Effects

More work will need to be done to identify the causes of declines of populations, both on and off the Forest. There are many potential risk factors for this species. Some of these include sublethal environmental stress which leaves the toads more susceptible to diseases like red-leg or chytrid fungus; predation; livestock grazing at temporary ponds, and use of pesticides and insecticides (Maxell, 2000).

References cited in above section:

Burton, S. and C.R. Peterson. 1998. Distribution, Relative Abundance and Habitat Association of Amphibians in Caribou National Forest. Idaho State University, Pocatello, ID.

Groves, C.R. and C. Peterson. 1992. Distribution and Population Trends of Idaho Amphibians as Determined by Mail Questionnaire. Idaho Fish and Game, Boise, ID.

Maxell, B.A. 2000. Management of Montana's Amphibians: A review of factors that may present a risk to population viability and accounts on the identification, distribution, taxonomy, habitat use, natural history and the status and conservation of individual species.

Pygmy rabbits are associated with greater sagebrush densities; stands in deep soils, with a tall, dense structure and a high percent of woody cover. Sagebrush is the primary food, but grasses and forbs are eaten in mid- to late-summer (Green and Flinders, 1980).

Pygmy rabbits are moderately widespread or widespread with spotty distribution. They are found across the western states. They are ranked as apparently secure (S4) in Nevada; vulnerable (S3) in Idaho and California; and imperiled (S2) in Oregon, Montana, Wyoming, and Utah (www.natureserve.org).

Habitat Evaluation

ICB (Wisdom, *et al*, 2000) put pygmy rabbits in family 11 with species that use big sagebrush, low sage and mountain big sagebrush. Pygmy rabbits use dense stands of tall sagebrush, with a high amount of woody cover, in areas with deep soils. Sagebrush is the primary food, but grasses and forbs are eaten in mid- to late-summer.

Documented historic records for pygmy rabbits are from near Pocatello, Ft Hall and Downey, all at lower elevations, below the Forest (CDC). There are no known occurrences on the Forest. Pygmy rabbits have been included with cottontails in Idaho's hunting seasons. There is currently a proposal to ban hunting for pygmy rabbits because of the lack of data and concerns that populations may be declining.

There are 365,200 acres of sagebrush on the Caribou NF, and the assumption is made in this analysis that it is all potential habitat. Assuming that proposed treatments are evenly distributed across the Forest, and that treatments treat sagebrush and mountain brush in the proportion that they are present (90 percent sagebrush, 10 percent mountain brush) this table shows acres treated by type, forest-wide.

Determination of Effects

Table 107. Acres of Non-forested Vegetation and Sagebrush Treated, by Alternative.

Non-forested Vegetation	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Total acres treated	130,000	77,500	100,000	77,500	70,800	60,000	79,750	40,000
Acres of sagebrush treated	117,000	69,750	90,000	69,750	63,720	54,000	71,775	36,000

Table 108. Distribution of Sagebrush Canopy Cover Classes at the end of Ten Years.

Canopy Cover Classes	Existing Condition	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
% Sagebrush acres <15%cc	50%	65%	52%	57%	52%	50%	47%	52%	43%
% Sagebrush acres >15%cc	50%	35%	48%	43%	48%	50%	53%	48%	57%

Recommendations for sagebrush-associated species suggest that habitat patches need to be at least 320 acres to be effective for species requiring "interior" habitats[4]. Fragmentation of sagebrush shrublands may result in the loss of habitat for a couple of decades, or until canopy cover moves up into the denser category. Large treatments would result in a decrease in habitat connectivity, acting as barriers to movement or increasing vulnerability to predation due to a lack of cover.

[4] Paige and Ritter

Vegetation is very patchy on the Caribou NF. Since most of the sagebrush habitats are at lower elevations on the Forest (and off-Forest), and mix in with other types as elevation increases, they naturally are more broken on the Forest. To get an idea of patch sizes in sagebrush stands, six relatively undisturbed watersheds were selected from across the Forest. The average sizes in these six watersheds range from 35 acres up to 294 acres.

Table 109. Average Sagebrush Patch Size (in acres) for Relatively Undisturbed Watersheds.

Watershed Name	Average Sagebrush Patch Size (acres)
Preuss	229
Weston	95
Toponce	35
Rock/Pine	294
St. Charles	56
Horse	94

The Forest Plan has a guideline that looks at a patch size minimum of 320 acres, where possible. In addition, because of the unknown status of pygmy rabbits on the Forest, an objective has been added to work with IDFG to resurvey historic locations to see if they are present, or habitat is still suitable.

Table 110. Risk Assessment for Pygmy Rabbits, by Alternative.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Loss of mature sage, 10-years	Mod	Low	Mod	Low	Low	Low	Low	Low
Departure from PFC	Low	Mod	Low	Mod	Mod	High	Mod	High
Loss in grass/forb understory	Mod	Low	Low	Low	Low	Low	Low	Low
Overall risk	**Mod**	**Low**	**Mod**	**Low**	**Low**	**Mod**	**Low**	**Mod**

Alternatives 2, 4, 5 and 7 all have a low risk for pygmy rabbits, while the rest of the alternatives rate moderate. Alternative 7R has a low risk over the short-term due to the low level of treatments. But over the long-term, risk goes up as sagebrush habitats move further from proper functioning condition. All alternative should maintain habitat suitability over the planning period over the next ten years, but the most suitable habitat for this species was historically found at lower elevations.

Cumulative Effects

The historic records of pygmy rabbits in the vicinity of the Forest were mostly from off-Forest locations. It is unknown what the status of habitats or animals is currently. To address the status of habitats, an objective has been added to the Plan to work with IDFG to resurvey historic locations to see if they are still present, or if habitat is still suitable.

References cited in above section:

Green, J.S. and J. T. Flinders. 1980. Habitat and Dietary Relationships of the Pygmy Rabbit. Journal of Range Management. Vol 33, No. 2, p. 136-142.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

Marten distribution is closely associated with late-successional coniferous forest. Voles are the most important food item across their range. They prefer mature, moist forests with high structural diversity in the understory (foraging habitat and winter thermal cover). They are vulnerable to predators (raptors and owls) and need cover for protection from predation.

The main part of their distribution comprises the boreal and taiga zones of Canada and Alaska. South of this area, the distribution becomes more dispersed, following mountain ranges southward. The southern limit of marten distribution coincides roughly with that of conifer tree species (Ruggerio, *et al*, 1994).

In the winters of 1994 and 1995, the Forest, in cooperation with the IDFG, released pine marten back into the Bear River Range to supplement the remaining resident populations that had been trapped to very low numbers from the 1940s through the 1960s. During the winters of 1995 and 1996 camera/bait stations recorded the presence of martens. These surveys stations were in Green Canyon, Franklin Basin, and Egan Basin. They recorded snowshoe hare, bobcat, deer mice, northern flying squirrels, magpies, golden eagles and tree squirrels, as well as pine marten.

Relatively small home ranges and tolerance of home range overlap suggests that marten may be capable of persisting in fragmented landscapes (Witmer, *et al*, 1998). However, they will not travel far from overhead cover, and thus direct links between habitats are essential.

Habitat Evaluation

ICB (Wisdom, *et al*, 2000) put pine martens in Family 2, which are species using broad-elevation old forest. They use late-seral multi- and single layered stages of the montane community. Important habitat components include snags for nesting and downed logs for foraging for prey species. Late-seral source habitats used by the marten may be negatively affected by increased fragmentation.

Conservation strategies for species in this group include: (1) disturbance processes that create/maintain these habitats considered when determined where habitats are to be maintained. In Upper Snake and Snake Headwaters ERU's it may be necessary to identify mid-seral forests in lower montane communities that could be brought to late-seral condition; (2) maintain all large diameter (21 inches dbh) snags and trees, preferably in clumps, and provide opportunities for snag recruitment; (3) maintenance of old forest attributes, like coarse woody debris; (4) increase connectivity; (5) minimize or avoid road construction in late-seral forests; and (5) evaluate wildfire and prescribed fire policies (Wisdom, *et al*, 2000).

Comparison of Alternatives

Table 111. Average Patch Size in Acres, by Habitat Type.

Watershed	Aspen (Acres)	Doug-fir (Acres)	Mixed conifer (Acres)	Lodgepole pine (Acres)
Preuss	35	26	20	20
Weston	18	43	na	na
Toponce	55	10	14	na
Rock/Pine	56	48	8	na
St. Charles	29	27	27	22
Horse	23	28	16	44

Even when lumping the vegetation into forested and non-forested vegetation, patch sizes were relatively small. Average patch sizes in forested vegetation were between 84 and 348 acres in these six drainages.

Based on this information, in combination with analysis of vegetation patterns as displayed on maps, it is apparent that the Forest has naturally small patch sizes and fragmentation as a result of timber harvest or burning is not expected to have measurable impacts on this species.

Table 112. Percent Mature and Old at the end of Ten Years, by Alternative.

Alt	Forest Types Treated	Aspen % Mature and Old	Low-elevation % Mature and Old	High-elevation % Mature and Old
1	All	57%	85%	79%
2	Mixed conifer, aspen/Douglas-fir, aspen	56%	85%	76%
3	Douglas-fir, lodgepole pine and mixed conifer	56%	83%	74%
4	Mixed conifer, aspen/Douglas-fir and aspen	56%	83%	77%
5	Mixed conifer, aspen/Douglas-fir and aspen	55%	85%	79%
6	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	80%
7	Mixed conifer, aspen/Douglas-fir and aspen	56%	85%	79%
7R	Mixed conifer, aspen/Douglas-fir and aspen	49%	82%	81%

The risk assessment focused on higher-elevation mixed conifer forests, since generally mesic forest is considered primary habitat.

Table 113. Risk Assessment for Pine Marten, by Alternative.

Risk Assessment	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Decrease on high-elevation Old forest	Low	Mod	Low	Low	Low	Low	Low	Low
Departure from PFC	Mod	Low	Low	Low	Mod	Mod	Low	Mod
Loss of snags, downed woody debris	Mod	Mod	Mod	Low	Low	Low	Low	Low
Fragmentation	Low	Low	Low	Low	Low	Low	Low	Low
Overall Ranking	**Mod**	**Mod**	**Low**	**Low**	**L-M**	**L-M**	**Low**	**L-M**

* Emphasis on high-elevation mixed conifer as primary habitat

Alternatives 3, 4 and 7 provide the lowest risk for boreal owls, based on short-term and long-term habitat provided, as well as that predicted availability of snag nesting trees. Alternatives 1, 2, 5, 6 and 7R have a moderate risk to pine marten and habitat. While the forested stands are further from PFC, the preponderance of mature and old stands will provide habitat. Populations would be expected by remain at current levels until such time as stand-replacing fires, insect or disease epidemics or other natural events replace mature/old stands with young stands.

Cumulative Effects

Most of the suitable habitat for this species is found at higher elevations, in forested lands, which are often federally managed lands. Increased emphasis on managing for forested species and forest carnivores should benefit this species over the long-term.

References cited in above section:

Ruggerio, L.F., K.B. Aubry, S.W. Buskirk, L.J. Lyon and W.J. Zielinski, technical editors. 1994. The Scientific Basis for Conserving Forest Carnivores: American Marten, Fisher, Lynx and Wolverine in the western United States. US Forest Service, General Technical Report, RM-254. Ft Collins, CO. Rocky Mountain Range and Experiment Station. 184 p.

Witmer, G.W., S.K. Martin and R.D. Sayler. 1998. Forest Carnivore Conservation in the Interior Columbia River Basin: Issues and Environmental Correlates. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-420. Portland, OR. 15 p.

Wisdom, M.J., *et al.* 2000. Source Habitats for Terrestrial Vertebrates of Focus in the Interior Columbia Basin: Broad-scale trends and management implications. USDA Forest Service, Pacific Northwest Research Station, Portland, OR. General Technical Report PNW-GTR-485. 156 pp.

Landbirds

Idaho has 243 species of birds that breed in the state (IPIF, 2000). Breeding bird survey routes in Idaho have found 114 species on more than fourteen routes, from 1966 to 2000. Of these 114 species, 46 percent of species had positive population trends; 18 percent had significant negative trends (mostly wetland-associated species) and 9 percent had significantly positive trends (www.mbr-pwrc.usgs.gov).

The USFS has developed a Landbird Strategic Plan (USFS, 2000). The overall goal is to maintain long-term sustainability of habitat for landbirds. This Plan includes goals to incorporate landbirds at all levels of the organization; incorporate knowledge about landbirds into land management decisions; consistency with state Partners in Flight Conservation Plans; incorporation of landbirds into Forest Plans; and prioritization of habitat improvement efforts in priority habitats.
More recent developments in migratory bird conservation provide a framework for promoting bird conservation. These include:

1) Executive Order 13186 (January, 2001). Defines responsibilities for federal agencies to protect migratory birds.

2) Memorandum of Understanding (January, 2001). Between the USFS and USFWS, providing for enhanced cooperation on behalf of migratory birds and their habitats.

3) Expansion of *Taking Wing* (February, 2001). Deputy areas for State and Private Forestry, research and Development, and the Office of International Programs joined the National Forest System in advancing the Taking Wing program, and expanding it to include all water birds.

The needs of landbirds have been incorporated into the Forest Planning process in several areas:

1) Identification of species-at-risk used the Partners in Flight "Idaho Bird Conservation Plan" (2000) to identify species of concern for the physiographic areas present in the Planning Area. See the Viability section of this document for more information.

2) These species-at-risk were grouped into habitat associations based on primary breeding habitats used. Habitat conservation measures were developed for priority habitats (riparian, non-riverine wetlands and sagebrush) and these were incorporated into the Forest Plan.

3) Individual species of landbirds (threatened, endangered and sensitive species) have guidelines to manage habitats and mitigate effects of projects.

4) Cavity nesters are addressed through Forest Plan snag guidelines.

5) Priority habitats from the PIF "Bird Conservation Plan" were incorporated into the analysis and Plan

Incorporation Into The Revised Forest Plan

Idaho PIF identified priority habitats for migratory landbirds. These include riparian habitat, non-riverine wetlands, sagebrush habitats and dry Ponderosa pine/Douglas-fir/Grand fir (which are not found on the Caribou NF). Habitat management goals, and desired future conditions have been included in the Forest Plan.

Riparian habitat

Riparian goals, objectives, standards and guidelines have been incorporated into the Plan in both Forest-wide direction and direction specific to 2.8.3 (Aquatic Influence Zone). This includes direction for shrub riparian vegetation. Direction from PIF and how it has been incorporated is shown in the Conservation Measures section of this paper.

Non-riverine wetland

Elk Valley, which is the major non-riverine wetland found on the Forest, has been given a Wild and Scenic River designation. The alternatives vary as to whether livestock grazing is allowed in this area. Alternatives 1, 2, 3, and 4 allow grazing, while no grazing is allowed in Alternatives 5 and 6. In alternative 7 and 7R, the Grazing Protocol will allow grazing if vegetative and soil conditions allow it. Direction from PIF and how it has been incorporated is shown in the Conservation Measures section of this paper.

Sagebrush habitats

Direction for management of sagebrush habitats if found in the Properly Functioning Condition section, Vegetation section and Wildlife section. This was developed from PIF and Paige and Ritter (1999). This direction how it has been incorporated is shown in the Conservation Measures section of this paper.

Overall

The Revised Forest Plan includes an objective to establish population and habitat trend plots in riparian, non-riverine, and sagebrush habitats.

Effects Analysis

Activities associated with the alternatives have the potential for unintentional take of nests or nestlings. Spring prescribed burning, off-route vehicle use, mining, timber harvest, concentrated recreational use and livestock grazing all can affect birds during the nesting season.

Forested vegetation treatments may affect understory and overstory nesting species. Prescribed burning may affect ground and shrub nesting species. Livestock grazing may affect ground, shrub and riparian

nesting species. Off-route vehicle use may impact ground-associated species. Mining and concentrated recreational use does not vary by alternative and is not displayed below.

Table 114. Risk Factors for Nesting Landbirds, by Alternative.

	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
Forested acres treated	16,800	34,100	41,800	57,000	25,700	25,700	34,100	49,000
% of forested acres treated	3%	6%	7%	10%	4%	4%	6%	8%
Non-forested vegetation treated	130,000	77,500	100,000	77,500	70,800	60,000	79,750	40,000
% of non-forested vegetation treated	28%	16%	21%	16%	15%	13%	17%	8%
Potential Cattle AUM decrease*	7%	7%	6%	24-31%	30-38%	65-66%	19-26%	17-24%
% Forest open to cross-country motorized travel*	33%	38%	38%	0%	3%	0%	2%	2%
Overall risk	**Mod**	**Mod**	**Mod**	**Low**	**Low**	**Low**	**Low**	**Low**

* Assumption that less cattle and less cross-country travel means less trampling of nests.

Alternatives 1, 2, and 3 have a moderate risk to breeding landbirds, due to higher percent of non-forested acres treated, more cattle compared to the other alternatives, and more of the forest is open to cross-country travel. Alternatives 4 and 7R have a low risk.

The Caribou NF will contribute towards the conservation of landbirds in southeastern Idaho. Many of the sagebrush-associated birds were historically found at lower elevations where sagebrush was more extensive and not broken into smaller patches. Planned management of sagebrush habitats on the Forest will maintain habitats in a suitable condition for these species, although it is generally in smaller patches than habitats that they used historically.

Most of the non-riverine wetland habitats are found at lower-elevations off-forest and the Forest contributes little habitat for associated species. Riparian habitats are found across the Forest and the Caribou will contribute to improving riparian habitats of various types and at a range of elevations, providing habitat for associated wildlife species.

References cited in above section:

IPIF. 2000. Idaho Bird Conservation Plan. S. Ritter, PIF Coordinator, Hamilton, MT.

Paige, C. and S.A. Ritter. 1999. Birds in a Sagebrush Sea: Managing Sagebrush Habitats for Bird Communities. Partners in Flight Western Working Group, Boise, ID.

USFS. 2000. Landbird Strategic Plan. Prepared in cooperation with Partners in Flight. FS-648. Washington D.C.

Overall Viability Assessment

Based on the risk assessments presented in this section, we have determined that Alternative 7R will maintain habitat able to support viable populations of existing native and desired non-native vertebrate species in the planning area. We have determined that the Plan is sufficient to provide well distributed habitat for reproductive individuals.

Big Game

Selection Of Areas To Be Analyzed

The Caribou NF includes parts of nine different State Game Management Units. These are shown on the following table and on Map 15.

Table 115. State Game Management Units on the Caribou NF.

GMU No.	GMU Location
66	Bear Creek
66a	Caribou
70	Bannock Range
71	Portneuf Range
73	Malad
75	Bear River Range North
76	Diamond Creek
77	Bear River Range Southwest
78	Bear River Range Southeast

Several meetings were held with IDFG Biologists to identify areas of concern on the Caribou. Most of the Forest is providing habitat to help meet big game population objectives. There were four areas identified where special concerns for big game exist. These four areas identified and specific concerns for each of these areas are discussed below.

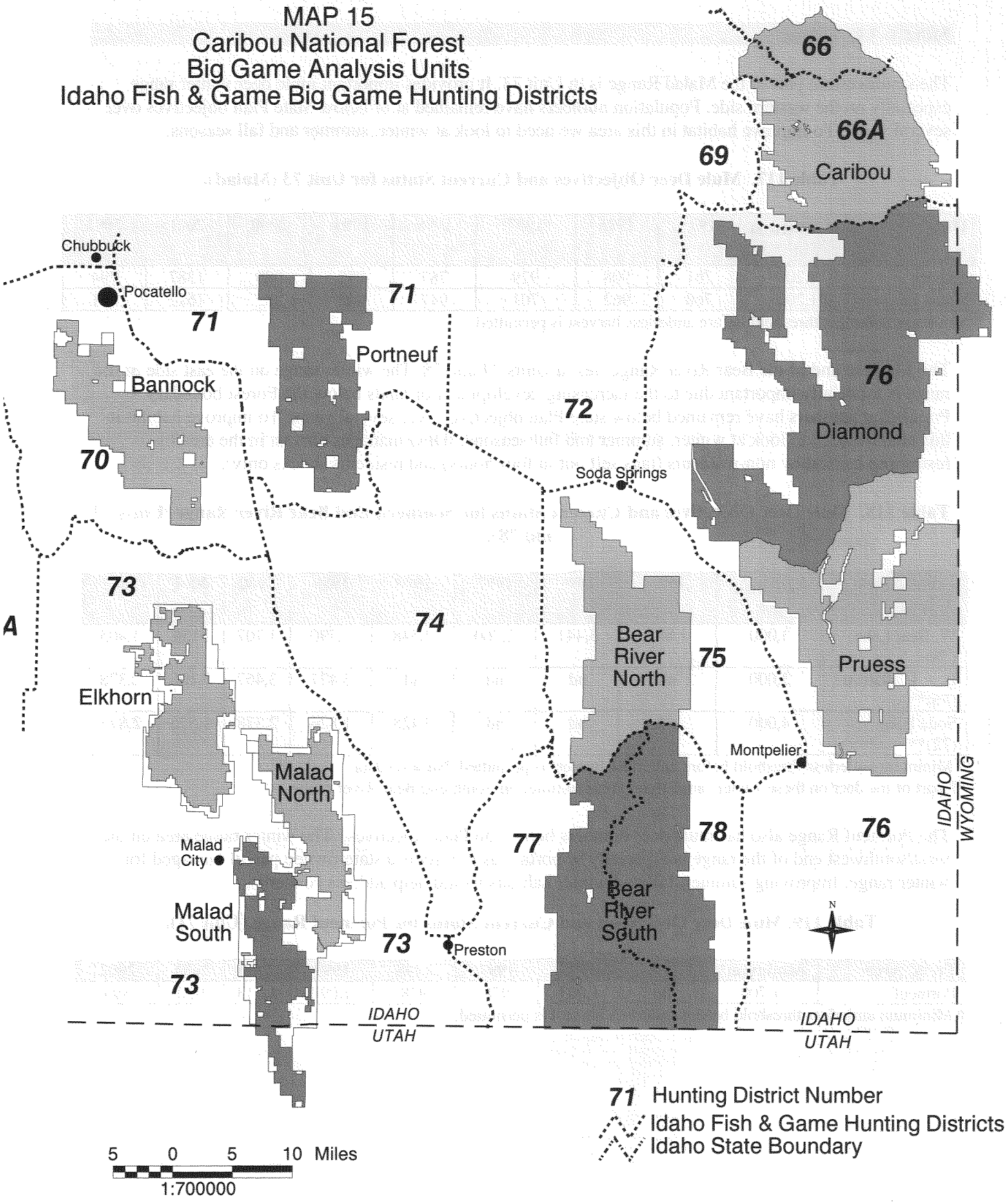
Elk

Smoky Canyon/Diamond Creek north. This area is part of Zones 66a and 76 and is managed for trophy bull elk hunting. To maintain this opportunity, summer and fall habitat concerns need to be addressed.

Table 116. Elk Population Objectives and Current Status for the Diamond Creek Zone.

Zone	Units	Adult Bull: 100 cows objective	Current Adult Bull: 100 cows	Total Bull: 100 cows objective	Current Total Bull: 100 cows	Population Objectives	Current Population
Diamond Creek	66a, 76	18-24	19 (2002 estimate)	30-35	35 (2002 estimate)	2,100	3,690 (2002 estimate)

MAP 15
Caribou National Forest
Big Game Analysis Units
Idaho Fish & Game Big Game Hunting Districts



MULE DEER

The southwestern part of the Malad Range is in Unit 73. It provides important mule deer winter range, especially on the western side. Population numbers have remained at or below State Plan objectives over several years. To improve habitat in this area we need to look at winter, summer and fall seasons.

Table 117. Mule Deer Objectives and Current Status for Unit 73 (Malad).

Trend Areas	Minimum *	1995	1996	1997	1998	1999	2000	2001	2002
Elkhorn	1,200	761	908	929	787	958	980	1387	794
Malad Face	1,200	760	962	701	947	942	885	1622	761

* Minimum antlerless threshold before antlerless harvest is permitted.

The southern end of the Bear River Range lies in Units 77 and 78. The winter range on the east side of the range is especially important due to the increasing development of lands below the Forest boundary. Population numbers have remained below state Plan objectives over several years. To improve habitat in this area we need to look at winter, summer and fall seasons. IDFG manages harvest in the area by restricting harvest by non-residents (tags sell out in four hours) and residents (bucks only).

Table 118. Mule Deer Objectives and Current Status for Southern End Bear River Range (Units 77 and 78).

Trend Areas	Minimum*	1995	1996	1997	1998	1999	2000	2001	2002
W. Bear Lake (78)	3,000	1,884	3,441	2,760	2,548	1,790	1,707	3150	1,405
Bear L. Plateau (76)**	3,000	nd	nd	nd	nd	3,427	3,467	5,106	2,378
Soda Hills (72)**	4,000	nd	nd	nd	3,428	1,826	2,378	4,576	2,877

* Minimum antlerless threshold before antlerless harvest is permitted. Nd = no data.

** part of the deer on these winter range trend areas summer on South end Bear River range.

The Portneuf Range also has mule deer numbers below the Plan objectives. The winter range area on the west/southwest end of the range is especially important as it borders a state-owned parcel managed for winter range. Improving summer, fall and winter habitats would help address concerns.

Table 119. Mule Deer Objectives and Current Status for Portneuf Range (Unit 71).

Trend Area	Minimum*	1995	1996	1997	1998	1999	2000	2001	2002
Portneuf	1,700	nd	1,003	978	978	1,097	1,113	920	899

* Minimum antlerless threshold before antlerless harvest is permitted.

Measures Or Considerations For Seasonal Habitats

Summer habitat effectiveness is defined as the percent of available habitat that is usable by elk from late green-up to hunting season (Christensen, *et al*, 1993). Factors that influence summer habitat effectiveness include roads; special features such as wet sites, riparian areas, and movement corridors; cover; domestic livestock grazing; and land ownership patterns. Roads have been identified as the most significant consideration on elk summer range.

During hunting season, vulnerability results from a complex relationship between access, cover, topography, hunter density, type of season and weather. The measure of this is the level of compatibility between Forest Service and State management plans, such as number of bulls per hundred cows (Christensen, *et al*, 1993).

The main considerations for winter range are forage quantity and quality; thermal cover; roads and other disturbances; and livestock management (Christensen, *et al*, 1993).

Summer Habitat Effectiveness

Christensen, *et al*, (1993) identified open road densities for elk habitat. For areas intended to benefit summer habitat range and retain high use, habitat effectiveness should be greater than seventy percent (70 percent) or more. This roughly equates to an open route density of 0.7 miles per square mile (mi/mi^2). For areas where big game is a primary resource consideration, habitat effectiveness should be fifty percent (50 percent) or greater. This roughly equates to an open route density of 1.9 mi/mi^2. For purposes of analysis, OMRDs were rounded to 1.0 mi./mi^2 and 2.0 mi/mi^2 in the development of the alternatives and prescription area direction.

All four areas being analyzed for big game were assigned a goal of a maximum open motorized route density of 1.0 mi/mi^2.

Table 120. Existing Summer OMRDs and Status in Relationship to Goal.

Summer HE	Existing OMRD*	OMRD goal	Status
Malad South	1.1 mi/mi^2	1.0 mi/mi^2	Doesn't meet
Portneuf Range	0.9 mi/mi^2	1.0 mi/mi^2	Meets
South end Bear River	1.4 mi/mi^2	1.0 mi/mi^2	Doesn't meet
Diamond Creek	1.4 mi/mi^2	1.0 mi/mi^2	Doesn't meet

* = Open motorized route density.

Vulnerability During Hunting Season

Vulnerability results from a complex relationship between access, cover, topography, hunter density, and weather. The measure of success for elk vulnerability is often the number of bulls per hundred cows surviving the hunting season.

Access and use of roads appear to be the most significant factors in vulnerability analysis (Christensen, *et al*, 1993). In areas where heavy cover is not available, reduced open road densities contribute to reducing both deer and elk vulnerability. In areas with more open cover and gentler terrain, roads speed up the harvest of available bulls and make bulls more vulnerable throughout the season. Increased emphasis

should be placed on security where poor cover conditions exist. Additionally, decreases in OMRD might occur where population objectives are not being met.

Security is the result of a combination of factors that allow elk to remain in a specific area while under stress from hunting. Specifically, security areas are defined as areas of cover (vegetative or topographic) large enough and far enough away from open roads to provide security. In one southwestern Montana analysis (Hillis, *et al*, 1991), security was defined as non-linear blocks, over .5 miles from an open route and at least 250 acres in size. They also determined that there should be at least a minimum of thirty percent (30 percent) security in a herd's summer/fall range. These same criteria were used to map security areas for the Caribou NF through use of Geographic Information Systems (GIS).

The map was produced and checked for accuracy. Several polygons were at the minimum size, but were dominated by sagebrush cover and dropped. Several polygons were adjacent to the Forest Boundary, and roads on adjacent lands had not been incorporated. These polygons were revised to be more accurate.

Table 121. Existing Security Area and Relationship to Goal.

Hunting Season Vulnerability	Percent Security in Area	Status
Malad Range south	19%	Does not meet
Portneuf Range	40%	Meets
South end Bear River	19%	Does not meet
Diamond Creek	16%	Does not meet

Mapping Of Big Game Winter Ranges

Winter ranges were originally mapped for the 1985 Caribou Forest Plan. According to Compton (IDFG Biologist, pers. comm. 2/2/01), the 1985 winter range map was based on actual counts in established survey blocks. However, not all winter range was in survey blocks, and in 1994, survey protocols were changed and surveys focused on areas where the animals were wintering.

In 1999, winter range was remapped by Scott Feltis (FS) and Brad Compton (IDFG). Winter range areas were drawn larger, based on a combination of: 1) new data since the survey protocol had changed; 2) incorporation of "overflight" information; 3) a need for a better way to address access concerns on winter range; and 4) some lines reflected upper limits of "search units" rather than actual winter range. This is shown on Winter Range Maps 1 and 2 in the project file.

The 1985 winter range was incorporated into Alternatives 2 and 3 (Alternative 2 had already gone out as the Proposed Action and Alternative 3 is the "commodity" alternative, which does not have as much emphasis on winter range). The 1999 winter range was used for Alternatives 4-7 Prescription maps. Upon further review, there were concerns raised that some of the lines may not actually reflect winter range use and the decision was made (3/31/01) to reconsider the winter range lines, especially specific areas shown on Winter Range Map 3 in the project file.

On 2/2/02, Betsy Hamann (FS Biologist) met with Brad Compton to reconsider the lines. He thought the Bannock Range was appropriate as drawn. He indicated that the elevations were high on Portneuf, because of mule deer bucks seen on the side of Haystack Mountain in 1999. But we did come to agreement to move the line down to roughly the 8,000-foot contour line. He also brought up the point that we might want to look at State Population objectives, not just the current population. This is one area

where current mule deer numbers are well below population objectives. He pointed out that in the 1960s during a period of high mule deer populations, deer were using the whole western slope of the Portneuf range as winter range.

Other points that he brought up are: 1) before 1992, there were a lot of deer using the north end of the Oxford Unit; 2) winter range on the east-side of the Bear River range looked good for elk, but for mule deer it would be lower, and follow up some of the canyons where there are mountain mahogany-dominated south slopes; 3) generally, elk are at or above numbers with the existing open road densities; 4) in the Malad area, hunting seasons have changed from five weeks either sex season to three days of any buck and three weeks of two-point buck for the rest of the season. He expressed concern that population numbers and buck;doe ratios are not being met.

On 2/5/01, Betsy Hamann met with Gary Vecellio (IDFG) to review the map. Carl Anderson participated in part of the meeting. Notes and decisions made from both of these meetings are shown on Winter Range Map 4 in the project file.

On 2/12/01, the IDT met to finalize the winter range map with changes made from the above meetings. The Districts had had a few days to review and comment, and comments were received from Soda Springs and Montpelier. Soda Springs had four areas of concern, as shown on Winter Range Map 5 in the project file. Montpelier had one area of concern, the area west of Bear Lake over 8,000 feet. Decisions were made on the five areas in question, as shown on Winter Range Map 6 in the project file.

Later that day, Jerry Tower came in with a map with Westside Ranger District concerns (Winter Range Map 7 in the Project File). Ken Timothy, who has worked in the area for over twenty years had sat down and redrawn lines based on his knowledge of winter range. However, as Gary Vecellio (IDFG) had already left, these changes were not made. The decision was made to leave Westside Ranger District as it is, and if changes need to be made, it would be done between the draft and final EIS/PLAN.

Additional meetings were held in the summer of 2002 to address additional areas of concern to members of the public. The meetings involved snowmobilers, county representatives, IDFG, and other interested people. The final winter range prescription areas in Alternative 7R were modified based on concerns identified at these meetings. This is shown in Map 16: Big Game Winter Range on the Caribou.

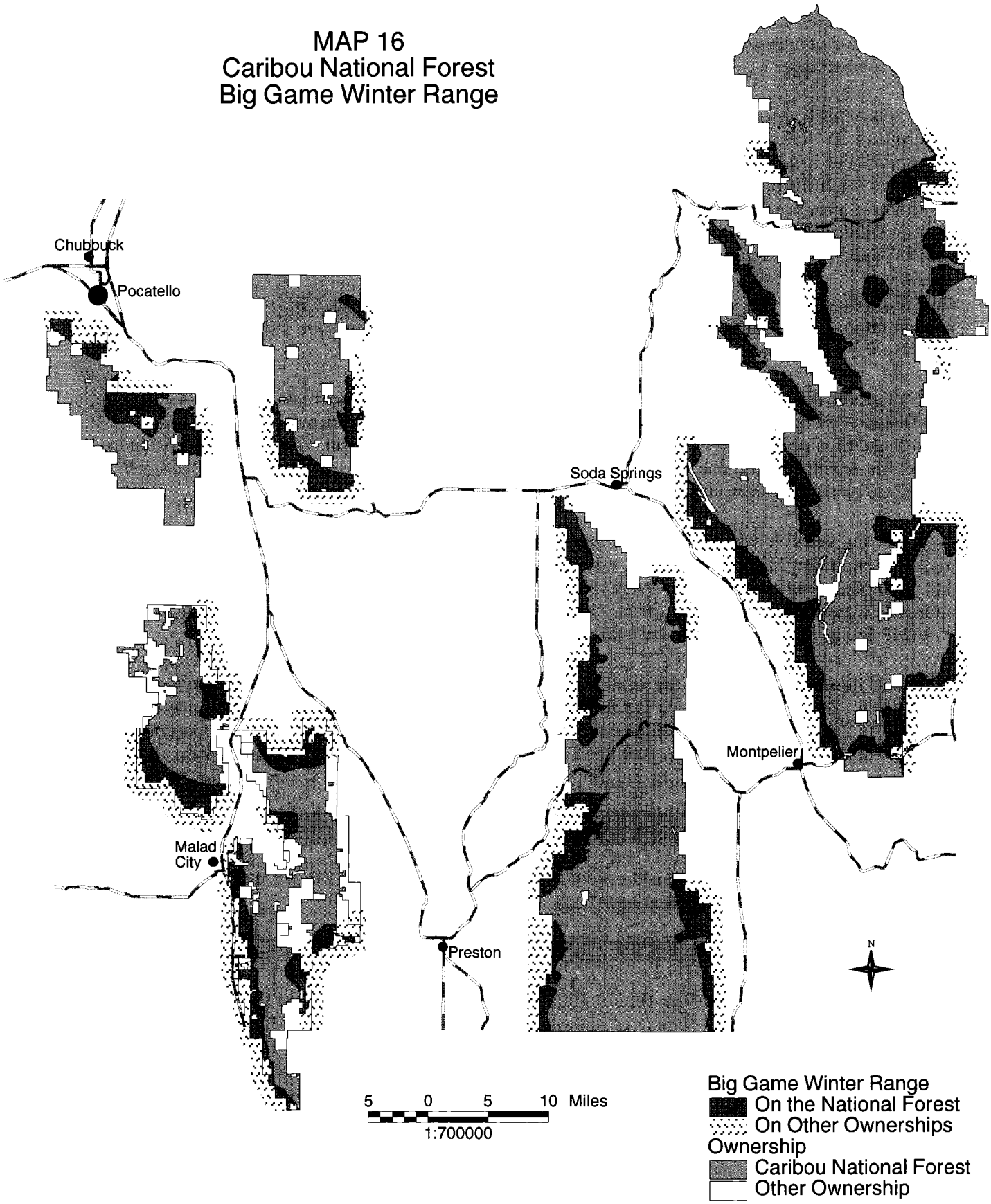
Big Game Movements

The following information does not address elk and mule deer over the whole Forest, but does discuss specific areas where elk and mule deer have been studied.

Elk

Thomas (2000) radio-collared elk on the Tex Creek winter range, to the north of the Caribou NF. Almost half the elk marked in his study summered in the area between Bald Mountain and Tincup Mountain (Unit 66a). He found that they move onto the Caribou NF through Fall Creek Basin. Fall migration dates varied, depending on weather conditions, but the mean date for movement off of summer range was December 14. Spring migration began in early April, with arrival on summer range in early May. The elk demonstrated high fidelity to summer home ranges between years.

MAP 16
Caribou National Forest
Big Game Winter Range



Brown (1980) also studied elk from the Tex Creek winter range. He found that 69 percent of his study elk summered in Unit 66a. They were on summer range by May 15, with the migration starting in late March to early May. They generally returned to winter range in mid-December to January. Again, Fall Creek Basin to the north was identified as a migration corridor. Generalized movements from Fall Creek then moved to Bear Creek, to South Fork Bear Creek, to Clear Creek and into the Caribou Basin. High fidelity to summer range was also found for elk with more than one years data. He did identify three areas that appear to be used as calf-rearing areas: south aspects of Tincup Mountain, Jacknife Creek in the vicinity of Trail Creek and adjacent south aspects; and the upper slopes of Black Mountain on both the east and west sides. He did notice minor shifts of three to seven miles for six elk during September/October period. These movements were into more inaccessible areas or areas of greater cover.

MULE DEER

Thomas (1987) studied movements of the mule deer wintering on the Willow Creek winter range (to the north of the analysis area). The summer range for part of these animals (66 percent) went south to Stump Creek and Blackfoot River and to the Salt River Mountains on the southeast (Units 66a and 76). The mule deer also showed a strong fidelity to summer home ranges, and the mean arrival date on summer home ranges was May 29.

He noted that mule deer in his study increased use of north and northwest aspects during hunting season and used higher elevations. Fall migration of mule deer began in mid-November and did not appear to be related to snow conditions.

Elk did not appear to affect deer distributions during his study. Avoidance of elk by individual deer was not observed; deer were observed feeding adjacent to, and mixed with, groups of elk on a number of occasions. He noted that livestock grazing was the only land use with high potential for altering the quality of summer ranges on the study area. Heavy grazing pressure in late summer and early fall has the potential to have greatest impact; livestock concentrate in high quality mesic patches of habitat, and opportunities for deer to shift habitat use appear extremely limited.

Migration corridors were associated with prominent geographical features, and were pronounced only where terrain channelized deer movements. These areas tended to become less distinct as distance from winter range increased (Thomas and Irby, 1990).

References cited in above section:

Brown, C. 1980. Spring-Fall Movements and Distribution of Tex Creek Elk in Southeast Idaho. IDFG. Idaho Falls, ID.

Thomas, T. 1987. Yearlong Movements and Habitat Use of Mule Deer Associated with the Willow Creek Winter Range in Southeastern Idaho. Masters Thesis, Montana State University, Bozeman, MT.

Thomas, T. 2000. Elk Radio Telemetry Study, Tex Creek Wildlife Management Unit, Final Report, January 1998 to December 2000. IDFG, Idaho Falls, ID.

Thomas, T.R. and L. R. Irby. Habitat Use and Movement Patterns by Migrating Mule Deer in Southeastern Idaho. Northwest Science, Vol. 64, No. 1, pgs. 19-27.

Big Game And Motorized Use

SUMMER

There is a large volume of research documenting the impacts of motorized access on elk habitat selection (such as Lyon 1983, Irwin and Peek 1979, Rost and Bailey 1979, Lyon 1979, Rowland, *et al*, 2000). Habitat management guidelines (Leege 1984, Lyon, *et al*, 1985) recognize roads as influencing elk use of summer habitat and provide guidelines for the management of roads.

Thomas (2000) radio-collared elk on the Tex Creek winter range, to the north of the Caribou NF. Almost half of the elk marked in his study summer in the area between Bald Mountain and Tincup Mountain (Unit 66a). He did an analysis of roads and trails and concluded that "by far, the greatest concentration of elk is in the area least accessible to motorized vehicles." He applied a one-half mile buffer along each motorized road and trail, and compared against elk locations and these patterns became even more evident. The analysis, as it applies to the Caribou, is shown on Map 17.

Rowland, *et al*, (2000) looked at elk distribution in relation to roads in northeast Oregon. They looked at three things; that elk habitat selection of habitats increases with increasing distance from roads; habitat effectiveness in relationship to open road densities; and last they considered different spatial patterns of roads and effects on habitat effectiveness. They concluded that roads and related human activities during spring and summer were important considerations for elk; and that a spatial component for roads needs to be incorporated into elk habitat models.

HUNTING SEASON

Generally, elk populations are stable or increasing in Idaho. The main factor to consider is the sex ratio and age class structures. Results from studies on the Starkey Experimental Forest in Oregon have shown that a lack of mature bulls in a herd can disrupt breeding seasons, delay conception dates and decrease calf survival. Younger bulls tend to breed later and over a longer period in fall. As a result, calves are born late in the spring and have less time to feed on high quality forage, and go into winter in poorer condition (Stalling, 1994).

Hillis, *et al*, (1991) analyzed elk security and vulnerability during the hunting season. Elk and bull vulnerability may be reduced and hunter opportunity may be increased, by providing security areas for elk during the hunting season. They recommended that to provide a reasonable level of bull survival, each security area should be a non-linear block of hiding cover greater than 250 acres in size and more than one-half mile from any open road. Collectively, these security areas should be at least 30 percent of the analysis unit. Vegetation density, topography, road access, hunter use patterns and elk movements are variables that must be considered when assessing security.

Gratson and Whitman (2000) looked at road densities as they influenced hunter access and hunter success, in north central Idaho. They acknowledge some problems associated with their study (lack of evaluation of terrain and habitat features in study areas) and caution about application of specific data from their study into other areas. However, they did conclude that road closures may significantly reduce densities of hunters, and increase success rates of hunters. They attributed this to greater bull densities in closed areas, lesser hunter:bull ratios, changes in elk behavior, environmental factors associated with road closures and the restricted areas attracting a different kind of hunter.

References cited in above section:

Gratson, M.W. and C.L. Whitman. 2000. Road Closures and Density and Success of Elk Hunters in Idaho. Wildlife Society Bulletin. 28(2): 302-310.

Hillis, J.M., M.J. Thompson, J.E. Canfield, L.J. Lyon, C.L. Marcum, P.M. Dolan and D.W. McCleerey. 1991. Defining Elk Security: the Hillis Paradigm. Elk Vulnerability Symposium, Montana State University, Bozeman, MT. April 10-12. p. 38-43.

Irwin, L.L. and J.M. Peek. 1979. Relationship Between Road Closures and Elk Behavior in Northern Idaho. In "North American Elk: Ecology, Behavior, and Management". Eds. M.S. Boyce and L.D. Hayden-wing. Laramie University, WY. P. 199-204.

Leege, T.A. 1984. Guidelines for Evaluating and Managing Summer Elk Habitat in northern Idaho. Idaho Department of Fish and Game, Wildlife Bulletin No. 11.

Lyon, L.J. 1983. Road Density Models Describing Habitat Effectiveness for Elk. Journal of Forestry, September 1983. p. 592-595.

Lyon, L.J. 1979. Habitat Effectiveness for Elk as Influenced by Roads and Cover. Journal of Forestry, October 1979. p. 658-660.

Lyon, L.J., T.N. Lonner, J.P. Weigand, C.L. Marcum, W.D. Edge, J.D. Jones, D.W. McCleerey and L.L. Hicks. 1985. Coordinating Elk and Timber Management; Final Report of the Montana Cooperative Elk-Logging Study 1970-1985.

Rost, G.R. and J.A. Bailey. 1979. Distribution of Mule Deer and Elk in Relation to Roads. Journal of Wildlife Management. 43(3): 634- 641.

Rowland, M.M., M.J. Wisdom, B.K. Johnson and J.G. Kie. 2000. Elk Distribution and Modeling in Relation to Roads. Journal of Wildlife Management 64(3); 672-684.

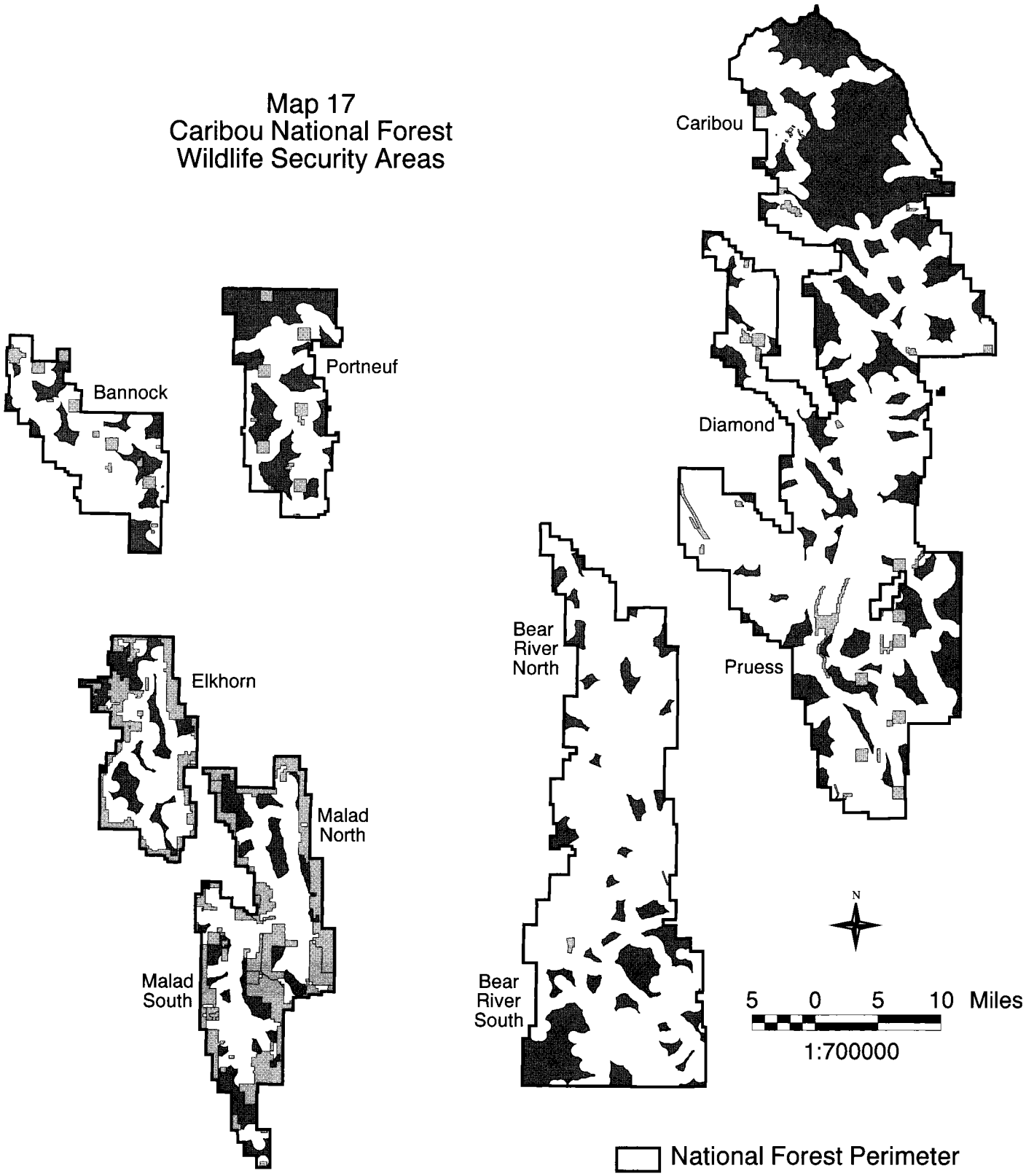
Stalling, D. 1994. Roads Closed: Making Bulls less Vulnerable. Bugle, Fall issue.

Thomas, T. 2000. Elk Radio Telemetry Study, Tex Creek Wildlife Management Unit, Final Report, January 1998 to December 2000. IDFG, Idaho Falls, ID.

Overview Of Hunting In The Four Areas Analyzed

While hunting seasons are outside of the scope of the Decision to be made for the Plan, an overview of the changes in hunting seasons in the areas analyzed will be included here. Hunting has an affect on big game populations, and it was brought up in numerous public comments on the Final Plan and EIS. The information was taken from Compton, *et al*, (1999).

Map 17
Caribou National Forest
Wildlife Security Areas



Motorized roads and trails were buffered 1/2 mile.
Private land was not excluded, nor were roads/trails on private land.

MULE DEER

Bannock (Unit 70) and Malad South (Unit 73)

Harvest management during the 1950s and 1960s was designed to maintain or reduce deer numbers in response to what was considered over-browsed winter ranges. Season frameworks in these units have varied considerably more than elsewhere in southeastern Idaho. General seasons have been the rule, with season lengths varying from three days to five weeks. Additionally, either sex opportunity has ranged from none to extra antlerless-only tags available in 1989 and 1990 for Unit 70 and 73. Following the winter of 1992/93, when significant winter mortality occurred, harvest management has been conservative. Despite conservative hunting seasons and low harvest since 1993, wintering populations in both Units 70 and 73 have either remained stable at low levels or declined.

Portneuf (Unit 71)

Harvest management during the 1950s and 1960s was designed to maintain or reduce deer numbers in response to what was considered over-browsed winter ranges. Long general either-sex seasons (three to five weeks) predominated. Following the decline in the early 1970's, harvest management became more conservative with two to four weeks of general season with varying amounts of either-sex opportunity offered. By the late 1980s, the deer populations had increased to the point that a population reduction was desired. The years 1989 and 1990 were marked by four-week general either-sex seasons with extra deer tags available. Following the winter of 1992/93, when significant winter mortality occurred, harvest management has been conservative.

ELK

Diamond Creek (Unit 76)

The elk population in this zone has increased dramatically from early historical records. Unregulated harvest in the late 1800s and early 1900s reduced populations to relatively low levels. By 1952 elk were believed to be numerous enough to warrant the first hunting season with 250 permits for either-sex elk in Units 66, 66a, and 69. An aerial survey of Unit 76 during 1952 counted 193 elk, with a total population estimate of 230. The first hunt in Unit 76 began in 1964 with 75 either-sex permits. As elk populations grew, so did hunting opportunity. Although most harvest has been through controlled permits, several general hunting seasons have occurred since regulated harvest began.

References cited in above section:

Compton, B.B. (ed). 1999. White-tailed Deer, Mule Deer, and Elk Management Plan. Idaho Department of Fish and Game. Boise, ID.

Hunter Access To Federal Public Lands

A recent report "Hunter Access to Federal Public Lands" (2002) outlines eight critical issues related to the issue of access. The questions that are associated with these issues are:

1) How are access issues incorporated into the agency land-use planning process?

2) How do wildlife and habitat management decisions affect hunter access and hunter satisfaction?

3) Do checkerboard ownership patterns and inadequate signage affect hunter access to public lands?

4) Do agencies provide hunters with enough information regarding access and do they provide it through effective channels?

5) What are the trends, impacts of and solutions to access problems caused by public lands that are "land-locked" by private property

6) Is there a need for an inventory of road ownership so hunters can be certain what roads can be legally used for access to public lands?

7) What are the trends for hunter use of public land, and the relationship between access to private lands and access to public lands?

8) Is there a need for a centralized clearinghouse that can be used to assess both the quantitative and qualitative impacts of these actions on hunter access?

The first two issues/questions will be addressed here, as they relate to this Forest Planning process. The 1985 Caribou Forest Plan included direction that restricted any increase in roads, and was silent on the issue of motorized trails. Current travel management allows cross-country motorized use on about 40 percent of the Forest.

Through the scoping process for the Plan Revision, recreation and access management was identified as an issue. Comments included a full range of feelings, on summer and winter access and on motorized and non-motorized use. Access issues have been incorporated into the Forest Plan in several ways. Maximum open motorized route densities were prescribed for most prescription areas, in each alternative. The Plan also includes direction on areas that are open to motorized use, either on designated roads or trails, or cross-country in both the summer and winter periods.

Table 122. Percent of the Forest Closed to Motorized Use.

Existing Condition	Alt 1	Alt 2	Alt 3	Alt 4	Alt 5	Alt 6	Alt 7	Alt 7R
4%	4%	4%	<1%	10%	10%	34%	8%	10%

As shown in the table, only a small part of the Forest provides for a more non-motorized type of hunting experience. Alternative 7R would increase this to 10 percent of the Forest. The other 90 percent of the Forest would still be open to motorized use (mostly on designated roads and trails.

The second question asks how wildlife and habitat management decisions affect hunter access and satisfaction. As mentioned previously, under current travel management, there are no restrictions on about 40 percent of the Forest. The other 60 percent has some kind of area, road or trail restrictions. There is a range of restrictions, ranging from year-round to winter versus summer. None are just confined to hunting season (except the Curlew National Grassland, which was not analyzed in this process).

In this planning process, open motorized route densities were applied to prescription areas as shown above. Actual numbers (1.0 mi/mi^2 and 2.0 mi/mi^2 in Alts 1-7) were based on research done on elk and mule deer but were assumed to be applicable and beneficial to other wildlife species, as well. (See the Roads and Motorized Trails section of this paper for more information.) Part of the Malad Range had a hunting season OMRD that was lower than the existing condition and this was applied because of concerns over mule deer in this area. OMRD's in Alternative 7R were largely based on existing condition, with a few areas needing reductions based on concerns for mule deer populations and elk hunting opportunities. The biological, social and economic impacts of these changes are displayed in the EIS.

Table 123. Access Direction by Prescription Area for Alternatives 1-7 (from Draft Revised Forest Plan, 2001).

Prescription	Summer motorized or non-motorized	Summer open or closed to cross-country	Winter motorized or non-motorized	Winter open or closed to cross-country
1.3	N	C	M	O
2.1.1	N	C	M	O
2.1.2	M	C	M	O
2.1.3	M	C	M	O
2.2	N	C	N	C
2.5	M	C	M	O
2.7.1(a)	M	C	N	C
2.7.1(b)	M	C	M	C
2.7.1(e)	M	C	M	C
2.7.2(a)	M	C	N	C
2.7.2(b)	M	C	M	C
2.8.3	M	C	M	O
3.1(b)	N	C	M	O
3.2(a)	M	C	N	C
3.2(b)	M	C	M	O
3.2(c)	M	O	M	O
3.2(d)	M	C	M	O
3.3(b)	M	C	M	O
4.1	M	C	M	O
4.2	M	C	M	O
4.3	M	C	M	O
5.1(b)	M	C	M	O
5.1(c)	M	O	M	O
5.1(d)	M	C	M	O
5.3(b)	M	C	M	O
5.4	M	C	M	O
6.1(b)	M	C	M	O
6.1(d)	M	C	M	O
6.3(b)	M	C	M	O
6.3(c)	M	O	M	O
6.3(e)	M	C	M	O
6.3(f)	N	C	M	O
8.1	M	C	M	O
8.2.2*	M	O	M	O

* Technically access does not apply here, but from a wildlife standpoint, mine activity is the same the disturbance from public access, so I considered them motorized and open to cross-country.

Table 124. Access direction by Prescription Area for Alternative 7R (from Draft Final Revised Forest Plan, 6/25/02).

Prescription	Summer motorized or non-motorized	Summer open or closed to cross-country	Winter motorized or non-motorized	Winter open or closed to cross-country
1.3(e)	N	C	M	O
2.1.1(e)	N	C	M	O
2.1.2(b)	M	C	M	O
2.1.3	M	C	M	O
2.1.4(b)	M	C	M	O
2.1.5(b)	M	C	M	O
2.1.6(b)	M	C	M	O
2.2(a)	N	C	N	C
2.5(b)	M	C	M	O
2.7.1(d)	M	C	M	C
2.7.1(f)	M	C	N	C
2.7.2(d)	M	C	M	C
2.7.2(f)	M	C	N	C
2.8.3*	M	C	M	O
3.1(a)	N	C	N	C
3.1(e)	N	C	M	O
3.2(b)	M	C	M	O
3.2(c)	M	O	M	O
3.2(f)	M	C	N	C
3.3(b)	M	C	M	O
4.1(b)	M	C	M	O
4.2(b)	M	C	M	O
4.3(b)	M	C	M	O
5.2(b)	M	C	M	O
5.2(c)	M	O	M	O
6.2(b)	M	C	M	O
6.2(e)	N	C	M	O
6.2(f)	M	C	N	C
8.1	M	C	M	O
8.2.2**	M	O	M	O

* Access table is missing from Plan, assume same at Alts 1-7

** Technically access does not apply here, but from a wildlife standpoint, mine activity is the same the disturbance from public access, so I considered them motorized and open to cross-country.

References cited in this section:

CSF and WMI. 2002. Hunter Access to Federal Public Land. A Report from the Congressional Sportsmen's Foundation and the Wildlife Management Institute. On file at SO, Idaho Falls, ID.

Potential For Competition Between Elk And Mule Deer

Lindzey, *et al*, (1997) reviewed research and analyzed the potential for competition between elk and mule deer. They found few studies claiming competition between elk and mule deer. The focus of more recent publications has been on exploitation competition, primarily for food. These species are generally spatially separated and separated by diet; however winter has the greatest dietary and habitat overlap.

The State's Big Game Plan (Compton, 1999) has identified that increasing numbers of elk in the Bannock Range (Unit 70), Malad (Unit 73) and Portneuf Range (Unit 71) may be of concern. Some of the winter ranges do not lend themselves to niche separation by elk and mule deer, and either direct competition and/or social intolerance will likely impact deer numbers. The state has stated that they will aggressively seek opportunities to minimize the occupancy by elk in key mule deer winter ranges.

References cited in above section:

Compton, B.B. (ed). 1999. White-tailed Deer, Mule Deer, and Elk Management Plan. Idaho Department of Fish and Game. Boise, ID.

Lindzey, F.G., W.G. Hepworth, T.A. Mattson and A.F. Reese. 1997. Potential for Competitive Interactions Between Mule Deer and Elk in the western United States and Canada. Prepared for the Western States and Provinces by Wyoming Cooperative Fisheries and Wildlife Research Unit, Laramie, WY.

Part 2 Rare Plant Viability Evaluation

Overview

The assessment of rare plant viability was conducted to evaluate the likelihood that habitat and other environmental conditions will be maintained within the planning area for plant species of viability concern. The number of plant species found to be of potential or known risk within the planning area was relatively few. As a result these plants were evaluated individually versus placing the species into groupings based on habitat, threats or other criteria. The best available scientific information was used concerning the species and where they exist within the planning area. Considering this evaluation was conducted at coarse-scale programmatic planning level rather than at a fine-scale, site-specific project level, the evaluation of the potential impacts to rare plants was viewed in the context of level of risk. None of the proposed management alternatives would affect the continued existence of plant species within the planning area; however some alternatives present a higher level of risk to the species, because they allow more activities that can adversely impact rare plants and their habitat.

Process

An interregional process (Forest Service Regions 1 and 4) was initially identified by the Forest Service to assess viability for species (R1/4 Terrestrial Protocols 1997). More recently, a national "White Paper on Managing Viable Populations" was prepared and evaluated through peer review and is currently being updated to incorporate new information and issues raised during the review (UDSA, 2001). The White Paper viability process involves several steps to address species viability and includes the following:

1) Description of the ecological context;
2) Identification of species-at-risk and collection of information;
3) Description of key conservation elements for those species;
4) Development of Forest Plan alternatives;
5) Risk Assessment and Analysis of effects on viability of the Forest Plan alternatives; and
6) Monitoring.

Identification of Plant Species of Viability Concern

Forest Service botanists compiled existing information of rare, or potentially rare, plant species from the Intermountain Region's Sensitive Species List (current and proposed, 2000) and from lists maintained by the Natural Heritage and Conservation Data Center network.

The species reviewed were placed in one of three categories:

1. **Species for which there is a viability concern.** Documentation exists indicating that the species occurs on the Forest and is of viability concern.

    - All species listed as Threatened, Endangered or Sensitive on the Forest

- Sufficient information exists indicating a viability concern

2. **Species needing more information to determine status.**

   - Suspected or known to occur within the planning area; however, information is too limited to indicate the level of concern and to evaluate viability within the planning area

   - All species in this category will be recommend for addition to a "Forest Watch" list, because information is lacking for these species; an objective will be included in the Revised Forest Plan to develop a "forest watch" list to insure that species will not be ignored simply because of a lack of information.

3. **Species for which there is clearly no concern for the species viability on the Forest.**

   - Sufficient information exists to confidently determine viability will be maintained within the planning area, i.e., no threats to suitable habitat

   - Sufficient information indicates the species does not occur within the planning area

Table 125. Species Review for Viability Concern on the Caribou NF.

Species Reviewed	Rank[2] Global	State[1]	Category	Justification for Category
Arabis lasiocarpa Wasatch rock-cress	G3	NR S3 (UT)	2	Tracked in Utah (Utah Division of Wildlife Resources, 1998) as a rare species; on review list for Idaho as a species that may be of conservation concern in Idaho (Mancuso 2001; Idaho Native Plant Society, 2002); Bob Moseley collection from wilderness peak - Bear River Range, Montpelier Ranger District; may be misidentification (Utah Division of Wildlife Resources, 1998); no suspected threats based on suitable habitat - high elevation rocky areas.
Asplenium septentrionale Grass-like spleenwort	G4	NR	2	One collection is known from rock crevices of the upper Hodge Nibley Creek (Mancuso, 2001); on review list for Idaho as a species that may be of conservation concern in Idaho (Idaho Native Plant Society, 2002); tracked in Utah as a rare species; M. Mancuso tried to relocate in 2002; no apparent threats to habitat
Asplenium trichomanes-ramosum (sym: *A. viride*) Green Spleenwort	G4	S1	1	One occurrence on Forest – of potential viability concern and is proposed to be added as a Region 4 sensitive species
Astragalus jejunus var. *jejunus* Starveling milkvetch	G3T3	S2	1	Found to be more common in Wyoming – not tracked in Wyoming (Fertig, 2000); currently a Region 4 sensitive species, but more appropriate as a "Forest Watch" species; potential viability concern within the planning area due to potential activities within suitable habitat

Species Reviewed	Rank[2] Global	State[1]	Category	Justification for Category
Botrychium lineare Slender moonwort	G1	SH	2	USFWS does not list Caribou NF for potentially suitable habitat; pop. on W-C is higher in elevation and with much greater winter snowfall; no historical or current documented occurrences; too little information to indicate a viability concern on the Caribou NF
Carex occidentalis Western sedge	G4	S1	2	Very limited information; possibly occurs on Forest, but no documented occurrences
Carex parryanna var. idahoa Idaho Sedge	G4T2	S2	1	Documented occurrences on Forest with potential threats – viability concern on Forest
Carex tumicola Foothill sedge	G4	S1	2	Historical 1931 collection; herbarium label just says "mink creek, fork of road" (Idaho Conservation Data Center, 2001); too little information
Cryptantha breviflora Uinta Basin Cryptantha	G4	S2	1	Documented occurrences on Forest; potential viability concerns within planning area due to potential activities within suitable habitat
Cryptantha caespitosa Tufted Cryptantha	G4	S1	2	One historical collection from 1910 may have been from near or on the Caribou NF (Montpelier Ranger District); Known occurrence in Idaho is about 17 miles southeast of Montpelier on BLM managed lands (Idaho Conservation Data Center, 2001); too little information to indicate a viability concern on the Forest
Juncus bryoides Moss rush	G4	SR	2	Idaho review list; record for species in Franklin Basin area in Bear Lake County (Mancuso, 2001); Idaho apparently represents the species northern range; too little information
Juncus hallii Hall's rush	G4G5	SR	2	Habitats include exposed slopes, stream banks, and meadows in montane and alpine areas; locally common in the Uintas in Utah; no records for Caribou NF; documented on Targhee NF; on review list for Idaho as a species that may be of conservation concern in Idaho (Idaho Native Plant Society, 2002)
Lepidium papilliferum Slick-spot peppergrass	G2	S2	3	Historical collection considered to be a misidentification or erroneous label; no habitat; recommend to Regional Forester to be removed from sensitive species list
Lesquerella multiceps Manyhead bladderpod	G3	S2	1	Potentially of viability concern, but new information may indicate that it is more common then originally thought
Lesquerella paysonii Payson's bladderpod	G3	S2	1	Regional endemic, but common when found; of conservation concern on Forest only because there is only one documented occurrence on Caribou Mountain and the species is a Region 4 sensitive species
Muhlenbergia racemosa Green muhly	G5	S2	2	Saturated soils in fens, on peat and mineral hummocks; not documented to occur on Forest Service managed lands; too little information
Musineon lineare Rydberg's musineon	G2	S1	1	Globally rare plant; one occurrence on Forest at Bloomington Lake; of viability concern on Forest; proposed Region 4 sensitive species
Penstemon compactus Cache penstemon	G2	S2	1	Currently a Region 4 sensitive species; few anthropogenic threats; of potential viability concern due to rarity
Primula maguirei Maguire's primrose	G1	S1 (UT)	2	Endemic to relatively lower elevations of Logan Canyon, UT (Utah Division of Wildlife Resources, 1998); USFWS does not consider Caribou NF to have habitat; listed as "Threatened"
Salicornia rubra Red glasswort	G4	S2	1	Documented as occurring on the Forest; population of potential viability concern
Salix candida Hoary willow	G5	S2	2	Documented to occur at Kelly Park by Soda Springs, Wilson Spring and Henry Stampede Park near but not on Forest (Jankovsky-Jones, 1997); no documented occurrences on Forest
Spiranthes diluvialis Ute ladies'-tresses	G2	S2	2	*Spiranthes diluvialis* was considered as a species of viability concern for the Draft EIS; however, with no documented occurrences and based on habitat potential on the Forest, the species is not considered to be of viability concern on the Forest; potential and occupied habitat is only suspected, not known to occur within the planning area; species is no longer listed for the Caribou NF by the USFWS (USFWS, 2002)

Species Reviewed	Rank[2] Global	State[1]	Category	Justification for Category
Stipa viridula Green needlegrass	G5	S2	2	Rare in Idaho but common in the northern Great Plains. Cultivated for pasture, grass, hay, and seed. Removed from Sensitive list in 1992 (US Forest Service, 1992); documented occurrence close to Caribou NF, but more likely on lower elevation lands, i.e., BLM
Triteleia grandiflora Large-flower triteleia	G4	S1 (WY)	2	Occurrence record for portion of Caribou NF administrated by the Targhee NF in Wyoming (Wyoming Natural Diversity Database, 2001); not tracked as rare in Idaho
Epilobium canum ssp. garrettii (Sym: Zauschneria garrettii) Garrett's firechalice	G5T?	SR	2	Southeast Idaho apparently represents the species northern range; relatively common in Utah; habitat is shady areas of cabonate cliffs/ledges/rock out-cropping; too little information, few threats to habitat; on review list for Idaho as a species potentially of conservation concern in Idaho (Idaho Native Plant Society, 2002)

1 State rank is for Idaho unless otherwise noted. Idaho state ranks obtained from the Idaho Conservation Data Center website (Idaho Conservation Data Center 2002)

2 Status = Global and state (Idaho) ranking as assigned by Natural Heritage and Conservation Data Center Network. The system is a one-through-five ranking system, ranging from species globally rare (G1-G3) to those rare in Idaho (G4-G5 with state ranks of S1 or S2).

Summaries for Plants in Category 1

The following information represents a review of information available for each species in Category 1 within the planning area, including known or suspected threats (risks) and conservation recommendations.

GREEN SPLEENWORT (*ASPLENIUM VIRIDE; SYM: A. TRICHOMANES-RAMOSUM*)

Family: *Aspleniaceae*

Rank/status: Global: G4 State: S1 Federal: Proposed Sensitive

Habitat:

Elevation: 8,500-8,900 feet above sea level

General: Rock crevices, cliff faces

Specific Habitat Description: Prefers rocks with a basic nature but have been found on quartz. Prefers moist habitat (Moseley and Mancuso, 1990). Spruce-fir and alpine communities (Welsh, 1987). On the forest it is found within a chute that is a unique micro-site of unusually cool/moist climatic conditions

Potential Habitat: Subsections with potential habitat include Cache Front, Bear River Mountains and Caribou Range Overthrust Mountains; however, it is likely limited to the microsite conditions only found to occur on the Headwall of Bloomington Lake Cirque.

Abundance (on Forest): One occurrence at Bloomington Lake Cirque; 30-40 plants in three small areas occupying approximately one acre (Moseley and Mancuso, 1990).

Range/Distribution: Green spleenwort is a boreal species sparsely distributed throughout the United States, Canada and Newfoundland. Range-wide, land ownership, land management, threats, and viability vary widely for this species. Green spleenwort also is considered rare in California, Colorado, Maine,

Michigan, New York, Oregon, South Dakota, Utah, Vermont, Wisconsin, Wyoming and various locations in Canada (NatureServe, 2001). Individual populations are often small and highly localized.

Trend: Range-wide: unknown Forest-wide: unknown

Protection of Occurrence: Cliff-face; protected due to habitat type

Threats: Currently no apparent anthropogenic threats – small potential of recreation impacts due to high use at Bloomington Lake; isolation/small size/dependency on micro-site climatic conditions increases the potential that the occurrence may not be maintained in the long term.

Fragility/Habitat Specificity: Likely would not be tolerant of a long-term change in the climate on the forest, i.e. global warming

Last Observed on Forest: 1990 (Moseley and Mancuso, 1990)

Information Needs: Unable to relocate during surveys in 2002 (Mancuso, 2002) – snow still in chute in July; re-survey in 2003

Key Forest Plan criteria for conservation: Recommend Bloomington Lake Cirque as a Special Interest Area or Special Management Area; recreation use at lake make it unsuitable as an RNA; discourage rock climbing.

IDAHO SEDGE (*CAREX IDAHOA; SYM: C. PARRYANNA SSP. IDAHOA*)

Family: *Cyperaceae*

Rank/status: Global: G2 State: S1 Federal: Proposed Region 4 Sensitive

Habitat:

Elevation: 6,000 – 8,000 feet above sea level

General: Low, level wetland transition zones

Specific Habitat Description: Rare to infrequent and very local, known to occur in suitable habitat associated with the Blackfoot River watershed. Located in meadows, swales, and on low, moist ground around streams and lakes range-wide. Prairies and high plains at moderate elevations in the mountains (Hurd, *et al*, 1998). Most often occurs in an ecotonal area at the border of wet meadow vegetation and sagebrush steppe. Restricted to nearly level sites and most commonly found on terraces associated with headwaters streams at elevations greater than 6,000 feet. Always found in sub-irrigated soils associated with low-gradient streams, springs or seeps. Theses soils are wet early in the growing season and moist the rest of the time. (Leisca, 1998)

Potential Habitat: Subsections with potential habitat includes Webster Ridges and Valleys & Caribou Range Overthrust Mtns in similar habitat.

Abundance (on Forest): 1000+

Range/Distribution: Regional Endemic – known to occur on Dubois District, Targhee NF; Blackfoot River Watershed, Soda Springs Ranger District; and Southwest Montana

Trend: Range-wide: unknown Forest-wide: unknown

Protection of Occurrence: None

Threats: Known threats include mining and potentially grazing on forest if overgrazed

Fragility/Habitat Specificity: Graminoid plants, such as sedges, are adapted to grazing and are usually able to persist with light to moderate grazing pressure. Evidence suggests that *Carex parryana* ssp. *Idahoa* responds to grazing like a typical palatable Graminoid, capable of persisting under light to moderate grazing, but declining with chronic heavy grazing. Experiments and monitoring studies to determine the actual response of *C.parryana* ssp. *idahoa* to grazing have not been conducted. Severe livestock grazing can result in stream bank destabilization followed by lowering of the water table and a reduction in the extent of hydropytic vegetation. Overgrazing could reduce the extent of *C.parryana* ssp. *Idahoa* habitat associated with riparian areas (Leisca, 1998). Road construction near riparian areas can reduce habitat available for *C. idahoa*; observed to occur in Montana (Leisca, 1998). Mining/Dredging for mineral extraction reduces habitat for *C. idahoa* (Leisca, 1998). Kentucky Bluegrass is a common associated species and may compete with Idaho sedge for resources (Leisca, 1998).

Last Observed on Forest: 1998 (Glennon and Holte, 1998)

Information Needs: Trend monitoring; surveys in potentially suitable habitat; Impact grazing has on the species

Key Forest Plan criteria for conservation: Low-moderate grazing utilization; AIZ management direction; monitoring

UNITA BASIN CRYPTHANA (*CRYPTANTHA BREVIFLORA*)

Family: *Boraginaceae*

Rank/status: Global: G4 State: S2 Federal: Proposed Sensitive

Habitat:

Elevation: 6,400 to 6,900 feet above sea level

General: Shale, barren, harsh sites on Twin Creek Limestone substrate

Specific Habitat Description: Forest - Restricted to exposed Twin Creek Limestone substrate that is a raw, loose, and eroding shale; the same habitat for Starveling Milkvetch. Uinta Basin *Cryptantha* appears to be sensitive to substrate texture, as does Starveling Milkvetch. It is less abundant in soils where shale size is greater than approximately 5centimeters, and is absent from large rocky sites. On all slopes and aspects – southern exposures dominate and most common on low to moderate slopes (Mancuso and Moseley, 1990). Range-wide it exists in mostly heavy clay soils, poor substrates of eroding knolls and badland slopes. Dry Salt desert shrub, sagebrush, rabbitbrush, pinyon-juniper and mountain brush communities (Welsh 1987).

Potential Habitat on Forest: See specific habitat description.

Abundance: Six occurrences on Forest support approximately 900 to 1,300 plants (Mancuso and Moseley, 1990)

Range/Distribution: Known to occur in Colorado, Idaho, and Utah. On the Forest the species occurrences and habitat is on the Montpelier Ranger District.

Trend: Range-wide: unknownForest-wide: unknown

Protection of Occurrence: None

Threats: Livestock trampling, roadwork, and prospecting (if resumed) (Mancuso and Moseley, 1990).

Fragility/Habitat Specificity: For the Caribou NF and surrounding lands, evidence points to a mostly small, widely scattered, relatively low density population structure (Mancuso and Moseley, 1990).

Last Observed on Forest: 2001 (habitat condition); last inventory was in 1990 (Mancuso and Moseley, 1990).

Information Needs: Surveys needed to further determine the extent of the species.

Key Forest Plan criteria for conservation: Low-moderate grazing utilization; monitoring.

MANYHEAD BLADDERPOD (*LESQUERELLA MULTICEPS*)

Family: *Brassicaceae*

Rank/status: Global: G3 State: S1 Federal: Proposed Sensitive

Habitat:

Elevation: 6,000 – 10,000 feet

General: Dry, Gravely – usually associated with limestone

Abundance: Ten from historical records (Mancuso, 2000). 2002 surveys for the species found it to be much more common then originally thought; occurrence records will be updated winter 2002/2003; population estimated in the thousands.

Range/Distribution: Bear River Range in north-central Utah and adjacent mountains of southeastern Idaho and southwestern Wyoming.

Trend: Range-wide: unknownForest-wide: unknown

Protection of Occurrence: Many occurrences are within proposed wilderness areas.

Threats: Potential threats are most likely related to roads (construction and maintenance), trails, various recreational activities, and sheep grazing. The species' habitat tends to have low threats overall indicating that all activities would have a low impact on the species.

Fragility/Habitat Specificity: Tolerant of disturbances and may benefit from disturbances

Last Observed on Forest: 2002 (Mancuso, 2002)

Information Needs: Review at 2003 Idaho Native Plant Conference to determine if species is still of conservation concern in Idaho; report from 2003 inventory

Key Forest Plan criteria for conservation: protection status of habitat, i.e. recommend wilderness and cross-country travel

Recommended Status: Forest "Watch List" or not tracked, depending on review (See "Information Needs" section above).

> *Note: Information in spring of 2001 indicated that viability of species was a concern on the Forest, however new information gathered in 2002 indicate that there is no viability concern for the species on the forest.*

PAYSON'S BLADDERPOD (*LESQUERELLA PAYSONII*)

Family: *Brassicaceae*

Rank/status: Global: G3 State: S1 Federal: Sensitive

Habitat:

Elevation: 6,000 – 9,950 feet above sea level, most often above 8,000 feet

General: Open ridgetops and slopes, occasionally in openings in sagebrush and forest stands

Specific Habitat Description: Carbonate parent material (limestone) with gravelly, skeletal soils. Open plant communities with low percent cover (Moseley, 1996).

Abundance: One occurrence on Caribou Mountain, 10 – 1000+ in sites ranging from ten square feet to four miles; population occurs on private and public land (Moseley, 1996).

Range/Distribution: Largely endemic to the carbonate mountain ranges of west-central Wyoming and adjacent Idaho. Two disjunct populations are known from southwestern Montana. In Idaho, it occurs on ridges and high peaks of the Snake River Range above the escarpment that parallels the Snake River. These populations are contiguous with its known distribution in Wyoming where numerous occurrences are documented and extend about twelve miles northwest into Idaho from the border. One population is disjunct from its main range in Idaho, occurring nineteen miles southwest on Caribou Mountain. (Moseley, 1996).

Trend: Range-wide: stable Forest-wide: stable

Protection of Occurrence: Currently no protection specifically for the species

Threats: Potential - Sheep grazing, off highway vehicle use, trampling may impact plants, prospecting

Fragility/Habitat Specificity: *L. paysonii* grows on carbonate soils high on ridge tops. It prefers low competition with other species or grows in low forb communities.

Last Observed on Forest: 1996 (Moseley, 1996)

Key Forest Plan criteria for conservation: Protection status of known occurrence

RYDBERG'S MUSINEON (*MUSINEON LINEARE*)

Family: *Apiaceae*

Rank/status: Global: G2G3 State: S1 Federal: Proposed Sensitive

Habitat:

Elevation: 8,800 – 9,000 feet above sea level

General: Rock Crevices

Specific Habitat Description: Limestone cliff faces, rock crevices and ledges between 8,800 to 9,300 feet (Moseley and Mancuso, 1990). Dry mesic; crest; North, Northeast and Northwest aspects; 15 percent to vertical slope; open to filtered light and shade (Moseley and Mancuso, 1990).

Potential Habitat on Forest: High probability that the only occurrence of the species on the Forest is at Bloomington Lake Cirque.

Abundance: Two occurrences at Bloomington Lake Cirque on Forest, estimated at 500 in 1990. In Utah, according to Ben Franklin (Utah Natural Heritage, 1998), *Musineon lineare* can be common in places and the most abundant endemic in some places at Logan Canyon in Utah.

Range/Distribution: Prior to 1990, Rydberg's *musineon* was thought to be endemic to Cache County, Utah, where it is known only from the Bear Range.

Trend: Range-wide: stable Forest-wide: stable

Protection of Occurrence: Protected due to habitat type

Threats: No clear anthropogenic threats to the populations of Rydberg's *musineon* at Bloomington Lake were seen in 1990. The populations are extremely small, however, with a combined total of less than 500 individuals seen in 1990. For this reason it remains vulnerable to extirpation in Idaho (Moseley and Mancuso, 1991).

Fragility/Habitat Specificity: Very specific to carbonate parent material; n. facing cool/cold on forest and a narrow endemic.

Last Observed on Forest: 2002 (Mancuso, 2002)

Information Needs: Review at 2003 Idaho Native Plant Conference to determine level of concern in Idaho; report from 2002 inventory.

Key Forest Plan criteria for conservation: Protection status of habitat, i.e. prescription and recreational use

CACHE PENSTEMON (*PENSTEMON COMPACTUS; SYM: P. CYANTHUS VAR. COMPACTUS*)

Family: *Scrophulariaceae*

Rank/status: Global: G2G3 State: S2 Federal: Sensitive

Habitat:

Elevation: 8,800 – 9,300 feet above sea level

General: Bedrock habitats, outcrops or cliff bands, usually rooted in crevices; open and dry near ridgelines or summits, moderate to steep slopes, all aspects on carbonate substrates

Specific Habitat Description: High elevation on ridge tops on carbonate substrates (St. Charles or Garden City limestone or Fish Haven Dolomite)

Potential Habitat on Forest: Southern end of Bear River Range; most high potential habitat has been surveyed (Mancuso, 2002).

Abundance: Seven occurrences. In 1954 population was described as "frequent." In 1990 populations ranged from 10-2,000 individuals in areas ranging from .10 to 35 acres.

Range/Distribution: Endemic to the Bear River Range in Idaho and Utah, on the Caribou-Targhee and the Wastach-Cache National Forests.

Trend: Range--wide: appears stable Forest-wide: appears stable

Protection of Occurrence: Proposed wilderness and areas difficult to access.

Threats: Potential - Sheep grazing, off highway vehicle use – none observed in 2002

Fragility/Habitat Specificity: *P. compactus* is very specific to the carbonate substrates at high elevations in Bear River Range; a long-term risk to the species could be global warming due to the species specifically only being found at the highest points of the highest mountains in the range.

Last Observed on Forest: 2002

Information Needs: Report from M. Mancuso's 2002 surveys

Key Forest Plan criteria for conservation: Protection status of habitat, i.e. prescription and cross-country travel

STARVELING MILKVETCH (*ASTRAGALUS JEJUNUS VAR. JEJUNUS*)

Family: *Fabaceae*

Rank/status: Global: G3 State: S2 Federal: Sensitive

Habitat:

Elevation: 6,000 – 7,100 feet above sea level

General: Dry hilltops, gullied bluffs and barren ridges or river terraces, on tuff, shale, sandstone, or derived gumbo clays (Barneby [1989] as cited in ref. Mancuso and Moseley, 1990).

Specific Habitat Description: On the Caribou NF its habitat is relatively more restricted. Forest populations occur strictly on exposed Twin Creek Limestone substrate that is a raw, loose, and eroding shale. Soil texture can vary greatly on an outcrop and between outcrops and is an important edaphic attribute. Starveling milkvetch is less abundant where shale size is greater than approximately 5 centimeters, and is absent from large rocky sites. It also decreases in abundance when the texture becomes fine/powdery. Most common on south to west aspects with slopes less then 20 percent (Mancuso and Moseley, 1990).

Potential Habitat on Forest: See specific habitat description.

Abundance: Nine occurrences support 5,000-6,000 plants. Most occurrences are relatively small, with only three found to contain more than 500 individuals. The largest known occurrence occurs at Whiskey Flats. All populations are restricted to a narrow range of habitat conditions that are generally discontinuous and not very extensive. All are on the Montpelier Ranger District.

Range/Distribution: Regional endemic to southeastern Idaho, southwestern Wyoming and Northeastern Utah.

Trend: Range-wide: appears stable Forest-wide: appears stable

Protection of Occurrence: None specific for species, not within a "protection" prescription.

Threats: Livestock trampling, road improvements (construction, prospecting (if resumed), off-road vehicles. Any one of these alone would probably not adversely affect the overall population, but due to the limited localized habitat the cumulative affects of any combination of these threats may adversely affect the long-term viability in Idaho (Mancuso and Moseley, 1990).

Fragility/Habitat Specificity: Very specific habitat criteria in Idaho (See habitat description). Likely tolerant of ground disturbance based on high erosion rate of substrate.

Last Observed on Forest: 1990; general review of habitat and population in 2001.

Information Needs: More surveys needed to strengthen understanding of the conservation status on the Forest.

Key Forest Plan criteria for conservation: Cross-country travel and grazing utilization levels

Note: Not of region-wide conservation concern; currently not tracked in Wyoming – known from over sixty occurrences throughout southwestern Wyoming (Fertig, 2000).

RED GLASSWORT (*SALICORNIA RUBRA*)

Family: *Chenopodiaceae*

Rank/status: Global: G4 State: S2 Federal: Sensitive

Habitat:

Elevation: 4,380-7,450 feet above sea level

General: Low elevation flats, prefers basic, saline soils

Specific Habitat Description: Occurs in moist saline or alkaline soil. Associated species may include other chenopodium species, such as *Distichlis spicata* and *Monolesis nuttaliana (J-J)*

Abundance: The known occurrences of red glasswort on the Forest occur at Elk Valley Marsh and Stump Creek Guard Station. Data for Elk Valley Marsh indicate thousands of individuals in a twenty-acre area (CDC, 2001). No data is available for the Stump Creek population.

Range/Distribution: Red glasswort is distributed from southern British Columbia and eastern Washington to Nevada, east to Saskatchewan, Kansas and New Mexico. Occasionally it is introduced west of the Cascades. In Idaho, Red glasswort occurs in the southeastern port of the state in Cassia, Franklin, Caribou, Bingham, Bear Lake, Oneida, and Bannock Counties (Jankovsky-Jones, 1997).

Trend: Range-wide: unknown Forest-wide: unknown

Protection of Occurrence: None specific for species, not within a "protection" prescription.

Threats: Threats include alterations of hydrologic cycles, grazing and agriculture conversion (off Forest). Populations persist with light grazing, but numbers decline as ground becomes hummocky. Potential habitat observed, which had been plowed and left fallow, had many of the expected associates present, but no Red glasswort was found (Jankovsky-Jones, 1997).

Fragility/Habitat Specificity: Refer to habitat description

Last Observed on Forest: 1995

Information Needs: More surveys needed to strengthen understanding of the conservation status on the Forest.

Key Forest Plan criteria for conservation: Protection status/management of Elk Valley Marsh, grazing utilization.

Recommended Status: Forest "Watch List" – not of region-wide conservation concern

Evaluation Of Species Threats Specific to Species

The current and potential threats to each individual TES plant species were determined from current scientific literature and professional botanical knowledge and expertise. The process included using GIS technology, to create the table in FEIS, Chapter 4, Other Resources: Threatened, Endangered and Sensitive (TES) plant species) by overlaying prescriptions with the most current distribution information for element occurrences of TES plant species for each alternative. Species associated with riparian/wetland habitat would occur in most prescriptions under 2.8.3 (Aquatic Influence Zone) that is not included in this table, because it is not a GIS-mapped prescription. *Lesquerella multiceps* in not included in this table, since many new occurrences have not been updated in the Idaho Conservation Data Center element occurrence records.

To assess the "continued existence" of a species, it may be best expressed through varying levels of risk. A risk assessment includes reviews of risks to species habitat or populations at the Forest-wide scale. Three levels of risk have been used: low, medium and high.

> **Low risk** – A high likelihood exists that the populations would meet population viability criteria. Effects to individuals and habitat are unlikely and short-term; populations and habitat are expected to be maintained or improved in the long-term.
> **Moderate risk** – An intermediate likelihood exists that populations would stabilize. Impacts to individual populations and habitat may occur in the short-term; populations and habitat expected to be maintained in the long-term.
> **High risk** – It is unlikely that species populations would be maintained. Effects on individual populations and habitat from direct and indirect impacts are expected to be chronic in the short-term; maintaining populations and habitat in the long-term is expected to be low.

Monitoring

Significant uncertainty is involved in the processes of managing for and evaluating species viability. This uncertainty is due both to simple lack of knowledge and to unpredictability of ecological systems. Because of these high levels of uncertainty, it is critical to implement an effective monitoring and adaptive management program (Viability White Paper, 2001).

Taking into account current knowledge of rare plants on the Forest, there is uncertainty on the type, level and amount of monitoring needed for each species. As a result, no specific monitoring is recommended for specific species; rather a recommendation is made to conduct monitoring for plant species of viability concern overall. Monitoring would include an annual review of what monitoring should be done and for what species, based primarily on site-specific project work on the Forest. The intent is to insure that plant species are either monitored or evaluated each year and assessed for population trends, viability, or habitat conditions while retaining the flexibility to focus monitoring attention on the species that need the most attention, based on the most current information at the time. (See Plan, Chapter 5, Monitoring and Evaluation)

Part 3 Fish Population Viability Evaluation

Introduction

During the Forest Plan revision, a determination was made as to the long-term viability of fish populations on the Forest. There is currently no cookbook for fish population viability evaluations. Forest Service researchers, scientists, and policy-makers are currently developing a strategy. This viability analysis was influenced by a draft Forest Service White Paper on managing for species viability (2/2/01), and input from the Rocky Mountain Research Center and the Intermountain Regional Office.

This fish species viability evaluation has several parts. Generally, this viability evaluation will identify evaluation species (species at risk), describe their ecological context, determine their metapopulations (if the principle applies), identify risks and threats to the evaluation species, determine the effects of each Forest Plan alternative upon the evaluation species, identify conservation approaches, and recommend monitoring. The overall objective is to evaluate the potential of long-term persistence of at-risk fish populations given the effects of each alternative of the Forest Plan.

Fish Species on/near the Caribou Portion of the Caribou-Targhee National Forest

The Caribou portion of the Caribou-Targhee National Forest supports a diversity of both native and non-native fish. The fish species on/near the Caribou portion of the Caribou-Targhee National Forest are listed below with their common names, scientific names, and status. This list is followed by narrative descriptions of each native and some selected non-native fish.

Native Fish

Common Name	Scientific Name	Status
Yellowstone cutthroat trout	(*Oncorhynchus clarki bouvieri*)	S, SC-A
Bonneville cutthroat trout	(*Oncorhynchus clarki utah*)	S, SC-A
Mountain whitefish	(*Prosopium williamsoni*)	
Bonneville cisco	(*Prosopium gemmifer*)	SC-A
Bear Lake whitefish	(*Prosopium abyssicola*)	SC-A
Bonneville whitefish	(*Prosopium spilonotus*)	SC-A
Leatherside chub	(*Gila copei*)	SC-C
Utah chub	(*Gila atraria*)	
Mottled sculpin	(*Cottus bairdi*)	
Piute sculpin	(*Cottus beldingi*)	
Bear Lake sculpin	(*Cottus extensus*)	SC-A
Longnose dace	(*Rhinichthys cataractae*)	
Speckled dace	(*Rhinichthys osculus*)	
Redside shiner	(*Richardsonius balteatus*)	

Utah sucker	(*Catostomus ardens*)
Bluehead sucker	(*Catostomus discobolus*)
Mountain sucker	(*Catostomus platyrhynchus*)

Introduced Nonnative Fish

Common Name	Scientific Name
Rainbow trout	(*Oncorhynchus mykiss*)
Brown trout	(*Salmo trutta*)
Brook trout	(*Salvelinus fontinalis*)
Lake trout	(*Salvelinus namaycush*)
Channel catfish	(*Ictalurus punctatus*)
Walleye	(*Stizostedion vitreum*)
Yellow perch	(*Perca flavescens*)
Carp	(*Cyprinus carpio*)
Brown bullhead	(*Ictalurus nebulosus*)
Green sunfish	(*Lepomis cyanellus*)
Bluegill	(*Lepomis macrochirus*)
Black crappie	(*Pomoxis nigromaculatus*)
Largemouth bass	(*Micropterus salmoides*)
Smallmouth bass	(*Micropterus dolomieui*)

Status Codes

S: USDA Forest Service Regional Forester Sensitive species designation (Forest Service Manual 2670.5). Those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by:

- Significant current or predicted downward trends in population numbers or density.
- Significant current or predicted downward trends in habitat capability that would reduce a species existing distribution.

SC: Idaho Fish & Game Species of special concern: native species that are either low in number, limited in distribution, or have suffered significant population reductions due to habitat losses, but is not likely to become threatened in the near future. There are 3 categories:

- SC-A: Species, which meet one or more of the criteria listed above and for which Idaho presently contains, or formerly constituted, a significant portion of their range (i.e. priority species).
- SC-C: Species that may be rare in the state but for which there is little information on their population status, distribution, and/or habitat requirements (i.e. undetermined status species).

Habitat Descriptions

Native Fish Species Descriptions

YELLOWSTONE CUTTHROAT TROUT (*ONCORHYNCHUS CLARKI BOUVIERI*)

U.S. Fish and Wildlife Service was petitioned to list Yellowstone cutthroat trout in August 1998. In February 2001, U.S. Fish and Wildlife Service determined the petition did not provide substantial

information to indicate listing may be warranted listing. Yellowstone cutthroat trout currently retains its status as a Sensitive species on the Regional Foresters Sensitive Species List. The Caribou side of the Caribou-Targhee National Forest is currently addressing the needs of Yellowstone cutthroat trout by maintaining consistency with the Caribou Forest Plan as amended by INFISH. An interagency conservation memorandum of agreement for Yellowstone cutthroat trout was prepared and signed in 2000.

Intensive surveys for Yellowstone cutthroat trout distribution have been conducted on the Caribou-Targhee National Forest since 1996. The subspecies appear to be well distributed throughout the parts of the Forest within the Snake River Basin, but populations in various streams or stream segments vary in strength. While some populations are threatened by competition and interbreeding with nonnative, introduced fish species, others appear to be thriving in some streams or stream reaches. Apparently, some populations have been replaced by nonnative, introduced fish species. Genetic interactions between existing Yellowstone cutthroat trout populations have diminished from historic conditions because of a decrease in connectivity. Distribution surveys continue.

Within Idaho, the original cutthroat trout native to the Snake River system may have been the Yellowstone cutthroat trout. It is believed they were replaced by rainbow trout and other subspecies of cutthroat trout in drainages downstream of Shoshone Falls. Shoshone Falls isolated cutthroat trout from contact with rainbow trout and the Yellowstone subspecies remains the native trout in the upper Snake River basin. Yellowstone cutthroat trout are adapted to cold water. Water temperatures between 4.5 and 15.5 C appear to be optimum for the subspecies. This subspecies migrates for spawning when threshold water temperatures approach 5 C (optimum 10 C) and streamflows subside from spring peaks. Streams selected for spawning are commonly low gradient (up to 3 percent), perennial streams, with groundwater and snow fed water sources. Use of intermittent streams for spawning is not well documented, but has been noted in some intermittent tributaries to Yellowstone Lake. Spawning occurs wherever optimum size gravel (12-85 mm in diameter) and optimum water temperatures (5.5-15.5 C) are found. Depending on variations in growth, spawning populations are comprised of individuals age three and older (primarily ages 4-7). Juveniles congregate in shallow, slow-moving parts of the stream (USDA Forest Service, 1996).

Three life history patterns of Yellowstone cutthroat trout occur on the Caribou section of the Caribou-Targhee National Forest: resident, fluvial, and adfluvial. Resident trout spend their entire lives in small streams. Fluvial fish spend most of their lives in large streams and rivers, migrating into small streams in the spring to spawn. Their offspring spend the first couple years of their lives in these small streams and eventually migrate to the large streams and rivers downstream. Fluvial and resident populations may interact in the spawning stream. Adfluvial fish spend most of their lives in lentic waters, migrating upstream to small streams to spawn. Their young generally rear in these streams for a couple years and return to the lakes downstream. All adfluvial life history patterns exhibited by Yellowstone cutthroat trout on the Caribou Section of the Forest were forced into this pattern by the construction of reservoirs with no fish passage at the dams. For centuries, adfluvial and fluvial populations were instrumental in re-founding extirpated resident populations.

Both large-spotted and fine-spotted varieties of Yellowstone cutthroat trout occur on the Forest. The two varieties have been observed inhabiting same streams and, in fact, the same habitat within the stream. While some biologists prefer to split these forms of Yellowstone cutthroat trout when analyzing effects, there has been no genetic, behavioral, or biologic reason to do so to date.

BONNEVILLE CUTTHROAT TROUT (*ONCORHYNCHUS CLARKI UTAH*)

U.S. Fish and Wildlife Service received a petition to list Bonneville cutthroat trout as Threatened in February 1998. The agency responded the petition presented substantial information indicating that listing this species may be warranted. They initiated a status review of the subspecies. On 9 October 2001, US Fish and Wildlife Service found the Bonneville cutthroat trout to not be warranted for listing. The Bonneville cutthroat trout currently retains its status as a Sensitive species listed on the Regional Foresters Sensitive Species list. The Caribou-Targhee National Forest is currently addressing the needs of Bonneville cutthroat trout by maintaining consistency with the Caribou Forest Plan as amended by INFISH. An interagency conservation agreement for Bonneville cutthroat trout was prepared and signed in 2000.

Intensive surveys for Bonneville cutthroat trout distribution have been conducted on the Caribou-Targhee National Forest since 1998. The subspecies appear to be distributed throughout the southern part of the Forest, but populations in various streams or stream segments vary in strength. While some populations are threatened by competition and interbreeding with nonnative, introduced fish species, others appear to be impacted by habitat alterations. Some populations have been completely replaced by nonnative, introduced fish species. Genetic interactions between existing Bonneville cutthroat trout populations have diminished from historic conditions because of a decrease in connectivity due to irrigation diversions and dams. Distribution surveys continue.

Only one trout subspecies, the Bonneville cutthroat trout, is endemic to the Bonneville Basin. While some stream populations survive, this subspecies evolved primarily in a lake environment. Upon the desiccation of Lake Bonneville, trout were primarily restricted to perennial tributaries and connected watersheds and subbasins. Only Bear, Utah, and Panguitch Lakes retained lacustrine populations. These historic lake populations have been extirpated except in Bear Lake. During the last 150 years, the Bonneville cutthroat trout populations have been significantly reduced through anthropogenic activities, including habitat degradation, over utilization, and the introduction of non-native fish species. They spawn in spring, from April to June. Like other cutthroat, they require a clean, gravel substrate in cool, well-oxygenated water for spawning. They reach sexual maturity at two to three years of age. They eat mainly aquatic insects and terrestrial insects that fall into the water from overhanging vegetation. Larger Bonneville cutthroat trout feed on small fish (USDA Forest Service, 1996). Resident, fluvial, and adfluvial life history patterns are exhibited by Bonneville cutthroat trout on the Forest.

MOUNTAIN WHITEFISH (*PROSOPIUM WILLIAMSONI*)

Mountain whitefish is widely distributed throughout the western United States and occur in large streams on the Caribou section of the Caribou-Targhee National Forest. They are considered abundant. Its preferred habitat is cold mountain streams where it rests in the deep pools and feeds in the riffle areas. They spawn in the fall in riffles. Whitefish are active feeders throughout the year, feeding on aquatic and terrestrial insects and fish eggs (Idaho Fish and Game, 2000).

BONNEVILLE CISCO (*PROSOPIUM GEMMIFER*)

The natural range of Bonneville cisco is restricted to Bear Lake, generally in deep, cool water. Spawning occurs in late January through early February in water generally 2-3 feet deep, usually after the lake ices over. The adults form large schools and spawn over the lake's limited rocky areas (Utah

Natural Resources, 2000). Cisco eat zooplankton. The fish are a popular sport fish during the spawning season, when they are caught in the lake with dipnets (Simpson and Wallace, 1982).

BEAR LAKE WHITEFISH (*PROSOPIUM ABYSSICOLA*)

The natural range of the Bear Lake whitefish is confined to Bear Lake, generally at a depth of 60 feet. At this depth, the water temperature is generally at 39F. They spawn at a water depth of 60 to 100 feet January through February. Bear Lake whitefish eat ostracods, copepods, insects, and aquatic earthworms. During the pioneer times, a few commercial fishermen harvested Bear Lake whitefish and offered them for sale in meat markets. It was also used as bait on lines to harvest cutthroat trout (Simpson and Wallace, 1982).

BONNEVILLE WHITEFISH (*PROSOPIUM SPILONOTUS*)

The native range of Bonneville whitefish is also confined to Bear Lake. Most inhabit the cold, deeper parts of the lake, but some have been observed in shallow waters, near the mouths of tributaries. They spawn in shallow areas of the lake on rocky or sandy bars, in late November through early December. Bonneville whitefish eat midge larva, copepods, ostracods, aquatic worms, and miscellaneous aquatic and terrestrial insects. Bonneville whitefish are more readily harvested by hook and line than Bear Lake whitefish (Simpson and Wallace, 1982).

LEATHERSIDE CHUB (*GILA COPEI*)

Little is known about the leatherside chub in Idaho. Available information suggests it was never abundant, and rarely reported. Prime chub habitat generally occurs at a lower elevation in the watershed than prime cutthroat trout habitat. They have not been observed in high gradient stream reaches. They inhabit clear, cool streams and prefer a pool environment. However, leatherside chub cease growth when the water temperature goes below 10C.

It is likely the fish spends its entire life history in a limited segment of stream. It utilizes off channel pool or main channel pocket pool habitat and avoids pocket pool habitat when predators such as brown trout are present. The leatherside chub is dependent upon channel complexity for cover, particularly large instream wood and undercut banks (Belk, 2001). This chub species is less likely to be found in areas with a high frequency of surface fine sediment deposition. Leathersides have seldom been observed in eroded, heavily silted stream reaches or in areas that have been channelized. Young-of- the-year leathersides were often observed in shallow waters and larger individuals in deeper waters. Overhanging vegetation also appears to be an important component to quality leatherside habitat (Wilson and Belk, 1996).

Wilson and Belk (1996) noted as numbers of brown trout increased, the probability of encountering leathersides decreased. They may be preyed upon by nonnative brown trout.

The natural distribution of leatherside chub in Idaho was confined to the upper Snake River and Wood River drainages and the Bonneville Basin. Even though extensive stream sampling has occurred throughout its range, observations of the species have been limited. It probably spawns in midsummer. It may be a forage fish for trout where they are found in the same stream (Simpson and Wallace, 1982). In 2000, leatherside chub were collected in upper Tygee Creek and Tincup Creek on the Caribou portion of the Forest. A historic collection has been documented in Angus Creek.

Leatherside chub are currently listed as a State of Idaho Species of Special concern for 3 reasons. First, the current distribution is not well known and may be greatly reduced compared to its original range. Second, little is known about their basic habitat requirements. This makes it difficult to make recommendations concerning management of rehabilitation of waters where this fish occurs. Third, leatherside chubs occur in areas that have and will be impacted by future water development projects (Wilson and Belk, 1996).

The biological and habitat requirements of leatherside chub will not likely be entirely met if solely managing stream habitat for native cutthroat trout. Leatherside chub water temperature (cool, but not below 10C), habitat type (pocket pools and off-channel/margin pools), and habitat elevation requirements (lower) do not specifically overlap with those of native cutthroat trout (Belk, 2001).

UTAH CHUB (*GILA ATRARIA*)

In Idaho, the Utah chub is native to the Bear River drainage and the Snake River Drainage upstream of Shoshone Falls. It prefers a lake, pond, or reservoir environment and is very abundant in waters with aquatic vegetation. These fish spawn in late spring and early summer when surface waters reach or exceed 60F. The eggs are scattered indiscriminately over varied types of lake bottom in a water depth of 2 feet or less. Young chubs eat zooplankton until they reach 6-7 inches in length. They then become omnivorous, eating aquatic plants, insects, and crustaceans (Simpson and Wallace, 1982).

The Utah chub is very prolific and is a strong competitor with small trout for food and space (Simpson and Wallace, 1982). Although they are native to waters of the Caribou section of the Forest, they have been introduced in some waters, including the Henry's Fork upstream of Mesa Falls (Targhee section of the Forest), by some anglers using them as bait.

MOTTLED SCULPIN (*COTTUS BAIRDI*)

The mottled sculpin occur in the Snake River upstream of Shoshone Falls and in the Bear River Basin. It is abundant over its entire range and prefers streams with rubble stream bottoms (Simpson and Wallace, 1982). They are seldom found in silted areas (AFS, 2000). Spawning season is in May and early June. Their eggs are deposited in burrows, on the undersides of rocks (Hendricks, 1997). A male usually protects the spawning nest until the eggs hatch. Mottled sculpin eat immature aquatic insects, crustaceans, small sculpins, fish eggs, annelids, and plants (Hendricks, 1997). Sculpin are an important forage fish for trout, particularly cutthroat, rainbow, and brown trout (Simpson and Wallace, 1982).

PIUTE SCULPIN (*COTTUS BELDINGI*)

Piute sculpin occur in the upper Snake River and Bonneville Basins. It is known to occur in both lakes and streams where rubble is present. In streams, it occurs in riffle areas among rubble or large gravel. It prefers clear, cold water with slight to moderate current. It also serves as an important food source for trout (Simpson and Wallace, 1982).

Nothing is known of the life history of this species in Idaho, but in Lake Tahoe, Piute sculpins spawn in the spring. Eggs are laid in clusters on the undersides of rocks and are guarded by the male. Females produce from 20 to about eggs. Their food consists of a variety of aquatic invertebrates (AFS, 2000).

BEAR LAKE SCULPIN (*COTTUS EXTENSUS*)

Bear Lake sculpin occur only in Bear Lake. It lives in association with the bottom, from the shallows to a depth of over 50 meters (AFS, 2000). Spawning takes place in the spring around rocks near shore. Eggs are deposited on the underside of rocks or other substrate. After spawning, the fish move to deeper water, to a depth of 175 feet. In Bear Lake, sculpins have been sampled with gill nets at a depth of 175 feet. Bear Lake sculpin are an important forage fish for other fish in Bear Lake, including cutthroat trout (Simpson and Wallace, 1982).

LONGNOSE DACE (*RHINICHTHYS CATARACTAE*)

Longnose dace is widespread from the Pacific to the Atlantic in north-central America. In Idaho it is a common species in every river system. It occurs primarily in the riffle areas of streams, but has been taken from lakes where the shoreline is composed of small rubble. Spawning likely occurs over gravel in riffle areas of streams. It eats immature aquatic insects. Because of its small size and preference for living in riffle areas, it is an important forage fish for trout. It is reported to hybridize with redside shiners (Simpson and Wallace, 1982).

SPECKLED DACE (*RHINICHTHYS OSCULUS*)

Speckled dace are present in tributaries of the Snake and Bear Rivers in Idaho. They will live in a variety of habitat, but normally prefer the shallow, cool, and quiet waters in contrast to the longnose dace that prefer the fast riffle areas (Simpson and Wallace, 1982). They spawn in the spring, usually in May, and broadcast their eggs over the gravelly stream bottom. They are omnivorous, feeding on aquatic insects, plant material, and zooplankton (AFS, 2000). Speckled dace are an important forage fish for trout and have been used as a baitfish in parts of its range.

REDSIDE SHINER (*RICHARDSONIUS BALTEATUS*)

The redside shiner occurs in the Columbia River System and the Bonneville Basin. In Idaho, it is found in all the major river systems. It prefers the slow moving currents of lakes, ponds, ditches, springs, sloughs, streams, and rivers (AFS, 2000). Spawning generally occurs in June or July in water depths of less than 6 inches. Eggs are broadcasted by the female and settle to the stream bottom, attaching to substrate or submerged vegetation. The fry of redside shiners feed on small planktonic organisms but switch to a diet of insects, mostly terrestrial, by their second year of life. They will prey on eggs, often their own (Simpson and Wallace, 1982).

UTAH SUCKER (*CATOSTOMUS ARDENS*)

The Utah sucker is presently found in the Snake River drainage above Shoshone Falls and the Bear River Drainage. It is an adaptable species and lives in lakes, rivers, or streams in warm to very cold water. If living in a stream, it prefers a slow moving current where there is a variety of bottom material (Simpson and Wallace, 1982).

The Utah sucker spawns during the spring in small tributaries. Their diet is varied and includes animals and plants found at the bottom of its habitat. Many of the early settlers of the Bear River area harvested large numbers of suckers during their spawning runs. They were eaten fresh and some were salted and stored in wooden barrels or earthen crocks for winter consumption (Simpson and Wallace, 1982).

BLUEHEAD SUCKER (*CATOSTOMUS DISCOBOLUS*)

The bluehead sucker occurs on the Forest within the Bonneville basin and the Snake River above Shoshone Falls. It is a river dwelling species, occurring in a variety of habitats, ranging from cold, clear trout streams to warm, very turbid waters. It prefers riffle areas with rocky substrates. It spawns in late spring/early summer and probably scrapes its food off rocks (AFS, 2000). Little is known about the life history of this species, but it is assumed to be similar to that of other members of the sucker family. It is often found associated with mountain sucker but can easily be distinguished from it by the smaller scales and by its size when mature (generally larger). It is relatively rare in Idaho waters (Simpson and Wallace, 1982).

MOUNTAIN SUCKER (*CATOSTOMUS PLATYRHYNCHUS*)

Mountain sucker are widespread throughout the Snake and Bear River Systems in Idaho. The preferred habitat of this fish is usually clear, cold streams with clean rubble or sand bottoms. It is seldom found in lakes. This is a small species, when compared with bluehead sucker (AFS, 2000). Spawning occurs in late spring or early summer in riffles of clear, swift streams. Its food consists almost entirely of algae that are scraped from the rocks by means of the cartilaginous sheath on the jaws. Because of its preference for cool water, it may serve as an important forage fish to several trout species Simpson and Wallace, 1982).

Selected Non-Native Species Descriptions

Fourteen non-native fish species have been introduced to or just downstream of the waters of the Caribou portion of the Caribou-Targhee National Forest. Of those 14 species, 3 are particularly important to describe because they are valued by some anglers and are considered a threat to some native fish species on the Forest.

RAINBOW TROUT (*ONCORHYNCHUS MYKISS*)

Rainbow trout are native to the Pacific coast. They have been introduced to the Snake River above Shoshone Falls and the Bear River System. Naturally reproducing populations occur in many streams on the Forest where past introductions have occurred. Idaho Department of Fish & Game still stocks non-native rainbow trout in some streams on the Forest to cater to some recreational anglers. Future rainbow trout releases will primarily be sterile fish.

Naturally reproducing populations generally spawn from March through June. They are basically stream spawners and usually search out the small tributaries where gravel riffles are abundant. After hatching, young alevins drift into deeper pools of the streams. Their diet consists mainly of aquatic insects. Large individuals take small fish of any available species as well as aquatic invertebrates (Simpson and Wallace, 1982).

Rainbow trout may interbreed with native cutthroat trout, affecting their gene pool. In addition, rainbow trout compete with cutthroat trout for habitat.

BROWN TROUT (*SALMO TRUTTA*)

The brown trout is native to Europe. Successful introductions to Idaho waters began in 1948. The species is now well established in several river systems, including the Snake and Bear Rivers. Its

preferred habitat is larger streams, rivers, lakes, and reservoirs at lower elevations. It is more tolerant of the less favorable environment of the lower reaches of streams and rivers than are rainbow and cutthroat trout. The fish spawn in October through December. They usually move upstream some distance to small tributaries to spawn. They spawn by excavating a redd in gravel or small rubble, like other salmonids. Brown trout normally live longer than cutthroat trout. They eat aquatic insects and other fish (Simpson and Wallace, 1982). Brown trout use some streams on the Caribou portion of the Forest to spawn. They may prey upon native cutthroat trout and other fish species.

BROOK TROUT (*SALVELINUS FONTINALIS*)

Brook trout are native to eastern Canada and the United States. It has been extensively planted in lakes, rivers, and streams in the West, including on the Caribou portion of the Caribou-Targhee National Forest. It competes for habitat with native cutthroat trout and has completely displaced some cutthroat populations on the Forest. Brook trout appears to more readily compete with native fish when habitat has been altered (Marcus, *et al*, 1990). Brook trout also prey upon cutthroat trout juveniles and other native fish.

Like other salmonids, brook trout excavate redds while spawning. They spawn in the fall, usually in late September and October in gravels of small streams. The fry emerge from the gravel in April and May and move into pools in the stream. Brook trout generally eat aquatic insects and other small aquatic invertebrates. Large individuals also eat small fish.

Effects Analysis

Selection Of Fish Species For Analysis

Considering the Caribou half of the Caribou-Targhee National Forest spans 2 river basins (Snake River and Bear River), the diversity of aquatic life on the Forest is obviously great. Aquatic biota includes plants and animals that depend upon the aquatic environment for at least part of their life history. Native fish communities are an integral element in the composition, structure, and function of aquatic ecosystems. Fish typically dominate the aquatic vertebrates. They are sensitive to disturbance, and potentially integrate the effects of landscape and watershed processes over large spatial and temporal scales. Fish have influenced the development, status, and success of human social and economic systems. They can also be important pathways for nutrient and energy flows between aquatic and terrestrial systems. Even in waters historically barren of fish, introduced fishes profoundly influence the structure of aquatic communities (USDA Forest Service and USDI BLM, 1997). This analysis will concentrate upon select native fish species. It is believed that if their habitat and aquatic/riparian areas that influence their habitat are protected and restored, other important aquatic biota that have evolved to similar habitat conditions will also benefit.

It is unnecessary to specifically address the viability of each of the species listed above because some are common, the viability of some can be addressed while discussing others with the same requirements, and/or Forest management activities are not likely to affect their habitat downstream. The Caribou-Targhee National Forest developed the following filter to determine which species would be used in this assessment:

1. **Is the species listed by the Regional Forester as Sensitive or Idaho Department of Fish & Game as a Species of Special Concern?**

Species are listed as Sensitive by the Regional Forester if there are significant current or predicted downward trends in population numbers/density or habitat capability. Species listed by the State of Idaho as a Species of Special Concern are either low in number, limited in distribution, have suffered significant population reductions due to habitat losses, or little is known about their population status, distribution, and/or habitat requirements. The following fish species meet this requirement:

Species	Status
Yellowstone cutthroat trout	Regional Forester Sensitive, State SC-A
Bonneville cutthroat trout	Regional Forester Sensitive, State SC-A
Leatherside chub	State SC-C
Bonneville cisco	State SC-A
Bear Lake whitefish	State SC-A
Bonneville whitefish	State SC-A
Bear Lake sculpin	State SC-A

The other fish species on the Forest are considered common and will not be directly considered in this evaluation. However, the habitat requirements of these common species are addressed through the development of general watershed, water quality, and riparian goals, objectives, standards, and guidelines. Non-native fish were not analyzed because the selection process filtered them out. They are often common and/or increasing where they have been introduced. In fact, one of the primary challenges in the conservation of some of our native fish populations lies in addressing the competition and interbreeding impacts from invading non-natives.

2. **Can land management on the Caribou-Targhee National Forest have an effect upon the population and habitat of these species?**

Bonneville cisco, Bear Lake whitefish, Bonneville whitefish, and Bear Lake sculpin spend their entire life histories in Bear Lake. Two streams originating on the Forest actually flow into Bear Lake, St. Charles and Fish Haven Creeks. Both streams flow through private land prior to reaching the lake and Fish Haven Creek is dry during the summer due to irrigation diversions on private land. Land management in these drainages would not likely affect habitat conditions in the lake. The only impact with the potential of reaching the lake is sedimentation from management actions or natural events on the Forest. The effects of sediment delivery to spawning habitat in the lake was considered for Bonneville cisco, Bear Lake whitefish, Bonneville whitefish, and Bear Lake sculpin. They spawn in rocky areas. Most rocky areas occur on the east side of the lake. The mouths of St. Charles and Fish Haven Creeks occur on the west side of the lake. Potential sediment production from future land management activities on the Forest would not affect these spawning areas. It is not likely these species that occur solely in Bear Lake could be affected by land management activities on the Forest.

Yellowstone cutthroat trout, Bonneville cutthroat trout, and leatherside chub occur in streams within the Forest. They can be directly affected by management activities on the Forest and will be subject to this viability evaluation. The combined ranges of Yellowstone cutthroat trout, Bonneville cutthroat trout, and leatherside chub overlap with the more common fish species and other aquatic biota that occur on the Forest. Because

of this overlap, the habitat requirements of the more common native aquatic species that occur on the Forest and have the potential of being affected by Forest management activities are indirectly addressed through this analysis.

Ecological Context

General range- and Forest-wide species and habitat assessments were made for the 3 evaluation species; Yellowstone cutthroat trout, Bonneville cutthroat trout, and leatherside chub. Historic cutthroat trout habitat occurs throughout the Forest, Yellowstone to the north and Bonneville to the south. Leatherside chub also occurs in both the Snake and Bonneville Basins. However, the chub generally occurs at lower elevations than the cutthroat trout and is restricted to pocket pools, margin waters, and off channel habitat. Its water temperature requirements are different than cutthroat trout. The leatherside chub ceases growth when water temperatures are below 10C. This makes its habitat and biological requirements somewhat different than cutthroat trout and warrants separate analysis.

This assessment used USDA Forest Service (1996), recent Forest stream survey data, Inland West Watershed Initiative and Interior Columbia Basin Ecosystem Management Project fish distribution data, and scientific literature as information sources.

Distribution maps were prepared to depict the status of evaluation species and key non-native species throughout the Forest. The Inland West Watershed Initiative fish status definitions were used while preparing these maps. The definitions are available below.

YELLOWSTONE CUTTHROAT TROUT

Range-Wide Species Status

Many Yellowstone cutthroat trout populations currently exist as localized remnants of original subpopulations with little or no connectivity. Others owe their existence to hatchery programs. Current estimates indicate that Yellowstone cutthroat trout occupy 41 percent of historic riverine environments throughout the historic range. In addition, there are about 450 lake environments, within the historic range that currently support Yellowstone cutthroat trout. The number of lake environments currently supporting Yellowstone cutthroat populations represents a 380 percent increase over historic levels. Additionally, there are now numerous riverine and lake populations in existence outside of the historic range resulting from extensive stocking.

Caution should be applied before developing conclusions relative to overall Yellowstone cutthroat trout status. Many populations have not received sufficient testing for a definitive assessment of genetic status. Based on the findings in Montana, genetic contamination is probable for most cutthroat trout populations that have been exposed to rainbow trout or cutthroat of hatchery origin.

Fragmentation and population isolation has occurred as a result of stream dewatering, replacement by introduced nonnative fish, hybridization, substantial environmental change, and over-harvest. Many populations owe their current existence to passage barriers (natural or human caused) that have effectively controlled access of both contaminating and competitive species that are present in nearly all areas of the current range. At the same time these populations find themselves restricted to relatively small patches of habitat that have, in many cases, been degraded by human activity. Viability concerns increase with decreasing patch size, declining habitat quality and complexity, and increased isolation from source populations. Yellowstone cutthroat trout are a Regional Forester Sensitive species.

Forest-Wide Species Status

The Caribou half of the Caribou-Targhee National Forest comprises approximately 1/20 of the surface area of the historic range of Yellowstone cutthroat trout. A Yellowstone cutthroat trout distribution map was updated on December 2001 for the Forest. Of the fifty-one 6th code HUC's with Yellowstone cutthroat trout data on the Caribou half of the Forest, thirty-four HUC's had populations that were considered strong, fourteen had populations that were considered depressed, and three had populations where we expected them to be present but they were absent.

It appears that Yellowstone cutthroat trout are well distributed throughout the Caribou portion of the Forest within the Snake River Basin. Perhaps one of the most significant threats to the species within the Forest is the introduction of nonnative fish. As an example, rainbow trout are stocked in Blackfoot Reservoir. Historically, rainbow trout with the ability to reproduce were stocked there. Today, the majority of the stocked rainbow trout are sterile. The presence of naturally reproducing rainbow trout in the headwaters of the Blackfoot River, including Diamond Creek, is on the increase (Scully 2001). Rainbow trout interbreed with native cutthroat trout affecting their genetic purity. They also compete for habitat with native fish.

In the following section titled Evaluation of Species Metapopulation Risk Factors, the Yellowstone cutthroat trout metapopulations that occur on the Forest are rated per risk of extinction.

Range-Wide Habitat Condition

Aquatic environments inhabited with Yellowstone cutthroat trout on National Forest lands tend to be in better condition and support more populations. Present estimates indicate that 63 percent of historic riverine habitats on National Forests still support populations of Yellowstone cutthroat trout. Most of the currently occupied lake habitat is found on National Forest administered lands.

Forest-Wide Habitat Condition

Composite ecological ratings for the six (4th HUC) subbasins in the Caribou portion of the Forest within the range of Yellowstone cutthroat trout estimated that four were low, 1 was moderate, and one was high in overall ecological condition. The Interior Columbia River Basin Report (USDA Forest Service and USDI BLM, 2000) and Forest fish distribution survey reports (2000-2001) documented impacts to Yellowstone cutthroat trout habitat that included agriculture, urban expansion, timber harvest, livestock grazing, road building/maintenance/use, dispersed camping, off-road motor vehicle use, and mining. In some areas, these activities have affected aquatic and riparian habitat through dewatering, sedimentation, nutrification, stream bank erosion, channel widening/shallowing, isolating populations, and direct trampling of fish. In some areas, these activities have decreased riparian vegetation, decreasing available stream shade and nutrients, stream bank stability, and sources for large instream wood. These impacts affect the habitat requirements described in the Native Fish Species Descriptions section above, decreasing population productivity and, potentially, long term population viability. For additional information on Forest-wide habitat condition, please refer to the discussion in the Inland West Watershed Initiative section of Riparian Areas, Wetlands, and Aquatic Ecosystems. Additional information on geomorphic integrity, water quality integrity, and watershed vulnerability can be found in the watershed section of FEIS.

Bonneville Cutthroat Trout

Range-Wide Species Status

Current information on Bonneville cutthroat trout indicates that the range-wide status of this species has been improving over the last 20-year period. There are currently an estimated 163 tentative

populations inhabiting over 1365 miles of lotic habitats and 70,088 surface acres of lentic habitats. The largest single population occurs in Bear Lake with an estimated population size of over 30,000 individuals. Of the populations being managed for conservation, 62 have been identified as core or reintroduced populations, and two have been designated introgressed populations (Lentsch, *et al*, 2000). Nonnative fish such as brook trout, rainbow trout, and brown trout have been introduced to streams throughout the range of Bonneville cutthroat trout. Several populations have been completely displaced with brook trout. The Regional Forester of the Intermountain Region has designated Bonneville cutthroat trout as Sensitive.

Forest-Wide Species Status

The Caribou half of the Caribou-Targhee National Forest comprises approximately 1/30 of the surface area of the historic range of Bonneville cutthroat trout. A Bonneville cutthroat trout distribution map was updated on November 2001 for the Caribou portion of the Caribou-Targhee National Forest. Of the thirty-five 6th code HUC's expected to support Bonneville cutthroat trout populations, six HUC's had populations that were considered strong,[5] fifteen had populations that were considered depressed, and fourteen included watersheds where populations were expected but were absent.

In the following section titled Evaluation of Species Metapopulation Risk Factors, the Bonneville cutthroat trout metapopulations that occur on the Forest are rated per risk of extinction. Range-Wide Habitat Condition

Researchers speculate that Bonneville cutthroat trout historically inhabited all streams in the Bonneville Basin with suitable habitat. However, in the last 100 years, human land use and stream alterations have restricted their range through loss of connectivity between populations and loss and degradation of suitable habitat.

Habitat degradation within the range of Bonneville cutthroat trout has fragmented and reduced the complexity of aquatic habitat. Reservoirs and irrigation diversions have eliminated migratory corridors throughout their range, decreasing connectivity. Human activities such as water development, agricultural activities, energy development, mining, timber harvest, grazing, over fishing, and nonnative species introductions have directly impacted Bonneville cutthroat trout populations and habitat. Lentsch et al (2000) have identified water development, livestock grazing, timber harvest, road construction, energy development, and mining activities as primary causes of Bonneville cutthroat trout habitat loss.

Forest-Wide Habitat Condition

The Caribou-Targhee Forest Fish Distribution Crew has sampled all Bonneville cutthroat trout streams on the Forest between 2000 and 2001. Habitat has been impacted by land management activities in all of these streams to various degrees. The primary impacts documented were from grazing, dewatering (irrigation), roads and trails (passage barriers, riparian vegetation, and sedimentation), and recreational vehicle use. In some areas, these activities have affected aquatic and riparian habitat through dewatering, sedimentation, nutrification, stream bank erosion, channel widening/shallowing, isolating populations, and direct trampling of fish. In some areas, these activities have decreased riparian vegetation, decreasing available stream shade and nutrients, stream bank stability, and sources for large instream wood. These impacts affect the habitat requirements

[5] **Strong population**- All life histories that historically occurred in the subwatershed are still present, and numbers of fish are stable or increasing. The local population is likely to be half or more of its historic density. Greater than 50 percent of the total salmonid community consists of native trout.

described in the Native Fish Species Descriptions section above, decreasing population productivity and, potentially, long term population viability. For additional information on Forest-wide habitat condition, please refer to the discussion in the Inland West Watershed Initiative section of Riparian Areas, Wetlands, and Aquatic Ecosystems of the DEIS. Additional information on geomorphic integrity, water quality integrity, and watershed vulnerability can be found in the watershed section of DEIS.

LEATHERSIDE CHUB

Range-Wide Species Status

The leatherside chub is native to the eastern and southern areas of the Bonneville Basin of Utah, Idaho, and Wyoming, to Wood River, Idaho and to regions of the Snake River, Idaho and Wyoming, above Shoshone Falls. Even though extensive stream sampling has occurred throughout its range, observations of the species have been limited. The general status of the species throughout its range is unknown. Observations of leatherside chub have been documented in the following streams:

Table 126. Observations of Leatherside Chub in Idaho, Utah, and Wyoming.

Stream	County	State	Year
Cassia Creek	Cassia	ID	1986
Goose Creek	Cassia	ID	1986
Trapper Creek	Cassia	ID	1975, 1986, 1994
Beaver Dam Creek	Cassia	ID	1987
Little Wood River	Lincoln	ID	1934
Tincup Creek	Caribou	ID	1969. 2000
Angus Creek	Caribou	ID	Prior to 1995
Big Wood River	Lincoln	ID	1960
Tygee Creek	Caribou	ID	2000
Thistle Creek	Utah	UT	1995
Salina Creek	Sevier	UT	1995
Buffalo Fork		WY	1934
Pacific Creek		WY	1941
Bear River		WY	1972
Muddy Creek		WY	1974
Third Creek		WY	1974
Twin Creek		WY	1975
Rock Creek		WY	1975
Yellow Creek		WY	1972
Sulphur Creek		WY	1972

Forest-Wide Species Status

A leatherside chub distribution map was updated on March 2001 for the Caribou portion of the Caribou-Targhee National Forest. There were two 6th code HUC's with leatherside chub present. An additional 6th code HUC containing leatherside chub, Tygee Creek, is located just outside of the Forest boundary. We do not currently know the status of the populations. It is likely they occur elsewhere on the Forest, but they have only currently been documented in distribution surveys. The historic and current number of streams occupied by leatherside chub is unknown.

Idaho Department of Fish & Game and the Forest have been conducting fisheries surveys on the Caribou portion of the Caribou-Targhee National Forest for decades. During this time, extremely limited documented observations have been made of leatherside chub. This may be because surveys

were concentrating on salmonids or other game species or because of their sparse distribution. Forest-wide species status is unknown.

In the following section titled Evaluation of Species Metapopulation Risk Factors, the leatherside chub populations that occur on the Forest are rated per risk of extinction.

Range-Wide Habitat Condition

Leatherside chub prefer pool habitat in mid- to low- watershed elevations. Channel complexity, including large instream wood undercut banks, and overhanging vegetation, appears to be an important component of their habitat. No detailed range-wide habitat condition assessments were made for leatherside chub. Range-wide impacts to leatherside chub habitat include irrigation diversions, overgrazing of livestock, mining, timber harvest, and road construction. Interactions between leatherside chub and non-native fish may also affect populations, range-wide (USDA Forest Service and USDI BLM, 1997).

Forest-Wide Habitat Condition

On the Forest, the stream segments preferred by Leatherside chub are generally low in the watershed, in low gradient depositional areas. They may also be on neighboring private land. No Forest-wide habitat condition assessment for leatherside chub has been performed on the Forest, so general habitat condition is mostly unknown. A Properly Functioning Condition Assessment was performed on Angus Creek and it was functioning at risk-high. Angus Creek was surveyed by the Forest Fish Crew in 2001 and found to have high frequencies of instream sediment and bank instability. Primary causes identified included grazing and mining. A Properly Functioning Condition (PFC) Assessment was performed on Tincup Creek and it was functioning at risk-moderate. The Forest Fish Crew surveyed Tincup Creek in 2000. Areas with high frequencies of instream sediment and bank instability were observed in Tincup Creek. Those in excess to natural conditions were attributed to cattle grazing, roads, and recreation. The habitat impacts in Angus and Tincup Creeks affect the habitat requirements described in the Native Fish Species Descriptions section above, decreasing population productivity and, potentially, long term population viability. For additional information on Forest-wide habitat condition, please refer to the discussion in the Inland West Watershed Initiative section of Riparian Areas, Wetlands, and Aquatic Ecosystems. Additional information on geomorphic integrity, water quality integrity, and watershed vulnerability can be found in the watershed section of FEIS.

Metapopulations

A metapopulation is a collection of populations that interact through the exchange of individuals. Metapopulations are associated with large watersheds, lakes, or river basins, depending on the level of connection among streams and the straying or dispersal rates and distances typical of each species. When habitat is lost or streams are blocked, metapopulations may become fragmented into isolated local populations (Rieman, *et al*, 1993).

Based on existing conditions, metapopulations have been estimated for each of the evaluation species below. For cutthroat trout, these metapopulations are based upon known migration barriers (dams). Some of the cutthroat trout populations within these metapopulations are isolated due to irrigation diversions in the lower reaches of the streams.

YELLOWSTONE CUTTHROAT TROUT

Four general Yellowstone cutthroat trout metapopulations are currently considered to exist on the Forest; Palisades/Salt, Grays Lake, Blackfoot, and Portneuf/American Falls. Palisades/Salt includes McCoy Creek Watershed, the Salt River, and its tributaries. Resident, fluvial, and adfluvial life history patterns exist in this metapopulation. The adfluvial fish have developed with the establishment of Palisades Reservoir. Grays Lake includes those streams that drain into Grays Lake. These populations may exhibit resident and adfluvial life history patterns. The Blackfoot metapopulation includes Blackfoot Reservoir upstream to the headwaters of the Blackfoot River. The Blackfoot metapopulation likely exhibit resident, fluvial, and adfluvial life history patterns. The adfluvial pattern developed with the establishment of Blackfoot Reservoir. Portneuf/American Falls includes tributaries to the Portneuf River and the few streams originating on the Forest that drain directly into American Falls Reservoir. These fish have resident, fluvial, and adfluvial life history patterns. The adfluvial life history pattern developed with the establishment of American Falls Reservoir.

BONNEVILLE CUTTHROAT TROUT

Four general Bonneville cutthroat trout metapopulations are currently considered to exist on the Forest; Bear River East, Bear River West, Deep Creek Reservoir, and Daniels Reservoir. Each metapopulation is in various degrees of internal disconnect.

Bear River East includes the Bear River and its tributaries upstream of Alexander Reservoir. These fish may exhibit resident, fluvial, and adfluvial life history patterns. The adfluvial cutthroat trout may use Bear Lake and Alexander Reservoir.

Bear River West includes the Bear River and its tributaries downstream of Alexander Reservoir. The disconnect within this metapopulation is severe. Grace, Cove, and Oneida dams in Idaho affect river migration. Migration between the river and its tributaries is frequently affected by water diversions. These fish may exhibit a resident or fluvial life history pattern.

Small metapopulations also occur upstream of the dams at Deep Creek and Daniels Reservoir. These fish are likely resident and potentially adfluvial.

LEATHERSIDE CHUB

The metapopulation principle is much easier to apply to species with migratory behaviors such as salmonids. Leatherside chub appear to spend their entire life history in an abbreviated segment of stream (Belk, 2000), perhaps in one pool and its surrounding riffles. To date, no migratory behavior has been observed. The degree of genetic mixing in populations is unknown. It may be that genetic interaction occurs with individuals drifting downstream. There is a potential the leatherside chub observed in Tincup and Tygee Creeks are part of a metapopulation consisting of the Salt River and its tributaries. There is natural no genetic mixing or exchange of individuals between the Salt River tributaries and Angus Creek (within the Blackfoot River Drainage) due to disconnect. It is likely leatherside chub occur in other tributaries to the Blackfoot River, making the Blackfoot River a potential metapopulation. The two individual populations known to exist on the Forest will be used in this evaluation and referred to as populations.

Evaluation Of Species Metapopulation Risk Factors

The Yellowstone and Bonneville cutthroat trout metapopulations and the known leatherside chub populations were evaluated for their risk to extinction using a set of variables developed by the USDA Forest Service Intermountain Research Station (Rieman, *et al*, 1993). Six parameters were used:

1. **Temporal Variability**: This is the ability of the habitat to be altered by environmental disturbance. Low risk is associated with complex habitat within the drainages, providing for a variety of life stages. The more complex the habitat, the lower the risk of extinction. Temporal variability becomes more critical with small population sizes. The risk value presented is an average for the populations found in the metapopulation.

2. **Population Size**: This refers to the current population size and structure. The greater the number of breeding adults, the less risk of extinction there is. Population size, density dependent factors, and genetic diversity are critical risk factors that directly relate to population size. The risk value presented is an average for the populations found in the metapopulation.

3. **Growth and Survival**: This rates the quality of the habitat. Quality of habitat aids the resiliency of the fish populations. The risk value presented is an average for the populations found in the metapopulation.

4. **Isolation**: This rates the ability of individuals from a population to contribute genes to another population in the metapopulation. Consideration should be given to the ability of a population to be refounded or its gene pool strengthened (maintenance of genetic variability) through genetic interchange. The risk value presented is an average for the populations found in the metapopulation.

5. **Replication**: This considers the number of populations in the metapopulation. Several strong populations in a metapopulation decrease risk. The risk value presented is for the metapopulation.

6. **Synchrony**: Risk to metapopulation persistence is low when environmental variation (floods, low flows, fire, etc.) is low and populations are found in high quality and complex habitats. In this case, there is little evidence that populations fluctuate together. The risk value presented is for the metapopulation.

Each of these six risk factors was used to rate the Yellowstone and Bonneville cutthroat trout metapopulations. A general discussion follows regarding the known leatherside chub populations. A numeric rating system was used, with "1" meaning low risk, "2" meaning moderate risk, "3" meaning high risk, "4" meaning extreme risk, and "6" meaning unknown. The ratings are in the table below, followed by a discussion degree of risk associated with each metapopulation (and leatherside chub populations).

Table 127. Risk Factor Ratings for Trout Metapopulations.

Fish Species	Metapopulation Name	Temporal Variability	Population Size	Growth and Survival	Isolation	Replication	Synchrony
Yellowstone cutthroat	Palisades/Salt	1	1	1	1	1	1
Yellowstone cutthroat	Grays Lake	1	6	2	1	2	2
Yellowstone cutthroat	Blackfoot	1	1	1	1	1	1
Yellowstone cutthroat	Portneuf/American Falls	1	1	2	1	1	1
Bonneville cutthroat	Bear River East	2	2	2	2	2	2
Bonneville cutthroat	Bear River West	2	2	2	6	2	3
Bonneville cutthroat	Deep Creek Reservoir	2	2	3	2	4	3
Bonneville cutthroat	Daniels Reservoir	2	2	3	2	3	3
Leatherside chub	Angus Creek Population	2	3	2	6	4	3
Leatherside chub	Tincup Creek Population	1	3	2	6	4	1

PALISADES/SALT YELLOWSTONE CUTTHROAT TROUT METAPOPULATION

The Palisades/Salt Yellowstone Cutthroat Trout Metapopulation is robust, with a low risk of local population extinction. The populations are closely located, well distributed throughout the metapopulation area and streams, and barriers to interactions are few. Generally, the available habitat is complex and provides some of the highest quality Yellowstone cutthroat trout refugia in the analysis area. Stream hydrographs are generally predictable with infrequent flooding beyond spring snowmelt. There are no known isolated populations in this metapopulation area. Palisades Dam, a formative feature of this metapopulation, provides the only fragmentation. There may have been historic interchange between these populations and populations downstream of the dam, prior to dam construction. The occurrence of rainbow trout in the metapopulation area is minimal, minimizing the concern for introgression. Brook trout populations are strong in tributaries of the upper Salt River. In some streams, they are out competing Yellowstone cutthroat trout for habitat. An example of this is in Smoky Canyon Creek. There is an excellent potential for this metapopulation to exist over both the short (10 years) and long (100 years) terms.

GRAYS LAKE YELLOWSTONE CUTTHROAT TROUT METAPOPULATION

The Forest has limited land base in the Grays Lake Drainage. It generally occurs in the headwaters of six 6th code HUCs. Yellowstone cutthroat trout have been documented in three of these watersheds. Population size is unknown at this time. Additional surveys are being conducted. Environmental conditions appear to be stable enough to not have an effect on the entire metapopulation. However, the majority of the available stream habitat is located off Forest and in places, cattle grazing has impacted its quality. Three of the major streams on the Forest have been rated functioning at risk-high, functioning at risk moderate, and functioning at risk-low. This may have affected cutthroat

trout survival and growth. There is a potential for these stream populations to intermix when they are connected through channels in vicinity of Grays Lake. At best, a few populations occur within this metapopulation. There is moderate risk associated with the metapopulation replication parameter. Although streams are well distributed in this drainage, stream habitat primarily occurs on private land and has been simplified by livestock use. Metapopulation synchrony was rated at a moderate risk because of the simplified habitat. There is a moderate potential for this metapopulation to continue to exist over the short (10 years) and long (100 years) terms. A Forest Fish Distribution Crew is stationed out of Grays Lake National Wildlife Refuge during the 2002 Field Season to gather additional data.

Blackfoot Yellowstone Cutthroat Trout Metapopulation

The Blackfoot Yellowstone cutthroat trout metapopulation has well distributed populations that are well connected to each other. Available habitat is relatively high in quantity and quality. Numerous populations occur in tributaries of the Blackfoot River, from Blackfoot Reservoir to its headwaters. Spawning populations are in close proximity, making risk associated with isolation low. The risk associated with each evaluation parameter was low. Brook trout and rainbow trout occur in depressed populations in headwaters. There is an excellent potential for this metapopulation to exist over both the short (10 years) and long (100 years) terms.

Portneuf/American Falls Yellowstone Cutthroat Trout Metapopulation

The Portneuf/American Falls Yellowstone cutthroat trout metapopulation consists of several well-distributed populations in relatively stable streams. Although there is a lack of information on fish populations occurring on private land, all fish bearing streams on the Forest have been surveyed for fish distribution and relative abundance. The streams we know are occupied with Yellowstone cutthroat trout are close enough to each other to allow interchange of individuals. There is little evidence of population sizes fluctuating together. Moderate risk is associated with growth and survival due to stream impacts decreasing fish survival and growth. Some tributaries to Inman, Mink, and Pebble Creeks are nonfunctional. There are some migration barriers, generally associated with irrigation diversions. There is a moderate potential of this cutthroat trout metapopulation existing over both the short (10 years) and long terms (100 years).

Bear River East Bonneville Cutthroat Trout Metapopulation

The Bear River East Bonneville cutthroat trout metapopulation has moderate risk associated with each risk evaluation parameter. Though there is no exact way to combine the risk evaluation parameters, a population at moderate risk in several evaluation parameters is likely to be at high risk overall (Rieman, *et al*, 1993).

This metapopulation has two populations considered to be strongholds by the Caribou-Targhee National Forest; Giraffe and Emigration Creeks. These populations have access to the river system (a fluvial life history component) and no non-native fish present in their watersheds. However, their neighboring watersheds harbor strong populations of brook trout and there is a potential for colonization. Brook trout can out compete Bonneville cutthroat trout, completely displacing them from streams. This is recently evident in Georgetown and Little Beaver Creeks (in the metapopulation area). Fish distribution surveys, conducted in 1994, documented Bonneville cutthroat trout in these streams. 2000 fish distribution surveys could not detect their continued existence in these streams. Only brook trout exist in these streams today.

There is a moderate risk associated with temporal variability because environmental disturbances are relatively frequent. These environmental disturbances are both natural and management related. In recent years, draught conditions have affected Bonneville cutthroat trout populations. This is evident in the Idaho Department of Fish & Wildlife fish population monitoring data of Preuss and Giraffe Creeks in which there were decreases during the draught in the early to mid 1990s and population increases after the draught. Nonfunctional and functioning at risk streams have been documented throughout the metapopulation area and livestock grazing-related impacts have been documented in 2000-1 stream surveys.

Low population size is commonplace throughout most of the metapopulation area. Strong populations of brook trout are apparently displacing some of these populations. Total displacement (local extirpation of Bonneville cutthroat trout) has occurred in at least five 6th code HUC's in this metapopulation.

Fine sediments and riparian vegetation impacts, generated from land management activities (primarily grazing and roads) have affected riparian and aquatic habitat in stream segments distributed through most of the metapopulation area. This has resulted in a moderate risk associated with cutthroat trout growth and survival.

Isolation is also a concern for many local populations in the metapopulation. This isolation is caused by irrigation diversions, usually occurring on private land in the lower watersheds. This practice often either dries the stream or presents a physical barrier (headgates or dams), isolating local populations upstream. The Bear River East Metapopulation is fragmented.

Considering replication, there is moderate risk associated with this metapopulation because only a small percentage of the populations represent most of the fish production. There is also moderate risk associated with the synchrony evaluation parameter because most populations are depressed.

In summary, the Bear River East Metapopulation of Bonneville cutthroat trout have a high risk of extinction. Although this metapopulation may persist over the short term (10 years), without changes in resource use and management, this metapopulation may not continue to exist in the long term (100 years). The extirpation of some local populations has already been documented. These populations were displaced by brook trout. This displacement was facilitated by management impacts to aquatic and riparian habitat (primarily grazing, roads, and irrigation).

Bear River West Bonneville Cutthroat Trout Metapopulation

The Bear River West Bonneville cutthroat trout metapopulation consists of approximately 7 closely located local populations. Malad River tributaries, which are part of this metapopulation area, have the highest concentration of nonfunctioning and functioning at risk streams on the Forest. Because of this, the risk associated with temporal variability is rated moderate. Each of the populations currently identified are considered to be depressed. There is moderate risk associated with growth and survival due to stream habitat conditions. The degree of connectivity between these populations is unknown and needs to be investigated. There is a moderate risk associated with replication because the few populations that have been identified in this metapopulation have been rated as depressed. There is also a high risk associated with synchrony because the populations are located close together and they may respond to the same environmental variations.

Brook trout have been documented in some of the 6th code HUC's within this metapopulation area, compounding the risk of extirpation.

In summary, although we need to do further fish distribution surveys in the Bear River West Metapopulation area, we have enough information to indicate a high risk of metapopulation extinction over the long term (100 years) under current conditions. The metapopulation may continue to exist over the short term (10 years).

Deep Creek Reservoir Bonneville Cutthroat Trout Metapopulation

There is at least a high risk of extinction for this metapopulation. These small populations (approximately three) exist in a few short tributaries to Deep Creek Reservoir. The dam creating the reservoir has no fish passage facility, isolating the metapopulation. The reservoir is small, and roads surround 75 percent of it. Resident and forced adfluvial (reservoir dwelling) life history patterns likely exist. Risk associated with temporal variability is moderate because environmental disturbances will likely affect each of the closely located populations and poor stream habitat quality and quantity will exacerbate impacts. Risks associated with the population size are moderate due to the limited available habitat. Risks associated with growth and survival are rated high due to poor habitat quality. Each main tributary to the reservoir is rated nonfunctional or functional at risk. These impacts are primarily cause by overgrazing. These small populations are connected but the isolation parameter was rated moderate risk because of intense habitat disruption. The risk associated with the replication parameter is extreme. These are a few small populations, each with high risks of extirpation. The risk associated with synchrony is high due to the close proximity of the populations and documented habitat impacts.

There is at least a high risk this metapopulation will be extirpated over the short term (within approximately 15 years) due to limited habitat quantity and quality and brook trout presence.

Daniels Reservoir Bonneville Cutthroat Trout Metapopulation

The Daniels Reservoir Bonneville cutthroat trout metapopulation has a high risk of extinction over the long term (100 years). This is a metapopulation with similarities to the Deep Creek Metapopulation; isolated by an impassable dam and restricted to low quantity and low quality habitat. It is likely resident and forced adfluvial life history patterns exist. Risk associated with temporal variability is moderate because environmental disturbances will likely affect each of the closely located populations and poor stream habitat quality and quantity will exacerbate impacts. Risks associated with the population size are moderate due to the limited available habitat. Risks associated with growth and survival are rated high due to poor habitat quality. All but 1 main tributary to the reservoir are rated functional at risk. One of the main tributaries is properly functioning. These impacts are primarily caused by overgrazing. These small populations are connected but the isolation parameter was rated moderate risk because of habitat disruption. The risk associated with the replication parameter is high. These are a few small populations, each with high risks of extirpation. The risk associated with synchrony is high due to the close proximity of the populations and documented habitat impacts.

In summary, this metapopulation has similar isolation and habitat problems as the Deep Creek metapopulation. A bright point is brook trout have not been documented upstream of Daniels Dam. Because of this, this metapopulation may be sustained over the short term (10 years), but has a high likelihood of extirpation under existing conditions over the long term (100 years) due to habitat impacts and isolation. 2001 fish distribution surveys could not detect Bonneville cutthroat trout in this area.

Angus Creek Leatherside Chub Population

The Angus Creek leatherside chub population was evaluated using the same method as the cutthroat trout metapopulations above. Although this method was developed for salmonids, some of the evaluation parameters provide a good forum to discuss the potential of sustaining the leatherside chub population over time.

There is moderate risk associated with temporal variability and growth and survival in this population due to low habitat complexity and quality. Angus Creek has been rated as functioning at risk. High risk is associated with population size because of the small number of individuals typically found in local populations. The isolation parameter was rated unknown because future surveys are required to determine other populations in the area. The risk associated with replication (subbasin-wide) was extreme because there is only a single known population in this area at this time. The risk associated with synchrony (subbasin-wide) was rated as high due to the localized nature of this one population and its simplified habitat.

Although the extinction risk consideration model developed by Rieman, *et al*, (1993) was developed for salmonids, there are some conclusions we can provide from analyzing this population. Leatherside chub are likely restricted to the lower reach of Angus Creek. The stream is functioning at risk due to grazing, road, and mining impacts. Leatherside chub are dependent on habitat complexity that may include instream wood and overhanging vegetation. They utilize pools primarily off-channel slow water habitat types such as alcoves and oxbow cut offs (Belk, 2001). These stream features occur in less frequency in streams functioning at risk. Lack or absence of critical habitat components may lead to deterministic extinction (Rieman, *et al*, 1993). The collection of leatherside chub in Angus Creek was vouchered by Idaho State University at least a decade ago. The current status of the species in Angus Creek is unknown. If the Angus Creek leatherside chub population still exists, it is at a high risk of extinction primarily due to habitat quality.

Tincup Creek Leatherside Chub Population

Although it was developed to evaluate extinction risks for salmonids, the consideration of extinction risks process (Rieman, *et al*, 1993) was used for the Tincup leatherside chub population as a forum to discuss population viability. The risk associated with temporal variability was rated low due to moderate quality habitat in lower Tincup Creek and the short-lived, predictable environmental disturbances (snowmelt) that occur there. The risk associated with population size was rated as high due to low numbers of individuals observed. The risk associated with survival and growth was rated as moderate due to silt in stream substrate, highway related impacts, and stream bank cutting documented during the 2000 fish distribution survey. In addition, a recent PFC assessment of Tincup Creek rated it as functioning at a moderate risk. The degree of population isolation is unknown. There is a need for further chub distribution surveys. Based on our current data, there is only a single population or several very small populations, making the risk associated with replication within the subbasin extreme. The risk associated with synchrony (throughout subbasin) is low because the frequency of large-scale catastrophic events is low in the lower watershed where the species occurs.

Although the extinction risk consideration model developed by Rieman, *et al*, (1993) was developed for salmonids, there are some conclusions we can provide from analyzing this population. Based upon our knowledge of the species and their habitat preferences, leatherside chub are likely restricted to the lower reaches of Tincup Creek. The stream is functioning at moderate risk. Leatherside chub are dependent on habitat complexity that may include instream wood and overhanging vegetation. They utilize pools primarily off-channel slow water habitat types such as alcoves and oxbow cut offs

(Belk, 2001). The 2000 fish distribution survey noted a lack of large wood in the stream, even in reaches with conifers dominating the riparian area. Fine sediment deposition on the stream substrate was common in the lower reach. Lack or absence of critical habitat components may lead to deterministic extinction (Rieman, *et al*, 1993). The Tincup Creek leatherside chub population may have a moderate risk of extinction due to moderate habitat quality.

Evaluation Of Species Metapopulation Threats

Aggregated threats to each evaluation metapopulation were determined. Blanks were left where the parameter was not applicable. For some parameters, data were available. For others, a call was made based on the general knowledge of land managers located at the District and from knowledge gained from stream survey observations. The seven threats discussed were grazing, roads/trails, off trail motorized vehicle use, mining, vegetation management (logging and prescribed fire), recreation facilities, and non-native fish.

Table 128. Aggregated Threats to Metapopulations from Forest Management.

Fish Species	Metapopulation Name	Grazing	Roads/ Trails	Off Trail Motorized Vehicle Use	Mining	Vegetation Management	Recreation Facilities	Non-native Fish
Yellowstone cutthroat	Palisades/Salt	X	X	X	X	X	X	X
Yellowstone cutthroat	Grays Lake	X	X	X	X	X		X
Yellowstone cutthroat	Blackfoot	X	X	X	X	X	X	X
Yellowstone cutthroat	Portneuf/American Falls	X	X	X	X	X	X	X
Bonneville cutthroat	Bear River East	X	X	X	X	X	X	X
Bonneville cutthroat	Bear River West	X	X	X		X	X	X
Bonneville cutthroat	Deep Creek Reservoir	X	X				X	X
Bonneville cutthroat	Daniels Reservoir	X	X		X	X		
Leatherside chub	Angus Creek Population	X	X	X	X			X
Leatherside chub	Tincup Creek Population	X	X	X	X		X	X

GRAZING

Livestock grazing occurs throughout each cutthroat trout metapopulation and in each leatherside chub population watershed. In most areas, livestock grazing presents a moderate aggregated threat to the metapopulations. This indirectly affects the temporal variability, population size, and growth/survival metapopulation risk factors defined above. Grazing-related impacts to riparian and aquatic habitat have been documented during stream surveys and were reported by district specialists. The Bear River West Bonneville cutthroat trout metapopulation is experiencing a high threat relating to grazing. The Forest's highest concentration of nonfunctional streams occurs in the Malad Drainage. Due to their limited available habitat, Bonneville cutthroat trout populations in Deep Creek and Daniels Reservoir metapopulations are experiencing a high threat from grazing impacts. The Angus and Tincup leatherside chub populations have a high threat relating to grazing due to their habitat

requirements. They require low elevation, low gradient pool and off-channel habitat. These areas are often the most susceptible to grazing impacts.

ROAD/TRAILS

A moderate threat to fish and their habitat from roads and trails is common throughout the planning area. Roads and/or trails have frequently been constructed parallel to streams and often serve as sources of sediment to the stream. Road crossings may be barriers to upstream-migrating fish. In addition, these roads and trails affect riparian vegetation, potentially affecting stream temperature, frequency of large instream wood, and available floodplain (stream energy dissipation). These threats are considered higher in the Daniels Reservoir Bonneville cutthroat trout metapopulation and the leatherside chub populations because roads and trails parallel most of the limited stream habitat available. Threats to populations associated with roads and trails indirectly affect the temporal variability, population size, isolation, and growth/survival metapopulation risk factors defined above.

Watersheds were considered to have high road densities if they had greater than 1.8 miles of road per square mile (USDA Forest Service and USDI Bureau of Land Management, 1997). High road densities are more likely to affect watershed drainage patterns and deliver sediment to streams. The table below shows the watersheds with high road density, the evaluation species in the watershed, their status, and their associated metapopulation.

Table 129. Watersheds with High Road Densities

Watershed(s)	Species at Risk	Population Status	Associated Metapopulation
Mabey Creek	Yellowstone Cutthroat Trout	Depressed	Blackfoot
Diamond Creek	Yellowstone Cutthroat Trout	Depressed	Blackfoot
Slug Creek	Yellowstone Cutthroat Trout	Extirpated	Blackfoot
Crow Creek	Yellowstone Cutthroat Trout	Strong	Palisades/Salt
Montpelier Creek	Bonneville Cutthroat Trout	Depressed	Bear River East
Eightmile Creek	Bonneville Cutthroat Trout	Depressed	Bear River East
Pearl Creek	Bonneville Cutthroat Trout	Depressed	Bear River East
Skinner/Coop Creeks	Bonneville Cutthroat Trout	Depressed	Bear River East
North Creek	Bonneville Cutthroat Trout	Depressed	Bear River East
Emigration Creek	Bonneville Cutthroat Trout	Strong	Bear River East
Paris Creek	Bonneville Cutthroat Trout	Depressed	Bear River East
Mink Creek	Yellowstone Cutthroat Trout	Depressed	Portneuf/American Falls

Off Trail Motorized Vehicle Use

Based on areas currently open to cross country travel, moderate threat from Off Trail Motorized Vehicle use occurs in the Palisades/Salt, Grays Lake, and Blackfoot Yellowstone cutthroat trout metapopulations, the Bear River East and Bear River West Bonneville cutthroat trout metapopulations, and the Angus and Tincup leatherside chub populations. During recent stream surveys, off trail motorized vehicle impacts to aquatic and riparian habitat has been documented in the Palisades/Salt and Blackfoot Yellowstone cutthroat trout metapopulations and the Bear River East and West Bonneville cutthroat trout metapopulations. Threats associated with off trail motorized vehicle use indirectly affect the temporal variability, population size, and growth/survival metapopulation risk factors defined above.

Mining

Large-scale developed mines pose a moderate threat to the Palisades/Salt and Blackfoot Yellowstone cutthroat trout metapopulations and a high threat to the Angus Creek leatherside chub population. There are low threats posed from mining in the Grays Lake and Portneuf/American Falls Yellowstone cutthroat trout metapopulations, Bear River East and Daniels Reservoir Bonneville cutthroat trout metapopulations, and the Tincup Creek leatherside chub population. Threats associated with mining indirectly influence the temporal variability, population size, and growth/survival metapopulation risk factors defined above.

Vegetation Management

Vegetation management activities pose a low threat to all three evaluation species in the planning area. This includes timber harvest and prescribed burns. INFISH standards and guidelines prohibit vegetation management projects in riparian areas if those projects do not benefit aquatic and riparian dependent species habitat. Threats associated with vegetation management indirectly influence the temporal variability, population size, and growth/survival metapopulation risk factors defined above.

Recreational Facilities

Recreational facilities (developed and dispersed camping areas) have a low threat to the evaluation species in the planning area. They occur throughout the Forest and are often located near streams and rivers. However, their potential impacts (trampled streambanks, reduced riparian vegetation, increased fishing pressure, reduced instream and riparian large wood) are over a short stream distance. Threats associated with recreation facilities use indirectly influence the temporal variability, population size, and growth/survival metapopulation risk factors defined above.

Non-Native Fish

The non-native fish considered in this evaluation as threats to the Yellowstone cutthroat trout, Bonneville cutthroat trout, and leatherside chub populations are brook trout, rainbow trout, and brown trout. Brook trout compete for habitat with native cutthroat trout and prey upon them. Rainbow trout can interbreed with native cutthroat trout, affecting their genetics. They also compete with cutthroat trout for habitat. Brown trout are aggressive predators, preying upon cutthroat trout and leatherside chub when they occur in the same stream segment.

The presence of non-native fish poses a moderate threat to the Palisades/Salt and Grays Lake Yellowstone cutthroat trout metapopulations. Brook trout occur in the upper tributaries of the Salt

River and tributaries of Grays Lake and brown trout occur throughout the Salt River. Rainbow trout (a source of introgression) have been reported by Idaho Department of Fish & Game in tributaries of the Salt River (Jacknife and Crow Creeks) in low densities.

The presence of non-native fish poses a high threat to Blackfoot and Portneuf/American Falls Yellowstone cutthroat trout metapopulations, the Bear River East, Bear River West, and Deep Creek Reservoir Bonneville cutthroat trout metapopulations, and the Tincup Creek leatherside chub population. Brook trout are common throughout these cutthroat trout metapopulations, competing with native cutthroat trout for habitat and preying upon young cutthroat trout. Strong populations of brook trout occur in sixteen of the twenty-four inhabitable 6th Code HUC's in the Bear River East Bonneville cutthroat trout metapopulation area. Strong brook trout populations are also in key fisheries in the Portneuf/American Falls Yellowstone cutthroat trout metapopulation, including Mink and Pebble Creeks. Brook trout presence in the Deep Creek Reservoir Bonneville cutthroat trout metapopulation area is a grave concern, considering the lack of available habitat. Rainbow trout occur in high densities in the Pebble, Toponce, and Mink Creek Drainages in the Portneuf/American Falls Yellowstone cutthroat trout metapopulations. They occur in the upper Blackfoot River in low but increasing densities.

Rainbow trout occur in high densities in the Georgetown and Bloomington Creek Drainages within the Bear River East Metapopulation. Cutthroat trout have been extirpated from Georgetown Canyon and are near extinction in Bloomington Creek. Rainbow trout stocking still occurs in some cutthroat trout metapopulation areas. An effort has been made by Idaho Department of Fish & Game to sterilize the majority of the rainbow trout stocked in these waters. Although this mostly addresses the introgression issue, it does not address rainbow trout competition with cutthroat trout for habitat. Discussions continue regarding the appropriateness of rainbow trout stocking in a struggling (high risk of extinction) Bonneville cutthroat trout metapopulation area.

There is a negative response (avoidance) of leatherside chub to the presence of brown trout, a predator (Belk, 2001). Leatherside chub and brown trout both occur in lower Tincup Creek. Threats associated with the presence of non-native fish indirectly affect the population size, growth/survival, and replication metapopulation risk factors defined above.

Evaluation of Revised Forest Plan Alternatives by Threat

For a discussion regarding the way each Revised Forest Plan alternative addresses threats upon the long-term viability of evaluation species, please refer to the FEIS, Chapter 4, Issue 6: Riparian/Watershed Areas and Aquatic Biota.

Conservation Approaches

Under existing conditions, concern over the long-term persistence of Yellowstone cutthroat trout on the Forest is moderate, concern for Bonneville cutthroat trout on the Forest is high, and concern for leatherside chub is moderate. The concern for the long-term persistence of Yellowstone cutthroat trout in the planning area stems from the existence of rainbow trout in the Portneuf/American Falls and Blackfoot Metapopulations, potentially affecting the southern extent of the species' range on the Forest through introgression and competition for habitat. In addition, brook trout occur in strong populations within some streams in the same metapopulations. Non-native brook trout also compete for habitat with native cutthroat trout and have been documented in the Palisades/Salt, Blackfoot, and Portneuf/American Falls Metapopulations. Brook trout have the potential to completely displace

populations of cutthroat trout, particularly when habitat is degraded or the stream is disconnected. Some degree of management-related habitat impacts have been documented in most Yellowstone cutthroat trout streams surveyed during the 1999-2002 field seasons.

The high concern for the continued existence of Bonneville cutthroat trout on the Forest stems from the existence of non-native rainbow and brook trout in the planning area, tributary disconnect from irrigation diversions on private land, and documented habitat impacts. Although we can address management-related impacts to Bonneville cutthroat trout habitat through the Forest Plan Revision, there is a need to work cooperatively with other agencies and willing private landowners to address threats to the populations throughout their watersheds. As an example, the high risk of extinction associated with the Deep Creek Reservoir and Daniels Reservoir Bonneville cutthroat trout metapopulations will not likely be reduced by management actions on the Forest alone. Addressing fish passage at the dams and non-native fish populations are also required. In another example, we cannot expect the population of Bonneville cutthroat trout in Preuss Creek to perpetuate over the long term without addressing the lack of connectivity between the stream and the Thomas Fork River. To meet our requirements to maintain viable native fish populations in habitats distributed throughout their range on National Forest System lands, Forest Service Biologists must cooperatively work with other agencies and willing private landowners to actively address connectivity concerns and the threat of invading non-native fish species. This direction is included in the Forest Plan revision.

The moderate concern for the continued existence of the Tincup Creek leatherside chub population and the high concern for the continued existence of the Angus Creek leatherside chub are based on current knowledge of their habitat requirements and biology and our lack of knowledge of their distribution and population densities. There are also concerns generated from documented habitat impacts within the range of known populations.

Prior to the signing of the Record of Decision that will accompany this FEIS, conservation approaches to protect and restore Yellowstone and Bonneville cutthroat trout and leatherside chub could be found in existing agreements and the Inland Native Fish Strategy (INFISH) (USDA Forest Service, 1995). Maintaining consistency with elements pertaining to the Caribou part of the Caribou-Targhee National Forest within these sources of direction and supplementing this direction with site-specific direction (where needed) will better ensure the protection and restoration of these evaluation species.

Conservation goals and objectives have been developed for Yellowstone cutthroat trout in the Memorandum of Agreement for Conservation and Management of Yellowstone Cutthroat Trout among Montana, Idaho, Wyoming, Nevada, Utah, US Forest Service, Yellowstone National Park, and Grand Teton National Park (Anonymous, 2000). Although these are general and rather broadly worded, they provide some conservation direction. Direction pertaining to the Caribou half of the Caribou-Targhee National Forest has been incorporated into Forest Plan Direction.

The Range-Wide Conservation Agreement and Strategy for Bonneville Cutthroat Trout (Lentsch, *et al*, 2000) provides conservation approaches for Bonneville cutthroat trout. Key elements of this document should be incorporated into the Forest Plan Revision to ensure implementation. These measures will also benefit Yellowstone cutthroat trout if implemented in their range. Direction pertaining to the Caribou half of the Caribou-Targhee National Forest has been incorporated into Forest Plan Direction. INFISH was developed by USDA Forest Service as an interim direction to protect habitat and populations of resident native fish. Its management direction, riparian goals, riparian management objectives, establishment of riparian habitat conservation areas, and standards and guidelines are effective in the conservation of resident fish and their habitat. The application of INFISH direction that is applicable to the Forest will benefit Yellowstone cutthroat trout, Bonneville

cutthroat trout, and leatherside chub if applied to projects in their watersheds. The direction of INFISH that applies to the Caribou half of the Caribou-Targhee National Forest has been incorporated in the Forest Plan Revision.

The riparian grazing protocol was developed and included in the Forest Plan Revision to address the threat of overgrazing by livestock upon riparian and aquatic habitat. Its implementation will likely maintain quality aquatic and riparian habitat and help to restore livestock-impacted habitat. The goal of the riparian grazing protocol is to maintain or trend towards functioning riparian and aquatic habitat considering the inherent characteristics of the riparian areas and stream channels and their existing conditions and capabilities. Bank disturbance, soil disturbance, grass/sedge stubble height, woody vegetation utilization, and key vegetation utilization are parameters used to gage livestock use and trigger their movement when use is exceeded. Allowable disturbance levels are tailored to specific stream-type groups depending on how similar the riparian area and stream channel are to desired conditions and the ability of the stream channel to resist impacts or recover from impacts. This channel type-specific direction has been missing from previous Forest plan direction on the Caribou and is expected to benefit Yellowstone cutthroat trout, Bonneville cutthroat trout, and leatherside chub when implemented.

There is currently no conservation strategy or agreement for leatherside chub. Little is known about the biology and habitat requirements of the species. What is known is summarized above in Native Fish Species Descriptions. Generally, the species appears to prefer cool, clear water with low frequencies of fine sediment and complex aquatic habitat with overhanging vegetation, pocket pools and margin/off channel slow water. Although much of the low elevation habitat where the species have been observed has been downstream of the Forest, Forest management actions that affect water quality, create sedimentation, and decrease channel complexity, have the potential to affect the viability of leatherside chub populations. Direction in the Forest Plan revision maintains and improves water quality and channel complexity.

MONITORING

1. Perform distribution surveys for Bonneville cutthroat trout, Yellowstone cutthroat trout, and leatherside chub throughout the Forest.

2. Perform genetic analysis of cutthroat trout to determine degree of introgression. Collect tissue for genetic analysis in association with fish distribution surveys.

3. Perform aquatic and riparian habitat surveys to determine habitat condition and monitor trends. Utilize R1/R4 methodology for physical surveys of general riparian and instream conditions. Use other methodologies (embeddedness, core samples, riparian greenline, etc.) as needed.

4. Re-survey streams at a minimum of every 10 years to determine trends, when appropriate. Re-survey of fish distribution and R1/R4 survey steams would be especially valuable to document trends in introgression, non-native species invasions, and habitat quality/quantity.

Supplemental Information

Definitions

Fish Distribution Maps

Fish distribution maps for the analysis species can be found in the Fisheries Section of Chapter 3 of the Forest Plan Revision FEIS. The following excerpts from the Inland West Water Initiative document defines the status determination found in the legend of the distribution maps.

Inland West Water Initiative

Biotic Information/Imperiled Fishes

The ultimate goal of this module is to consistently evaluate the status and distribution of fish on NFS lands in the Inland West. Final objectives are to evaluate current condition of key fish species and species assemblages in order to help assess aquatic ecosystem integrity, to identify crucial subbasins for conservation of imperiled fish species and communities, and to show linkages between fish status-distribution and landscape features. The focus will be on imperiled and selected introduced fishes for now. Fish species assemblages (all fish taxa per subwatersheds) must be assessed later.

Regions will list TES fish species by icthyological subregion (Maxwell et al. 1995). Forest fisheries biologists can work with State/Federal biologists to classify the status of naturally-reproducing populations. If populations are supported solely by hatchery-reared fish, naturally-spawning fish will be rated Absent. Judge status from population factors (life-history forms, abundance status and trends), not from landscape factors or the presence of other species (e.g., habitat condition or introduced fishes). The overall status of each species will be **PRESENT**, **ABSENT**, or **UNKNOWN** as detailed below.

Present (Spawning And Rearing Habitat)

1. **SPAWNING AND REARING HABITAT**

   a. **PRESENT STRONG**: Subwatershed has ALL of the following conditions:

   -All major life-histories (e.g., stream resident or migratory) that historically occurred in the subwatershed are still present; AND

   -Numbers are stable or increasing, and the local population is likely to be half or more of its historic size or density; AND

   -The population or metapopulation in the subwatershed, or in the larger region of which it is a part, likely is at least 5,000 individuals or 500 adults.

***NOTE:** Number of individuals and/or adults may need revision based on population characteristics of species not in interior Columbia River basin (e.g., Lahontan cutthroat trout).*

b. **PRESENT DEPRESSED**: Subwatershed has ONE OR MORE of the following conditions:

-A major life-history component (e.g., migratory or resident form of cutthroat trout) has been eliminated; OR

-Numbers are declining, or species occurs in less than half of its historic habitat, or numbers are less than half of historic; OR

***NOTE:** If historic information is unavailable, densities are less than half of comparable undegraded streams where the species is well-distributed. If numbers are strong, but the population is seriously hybridized with introduced fish, the pure native population is considered to be depressed.*

-The population or metapopulation in the subwatershed, or in the larger region of which it is a part, is less than 5,000 individuals or 500 adults (fish in the subwatershed are isolated by distance or natural barriers from other populations that would collectively exceed these numbers).

***NOTE:** Number of individuals and/or adults may need revision based on population characteristics of species not in interior Columbia River basin (e.g., Lahontan cutthroat trout).*

2. **PRESENT MIGRATION CORRIDOR**: Migration corridors do not support spawning or rearing, and are solely routes or staging/wintering areas for migrating fish. Areas that support transient or subadult fish (e.g., mainstem rivers or lakes) are migration corridors. Pre-migration rearing areas are not.

3. **PRESENT UNKNOWN**: The species is present, but there is no reliable information to determine current status.

Absent

The subwatershed is within the natural range of the species, but the species is not present. It is extinct or never occupied the subwatershed.

Unknown

No information exists about presence or absence of the species.

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Yellowstone And Bonneville Cutthroat Trout Biological Evaluation

YELLOWSTONE and BONNEVILLE CUTTHROAT TROUT
BIOLOGICAL EVALUATION
FOR THE
PREFERRED ALTERNATIVE
OF THE
Caribou Forest Plan Revision
Westside, Soda Springs, and Montpelier Ranger Districts
CARIBOU-TARGHEE NATIONAL FOREST

Summary of Conclusion of Effects for the Proposed Action
upon Yellowstone and Bonneville Cutthroat Trout

Species	No Impact	May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing Or Loss Of Viability To The Population Or Species	Will Impact Individuals Or Habitat With A Consequence That The Action May Contribute To A Trend Towards Federal Listing Or Cause A Loss of Viability To The Population Or Species	Beneficial Impact
Yellowstone Cutthroat (*Oncorhynchus clarki bouvieri*)		X		
Bonneville cutthroat trout (*Oncorhynchus clarki utah*)		X		

Prepared/Approved by: _____ Date: 1 September 2002

James Capurso
Forest Fisheries Biologist
Caribou-Targhee National Forest

Reviewed by: _____ Date: _____

Jerry B. Reese
Forest Supervisor
Caribou-Targhee National Forest

Caribou Forest Plan Revision

The Caribou-Targhee National Forest is preparing an Environmental Impact Statement in conjunction with a revision of the Land and Resource Management Plan for the Caribou portion of the Caribou-Targhee National Forest. This Revised Forest Plan will do the following:

- Establish multiple-use goals and objectives [36 CFR 219.11];
- Establish forest-wide management requirements (standards and guidelines);
- Establish management areas and management area direction through the application of management prescriptions;
- Identify lands not suited for timber production [36 CFR 219.3];
- Establish monitoring and evaluation requirements;
- Recommend areas for official designation of Wilderness

The authorization of project-level activities on the Forest occurs through separate project, or site-specific, decision-making. Project-level decisions must comply with National Environmental Policy Act procedures and must include a determination that the project is consistent with the Forest Plan. The proposed action does not address specific project actions but will set the Forest-wide direction that frames those actions.

SPECIES: Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*)

BACKGROUND

U.S. Fish and Wildlife Service was petitioned to list Yellowstone cutthroat trout in August 1998. In February 2001, the agency finalized their finding on the petition to list Yellowstone cutthroat trout. They indicated the petition did not provide substantial information to indicate listing was warranted. Yellowstone cutthroat trout currently retains its status as a Sensitive species on the Regional Forester's Sensitive Species List.

The Caribou-Targhee National Forest is currently addressing the needs of Yellowstone cutthroat trout by maintaining consistency with their Forest Plans. Within the range of Yellowstone cutthroat trout, Forest activities are guided by the Targhee Forest Plan Revision (Targhee Forest) and the Caribou Forest Plan as amended by INFISH (Caribou Forest).

Intensive surveys for Yellowstone cutthroat trout distribution have been conducted on the Caribou-Targhee National Forest since 1997. The subspecies appear to be distributed throughout most of the Forest, but populations in various streams or stream segments vary in strength. While some populations are threatened by competition and hybridizing with nonnative species, others appear to be thriving in isolated streams or stream reaches. Some populations have been replaced by introduced nonnative fish species. Genetic interactions between existing Yellowstone cutthroat trout populations have diminished from historic conditions because of a decrease in connectivity. The forest continues to better define fish distribution through ongoing surveys.

BIOLOGY

Within Idaho, the original cutthroat trout native to the Snake River system may have been the Yellowstone cutthroat trout. It is believed they were replaced by rainbow trout and other subspecies of cutthroat trout in drainages downstream of Shoshone Falls. Shoshone Falls isolated cutthroat trout from contact with rainbow trout and the Yellowstone subspecies remains the native trout in the upper Snake River basin. It is also believed cutthroat trout may have been native to the Sinks drainages (Dubois District), but further research is needed. Yellowstone cutthroat trout are adapted to cold water. Water temperatures between 4.5 and 15.5 C appear to be optimum for the subspecies. This subspecies migrates for spawning when threshold water temperatures approach 5 C (optimum 10 c) and streamflows subside from spring peaks. Streams selected for spawning are commonly low gradient (up to 3 percent), perennial streams, with groundwater and snow fed water sources. Use of intermittent streams for spawning is not well documented, but has been noted in some intermittent tributaries to Yellowstone Lake. Spawning occurs wherever optimum size gravel (12-85 mm in diameter) and optimum water temperatures (5.5-15.5 C) are found. Depending on variations in growth, spawning populations are comprised of individuals age thee and older (primarily ages 4-7). Juveniles congregate in shallow, slow-moving parts of the stream.

DISTRIBUTION AND HABITAT CONDITION

Range-Wide Species Status

Many Yellowstone cutthroat trout populations currently exist as localized remnants of original subpopulations with little or no connectivity. Others owe their existence to hatchery programs. Current estimates indicate that Yellowstone cutthroat trout occupy 41 percent of historic riverine environments throughout the historic range. In addition, there are about 450 lake environments, within the historic range that currently support Yellowstone cutthroat trout. The number of lake environments currently supporting Yellowstone cutthroat populations represents a 380 percent increase over historic levels. Additionally, there are now numerous riverine and lake populations in existence outside of the historic range resulting from extensive stocking.

Caution should be applied before developing conclusions relative to overall Yellowstone cutthroat trout status. Many populations have not received sufficient testing for a definitive assessment of genetic status. Based on the findings in Montana, genetic contamination is probable for most cutthroat trout populations that have been exposed to rainbow trout or cutthroat of hatchery origin.

Fragmentation and population isolation has occurred as a result of stream dewatering, replacement by introduced nonnative fish, hybridization, substantial environmental change, and over-harvest. Many populations owe their current existence to passage barriers (natural or human caused) that have effectively controlled access of both contaminating and competitive species that are present in nearly all areas of the current range. At the same time these populations find themselves restricted to relatively small patches of habitat that have, in many cases, been degraded by human activity. Viability concerns increase with decreasing patch size, declining habitat quality and complexity, and increased isolation from source populations. Yellowstone cutthroat trout are a Regional Forester Sensitive species.

Forest-Wide Species Status

The Caribou half of the Caribou-Targhee National Forest comprises approximately 1/20 of the surface area of the historic range of Yellowstone cutthroat trout. A Yellowstone cutthroat trout distribution map was updated on December 2001 for the Forest. Of the fifty-one 6th code HUC's with Yellowstone cutthroat trout data on the Caribou half of the Forest, thirty-four HUC's had populations that were

considered strong, fourteen had populations that were considered depressed, and three had populations where we expected them to be present but they were absent.

It appears that Yellowstone cutthroat trout are well distributed throughout the Caribou portion of the Forest within the Snake River Basin. Perhaps one of the most significant threats to the species within the Forest is the introduction of nonnative fish. As an example, rainbow trout are stocked in Blackfoot Reservoir. Historically, rainbow trout with the ability to reproduce were stocked there. Today, the majority of the stocked rainbow trout are sterile. The presence of naturally reproducing rainbow trout in the headwaters of the Blackfoot River, including Diamond Creek, is on the increase (Scully 2001). Rainbow trout interbreed with native cutthroat trout affecting their genetic purity. They also compete for habitat with native fish.

In the following section titled Evaluation of Species Metapopulation Risk Factors, the Yellowstone cutthroat trout metapopulations that occur on the Forest are rated per risk of extinction.

Range-Wide Habitat Condition

Aquatic environments inhabited with Yellowstone cutthroat trout on National Forest lands tend to be in better condition and support more populations. Present estimates indicate that 63% of historic riverine habitats on National Forests still support populations of Yellowstone cutthroat trout. Most of the currently occupied lake habitat is found on National Forest administered lands.

Forest-Wide Habitat Condition

Composite ecological ratings for the 6 (4^{th} HUC) subbasins in the Caribou portion of the Forest within the range of Yellowstone cutthroat trout estimated that 4 were low, 1 was moderate, and 1 was high in overall ecological condition. The Interior Columbia River Basin Report (USDA Forest Service and USDI BLM, 2000) and Forest fish distribution survey reports (2000-2001) documented impacts to Yellowstone cutthroat trout habitat that included agriculture, urban expansion, timber harvest, livestock grazing, road building/maintenance/use, dispersed camping, off-road motor vehicle use, and mining. In some areas, these activities have affected aquatic and riparian habitat through dewatering, sedimentation, nutrification, stream bank erosion, channel widening/shallowing, isolating populations, and direct trampling of fish. In some areas, these activities have decreased riparian vegetation, decreasing available stream shade and nutrients, stream bank stability, and sources for large instream wood. These impacts affect the habitat requirements described in the Native Fish Species Descriptions section above, decreasing population productivity and, potentially, long term population viability. For additional information on Forest-wide habitat condition, please refer to the discussion in the Inland West Watershed Initiative section of Riparian Areas, Wetlands, and Aquatic Ecosystems. Additional information on geomorphic integrity, water quality integrity, and watershed vulnerability can be found in the watershed section of FEIS.

SPECIES: Bonneville cutthroat trout (*Oncorhynchus clarki utah*)

BACKGROUND

U.S. Fish and Wildlife Service received a petition to list Bonneville cutthroat trout as Threatened in February 1998. The agency responded the petition presented substantial information indicating that listing this species may be warranted. They initiated a status review of the subspecies. On 9 October 2001, US Fish and Wildlife Service found the Bonneville cutthroat trout to not be warranted for listing. The Bonneville cutthroat trout currently retains its status as a Sensitive species listed on the Regional

Foresters Sensitive Species list. The Forest informally agreed with U.S. Fish and Wildlife Service to analyze the effects of projects upon this species in the biological assessment as if the species were proposed for listing.

If the Bonneville cutthroat trout are proposed for listing prior to the implementation of this project, the Caribou-Targhee National Forest should request, in writing, that the U.S. Fish and Wildlife Service consider this biological assessment and concurrence as acceptable for the proposed species. If there have been no significant changes in the planned action and no new information that should be included in the biological assessment, the U.S. Fish and Wildlife Service will concur with the request.

The Caribou-Targhee National Forest is currently addressing the needs of Bonneville cutthroat trout by maintaining consistency with their Forest Plans. Within the range of the subspecies, Forest activities are guided by the Caribou Forest Plan as amended by INFISH (Caribou Forest).

Intensive surveys for Bonneville cutthroat trout distribution have been conducted on the Caribou-Targhee National Forest since 1998. The subspecies appear to be distributed throughout the southern part of the Forest, but populations in various streams or stream segments vary in strength. While some populations are threatened by competition and interbreeding with nonnative, introduced fish species, others appear to be thriving in isolated streams or stream reaches. Apparently, some populations have been replaced by nonnative, introduced fish species. Genetic interactions between existing Bonneville cutthroat trout populations have diminished from historic conditions because of a decrease in connectivity. Distribution surveys continue.

BIOLOGY

Only one trout subspecies, the Bonneville cutthroat trout, is endemic to the Bonneville Basin. While some stream populations survive, this subspecies evolved primarily in a lake environment. Upon the desiccation of Lake Bonneville, trout were primarily restricted to perennial tributaries and connected watersheds and subbasins. Only Bear, Utah, and Panguitch Lakes retained lacustrine populations. These historic lake populations have been extirpated except in Bear Lake. During the last 150 years, the Bonneville cutthroat trout populations have been significantly reduced through anthropogenic activities, including habitat degradation, over utilization, and the introduction of non-native fish species. They spawn in the spring from April to June. Like other cutthroat, they require a clean, gravel substrate in cool, well-oxygenated water for spawning. They reach sexual maturity at 2-3 years of age. They eat mainly aquatic insects and terrestrial insects that fall into the water from overhanging vegetation. Larger Bonneville cutthroat trout feed on small fish.

DISTRIBUTION AND HABITAT CONDITION

Range-Wide Species Status

Current information on Bonneville cutthroat trout indicates that the range-wide status of this species has been improving over the last 20-year period. There are currently an estimated 163 tentative populations inhabiting over 1365 miles of lotic habitats and 70,088 surface acres of lentic habitats. The largest single population occurs in Bear Lake with an estimated population size of over 30,000 individuals. Of the populations being managed for conservation, 62 have been identified as core or reintroduced populations and two have been designated introgressed populations (Lentsch, *et al*, 2000). Nonnative fish such as brook trout, rainbow trout, and brown trout have been introduced to streams throughout the range of Bonneville cutthroat trout. Several populations have been completely displaced with brook trout. The Regional Forester of the Intermountain Region has designated Bonneville cutthroat trout as Sensitive.

Forest-Wide Species Status

The Caribou half of the Caribou-Targhee National Forest comprises approximately 1/30 of the surface area of the historic range of Bonneville cutthroat trout. A Bonneville cutthroat trout distribution map was updated on November 2001 for the Caribou portion of the Caribou-Targhee National Forest. Of the thirty-five 6th code HUC's expected to support Bonneville cutthroat trout populations, six HUC's had populations that were considered strong,[6] fifteen had populations that were considered depressed, and fourteen included watersheds where populations were expected but were absent.

Range-Wide Habitat Condition

Researchers speculate that Bonneville cutthroat trout historically inhabited all streams in the Bonneville Basin with suitable habitat. However, in the last 100 years, human land use and stream alterations have restricted their range through loss of connectivity between populations and loss and degradation of suitable habitat.

Habitat degradation within the range of Bonneville cutthroat trout has fragmented and reduced the complexity of aquatic habitat. Reservoirs and irrigation diversions have eliminated migratory corridors throughout their range, decreasing connectivity. Human activities such as water development, agricultural activities, energy development, mining, timber harvest, grazing, over fishing, and nonnative species introductions have directly impacted Bonneville cutthroat trout populations and habitat. Lentsch, *et al*, (2000) have identified water development, livestock grazing, timber harvest, road construction, energy development, and mining activities as primary causes of Bonneville cutthroat trout habitat loss.

Forest-Wide Habitat Condition

The Caribou-Targhee Forest Fish Distribution Crew has sampled all Bonneville cutthroat trout streams on the Forest between 2000 and 2001. Habitat has been impacted by land management activities in all of these streams to various degrees. The primary impacts documented were from grazing, dewatering (irrigation), roads and trails (passage barriers, riparian vegetation, and sedimentation), and recreational vehicle use. In some areas, these activities have affected aquatic and riparian habitat through dewatering, sedimentation, nutrification, stream bank erosion, channel widening/shallowing, isolating populations, and direct trampling of fish. In some areas, these activities have decreased riparian vegetation, decreasing available stream shade and nutrients, stream bank stability, and sources for large instream wood. These impacts affect the habitat requirements described in the Native Fish Species Descriptions section above, decreasing population productivity and, potentially, long term population viability. For additional information on Forest-wide habitat condition, please refer to the discussion in the Inland West Watershed Initiative section of Riparian Areas, Wetlands, and Aquatic Ecosystems of the DEIS. Additional information on geomorphic integrity, water quality integrity, and watershed vulnerability can be found in the watershed section of DEIS.

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[6] **Strong population**- All life histories that historically occurred in the subwatershed are still present, and numbers of fish are stable or increasing. The local population is likely to be half or more of its historic density. Greater than 50 percent of the total salmonid community consists of native trout.

COMPLIANCE WITH FOREST SERVICE AND INTERAGENCY AGREEMENT FISH CONSERVATION DIRECTION

The selection of Alternative 7R is consistent with fisheries conservation direction provided by the Forest Service Manual, 36 CFR 219.19-20, the Interagency Memorandum of Agreement for Conservation and Management of Yellowstone Cutthroat Trout, and the Rangewide Conservation Agreement and Strategy for Bonneville Cutthroat Trout.

- Forest Service Manual Direction: Agency guidelines requiring the management of ecosystems, fish and wildlife populations, natural community diversity and productivity, and population viability can be found in several places within the Forest Service Manual.

- 2602-Objectives: Maintain ecosystem diversity and productivity by maintaining at least viable populations of all native and desired non-native wildlife, fish, and plants in habitats distributed throughout their geographic range on National Forest System lands. The selection of Alternative 7R maintains ecosystem diversity and productivity through improving existing conditions. Viable populations of Yellowstone and Bonneville cutthroat trout will be maintained over the long-term.

- 2603 Policy: Serve the American People by maintaining diverse and productive wildlife, fish and sensitive plant habitats as an integral part of managing National Forest ecosystems. This includes recovery of Threatened or Endangered species, maintenance of viable populations of all vertebrates and plants, and production of featured species commensurate with public demand, multiple-use objectives and resource allocation determined through the land management planning process. The selection of Alternative 7R is expected to maintain viable populations of Yellowstone and Bonneville cutthroat trout over the long-term.

- 2670.22 Sensitive Species

    - Develop and implement management practices to ensure that species do not become Threatened or Endangered because of USFS actions.
    - Maintain viable populations of all native and desired nonnative wildlife, fish, and plant species in habitats distributed throughout their geographic range on National Forest System lands.
    - Develop and implement management objectives for populations and/or habitat of Sensitive species. The selection of Alternative 7R will maintain viable populations of Yellowstone and Bonneville cutthroat trout and includes management objectives for populations and habitat.

- 2670.32 Sensitive Species: Avoid or minimize impacts to species whose viability has been identified as a concern. The selection of Alternative 7R will minimize impacts to Yellowstone and Bonneville cutthroat trout, Sensitive species.

- Code of Federal Regulations 36CFR219.19-20: This part of the Code of Federal Regulations has to do with the National Forest System land and resource management planning and directs the USFS to maintain or restore ecological sustainability and diversity, and species viability (U.S. GPO, 2001). The selection of Alternative 7R is consistent with this direction. A viability evaluation was performed on metapopulations of Yellowstone and Bonneville cutthroat trout and most metapopulations are expected to be maintained long term.

- The Interagency Memorandum of Agreement for Conservation and Management of Yellowstone Cutthroat Trout between Montana, Idaho, Wyoming, Nevada, Utah, USDA Forest Service, Yellowstone National Park, and Grand Teton National Park provides some direction pertaining to Yellowstone cutthroat trout. The direction pertaining to the Forest has been incorporated in Alternative 7R.

- The Range-wide Conservation Agreement and Strategy for Bonneville Cutthroat Trout provides some direction pertaining to Bonneville cutthroat trout. The direction pertaining to the Forest has been incorporated in Alternative 7R.

DIRECT/INDIRECT EFFECTS

Direct and indirect effects of selecting and implementing Alternative 7R considered the potential impacts of the major management actions of the Caribou portion of the Forest, including, livestock grazing, roads/trails, off-trail motorized use, mining, vegetation management, and recreation, upon Yellowstone and Bonneville cutthroat trout.

Effects from Livestock Grazing

Impacts from excessive grazing may include bank trampling, trailing, and heavy utilization of vegetation in some locations. These impacts typically contribute sediment to streams, decrease stream bank stability, increase stream channel width, decrease stream channel depth, and decrease riparian vegetation and associated shading (Shaw and Clary, 1996; Fleischner, 1994; Whisenant, 1999; Neary and Medina, 1996; Platts, 1981; Platts and Nelson, 1985). These impacts would likely affect Yellowstone cutthroat trout population viability because they prefer cold, clear streams with low frequencies of fine sediment (See Native Fish Species Descriptions in FEIS Appendix B). Alternative 7R addresses the concern of overgrazing, aiding the long-term viability of Yellowstone and Bonneville cutthroat trout populations within the Forest.

Alternative 7R proactively addresses the threats associated with grazing. It prescribes herbaceous utilization, browse utilization, and stubble height standards on a site-specific basis (with a restrictive default until a site-specific prescription can be developed).

Effects from Roads/Trails

The impacts upon aquatic and riparian habitat associated with roads and trails were evaluated through changes in road density, miles of road projected to be constructed during vegetation treatment projects, surface area proposed for wilderness, whether new road construction is allowed in roadless areas, and summer motorized recreation use restrictions.

Increasing road densities and their attendant effects are associated with declines in the status of native inland fish (USDA Forest Service and USDI BLM, 1997). Roads can affect streams through increased erosion rates, increased mass soil movement, surface erosion, migration barriers at stream crossings, alterations in channel morphology, and decreasing riparian vegetation and large wood sources. Roads can affect fisheries by interrupting upstream-migrating fish, increasing fine sediment delivery to spawning and rearing habitat, and simplifying stream channels through constriction (Furniss, *et al*, 1991). An expanded road network augments peak flows since water traveling as concentrated surface flow reaches the channel faster than water traveling as subsurface flow (Wemple, *et al*, 1996). These impacts can affect analysis species and their habitat through sedimentation, stream bank instability, and stream

channel simplification. In addition, roads and trails increase access for anglers that may increase fish mortality or illegal non-native fish introductions. Alternative 7R helps address these concerns.

In Alternative 7R, road densities would increase or decrease, depending upon prescription. Approximately eighteen miles of road are proposed for construction per decade in vegetation treatment project areas in this alternative. Approximately 47,200 acres would be proposed for wilderness acres. No roads would be constructed in roadless areas and summer motorized use of those areas would remain unchanged. The 47,200 acres of proposed wilderness includes portions of McCoy and Jackknife Creeks. The Forest considers both as Yellowstone cutthroat trout stronghold streams. The designation of these wilderness areas will eliminate road- and motorized vehicle-related threats to this population.

Effects from Off Trail Motorized Vehicles

The effects of Off Trail Motorized Vehicles upon aquatic and riparian habitat have been observed in Forest fish distribution surveys and documented in several survey reports between 2000 and 2001. They include increasing stream bank erosion and decreasing riparian vegetation. An increase in the frequency of fine sediment in aquatic habitat is a result. Increases of instream fine sediment have the potential to affect aquatic biota and their habitat, including native trout.

Alternative 7R helps address off-trail motorized threats by discontinuing it in all but approximately 36,000 acres. The area left open is fishless so populations will not likely be affected.

Effects from Mining

Mining has the potential to affect aquatic biota, including native trout, and their habitat through the introduction of toxic materials to streams, sedimentation from the mining activity and associated roads, and changes in hydrology (Nelson, *et al*, 1991). Alternative 7R has an adaptive approach to address the effects of mining. The approach would require mining companies to meet established and well-defined desired future conditions without detailed Forest Plan direction. Mining will be consistent with state and federal laws. Detailed directions for mine operation and reclamation can be included in the operation plan. The adaptive approach allows for changes and additions to these requirements as we learn more or on a site-specific basis.

Moderate threats from mining occur in the Palisades/Salt and Blackfoot Yellowstone cutthroat trout metapopulations. These metapopulations are at a low risk of extinction.

Effects from Vegetation Management

Vegetation management could affect aquatic biota, including the viability evaluation species, and their habitat through influencing hydrology, affecting soil structure, changing water quality/temperature/suspended sediment, and increasing mass movements and sedimentation (Chamberlin, *et al*, 1991). Changes in stream hydrology could result in scoured reproductive nests and decreases in available quality habitat. Peak flows may increase in magnitude and low flows may be lower. Changes in soil structure may increase runoff and erosion. Increases in stream temperatures may decrease coldwater biota health and reproductive success. Increases in sediment delivery to aquatic habitat may decrease and simplify available habitat and decrease reproductive success and hiding habitat. Alternative 7R helps address these concerns.

Only a low degree of threat exists on Yellowstone and Bonneville cutthroat trout as a result of vegetation management activities, because of Revised Forest Plan riparian and aquatic related standards and

guidelines. Current site-specific planning/mitigations and guidance from Revised Forest Plan riparian and aquatic related standards and guidelines protect these populations from logging and prescribed fire related impacts. Alternative 7R will likely sustain these protection measures and are not expected to directly affect cutthroat trout or their habitat.

Depending on site-specific treatment areas, indirect effects may include sediment generation from haul routes and increases in stream flow extremes in treatment watersheds (higher peak flows and lower low flows). The extent of these short-term, indirect effects is expected to be proportional with the degree of harvest. In other words, more timber harvest roughly equates to more log hauling and potentially more road related sediment delivered to stream segments near haul routes.

Effects from Recreational Facilities

This discussion includes consideration of developed and dispersed recreational areas (primarily camping). Traditionally, camping areas have developed in riparian areas, near water. Associated impacts to riparian areas may include a decrease in riparian vegetation from foot and vehicle traffic and resulting erosion. Because of the proximity to aquatic habitat, fine sediment from this erosion is often delivered into aquatic habitat. Fine sediment affects the quality of aquatic habitat, including that of the viability evaluation species, often resulting in less carrying capacity. In addition, recreation sites located in riparian areas may affect the frequency of downed wood located in the floodplain and stream due to firewood gathering and hazard tree treatment. Because recreation sites located in riparian areas typically do not cover large percentages of riparian surface area, total impacts from recreation sites are usually minor at a watershed scale, but could play more of a role when considering cumulative effects.

Alternative 7R increases developed and dispersed recreation sites beyond what currently exists. This would have a negative effect on aquatic and riparian habitat if these sites were located in riparian areas. The low frequency of these facilities and sites along any particular stream will not likely impact Yellowstone and Bonneville habitat and populations to a degree that could affect their viability.

CUMULATIVE EFFECTS

The cumulative effects upon the Forest fisheries resource were considered. Analysis boundaries included any areas that had the potential of affecting the quality and quantity of aquatic and riparian habitat. Some of these fish species, such as the migratory life history patterns of cutthroat trout, may spend only a portion of their life on the Forest. They often spend part of their adult lives in larger river systems off the Forest. Because of that, the cumulative effects analysis boundary extends downstream to all habitats they use. Due to their migratory nature, the potential long-term viability of these fish populations may be affected by occurrences off of the Forest. Although these occurrences, such as grazing, development, road construction and maintenance, irrigation diversions, etc., affect these fish, they affect them the same under all Forest plan alternatives. However, when considered in combination with the cumulative effects associated with each Forest Plan alternative, there may be more of an additive effect when adding impacts off the Forest with higher cumulative effects associated with alternatives with more intensive land management activities (Alternatives 1, 2, and 3). When compared to the intensive management alternatives, Alternative 7R has a moderate amount of cumulative effects associated with it.

DETERMINATION OF EFFECTS

Consideration was given to the effects of implementing Alternative 7R of the Revised Forest Plan upon Yellowstone and Bonneville cutthroat trout. The selection and implementation of Alternative 7R **may**

impact individuals or habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species.

Other discussion of effects upon these species, other aquatic biota, and their habitat can be found in Chapter 4 and Appendix B of the FEIS.

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A general list of Yellowstone cutthroat trout references can be obtained by contacting the Caribou-Targhee Forest Fisheries Biologist.

Section 7 Consultation for the Caribou National Forest, Revised Forest Plan

USDI-Fish and Wildlife Service

Letter of Concurrence

United States Department of the Interior

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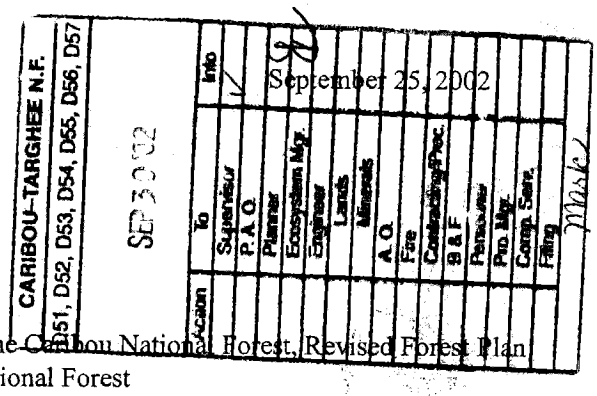


September 25, 2002

Jerry Reese, Forest Supervisor
Caribou-Targhee National Forest
Supervisor's Office
1405 Hollipark Drive
Idaho Falls, ID 83401

Subject: Section 7 Consultation for the Caribou National Forest, Revised Forest Plan for the Caribou-Targhee National Forest
File # 111.0000 FWS # 1-4-02-I-0190

Dear Mr. Reese:

This letter transmits the U. S. Fish and Wildlife Service's (Service) letter of concurrence for the Caribou National Forest's (Caribou) preferred alternative (Alternative 7R), Caribou Forest Plan Revision (Plan) for the Caribou-Targhee National Forest (Forest). It was prepared in response to your August 5, 2002, request to initiate informal consultation under Section 7 of the Endangered Species Act (Act) of 1973, as amended. Your letter was received by this office on August 6, 2002.

This document represents the Service's evaluation of the effects of that proposed action on the threatened Canada lynx (*Lynx canadensis*), bald eagle (*Haliaeetus leucocephalus*), Ute ladies'-tresses (*Spiranthes diluvialis*), the experimental, non-essential populations of gray wolf (*Canis lupus*), and whooping crane (*Grus Americana*), and candidate species, the yellow-billed cuckoo (*Coccyzus americanus*) in accordance with section 7 of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. et seq.).

Proposed Action. The purpose of the Revised Plan is to provide an approved land and resource management plan to establish direction for future decisions in the planning area (Caribou) which will include an interdisciplinary approach to achieve integrated consideration of physical, biological, economic and other sciences. The Caribou portion of the Forest encompasses eleven counties in three states (Idaho, Wyoming, and Utah) and is broken into three Ranger Districts: Westside, Soda Springs and Montpelier.

Future proposed projects and activities on the Caribou would be proposed, analyzed and carried out within the framework of the Plan. The Plan is a controlling consideration, but project decisions are only made after site-specific review with public involvement. Ongoing activities and uses will be regulated through the direction contained in regulations for management of the U.S. Forest Service (USFS). These site or activity-specific decisions must be consistent with applicable Plan direction or the Plan may be amended to permit the activity. The Plan allows or prohibits some uses and establishes standards and guidelines that regulate future resource use. The consistency requirement of the National Forest Management Act (NFMA) directs the USFS to evaluate proposed activities against the standards and guidelines and management area prescriptions of the Plan. The Plan focuses small landscape planning on the mix of activities and projects needed to meet forest-wide goals and implementation. All projects remain subject to site-specific and continuing compliance with Federal environmental laws, such as the Endangered Species Act, National Environmental Policy Act, Clean Water Act, and Clean Air Act.

One major requirement of the NFMA is to implement regulations that specify guidelines for land management plans. Plans are developed to achieve the goals which provide for a diversity of plant and animal communities based on the suitability and capability to meet overall multiple use objectives. The fish and wildlife resource regulations provide for diversity within multiple use objectives. The USFS uses the planning process and ongoing monitoring, evaluation and adjustment of fish, wildlife, and rare plant standards to prevent listing of species under the Act and avoid extirpation of species from its actions.

Several agency actions have directly influenced the structure of this Plan and determined how it is to be used. These include the Interior Columbia Basin Ecosystem Management Project (ICBEMP), the Inland Fish Strategy (INFISH), and the combining of the Caribou and Targhee National Forests. The existing Caribou Plan was amended in July, 1995 to provide interim direction to manage inland native fish (INFISH). The relevant parts of this interim direction was incorporated into this proposed Plan.

Preferred Alternative. Alternative 7R is the Preferred Alternative. This alternative was developed in response to public comment and has an emphasis on adaptive management and monitoring to resolve uncertainties. Alternative 7R proposes to manage resources using a mix of restoration strategies, including timber harvest, thinning, fire, grazing management, and managing motorized access.

Some disturbances would be allowed to operate naturally in order to maintain or restore ecological processes and functions. Insect and disease disturbances would be allowed to play their natural role where appropriate and desirable, although epidemic disturbances generally would be controlled. Wildfires would be suppressed in some areas to protect public safety and resource values, but would be allowed to burn in other areas to benefit resource values. Prescribed fire, mechanical treatment and wildland fire for resource benefit would be used to manage vegetation, reduce hazardous fuels, and recycle nutrients with priority on reducing fuels near interface communities.

Alternative 7R proposes to treat a total of 89,000 acres of vegetation over the next 10 years (about 8% of the Caribou). Conifer sites, particularly mixed conifer and aspen/conifer, and aspen would be managed to maintain 40% of these acres in a mature/old age structure. Non-forested vegetation treatments would focus on sagebrush, mountain shrub and tall forb sites. Sagebrush and mountain shrub sites would be managed to allow 50% of the acres to remain in greater than 15% canopy cover. Tall forb sites, where they exist, would be managed to maintain or restore sites, based on research findings. Areas that were once tall forb sites, but have lost the capability to maintain tall forb communities as a result of topsoil loss or site potential, would be managed for watershed stability.

Livestock grazing would be managed to maintain or restore watersheds, aquatic systems, soils, plants and animals. Livestock would be managed through forest-wide livestock forage utilization levels on upland and riparian sites. Generally, upland utilization would be set at 25-35% for browse and 35-55% for herbaceous species. On key winter ranges, utilization would be lowered to 10% and 35% respectively. These levels are lower than the current utilization level of 35-45% for browse and 50-60% for upland herbaceous species.

Riparian areas and watersheds would be aggressively managed to maintain water quality and aquatic ecosystems and to restore degraded conditions where they exist. The primary focus of management activities would be on achieving proper functioning condition of riparian areas, watershed protection and restoration. Streams that are in proper functioning condition would be managed to maintain or improve that condition. Streams that are functioning, but "at risk" of further degradation would have more stringent standards and guidelines applied. Streams considered not functioning would have the most prohibitive standards and guidelines applied. Additional standards and guidelines would be applied to streams identified by the State of Idaho as water quality limited or containing Threatened and Endangered Species.

Alternative 7R would maintain motorized access at approximately the current levels. Open motorized route density (OMRD) goals were set at 0.5 mi/mi2, 1.0 mi/mi2, 1.5 mi/mi2, 2 mi/mi2 or higher, based largely on the existing situation and with some consideration of resource concerns in specific areas. These OMRD's were assigned to prescription areas. The biggest changes in open motorized route densities would be across the Bear River Range and the Bannock Range, where OMRD's would be reduced by .1 mi/mi2.

Under this alternative, an adaptive approach to mining operations, reclamation and hazardous substance management would require a greater use of native plants, on-site topsoil/subsoil management, and more stable, natural appearing landscapes in reclamation activities.

Wildlife habitat management would restore habitat quality for species-at-risk, including Threatened, Endangered, Proposed and Sensitive species and other identified species-at-risk.

Habitat for hunted species, such as big game and upland birds, would be managed to maintain or restore habitat quality. Management actions include vegetation treatments in habitats-at-risk, establishment of upland and riparian livestock forage utilization levels, and establishment of road/motorized trail densities. Big game winter range would be emphasized in selected areas

through livestock forage utilization and access management. A high emphasis would be placed on improving stronghold habitats for wildlife and fish addressed in specific recovery plans. Moderate emphasis would be placed on retaining and improving wildlife corridors, through allocation of prescriptions in existing security areas adjacent to the Greater Yellowstone Ecosystem, the Bridger-Teton and Wasache-Cache National Forests.

List of Species

In March 2000, the Service provided the Forest with a list of endangered, threatened, proposed and candidate species which may occur on the Caribou (SP#1-4-00-SP-292). This letter listed the bald eagle, Canada lynx, gray wolf, whooping crane, and Ute ladies'-tresses, as species that may be present on the Caribou, in southeast Idaho. The Service provided periodic updates to these Species List, letters of March 2001 (SP#1-4-01-SP-316), March 2002 (SP#1-4-02-SP-459) and September 2002 (SP#1-4-02-SP-909). The list of species for the Caribou has remained the same since March 2000, except for the addition of a new candidate species in March of 2002, which is the yellow-billed cuckoo. A comment letter from the Service on the Draft Environmental Impact Statement from February 6, 2002, addressed these same species.

Canada Lynx

The Canada lynx was listed as threatened on April 24, 2000, (65FR16052). No critical habitat has been designated for the Canada lynx.

The Northern Rocky Mountains/Cascades Region (Washington, Oregon, Idaho, Wyoming, and Utah) supports the most viable resident lynx populations in the contiguous United States, while recognizing that, at best, lynx in the contiguous United States are naturally rare. In Idaho, lynx were not abundant, but were distributed throughout northern Idaho in the early 1940s, occurring in eight of the ten northern and north-central counties. Based on the time frames, many of the historical lynx records correlated with lynx movement out of Canada and may have represented dispersing, transient individuals. Early trapping and harvest records for Idaho are unreliable, because no distinction was made between lynx and bobcats until 1982 when Idaho Department of Fish and Game initiated a mandatory pelt tagging program. Although records of lynx in Idaho are relatively common, the Service is not able to substantiate the historic or current presence of resident lynx populations on the Caribou.

A summer lynx hair-snagging survey is being conducted on the Forest. This survey uses a nationwide lynx protocol for collecting lynx hair using hair-snagging techniques and DNA analysis. The Caribou has two years of sampling completed and the Targhee has three years of sampling completed on two grids and one year of sampling completed on two grids. To date, no lynx hair samples have been identified on the Caribou or Targhee.

The Caribou agreed to incorporate Canada lynx conservation measures as outlined in the Lynx Conservation Assessment and Strategy (LCAS) at the programmatic and project level. Draft Lynx Analysis Units (LAUs) were mapped for the Caribou soon after release of the LCAS. Primary habitat included all mixed conifer on the Caribou's vegetation layer (subalpine fire and

Engelmann spruce intermixed with other species). Secondary habitat included lodgepole pine, Douglas-fir, aspen and aspen/conifer. All of the draft LAU's had less than 20% primary habitat as described in the LCAS.

On September 5th, 2001 in Leadore, ID, it was jointly decided by Forest and Service personnel that primary vegetative types (lynx habitat) on the Caribou were too patchy and disjunct to provide suitable lynx habitat, as described in the LCAS. At that meeting, it was agreed that the Caribou portion of the Forest would be dropped as suitable lynx habitat, and no LAU's would be delineated on the Caribou. As a result, the Montpelier and Soda Springs Ranger Districts were identified as Canada lynx linkage habitat. The Westside Ranger District was not considered as linkage habitat.

A final LAU map was released by the Forest on September 18, 2001, reflecting these changes. The Service agreed the final mapping (by letter dated February 5, 2002), met the requirements of the LCAS. As outlined in the preferred alternative, the Montpelier and Soda Springs Ranger Districts would implement conservation measures as described in the LCAS regarding lynx connectivity, movement and dispersal.

An interagency meeting was held in Boise, ID, on January 25, 2002, where potential lynx linkage areas for the Caribou were identified and mapped. This mapping effort focused on highways as the major factor affecting lynx movements and dispersal, especially 4-lane highways. As a result of that mapping, two areas on or adjacent to the Caribou were mapped as linkage across highways. They are Highway 34 along the Tincup Highway and Highway 34 between Manson and Georgetown. Landscape level linkages have been identified as areas that could allow movement of lynx from the Greater Yellowstone Ecosystem on the north to adjacent national forests to the south. On the Caribou, areas that were considered as most important include 1) the south end of the Bear River Range that connects with the Wasatch-Cache National Forest to the south; 2) the Gannett Hills area that connects with the Bridger-Teton National Forest to the east; and 3) the McCoy Creek area that connects with the Targhee on the north and Bridger-Teton to the east.

The LCAS identifies range-wide risk factors to lynx movement. These include highways, railroads and utility corridors, land ownership patterns, ski areas and large resorts. The Plan incorporates the standards and guidelines at the programmatic and individual project level from the LCAS and incorporates the Ecology and Conservation of Lynx in the United States (Ruggiero, et al. 2000) as the basis of analysis. Conservation measures were developed to address risk factors to lynx, such as: 1) Maintaining and where feasible, restoring habitat connectivity across forested landscapes; 2) Identifying key linkage areas that may be important in providing landscaped connectivity within and between geographic areas, across all ownerships; 3) Developing and implementing plans to protect key linkage areas on the Caribou from activities that would create barriers to movement. Barriers could result from an accumulation of incremental projects, as opposed to any one project; 4) Evaluating the potential importance of shrub-steppe habitats in providing landscaped connectivity between blocks of lynx habitat; 5) Where feasible, maintaining or enhancing native plant communities and patterns, and habitat for potential lynx prey, within identified linkage areas; 6) Pursuing opportunities for

cooperative management with other landowners; 7) Ensuring that connectivity is maintained across highway right-of-ways; 8) Working cooperatively with the Federal Highway Administration and Idaho Transportation Department to identify land corridors necessary to maintain connectivity of lynx habitat and mapping "key linkage areas" where highway crossings may be needed to provide habitat connectivity and reduce mortality of lynx; 9) Evaluating whether land ownership and management practices are compatible with maintaining lynx highway crossings in key linkage areas; 10) Identifying, mapping and prioritizing site-specific locations, using topographic and vegetation features, to determine where highway crossing are needed to reduce impacts to lynx; 11) Retaining lands in key linkage areas in public ownership; 12) Identifying key linkage areas by management jurisdictions in management plans and prescriptions; 13) Evaluating proposed land exchanges, land sales and special use permits for effects on key linkage areas; and 14) Maintaining foraging habitat over the long-term for lynx movement and dispersal across shrub-steppe habitats.

Based upon the information provided in the Biological Assessment and the Revised Forest Plan, the Service concurs with the Forest's determination that the Caribou Forest's Preferred Alternative (7R) programmatic level actions, as proposed, *may affect but are not likely to adversely affect* the threatened Canada lynx.

Gray Wolf

In 1994, the Service signed the decision to reintroduce wolves into Yellowstone and Central Idaho as nonessential, experimental. In Idaho, the division between these two populations is Interstate 15 . As a result of this division, the Caribou lies in both the Central Idaho and the Greater Yellowstone non-essential, experimental gray wolf recovery areas. The Rocky Mountain Wolf Recovery 2001 Annual Report states that the minimum population for fall wolf breeding pairs is 13 wolf packs in the Yellowstone Recovery Area and 14 packs in the Central Idaho Recovery Area.

For Section 7 consultation purposes, wolves designated as nonessential, experimental and that are within the boundaries of any unit of National Park system or the National Wildlife Refuge System are treated as a *threatened* species; wolves designated as nonessential, experimental that are not within units of the National Park System or National Wildlife Refuge System are treated as *proposed* species. As such, Federal Agencies are only required to confer (on actions outside the boundaries of any unit of National Park system or the National Wildlife Refuge System) with the Service when they determine that an action they authorize, fund, or carry out "is likely to jeopardize the continued existence" of the species. No critical habitat has been designated for the nonessential, experimental populations of gray wolf.

There have been reported sightings of wolves across the east-side of the Caribou over the last 20 years. These have been individual animal sightings. All of these sightings were in the vicinity of Montpelier and Soda Springs Ranger Districts. At this time, no breeding pairs of gray wolves are known to occur on the Caribou. On November 22, 2000, a female wolf was captured on private lands adjacent to the Caribou by a Wildlife Services employee following documented

sheep depredations. During this time, this individual wolf apparently traveled and lived on both the Caribou and nearby private lands.

The Caribou should advise all permittees using public grazing allotments on the procedures to follow if wolf depredations occur. Permittees are not allowed to kill wolves, even in the act of attacking livestock, except by Lethal Take Permit. The Special Rules for Experimental Populations of Gray Wolves (50 CFR, Part 17, Subpart H, Section 17.84) outlines the provisions for livestock producers that are legally using public lands to harass any wolf in a non-injurious manner at any time. The Special Rules describe steps to be taken by a livestock producer or permittee with livestock grazing allotments on public land, which has livestock depredations determined by Wildlife Service personnel to be wolf caused. The producer/permittee may receive a written "take" permit, valid for up to 45 days, from the Service or other agencies designated by the Service to "take" a wolf that is in the act of killing, wounding, or biting livestock.

Also, with regard to the provisions of section 9 of the Act, the Special Rules allow for taking gray wolves in an nonessential, experimental area provided that the taking is incidental to an otherwise lawful activity, accidental, unavoidable, unintentional, not resulting from neglectful conduct lacking reasonable due care, and due care was exercised to avoid taking a gray wolf. Such taking is to be reported within 24 hours to a Service or Service-designated authority. Take that does not conform with such provisions may be referred to the appropriate authorities for prosecution. This means that Federal Agencies must exercise due care to avoid taking a gray wolf when conducting their normal operations.

Identified risks to gray wolves that may occur on the Caribou include trapping, shooting, predator control activities resulting from grazing activities by permittees, activities that decrease prey populations, and increased accessability of humans. Travel Management plans in Alternative 7R restrict motorized use to designated routes year-round in over 97% of the Caribou. Highways across the Caribou are all 2-lane and generally lower speed highways. Any highway reconstruction, re-alignment or improvement that crosses federal lands would be assessed in a site-specific analysis and mitigated as needed. The risk of shooting or trapping should not increase over current conditions, based on OMRDs. Alternative 7R improves suitability of habitat for mule deer and elk and no decrease in abundance or major changes in distribution are expected. Predator control activities are performed by Wildlife Services under existing regulations. The Idaho Wildlife Services program completed a programmatic consultation with the Service regarding predator damage management activities on all threatened and endangered species in Idaho south of Interstate 90.

Based upon the above measures, the Service concurs with the Caribou's determination that Alternative 7R, as proposed, *is not likely to jeopardize the continued existence* of the non-essential, experimental population of gray wolves.

Bald Eagle

The bald eagle, which is listed as *threatened,* occurs on the Caribou. The Caribou is part of the Pacific Recovery Region for bald eagles which encompasses the states of Idaho, Nevada, California, Oregon, Washington, Montana, and Wyoming. The Pacific States Bald Eagle Recovery Plan was developed in 1986. Risk factors identified at listing were the effects of organochlorine pesticides (caused eggshell thinning) and predator control campaigns. To promote recovery, efforts have focused on these factors as well as habitat protection.

The Caribou lies within three bald eagle management zones, as identified in the Recovery Plan; Caribou/Green River in the southern part of the Caribou, the Greater Yellowstone in the northeast part, and Great Basin on the northwestern part of the Caribou. The Recovery Plans established habitat and population goals for these zones. The habitat management goals are considered the minimum number of territories needed to provide secure habitat for a recovered population.

There are two known bald eagle nest territories on or adjacent to the Caribou. One is located in Wyoming and the other is in Idaho. Both lie in the Greater Yellowstone Management Zone.

One nesting territory on the Caribou is found near Thayne, Wyoming. The Nest Management Plan for this nest has been approved by the Service and includes land management recommendations for different zones. The territory has been occupied since 1977 and includes at least three nest sites, two of which are on Forest lands. The territory is considered occupied but inactive for the last 2 years. Access to the nests is by foot only and the nearest bridge to cross the Salt River is privately owned and one-half mile from the nest, so the nests are relatively secluded from human activity.

The other bald eagle nest territory on or near the Caribou is found on Grays Range. The Grays Range primary nesting area is located on private land, however, one nest tree may be located on the Caribou. The Grays Range nest was observed in 1996 and 1997, but first shows up in the 1998 Idaho Bald Eagle Nesting Report. This nest was successful raising young in 1998 - 2000. Nest information was not available for 2001 or 2002. Alternative 7R includes an objective to prepare a Nest Management Plan for the Grays Range Nest territory and any other new territories that may become established on the Caribou. This will include management direction by zone (nest, primary use area and home range), as summarized below and described in the Plan.

Occupied Nesting Zone. Zone 1 is an area within a 400 meter radius of an occupied nest. Critical nesting periods vary throughout the recovery area, but generally fall between 1 March and 31 August. Human activity should not exceed minimal levels during the period from first occupancy of the nest site until two weeks following fledging. Human activity restrictions for Zone 1 may be relaxed during years when a nest in not occupied. During the nesting period, exclude all activities which may negatively impact critical periods of nest use. Excessive disturbances should also be regulated up to 800 meters from nests and roosts where eagles have line-of-sight vision.

If activities are located more that 400 meters from a nest site, this will fall into Zone II and program activities should be as outlined and described under the Zone II in the Pacific States Bald Eagle Recovery Plan (Service 1986). Zone II, the Primary Use Area includes the area within an 800 meter radius of the active nest and of all known alternate nests.

Zone III: Home Range. Ideally, home ranges are delineated by monitoring eagle movements during nesting and brood rearing for several years. Lacking such data, this zone should include all potential foraging habitat with a 4 km (2.5 miles) radius of the center of Zone I. The primary purposes of this zone are to maintain adequate foraging conditions and aid in maintaining the integrity of Zones I and II.

Risks to eagles involve exposure to lead poisoning, secondary poisoning from insect and predator control programs, collision and electrocutions associated with power transmission, and loss of perching, foraging and roosting opportunities due to human disturbance or activities. The Plan also includes direction and standards in nest zones and primary use areas to reduce the potential of adverse effects from powerlines.

Wildlife Services field personnel may use some toxicants on the Caribou resulting from predator management activities. However, Wildlife Service has completed consultation with the Service regarding all predator management methodologies used and mitigated potential adverse affects to bald eagles.

Bald eagles clearly respond to the proximity of humans by modifying activity and movements to avoid encounters. Relationships of human activity and eagle responses are highly complex and difficult to quantify. Responses vary depending on type of activity, intensity, duration, timing, predictability and location of human activity. The way in which these variables interact depend on age, gender, physiological condition, sensitivity, residency, and mated status of affected eagles. Prey base, season, weather, geographic area, topography and vegetation in the vicinity of the activity also influence eagle responses. Some eagles are more tolerant of human activity than others. Whether individual eagles become more tolerant of human activity over time or if areas subjected to excessive human activity are occupied by more tolerant eagles is unknown.

Human activities and potential adverse impacts around nests can be avoided through implementation of Nest Management Plans. Both nest locations on or adjacent to the Forest are in areas that are fairly inaccessible to the general public. They are both within 1 - 2 miles of main roads. The site near Thayne is within two miles of Highway 89, which receives heavy traffic.

The highway near the Grays Range nest site receives much less traffic. There may be some activities on adjacent private lands, but probably at fairly low levels. Current levels of human activity do not appear to be affecting use of these nest territories, especially the Grays Range site (Ann Keysor, personal communication). The Thayne site has been occupied but inactive, but no clear reason has been identified for this. Vehicular traffic traveling along prescribed routes or within strict spatial limits and at relatively predictable frequencies is least disturbing to bald eagles. Snowmachines and all terrain vehicles are more disturbing, due to random, unpredictable movements, loud noise and visibility of operators.

There are four monitored winter use areas monitored by the Caribou, all of which are located adjacent to main access routes. Other roost sites may also be adjacent to main roads, since road locations often follow major riparian corridors. There is the potential for disturbance, but if the traffic stays on the road, they may become habituated to it and not be displaced.

As outlined in Alternative 7R, if bald eagles are de-listed, monitoring on the Caribou will continue, management plans will be followed and bald eagles would continue to be protected under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

Based upon the above measures, the Service concurs with the Caribou's determination that the Preferred Alternative 7R, as proposed, *may affect but are not likely to adversely affect* the threatened bald eagle.

Ute ladies'-tresses

Ute ladies'-tresses orchid was federally listed as threatened on January 17, 1992, under the Act. Since that time, numerous surveys have been done on the Forest and in adjacent areas. To date, no populations of Ute ladies'-tresses have been discovered on the Caribou. One lower elevation area on the Caribou, where potential habitat for the species may occur, is along McCoy Creek, however, this area has been surveyed multiple times by qualified botanists and no Ute ladies'-tresses have been found. The Service will continue to ask that the Caribou consider the species when activities occur within potentially suitable habitat.

In Idaho, the orchid occurs along the South Fork of the Snake River where the plant is endemic to moist soils at relatively low-elevation riparian edges, gravel bars, old oxbows, and moist-to-wet meadows along the South Fork. Ute ladies'-tresses appears to be well adapted to disturbances caused by water movement through flood plains over time. The orchid often grows on point bars and other recently created riparian habitat. The orchid appears to require permanent sub-irrigation, with the water table holding steady throughout the growing season and into late summer and early autumn. Ute ladies'-tresses occurs primarily in areas where the vegetation is relatively open and not very dense.

Habitat that would be considered suitable for Ute ladies'-tresses is limited on the Caribou based on topography, elevation, vegetation and stream types and other factors. There are no river systems similar to the South Fork of the Snake River on the Caribou.

Under Preferred Alternative 7R, riparian areas and watersheds would be aggressively managed on the Caribou to maintain water quality and aquatic ecosystems and to restore degraded conditions where they exist. The primary focus of management activities would be on achieving riparian proper functioning condition, watershed protection and restoration.
Though the majority of the Caribou's potential habitat has been surveyed with no populations found, the Caribou will continue to consider potentially suitable habitat for Ute ladies'-tresses that may be impacted by proposed and ongoing activities. There are no measurable risks to Ute ladies'-tresses based on the low potential of occurrences on the Caribou.

Based upon the information provided in the BA, Alternative 7R of the Plan, and County Species List changes, the Service concurs with the Forest's determination that the Caribou Forest's Preferred Alternative (7R) programmatic level actions, as proposed, *may affect but are not likely to adversely affect* the threatened Ute ladies'-tresses.

Whooping Crane

In 1997, the Service designated the Rocky Mountain population of whooping cranes as an experimental, nonessential population. During the late 1970s and 1980s, the Service tried to establish a flock of whooping cranes at Grays Lake National Wildlife Refuge which is encompassed by the Caribou. The program attempted to "cross-foster" the whooping cranes, which was to allow sandhill cranes to hatch and raise young whooping cranes. The cross-fostering program was terminated in 1989, because the whooping cranes were not pairing, and mortality was too high to establish a self-sustaining population.

The last known whooping crane in the Rocky Mountain population has not been seen since last winter. Thus, the experimental, non-essential Rocky Mountain whooping crane population is considered to be extinct.

Due to the fact that no remaining whooping cranes exist in the Rocky Mountain populations, the Service concurs with the Caribou's determination of *no affect*.

Yellow-billed cuckoo

The yellow-billed cuckoo was petitioned for listing in 1998, and in 2000, the Service concluded that the petition presented information to indicate that listing may be warranted.

In Idaho, the yellow-billed cuckoo is generally considered a rare and local summer resident. There are many reports of yellow-billed cuckoos occurring in eastern Idaho during migration periods. In 1998, V. Saab (Effects of Recreational Activity and Livestock Grazing on Habitat Use by Breeding Birds in Cottonwood Forests along the South Fork Snake River), describes five records of yellow-billed cuckoos located along the South Fork of the Snake River. These yellow-billed cuckoos were detected in 5 of 57 cottonwood forest patches ranging in size from .40 hectares to 205 hectares during the four year study. Since this time, the Service has no documentation of yellow-billed cuckoos breeding or nesting in southeast Idaho. It is currently believed the breeding population of yellow-billed cuckoos in Idaho is likely limited to a few breeding pairs. The Caribou does not have these large tracts of riparian cottonwood habitat available as are located along the South Fork of the Snake.

Western yellow-billed cuckoos breed in large blocks of riparian habitats, especially woodlands with cottonwoods and willows. Dense understory foliage appears to be an important factor in nest site selection, while cottonwood trees are an important foraging habitat in areas where they have been studied in California. Western yellow-billed cuckoos appear to require large blocks of riparian habitat for nesting. This species is strongly associated with relatively large expansive stands of mature cottonwood-willow forests. They appear to be dependent on a combination of a

dense willow understory for nesting, a cottonwood overstory for foraging and large patches of habitat in excess of 20 hectares (about 50 acres). The species will occupy a variety of marginal habitats, particularly at the edge of their range, but is not known to use non-native vegetation in the majority of its range.

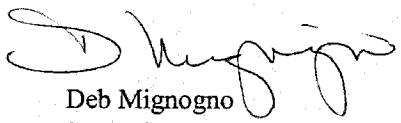
On the Caribou, The National Wetlands Inventory (1980) only identified about 50 acres of deciduous forest riparian areas, with no differentiation between aspen or cottonwood. Conversations with Caribou District personnel confirmed that cottonwood/willow riparian habitat types are very limited. If they do occur in small places, they are well below the 50-acre minimum patch size to be considered suitable habitat.

Because of the lack of suitable habitat for this species on the Caribou and the information contained in the BA, the Service concurs with the Caribou's determination that Alternative 7R will *not affect* the yellow-billed cuckoo.

This concludes informal consultation on the action as outlined in the Preferred Alternative (7R) and BA. As provided in 50 CFR § 402.16, re-initiation of consultation is required where discretionary Federal Agency involvement or control over the action has been retained (or is authorized by law) and if - (l) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not previously considered; (2) if the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat that was not considered; or (3) a new species is listed or critical habitat designated that may be affected by the action.

If you have any questions, please contact Larry Dickerson at the Snake River Basin Sub-Office in Chubbuck at (208)237-6975.

Sincerely,



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Final Environmental Impact Statement

Appendix R-- Roadless Area Re-Evaluations

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Appendix

R Roadless Area Re-Evaluations

Introduction

This Appendix contains a re-evaluation of the thirty-four IRAs on the Caribou NF. First the purpose and goals of the appendix will be explained, followed by a discussion on the re-evaluation process, and then a conclusion with the re-evaluation data and the selected management directions/prescriptions for each IRA[1]. The IRA Characteristics Re-Evaluation Tables are the primary source of data that was assembled and processed by an interdisciplinary team of specialists. The tables contain an assessment of IRA resources based on Analysis Characteristics discussed/defined below, as well as specialist prescription recommendations, and can be found in the Re-Evaluated IRA's section listed by roadless area.

Not all potential uses of IRAs have been evaluated in this process. Only those activities which were restricted in Alternative 7 as a result of the Roadless Area Conservation Initiative (RACI) were assessed. Some uses, such as grazing and water yield would not have changed in response to the RACI; therefore they are not specifically addressed in this Appendix.

PURPOSE AND GOAL OF APPENDIX R

The existing IRAs were mapped in 1985 as a part of the Forest Service's Roadless Area Review and Evaluation process. For more information about the original RARE II inventory process, as well as the original roadless area evaluations, see Appendix C of the 1985 Forest Plan EIS. This 1985 Appendix has been updated and appears as Appendix C in the 2002 Revised Forest Plan.

In 1996, the Caribou National Forest (CNF) completed an IRA re-inventory to capture and map the changes in the undeveloped character of the Caribou's thirty-four IRAs from 1985 to 1996. The inventory identified: the original IRA boundaries; acres within the IRA that were altered and no longer met roadless criteria described in the Forest Service Handbook 1909.12; acres that had pre-existing constructed roads that were not identified in 1985; as well as adjacent acres that were not identified as roadless, but met roadless criteria.

In 1999 the Forest IRAs were reviewed again when President Clinton passed the Roadless Area Conservation Initiative (RACI) and the Forest Service initiated the Roadless Area Conservation EIS[2] on a national scale. The RACI established management requirements for IRAs to insure preservation for future generations.

Management direction for Inventoried Roadless Areas (IRAs) was analyzed on a national scale through the Roadless Areas Conservation EIS, initiated by the Forest Service in the fall of 1999. In fall of 2000, the Forest Service issued the Roadless Area Conservation Rule which prohibited timber harvest and road building in inventoried roadless areas (36 CFR 294). Harvest for stewardship reasons could be done, however. Several groups and states sued the Forest Service, alleging that there had not been adequate public involvement. The Idaho District Court agreed and in May of 2001, the RACR was enjoined. Several environmental groups appealed this decision to the 9th Circuit Court of Appeals, on behalf of the government. In December of 2002, the 9th Circuit Court of Appeals rescinded the injunction imposed by the lower Court. The Plaintiffs have requested that the entire 9th Circuit panel of judges review the ruling. This request is pending.

Meanwhile, the Secretary of Agriculture, Ann Veneman, determined that while it was necessary to protect Roadless Area values, it

[1] Inventoried Roadless Area, typically undeveloped tracts of National Forest System land, originally mapped as part of RARE II. See Glossary for additional criteria.

[2] Environmental Impact Statement- See Glossary.

would be more appropriately done at a local level. The Forest Service issued Interim Directives and an Advanced Notice of Proposed Rulemaking describing how to evaluate roadless areas for potential management. The Forest Service has reviewed public comments on the Advanced Notice of Proposed Rule Making. A new Final Roadless Rule should be issued soon.

The RACR was in effect at the time the Draft EIS was issued, in May of 2001. The preferred alternative in the DEIS, Alternative 7, incorporated the RACR. Following the court injunction, forest managers determined that a re-evaluation of roadless areas was necessary. This review and process is described in detail in Appendix R of the FEIS. In this evaluation of roadless areas, the Forest followed the process outlined in the ANPR; Secretary Veneman's considerations for roadless area management (described below); and direction in the 1982 planning regulations. The recommendations from this re-evaluation have been used to develop Alternative 7R, the Selected Alternative in the Record of Decision. Secretary Veneman's five principles for evaluating Inventoried Roadless Areas are:

1. **Informed Decision-making** - Forest Service will examine more reliable information and accurate mapping, including drawing on local expertise and experience through the local forest planning process.

2. **Working Together** - Forest Service will work with states, tribes, local communities and the public through a process that is fair, open and responsive to local input and information.

3. **Protecting Forests** - Forest Service will protect roadless areas from the negative effects of severe wildfire, insect, and disease activity.

4. **Protecting Communities, Homes, and Property** - Forest Service will work to protect communities, homes, and property from the risk of severe wildfire and other risks that might exist on adjacent federal lands.

5. **Protecting Access to Property** - Forest Service will ensure that states, tribes, and private citizens who own property within roadless areas have access to their property as required by existing law.

THE INVENTORIED ROADLESS AREA (IRA) RE-EVALUATION PROCESS

With the purpose of ensuring that the Final EIS would reflect current federal policy, a team of interdisciplinary specialists were asked to re-evaluate the Forest's thirty-four IRA's using Secretary Veneman's five principles as a context for developing future management options for the Forest's roadless areas. Through the Forest planning process, IRAs may be managed for potential wilderness[3], back-country recreation, or other resource emphases, such as commodity use. The goal of this process was to determine appropriate prescriptions for effective management of the IRAs using an ecosystem management perspective, which takes into account federal, state, and local laws/regulations, scientific data, and public concerns. A listing of applicable laws, policies and regulations can be found in Appendix A of the Caribou National Forest Revised Forest Plan. The major steps of this process, and how they were addressed, follow:

1. Public comments on the Draft EIS, particularly those pertaining to the future management of the Caribou National Forest's thirty-four roadless areas, were used to identify the roadless areas that are important to the public and to discern how the public would like them to be managed. A sampling of *General* Roadless Area public comments is displayed below. IRA *Specific* public comments are summarized under each separate IRA re-evaluation.

2. A team of Forest specialists used a set of criteria (or characteristics) to identify important physical and biological features of each inventoried roadless area. Current laws, regulations, policies, and direction were also guiding factors in their research. Management prescription recommendations are based on the IDT findings. Laws, regulations, policies, and direction that guided specialists' efforts are listed below. The re-evaluation criteria led specialists to Resource Findings and subsequent Prescription Recommendations that are listed on the separate Characteristics Table found under each specific roadless area write-up.

3. All of the resource findings were synthesized and used to evaluate management prescriptions on an IRA-by-IRA basis by the IDT and District Rangers. During this review, the IDT compared the specialists' prescription recommendations to the original Alternative 7 in the DEIS, considered public comments pertinent to the IRA being discussed, and made suggested recommen-

[3] Roadless areas qualify for wilderness recommendation if, in addition to meeting the statutory definition for wilderness, they contain 5,000 acres or more (or if they are less than 5,000 acres, they must be a self-contained ecosystem such as an island), or they are contiguous to other existing wilderness, primitive or roadless areas in Federal ownership and they do not contain improved roads maintained for travel by standard passenger-type vehicles (Forest Service Handbook 1909.12).

dations for prescriptions changes to Alternative 7R. The rationale for each prescription recommendation is found under each separate IRA write-up.

SUMMARY OF GENERAL ROADLESS AREA PUBLIC COMMENTS

During the public comment period on the Forest Plan Draft EIS, many people provided general comments on future management options for roadless areas. These comments provided the IDT with a general overview of how the public wants the Forest's Roadless Areas managed in the future. Comments ranged from full protection to full development of all thirty-four roadless areas. Many commentors believe roadless areas should be conserved for future generations while others believe these public lands should be open and available for public use today. The array of comments the Forest received reflects the importance and value the public holds for these special places. While conflict is inherent in public land management, the responsibility of the Forest Service is to evaluate these conflicts, to balance uses within the land's capability, and to determine how these areas will be used now and in the future. To illustrate the difficulty of this task, the following sampling of comments shows the variety of values people hold regarding the Forest's roadless areas. Additional general comments can be found in the Analysis of Public Comments in the Public Involvement Section in the FEIS.

1. IRAs show us the "America" that our ancestors saw. We should conserve our heritage by maintaining roadless and wilderness areas.

2. Public lands are supposed to be managed for multiple-use, and locking off large sections for politics, for the rich, or for environmental groups is not in the best interest of American citizens.

3. Since when do industries (i.e. mining, lumber, and livestock) take precedence over conservation of natural resources (i.e. water, habitat, and wildlife)?

4. When did wild animals become more important than people and the families that they are trying to support?

5. Protect and restore damaged habitat (i.e. soils, vegetation, and watersheds) by prohibiting logging, mining and road building and leaving the Forest to natural processes.

6. All Forest resources are renewable and/or sustainable when reasonably managed and used. Forest health is not improved with management for wilderness/roadless preservation.

7. IRAs should be fully protected because undeveloped land is generally healthier than developed areas and if IRAs are subjected to increased use, they will no longer provide their existing influences on ecosystem health and sustainability.

RE-EVALUATION CRITERIA/CHARACTERISTICS

Resource specialists assigned to re-evaluate the thirty-four IRAs used the following criteria, originally identified in the 1999 Roadless Area Conservation FEIS, to analyze roadless area resources. In an effort to tailor these criteria to the Forest, some additional criteria have been added and the definitions of others have been updated. Each specialist evaluated their assigned IRA resource using the established evaluation criteria. When considering each criterion, the specialists documented their Resource Findings and in most cases assigned an Assessment Rating to those findings. Prescription recommendations were made for the management of each IRA, from the perspective of their resource area.

Tables displaying the resource findings, assessment ratings and management prescription recommendations are included in the section of this appendix that discusses each individual inventoried roadless area. Roadless Area discussions are organized alphabetically. The data within each table is *specific* to that IRA. However, each specialist also incorporated *general* data pertaining to most or all of the thirty-four IRAs. This general information, as well as an explanation of how each specialist addressed the columns of the table (Resource Findings, Assessment Rating, and Prescription Recommendations), is discussed by Re-Evaluation Criteria below. The following specialist narratives explain:

1. The information sources used by each resource specialist in order to complete his/her re-evaluation report (i.e. GIS[4] map layers, studies, reports, etc.).
2. Any general resource findings, terminology, circumstances, or other information that applies to most or all of the 34 IRAs.

[4] Geographic Information Systems, computer database/programs used for making maps (See Glossary for definition).

3. A discussion of the assessment ratings, which illustrate the intensity level of each Re-Evaluation Characteristic, and how each specialist defined his/her own assessment rating standards, based on the research criteria for the specific characteristics that he/she was re-evaluating.

4. The management prescription recommendation(s) that each specialist made based on the findings of his/her re-evaluation report. (Management direction, outlined in prescriptions, explains what uses are allowed on specific land areas and to what extent those uses are permitted. The specialists selected existing management prescriptions from the 2001 Caribou National Forest, Draft Revised Forest Plan.)

●Cultural Resources, Traditional Cultural Properties, and Sacred Sites

Due to the site-specific nature of heritage data, this Re-Evaluation Characteristic does not appear as a category on the IRA Characteristics Re-Evaluation Tables. Locations of Sacred Sites and other heritage resources are confidential as required by Executive Order 13007, and this information is also exempt from the Freedom of Information Act. To protect these irreplaceable resources, specific information is not disclosed in this Appendix.

Cultural Resources: Identified as those resources either directly or indirectly related to the material life ways of a cultural group(s) (36 CFR 296.3). Cultural resources may refer to sites, areas, buildings, structures, districts, and objects, which possess scientific, historic, and/or social values.

Traditional Cultural Properties: Generally defined as properties eligible for inclusion in the National Register of Historic Places because of their association with cultural practices or the beliefs of a living community that are: (a.) rooted in that community's history; and/or (b.) important in maintaining the continuing cultural identity of the community.

Sacred Sites: Any specific, discrete, narrowly delineated location on federal land that is identified by an Indian tribe (or an Indian individual determined to be an appropriate, authoritative representative of an Indian religion) as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe, or the authoritative representative, has informed the agency of the existence of such a site.

For the purposes of this analysis Caribou Forest Heritage Resources Project and Site records were used to determine areas that have undergone Heritage Resources analysis and where archaeological and historic resources locations are presently known within the Caribou National Forest. (There are over 400 cultural resource surveys that have been conducted and are on record at the Caribou-Targhee National Forest Supervisor's Office.) Other resources included *Basis-Plateau Aboriginal Socio-political Groups*, by Julian Steward and Murphy and Murphy's: *Northern Shoshone Culture Areas.* These resources were included in order to provide ethnographic research to supplement the project driven archaeological survey conducted in most of the analysis areas. Most of the archaeology previously completed in these areas is the result of projects being planned or implemented in the area; this "piecemeal" approach to archaeological investigations creates a situation where broad areas of the Forest are not investigated. Project driven research is usually confined to a delineated area and areas where traditional cultural properties and sacred sites *may* be encountered are defined and avoided as a mitigation measure. Ethnographic information is important knowledge for consideration of Traditional Cultural Properties and sacred sites.

Caribou Targhee Site and Project Atlas

Although it would be advisable to interview knowledgeable Tribal Members and Spiritual Leaders for each of the proposed areas, due to the reluctance of Knowledgeable Tribal Members and Spiritual leaders to share this information, this has not been accomplished.

Resource Findings and Assessment Ratings

Locations of Cultural Properties and Sacred Sites, although variable, are many times located on high points and ridges. Based on ethnographic research and general archaeological data, prehistoric, historic, and contemporary Native Americans utilize high points and ridges for a variety of spiritual and cultural activities.

All drainage and creeks have very high potential for significant heritage resources. Based on the preliminary baseline data, a general site distribution, or predictive model can be inferred. The areas near drainages and creeks that run into these drainages can be predicted, based on the presence or absence of water.

Where appropriate, the Forest Service shall maintain the confidentiality of known and/or discovered sacred sites in accordance with Executive Order 13007, May 24, 1996.

The IRAs are rated on the basis of previously surveyed areas, previously recorded archaeological and/or historic materials, ethnographic information, and the potential of locating additional significant cultural resource sites. Archaeological sites can

and have been found in most environments on the forest. However, the majority of them area located within a mile of water and on slopes of less than ten degrees. It would be unlikely to find sources in areas that have had ground disturbing activities in them previously (that did not turn up any sources), and/or that are far from water sources, and/or on slopes greater than ten degrees. IRAs with high source potential will be discussed in IRA Specific Data Narratives below. However, IRAs with moderate or low potential will not be addressed unless there is a unique element within them.

Resource Specific Prescription Recommendations

All ground disturbing activities will be surveyed and evaluated by a professional archaeologist in order to comply with Section 106 of the National Historic Preservation Act as mandated to all Federal Agencies. Government-to-Government consultation with interested Native American Tribes and consultation with other interested and/or knowledgeable parties.

Access and ceremonial use of any existing or newly discovered Indian sacred sites by Indian religious practitioners will be granted in accordance with Executive Order 13007, May 24, 1996. Surveying, consultation, and/or mitigation measures will be instituted in order to avoid adversely affecting the physical integrity of such sacred sites. The designation of a site as sacred must be determined in consultation with local Native American Groups.

Known properties that are eligible or listed on the National Register of Historic Places (NRHP), as well as future properties as they are discovered, will be protected/mitigated from activities which may have an adverse affect on the historic/archaeological integrity of the property. Mitigation measures will be created in consultation with the Idaho State Historic Preservation Officer (SHPO), and Native American groups for further research and interpretation as necessary. Cultural resource site locations are not disclosed in this document. In order to protect and preserve cultural resources, detailed description and locations are exempt from disclosure under the Freedom of Information Act as stated in the Forest Service Policy (FSH 6209.13, section 11.12) in accordance with the Archaeological Resources Protection Act (ARPA) of 1979 (16 U.S.C. 170hh) and the National Historic Preservation Act (NHPA) of 1966 (16 USC 470w-3). Such information is disclosed in full to the SHPO in order to facilitate decisions on sites which should be included on the NRHP, or which sites should be designated as significant.

●Soil Resources

Soil resources are the foundation upon which other resource values and outputs depend. Healthy watersheds provide clean water for domestic, agricultural, and industrial uses. They also help maintain viable fish and wildlife populations and are the basis for many forms of outdoor recreation.

Soil characteristics and limitations are often used to determine land use capabilities in forestland management. Examples of soil characteristics are soil permeability, soil depth and available water holding capacity. Examples of soil limitations are erosion potential, mass stability and compaction potential. Soil characteristics determine soil limitations. The Soil Survey of the Caribou National Forest (USDA 1990), the Preliminary Landslide Study Eastern Caribou Forest (USDA 1969), and Caribou National Forest GIS map layers were used to re-evaluate the thirty-four IRAs from a soil stability and erosion hazard perspective.

Information about soil characteristics and limitations contained in the Soil Survey was used to determine land types with high mass movement potential and erosion potential. This information is found in Tables 1 through 6 in the Caribou National Forest Soil Survey. Areas with landslide potential were also documented in the Preliminary Landslide Study Eastern Caribou Forest in 1969. Information from this study was used to verify the findings in the Soil Survey for the eastern portion of the Forest. GIS maps were used to determine the special area within each IRA that has high mass instability and high erosion potential. This information is the best available data for this area and for this analysis.

Resource Findings and Assessment Ratings

The detrimental effects of soil erosion can often be mitigated when any management prescription is implemented on the ground (intensive such as road construction and timber harvest or less intensive such as dispersed recreation use). The soil erosion potential of each IRA is presented in the tables as a reference point for decision making, but it was not used to determine the IRA Assessment Rating, nor as a criteria for the Prescription Recommendation, because management effects on it can be mitigated. IRAs with high erosion potential generally produce more sediment to streams and have lower water quality than those with low erosion potential. Erosion potentials for land types are used by land management personnel to evaluate various land management options for a given area. For example, if an area has high erosion potential one option is to create larger buffer strips in timber harvest areas to reduce erosion or to restrict activities to areas with gentle slopes and retain ground cover.

Areas with mass movement potential limit ground disturbing activities. Management disturbances can trigger mass movements in these unstable areas that may reduce long-term soil productivity and create high levels of erosion and sediment. Intensive management such as timber harvest and road construction can contribute to accelerate mass movement in two ways. They are: 1) road construction in which road cuts are made that remove support and/or intercept subsurface flows, and 2) removal of trees that stabilize the slope with their root mass and by influencing moisture conditions through evapotranspiration, canopy interception, and effects on snow distribution. Soils that are rated "unstable" indicate that the landform is actively moving and probabilities of increased or additional movement even without man-caused disturbances are high.

The soil erosion ratings for each soil in the land types listed in the soil survey were combined to establish the overall soil erosion potential for each land type which is listed for each IRA in the tables. Erosion ratings were establish for each land type in the following manner and listed on the GIS soil erosion map:

- **"hhh"** means all three soils in the land type have high erosion hazard or more than 75 percent of the area.
- **"hhm"** means two of the three soils in the land type have high erosion hazard and one has moderate hazard. Between 50 and 75 percent of the area has high erosion hazard.
- **"hmm"** means only one of the three soils in the land type have high erosion hazard with the remaining two soils in the landtype have moderate erosion hazard. These areas have less than 50 percent in high erosion hazard.

Soil erosion potential is listed in the tables, but as detrimental effects in relation to erosion can be fully mitigated (in most circumstances) erosion potential was not used as a determining factor of the soil Assessment Rating.

The ratings categories are high, moderate, and low and they are based on the percent of unstable land types in each IRA. These areas are mapped in the GIS soil stability layer for reference.

A rating of "high" is used to describe IRAs that have more than 49 percent of their acreage covered with unstable land types. These areas with this rating would be difficult to intensively manage (i.e. implementing road construction or other ground disturbing activities) without creating site productivity resource concerns related to loss of soil productivity from landslides caused by these activities.

"Moderate" is the rating used to identify IRAs that have between 10 and 48 percent of their acreage covered with unstable land types. These IRAs could sustain intensive management activities in some locations, while avoiding the sensitive, unstable landforms that are present in other areas.

A "low" rating is applied to IRAs that have less then 10 percent of their acreage covered with unstable land types. These IRAs could sustain intensive management activities on the majority of their area, while their few unstable landforms are avoided.

Resource Specific Prescription Recommendations

Recommendations for prescriptions were primarily based on the soil stability assessment ratings. From a soils perspective, IRAs with a "high" rating are recommended for management under the goals, standards, and guidelines of prescription categories 1, 2, 3 or 6 unless otherwise noted in the Re-Evaluation Tables where unstable land types could be avoided. In this case a 5 prescription was recommended. By managing "high" areas under these prescriptions, man-caused disturbances will be less likely to effect long-term soil productivity by causing mass movements. Forest-wide soil Standard 2 in the Revised Forest Plan requires ground verification of unstable land types prior to soil disturbing activities.

IRAs with a "moderate" rating are recommended for management under the goals, standards, and guidelines of prescription categories 1, 2, 3, 5, or 6. This recommendation is given because management activities can avoid unstable areas. Forest-wide soil Standard 2 in the Revised Forest Plan requires ground verification of unstable land types prior to soil disturbing activities.

The soils of "low" rated IRAs are primarily stable and can be managed under any prescription category (1, 2, 3, 5, or 6) as site specific mitigation of any unstable landform is required before implementation of any ground disturbing activity. Forest-wide soil Standard 2 in the Revised Forest Plan requires ground verification of unstable land types prior to soil disturbing activities.

●Air Quality

The Caribou National Forest operates under the Montana/Idaho Smoke Management plan and burning is not permitted when smoke dispersal conditions are unsatisfactory as determined by the Monitoring Unit in Missoula, Montana. Favorable

meteorological conditions and air quality must exist before burning is allowed and when state and federal air quality standards will not be exceeded (See Air Quality discussion in FEIS, Chapter 3 for more information).

Wind direction considerations were determined from the Pocatello windrose (M.Manguba, 1999). Additional information about air quality and visibility are presented in the FEIS in the air quality section of Chapter 3. Pocatello/Chubbuck, Idaho is the only sensitive receptor within a non-attainment area. A non-attainment area is an area that does not meet National Ambient Air Quality Standards. Any populated area can be considered a sensitive receptor.

Resource Findings and Assessment Ratings

Forest management has the potential to affect air quality especially if prescribed burning and/or wildfire are used to manage vegetation. In order to make informed management decisions that could affect the air quality of communities adjacent to the NF, a twenty-mile radius was drawn around the primary, sensitive receptors of Pocatello/Chubbuck and Soda Springs, Idaho, because they have the largest populations when compared to other sensitive receptors adjacent to the Forest and the potential to affect the most people. Other adjacent communities were considered in the assessment and are listed in the Re-Evaluation tables. Resource managers should be aware of the effects prescribed burning and wildfires may have on air quality. Prescription areas that permit prescribed fire or wildfire for resource benefit adjacent to populated areas could affect human health. These twenty-mile radius areas are identified to provide the resource manager an idea of which IRAs may affect populated areas when considering activities that use fire. Prevailing wind direction also influences the amount and type of burning that can be conducted. Areas down wind of Pocatello should have little effect on air quality when fire is applied through authorization of the Montana/Idaho Smoke Management Plan. Areas upwind would have greater impacts. Special consideration and controls should be applied to areas that may affect non-attainment areas.

An assessment rating of 'restrictive" describes any IRA that is within the twenty-mile radius of Pocatello/Chubbuck, Idaho as a result of the cities' non-attainment of National Ambient Air Quality Standards status. A restrictive rating indicates the forest manager should coordinate treatments using prescribed fire and wildfire for resource benefit with the Idaho Department of Environmental Quality (DEQ) in Pocatello, Idaho. Other areas that may affect sensitive receptors could also require coordination with DEA, but because these areas are not considered "non-attainment" areas, treatments are less likely to affect National Ambient Air Quality Standards in these areas; therefore, a non-restrictive recommendation was given to all other areas. A restrictive rating indicates land managers should be aware that smoke or particulate matter from wildfire or prescribed fire treatments in nearby roadless areas could affect populated areas in Pocatello/Chubbuck. A non-restrictive rating means the roadless area is outside the twenty-mile radius and wildfire and prescribed fire treatments would affect a smaller population base.

All treatments that may affect Class I areas must meet the Clean Air Act that prohibits any deterioration of air quality in these areas. Compliance can be accomplished by following the Montana/Idaho Smoke Management Plan, by completing a comprehensive smoke analysis in the project's environmental assessment or EIS, and by staying within the burning prescription.

Resource Specific, Prescription Recommendation

IRAs that fall within the twenty-mile, sensitive receptor radius (Pocatello/Chubbuck, Idaho) were recommended for special consideration before using prescribed fire and wildfire for resource benefit in order to address air quality concerns. All prescriptions allow prescribed fire or wildfire for resource benefit when it meets resource goals and objectives.

●Watershed Condition, Water Quality, Municipal Watersheds

To determine the current condition of watersheds within the thirty-four Forest IRAs, the information gathered and used for the Inland West Water Initiative (IWWI) and listed Water Quality Limited Streams data (as defined by section 303(d) of the Clean Water Act) have been applied to this re-evaluation.

The IWWI[5] is designed to characterize the watersheds and aquatic systems within Forest boundaries at the broad-scale, or reconnaissance level. It helps forests to focus on the watersheds and aquatic systems that are the most critical to the long-term integrity of western water resources. IWWI gives a sense of the overall condition for further study/work and provides an initial characterization for further watershed analyses. Each sub-watershed within the Caribou National Forest has been assessed using this method.

[5] The IWWI process is further discussed in the USDA Forest Service, 1998, Inland West Watershed Reconnaissance document.

The IWWI is subdivided into three components: Watershed Geomorphic Integrity, Watershed Water Quality Integrity, and Watershed Vulnerability. (Specific definitions for each of these subject areas are located in the Inland West Watershed Reconnaissance document, 1998.) Each of the above components is further sub-divided into three Rating Categories. For Example:

Water Quality Integrity Rating 1

"Good" condition. No stream segment is damaged by physical, chemical or biological impacts such that any resource value appears to be seriously degraded.

Water Quality Integrity Rating 2

"Moderate" condition. The watershed/aquatic system has a minor part (e.g. less than 20 percent) of its stream segments damaged.

Water Quality Integrity Rating 3

"Deteriorated" or "poor" condition. The watershed/aquatic system has a major portion (e.g. more than 20 percent) of its stream segment miles damaged.

Section 303(d) of the Clean Water Act requires states to identify water bodies that have reduced water quality that impairs the designated beneficial uses assigned by the state to that water body. To this end, the State of Idaho, Department of Environmental Quality (DEQ) has inventoried and evaluated streams within the state to determine how they meet water quality criteria. Exact protocols used to assess water bodies and determine listing eligibilities are found in DEQ publications, such as "Beneficial Use Reconnaissance Project Work plans" for the State of Idaho. The 303(d) streams that have been listed within the thirty-four Caribou National Forest IRAs are from the Idaho 2000 list package identified by the Idaho Department of Environmental Quality (DEQ). If a 303(d) stream occurs within an IRA boundary, it is identified in the IRA Characteristics Re-Evaluation Table for that specific IRA.

The Forest Service is authorized to identify and protect public water sources located within or adjacent to the Forest boundary (See Municipal Water Supplies in the Laws, Regulations, Policies, and Direction section above). There is only a single congressionally designated municipal watershed within the Caribou National Forest. This is the Pocatello Municipal Watershed, located near Pocatello, Idaho. It is located within the West Mink IRA. There are other watersheds that supply domestic use water to the public. These include the Grace Watershed, Paris Creek Watershed, Mink Creek Watershed, and others. However, these watersheds have not been congressionally designated and are not considered formal "Municipal Watersheds."

The drinking water sources that are not congressionally designated are currently being identified by individual states through the Safe Drinking Water Act as "Source Water Protection Areas." As specific protection plans and strategies are completed, the Forest will take measures to meet the identified obligations. To date, no specific plans have been developed, so no specific actions are recommended as part of this Re-Evaluation. A specific prescription recommendation for the Pocatello Municipal Watershed is identified on the IRA Characteristics Re-Evaluation Table in the specific IRA in which this municipal watershed is located. (Other public water supplies have been entered into a GIS data base layer, and the watersheds are listed in a permanent file, "2540 – Forest Municipal Watersheds," located in the Forest Supervisor's Office.)

Resource Findings and Assessment Ratings

The overall existing watershed condition of each IRA was determined by using the combined IWWI ratings from all of the categories present in that particular IRA and the presence or absence of water quality limited 303(d) water bodies.

The IWWI ratings used for determining current watershed condition within each of the IRAs are a combination of the individual ratings for Watershed Vulnerability, Integrity, and Water Quality (assigned in the 1998 report). Each of the individual rating scores (1, 2 or 3) were summed. A total score of 3 to 4 was rated as "good;" a total score of 5 to 7 was rated as "moderate;" and a total score of 8 or 9 was rated as "poor." For map display purposes, these three ratings have been color-coded into: Green, "good" overall condition; Yellow, "moderate" overall condition; and Red, "deteriorated" or "poor" overall condition. In GIS, the watersheds were overlaid on the IRAs and a percentage was determined of "red," "yellow," and "green" watersheds within each IRA.

Thirteen state-designated 303(d) streams are found within the thirty-four IRA boundaries. Specific streams occurring within an IRA are identified in the IRA Characteristics Re-Evaluation Table for each specific IRA.

The overall combination was used of watershed condition and the presence or absence of 303(d) streams. For example, if an IRA contained mostly "red" watersheds, and a 303 (d) stream, the IRA is probably in a somewhat degraded condition and a "restoration" prescription was recommended. Conversely, if an IRA contained mostly "green" watersheds and no 303(d) streams are present, then it would be a candidate for a "preservation" type prescription. The Assessment Ratings (high, moderate, low) are a subjective combination of all the factors present within the IRA.

Resource Specific Prescription Recommendations

The IRA Characteristics Re-Evaluation Table in each specific IRA write-up includes resource-specific recommendations for prescriptions within each of the IRAs. The overall percentage of each watershed category - red, yellow, or green - determined the overall recommendations for each IRA. For example: If an IRA consisted of 75 percent or more "green" watersheds, then it was recommended that the IRA be "preserved" using a prescription that would maintain the integrity of the watershed, such as prescription 3.1 – Non-motorized. If the IRA consisted of 75 percent or more of "red" watersheds, then a "restoration" prescription, such as 6.3 - Rangeland Restoration, was recommended (See Revised Forest Plan for complete prescription descriptions). If the IRA contained mostly "yellow" watersheds, then either a recommendation based on the capability of the land (e.g. timber production, livestock grazing) or no specific recommendation was advocated.

If an IRA contains a 303(d) stream, the watershed supplying water to that stream was recommended to be either preserved, to preclude further degradation, or restored to improve overall watershed conditions and associated water quality. A "preservation" prescription might include 3.1 – Non-motorized. A "restoration" prescription might include 6.3 – Rangeland Restoration.

States are required to develop Total Maximum Daily Loads (TMDLs) for limiting parameters on each 303(d) listed water body. For example, if sediment is determined to be degrading water quality in a certain stream, then specific criteria for limiting or reducing sediment is determined by the state for that water body. Water quality limiting parameters (i.e. temperature, sediment, nutrients, etc.) are found in the Idaho's 2000 list package referenced in the Information Resources narrative above.

The Forest is required to abide by state water quality standards and criteria. Therefore, specific state-designated criteria must be applied to any watershed containing a 303(d) stream. TMDLs have been established by the State of Idaho and approved by the Environmental Protection Agency (EPA) for the Blackfoot River and Portneuf River watersheds within the Forest. TMDLs for the Blackfoot and Portneuf Rivers can be found in the State of Idaho, Department of Environmental Quality (DEQ) Water body Assessments as well as Total Maximum Daily Load Specifications for the Blackfoot and Portneuf River basins, dated December 2001 and March 1999 respectively. TMDLs for the Bear River watershed are still being developed at the time of this writing.

Although TMDLs have been established for the Portneuf and Blackfoot River watersheds, specific implementation plans to address the TMDLs, and how the Forest is to attain desired conditions, have not been designed yet. Therefore no specific requirements have been identified to date for the listed 303(d) water bodies. Once these implementation plans have been written and approved, any prescriptions assigned to 303(d) water bodies may be modified or superseded by specific state-designated requirements and criteria. However, recommending "preservation/restoration" prescriptions for these watersheds should broadly address the necessary requirements and assist in reducing major changes that may be needed to address future State's requirements.

A "preservation," 2.1.3 prescription, is advocated for the Pocatello, congressionally designated, municipal watershed in order to maintain conditions that are capable of supplying clean water to the municipalities (See Revised Forest Plan for prescription descriptions). A preservation prescription is recommended because it is geared toward the goal of providing clean water, which requires watersheds to be relatively undisturbed (i.e. from road building, timber harvesting, recreation, etc.) and stream channels to maintain overall stable conditions. However, management actions and other activities are allowed within the watersheds as long as they are compatible with the long-term goals of the watershed.

●Ecosystem Disturbance

An ecosystem disturbance is a human-caused or natural disturbance in a self-maintained system of living and non-living interacting parts that are organized into biophysical and human dimension components. These disturbances include, but are not limited to, insects, disease, wildfire, floods, wind, and resource extraction.

The Forest used data sources and assumptions in its analysis to determine the potential for ecosystem disturbance in forested vegetation of the Forest's thirty-four IRA's. GIS (Geographic Information System) map layers displaying ownership, roadless areas, current vegetation (derived from Landsat imagery classified in 2001), old growth (as classified in the original CNF Plan, approved in 1986) and past disturbance on the CNF were combined to form a single data layer. This layer served as the

primary data source for the analysis, providing acreage and map information on current vegetation condition (species cover type and structure) and past disturbance in each IRA.

To assess potential for ecosystem disturbance, three ecosystem management issue indicators from the CNF Plan revision process were analyzed: aspen decline, insect hazard and wildfire hazard. To determine decline ratings for aspen and hazard ratings for insects and fire the acreage information from the GIS layer was compiled into tables and analyzed. Assumptions by the Forest Fire Ecologist and Silviculturist were made concerning the decline of aspen present in each IRA, risk of insect infestation (insect hazard) in conifer vegetation and the risk of stand-replacing wildfire (fire hazard).

Resource Findings and Assessment Ratings

The primary data source for this analysis was a combined GIS layer, which produced acreage and map information on current vegetation condition and past disturbance in each IRA. The current vegetation condition information included mapped locations and acreage totals for the species cover types used in the forested vegetation classification: Conifers - Douglas fir, lodgepole pine, Engelmann spruce/subalpine fir, mixed conifer, and Hardwoods - quaking aspen, aspen/maple and aspen/conifer. If non-forested or woodland vegetation cover types were dominant in an IRA, it was also mentioned in the current vegetation conditions section, only to more accurately describe the IRA. The past disturbance information included mapped locations and acreages of past stand-replacing fires and timber harvest. Structurally, about 70-80 percent of the stands comprising the conifer cover types and 40 percent of the stands comprising the aspen cover types are in mature and old age classes, including "old growth." Forested vegetation within an IRA was assumed to be mature unless affected by past disturbance displayed in the disturbance GIS layer. Acres recently disturbed by stand-replacing wildfire or timber harvest where a new stand was regenerated were classed as young or immature.

Based on the data and assumptions described, an aspen decline, fire hazard and insect hazard rating were assigned to each IRA based on vegetation composition, including the amount and type of old growth within each roadless area, the acreage and percentage of high, moderate and low risk values assigned within each roadless area, and the overall proportion of vegetation at risk within the roadless area. Risk values were assigned on a subjective basis following review of the data and consideration of the assumptions.

Aspen Decline Rating:

The aspen decline rating was based on very limited data primarily because the Forest's vegetation classification does not provide any structure or age class information for this species. The Forest Inventory for the Caribou National Forest, conducted in 1992, shows approximately 40 percent of the Forest's aspen stands as mature and old. Caribou National Forest (CNF) Plan Revision Process Paper P (2001) estimates a 33 percent decline in aspen on the CNF compared to historic conditions. Aspen decline in the Intermountain West is well documented in Campbell and Bartos' publications, "Aspen Ecosystems: Objectives for Sustaining Biodiversity." In: Sustaining Aspen in Western Landscapes: Symposium proceedings (2000), "Water depletion and other ecosystem values forfeited when conifer forests displace aspen communities (1998)," and "Decline of quaking aspen in the Interior West. Examples from Utah (1998)."

A decline rating of "high," "moderate" or "low" was assigned to each IRA based on the aspen decline potential. Due to a generally acknowledged decline of aspen on the Forest, all of the Aspen and Aspen/Conifer vegetation cover type not affected by disturbance were assumed to be mature and assigned a "high" decline rating. This is an admittedly weak conclusion, but given data limitations mentioned and time constraints, this was the rating presented for the IRA analysis. Forest wide, 88 percent of the IRA's received a moderate to high aspen decline rating. Those IRA's assigned a low aspen decline rating either had small aspen acreages or large acreages of recent disturbance by fire or harvest.

Insect Hazard:

According to USFS Forest Pest Management Annual Reports, bark beetles (Douglas fir, Mountain Pine and Spruce) kill more conifer trees on the Caribou National Forest than any other insect. As discussed in "Stand Hazard Rating for Central Idaho Forests" (Steele, *et al*, 1996), these beetles initially attack trees that exhibit several biological factors, among them advanced age and stress due to overcrowding.

A hazard rating of "high," "moderate" and "low" was assigned to each IRA based on the conifer vegetation's potential for attack by bark beetles. Due to the presence of older conifer forested vegetation, undisturbed by stand-replacing wildfire or harvest, and its increasing susceptibility to bark beetles which cause mortality in conifers, approximately 62 percent of the IRA's received a moderate to high insect hazard rating. These higher ratings were concentrated on the eastside of the Forest. Those IRA's assigned low insect hazard ratings either had small acreages of mature conifer or large acreages of recent disturbance by fire or harvest.

Fire Hazard:

The Forest Inventory for the Caribou National Forest, conducted in 1992, portrays approximately 70-80 percent of the coniferous forest stands and 40 percent of the aspen stands as mature and old. "Mature" refers to ages and sizes of dominant trees that are at least at culmination of average annual increment of tree stand volume growth. "Old" refers to dominant tree ages and sizes significantly beyond those of mature trees. Barrett's "Fire Regimes on the Caribou National Forest" (1994) discusses how the "long term fuel buildup in these stands will continue to promote a shift toward stand replacement fire regimes" and as "having missed three or four fire "thinning" treatments." This phenomena is also described in the Upper Columbia River Basin DEIS (1997).

A hazard rating of "high," "moderate" or "low" was assigned to each IRA based on the forested vegetation's potential for stand-replacing wildfire. As with Insect Hazard, those IRA's with primarily older conifer and/or aspen vegetation acreages, undisturbed by stand-replacing wildfire or harvest, were rated high for fire hazard. About 85 percent of the IRA's were assigned a moderate to high fire hazard rating mainly concentrated on the eastside of the Forest. Those IRA's assigned low fire hazard ratings either had small acreages of mature forested vegetation or large acreages of recent disturbance by fire or harvest.

Resource Specific Prescription Recommendations

The Resource Findings and Assessment Ratings generally indicate a lack of natural and human caused disturbance in forested vegetation sites throughout the Caribou National Forest's IRA's for at least 80 years (Barrett, 1994). This lack of disturbance has allowed natural succession to progress on these lands, resulting in the loss of early seral species, such as aspen, and has resulted in their replacement by conifers, usually Douglas fir and subalpine fir. Conifer species on these sites continue to age, increase in size and density and contribute to fire fuel loading. These trees eventually become susceptible to insects and, in some cases, fuel uncharacteristically high-intensity wildfires. Recommended forested vegetation prescriptions for management of the IRA's generally falls into two categories: 1) Prescription 5.2, which manages for timber harvest to promote forested vegetation growth/yield and scheduled wood fiber production while maintaining or restoring forested ecosystem processes and functions to a properly functioning condition; and 2) Prescription 3.3, which manages for ecological restoration to improve resource conditions that are not functioning properly. These prescriptions are recommended to restore early seral conditions in forested vegetation, thereby moving towards properly functioning condition; reduce the impacts of insect infestations on timber values and fuel loading, and reduce the impacts of uncharacteristically high-intensity wildfires.

●Invasive Plant Species

Roadless areas may conserve native biodiversity by providing areas where invasive species are often rare or absent. Invasive plants are species that are growing in an ecosystem where they do not typically occur, either presently (when compared to native vegetation on comparable sites) or historically. The Forest GIS database was used to determine the acres of weed infestations in each IRA. The GIS data was derived from 1998 District field survey maps and has been updated periodically as information has become available. Only poisonous and noxious weeds are listed in the database.

Resource Findings and Assessment Ratings

Three assessment ratings were used to identify the intensity of invasive plant species in each IRA: Low, Medium, and High. Each rating is twofold and represents both: the potential for invasion or spread of noxious weeds by motorized vehicles along motorized routes and/or into areas ***open*** to cross country travel; and the potential for weeds to spread from motorized routes into areas ***closed*** to cross country travel.

IRAs that are rated as "Low" contain infestations that are localized, not abundant and/or they are widespread across the landscape. For this rating, invasive plant species occupy between 0 and .5 percent (less than 160 acres) of the entire roadless area.

Roadless areas that warranted a "Medium" rating have infestations that may or may not be localized, are somewhat abundant, and/or widespread throughout the IRA. Invasive plants occupy between .6 percent and 1.9 percent (50-650 acres) of the IRA.

A "High" rating describes areas where infestations are not localized, abundant, and/or widespread across the IRA. Invasive plant species occupy more than 2 percent (more than 325 acres) of the roadless area.

Resource Specific Prescription Recommendations

No specific management direction is recommended as long as the prescriptions applied allow for treatment of invasive species. The Forest uses an Integrated Pest Management (IPM) strategy forest-wide. IPM directs managers to use a variety of treatment methods that will be effective and appropriate given desired conditions and goals for the area.

●Threatened, Endangered, Proposed, Candidate, and Sensitive Animal Species Habitat

Wildlife habitat has been divided into several categories that include separate and sometimes distinct methods of assessment of the Forest's Roadless Areas. To help the reader, the following definitions are provided:

Threatened: Animal, designated by U.S. Fish and Wildlife Service, likely to become endangered throughout all, or a specific portion, of its range within the foreseeable future.

Endangered: Animal, designated by U.S. Fish and Wildlife Service that has been given federal protection status because it is in danger of extinction throughout all, or a significant portion, of its natural range.

Proposed: An animal species for which a listing rule has been published in the Federal Register but formal listing still awaits action.

Candidate: Animal, proposed by U.S. Fish and Wildlife Service, for consideration as an endangered or threatened species listing. Category 1 species are groups for which the FWS has sufficient information to support listing proposals. Category 2 species are those for which available information indicates a possible problem, but that need further study to determine the need for listing.

Sensitive: Species identified by a Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers, or density, or by significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

Resource Findings and Assessment Ratings

Each Roadless Area was assessed with particular attention to species that are specific to the Forest, including Lynx, Wolf, and Wolverine in the TES category. In addition each Roadless Area was assessed for Forest-associated species and Grass/Shrub-associated species.

TES Occurrences

Threatened and endangered species are discussed individually, where appropriate. These species are lynx and wolves. Bald eagles and whooping cranes are associated with specific wetland and riverine habitats and are not associated with roadless areas. They were not included in this analysis. Sensitive species were reviewed. Wolverines were included with wolves, as both species have been shown to be sensitive to human disturbance or access provided by roads. Several of the species; boreal owl, flammulated owl, great gray owl, northern goshawk, three-toed woodpecker, and are all associated with forested habitats and are evaluated as a group. Sharp-tailed grouse are associated with sagebrush habitats but are habitat generalists. Sage grouse, which are a Management Indicator Species, are habitat specialists, and are more appropriate for analysis. The other sensitive species (spotted bat, western big-eared bat, trumpeter swan, harlequin duck, spotted frog and peregrine falcon) use specific habitats or habitat components and are not affected by roadless characteristics. These species were not analyzed further.

Records of sightings of threatened, endangered and sensitive species are on file at the Supervisors Office, and were used in the assessment of each roadless area along with other literature as described below under each TES species. These sighting locations were entered into the GIS database.

Lynx

Sources used to qualitatively assess linkage habitat include GIS maps of vegetation, size of roadless areas, GIS and Forest maps showing adjacency to other roadless areas or areas of suitable habitat (mapped Lynx Analysis Units on adjacent Forests) mapped topographic features and potential barriers to movement as shown on state maps (highways, towns, etc). In addition, the following literature reference was used in the assessment for lynx:

Ruediger, B., J. Claar, S. Gniadek, b. Holt, L. Lewis, S. Mighton, B. Naney, G. Patton, T. Rinaldi, J. Trick, A. Vandehey, F. Wahl, N. Warren, D. Wenger, and A. Williamson. 2000. Canada Lynx Conservation Assessment and

Strategy. USDA Forest Service, USDI Fish and Wildlife Service, USDI Bureau of Land Management, and USDI National Park Service. Forest Service Publication #R1-00-53, Missoula, MT. 142 pp.

Lynx linkage/connectivity areas were analyzed for the east side of the Forest on the Soda Springs and Montpelier Ranger Districts. Westside Ranger District is not considered linkage habitat and lynx will not be addressed in these areas. Lynx habitat was remapped on September 18, 2001, and the USFWS agreed to the use of this map in a letter dated February 5, 2002. (See Biological Assessment for more rationale.) The Lynx Conservation Assessment and Strategy (Ruediger, *et al*, 2000) outlines factors that may affect lynx movements, including highways, land ownership patterns, fragmentation and degradation of refugia, and ability to move across shrub-steppe habitats (riparian and major ridges).

N/A – Westside Ranger District

Low potential – small area, mixed ownership, proximity to highways, lack of forested cover

Moderate potential – larger area, more suitable cover

High potential – large area, more forested cover, major ridges/riparian for movements, adjacent to other area of habitat

Wolves/wolverine

Wolf risk factors have been identified as increased accessibility to humans and decreases in prey species (Witmer, *et al*, 1998). This is discussed in more detail in the EIS. Big game numbers are not expected to vary based on roadless and prey availability that were not analyzed. Security areas were used as a measure; security areas are areas over 250 acres over ½ mile from an open motorized route. Because wolverines are generally associated with areas free from human disturbance (Ruggerio, *et al*, 1994), they were analyzed with wolves. Winter security is of special concern as females begin denning in March; excavating dens under snow. This has the potential to put them in direct conflict with winter recreation, especially snowmobiling, as it is widespread across most of the Forest (allowed over 97 percent of the Forest). Research has found that wolverines are very sensitive to human disturbance during this time, and females will move den sites when disturbed.

Sources used were GIS maps of security areas and associated data tables. The map of security areas was made by buffering open motorized roads and trails by ½ mile, and the resulting areas had to be at least 250 acres to be mapped as security areas. These maps and associated data tables were used to calculate acres and size of security blocks. In addition, the following literature references were used in the assessment for Wolves/Wolverine:

Ruggerio, L.F., K.B. Aubry, S.W. Buskirk, L.J. Lyon and W.J. Zielinski, technical editors. 1994. The Scientific Basis for Conserving Forest Carnivores: American Marten, Fisher, Lynx and Wolverine in the western United States. USDA Forest Service, General Technical Report, RM-245. Ft. Collins, CO. Rocky Mountain Range and Experiment Station. 184 pp.

Witmer, G.W., S.K. Martin and R.D. Sayler. 1998. Forest Carnivore Conservation in the Interior Columbia River Basin: Issues and Environmental Correlates. USDA Forest Service, Pacific Northwest Research Station, General Technical Report PNW-GTR-420. Portland, OR 15 pp.

Roadless areas were rated as low, moderate or high. These categories were split out based on the spread of existing security area acres using what appeared to be natural breaks.

Low potential – area with small amounts of security (0-20 percent)
Moderate potential – area with a moderate amount of security (21-30 percent)
High potential – area with a large amount of security (more than 31 percent)

Forest-associated species

The importance of roadless areas to these species was based on the amount of forested vegetation found in the roadless area. Sources used were GIS maps and associated data tables. This information was used to determine the amount of potential habitat that is present in each roadless area.

Roadless areas were rated as low, moderate or high. These categories were based on the spread of conifer cover, using what appeared to be natural breaks.

Low potential – small part of the area provides forested cover (0-20 percent)

Moderate potential – a moderate part of the area provides forested cover (21-40 percent)

High potential – a large amount of the area provides forested habitats (more than 41 percent)

Grass/shrub-associated species

Columbian sharp-tailed grouse (sensitive species) and sage grouse (MIS) are associated with grass/shrub types. Because sharp-tailed grouse are habitat generalists, and sage grouse are habitat specialists (Apa, 1998), sage grouse were used to assess habitats. Lek locations were used as references for occupied habitats. Active leks are traditional display areas in or adjacent to shrub-dominated habitat that has been attended by two or more males in two or more of the previous five years.

Sources used for this analysis includes GIS maps of known lek locations (Idaho Department of Fish and Game, 2000), and GIS-generated maps with two-, five- and ten-mile buffers around known leks. This buffer map also showed the amount and distribution of sagebrush habitats within the buffer. In addition, the following literature references were used in the assessment:

Apa, A. D. 1998. "Habitat Use and Movements of Sympatric Sage and Columbian Sharp-tailed Grouse in Southeast Idaho." PhD Dissertation, University of Idaho. 199 pp.

Idaho Department of Fish and Game. 2000. Excel spreadsheet with lek names, location and male sage grouse lek attendance. On file at S.O.

Roadless areas were rated based on the proximity to sage grouse leks and availability of large areas of sagebrush habitats:

N/A – area is over ten miles away from know leks

Low potential – small amount of shrub habitats, leks within ten miles

Moderate potential – moderate amount of shrub habitats, leks within ten miles

High potential – extensive stands of sagebrush, leks within five miles

●Biological Conservation Assessment

A Wildlife Biological Stronghold is defined as an area identified as important (and/or critical) to a species or group of species for seasonal or year-round habitat. Noss, *et al,* (2001) completed an analysis of biological conservation in the Utah-Wyoming Rocky Mountain Ecoregion. The study considered two primary goals 1) to protect 100 percent of occurrences of G1/G2 species, and 10 percent of occurrences of other species, and 2) to protect habitat capable of supporting 50-70 percent of the population of focal species (note: G1= globally critically imperiled, G2=globally imperiled and focal species that they selected were grizzly bear, wolf, wolverine, lynx and elk). Areas were put in megasites, which were ranked based on vulnerability and irreplaceability. Quadrant 1 sites are highly vulnerable and irreplaceable. Quadrant 2 sites are highly irreplaceable but have low vulnerability. Quadrant 3 sites are low for irreplaceability but rated high for vulnerability and Quadrant 4 sites ranked low on both scales. Quadrant 1 sites are the highest priority for conservation.

Another measure used to assess biological strongholds was habitat structure and composition in each roadless area. Vegetation in proper functioning condition (PFC) should provide the best habitat for most species over the long-term. In 1999, a Forest-wide PFC analysis was done (USFS 1999). This analysis identified spruce-fir, aspen, pinyon-juniper, tall forbs and riparian habitats as being at high departure from PFC. Habitats at moderate departure include Douglas-fir, maple, mountain mahogany, mountain brush, and sagebrush. Limber pine and lodgepole pine were at low departure.

Sources used include GIS vegetation data tables. These tables were used to calculate acres of vegetation types at high departure (spruce-fir, aspen, pinyon-juniper, tall forbs and riparian). In addition, the following literature references were used in the assessment:

Noss, R., G. Wuerthner, K. Vance-Borland and C. Carroll. 2001. A Biological Conservation Assessment for the Utah-Wyoming Rocky Mountain Ecoregion: Report to the Nature Conservancy. Prepared by Conservation Science. Corvallis, OR.

USFS. 1999. Caribou National Forest Proper Functioning Condition Assessment.

Roadless areas were rated based on Noss, *et al* (2001) Quadrant classifications. Noss' mega sites do not directly correlate with roadless area boundaries; the decision was based on juxtaposition of the majority of the roadless area in relation to the mega site. Roadless areas were rated as:

Low potential – areas that were not ranked, or those placed in Quadrant 4

Moderate potential – areas that ranked in Quadrant 2 or 3

High potential – areas that ranked in Quadrant 1

Roadless areas were also rated as being at low, moderate or high departure from PFC. These categories were determined by ascertaining the percentage of the IRA in vegetation types that are at high departure from PFC. Vegetation areas were determined by following what appeared to be natural breaks.

Low potential – a large part of the area is at high departure (40 percent)

Moderate potential – a moderate part of the area is at high departure (21-39 percent)

High potential – a small part of the area is at high departure (0-20 percent)

Resource Specific Prescription Recommendations

Prescription recommendations included maintenance of existing big game winter range prescriptions; addition of 3.1 non-motorized prescriptions to maintain some existing security areas for species like wolverine, wolves and big game; and application of prescriptions that allow vegetation restoration treatments. These treatments may include prescribed burning, thinning and commercial harvest but would be determined at the site-specific project level.

●Fisheries Biological Strongholds

Fisheries biological strongholds are interpreted, on the Caribou National Forest, to be areas dominated by Yellowstone and Bonneville cutthroat trout, the native trout species. The Forest defines cutthroat trout stronghold streams as those streams with greater than 50 percent of the salmonid community consisting of native cutthroat trout. (These cutthroat trout subspecies are listed by the Regional Forester as "Sensitive" species.)

The Forest Fisheries Biologist used the Caribou-Targhee Forest Fish Distribution maps to determine Yellowstone and Bonneville cutthroat trout stronghold streams. These maps were last updated in December 2001 and include data from the 1999-2001 Forest Fish Distribution surveys.

Resource Findings and Assessment Ratings

The value of fisheries biological strongholds was described for each roadless area in the Forest's Planning Unit. Fisheries biological strongholds are interpreted to be areas dominated by Yellowstone and Bonneville cutthroat trout, the native trout species on the Forest. These cutthroat trout subspecies are listed by the Regional Forester as Sensitive species. The areas with "high" assessment ratings are areas that have the highest priority for protection and conservation from a fisheries perspective. They have the most value in relation to native fish conservation and would likely rate highest in restoration priorities (the best first), from a fisheries perspective.

Those roadless areas with streams in which the majority of the salmonid community consisted of native cutthroat trout were assessed with a high rating. Those areas with no native salmonid present were assessed with a low rating. Those areas with streams in which the majority of the salmonid community consisted of non-native salmonids, but where some native salmonids were present, were assessed with a medium rating. Non-native salmonids in the roadless areas included brook, brown, and rainbow trout.

Resource Specific Prescription Recommendations

All riparian areas are protected by Revised Forest Plan riparian management prescription area (Aquatic Influence Zone) 2.8.3. The Forest Plan Revision has incorporated INFISH standards and guidelines into management prescription area 2.8.3. A 3.1 (Non-motorized) prescription was recommended in Yellowstone cutthroat trout stronghold streams and their associated riparian areas (aquatic influence zones) within Roadless Areas that rated as "High." This was to restrict motorized vehicles to existing roads and trails, and minimize their impacts upon stronghold streams. This concern over the impacts of motorized vehicles to riparian and aquatic habitat may also be addressed through the elimination of cross-country motorized vehicle use in the Forest Plan Revision.

Rare Plants, Rare Plant Communities, and Plant Communities

The primary source of information for Rare Plants, Rare Plant Communities and Reference Plant Communities is from element occurrence (EO) records documented by the Idaho Conservation Data Center and reports on wetland conservation strategies (Jankovsky-Jones 1997 & 2001). Using GIS, a table was generated by overlaying the IRA boundaries and Idaho CDC point data coverage of element occurrences of rare plant and plant communities. The database of element occurrence records is dynamic – new ones are added and known EOs updated as new information is obtained. This presents a limitation to the use of the data in that it only includes those areas that have been surveyed and where tracked "species of special concern" and plant communities have been recorded in the database. Also, as a continuously updated database it should be referred to for this type of information along with using the information presented here, since this analysis only identifies what is known as of 2001.

This data is relevant to this re-evaluation in that it represents the best available information of rare plants and plant communities that contribute to the diversity of plant and animal communities; an identified characteristic of IRAs (See Roadless Section in Chapter 3 of the FEIS for more information).

Terms used in the assessment of rare plants and in individual IRA tables:

Rare Plants: Rare plants for this Re-Evaluation are those species that are tracked as "species of special concern" by the Idaho Conservation Data Center and documented to occur within the roadless area. The species may or may not be currently tracked as "sensitive" by Region 4.

Rare Plant Communities: Rare plant communities are recognized plant communities (See definition for plant communities) that have been given a G1-G3 by the Natural Heritage Network or tracked as S1-S2 by the Idaho Conservation Data Center for Idaho (Rust 2001).[6]

Plant Communities: Assemblage of species that co-occur in defined areas at certain times and that have the potential to interact with one another (as cited in Grossman et al 1998). Plant Communities included in this category of the Re-Evaluation are documented Plant Community Element Occurrences by the Idaho Conservation Data Center.

Sensitive species: Species identified by a Regional Forester for which population viability is a concern, as evidenced by significant current or predicted downward trends in population numbers, or density, or by significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

Research Natural Areas (RNA): Research natural areas are part of a national network of ecological areas designated in perpetuity for research and education and/or to maintain biological diversity on National Forest System lands. Research natural areas are for nonmanipulative research, observation, and study. They also may assist in implementing provisions of special acts, such as the Endangered Species Act and the monitoring provisions of the National Forest Management Act (FSM 4063).

Terms not in table, but relevant to characteristic, i.e. references used:

Idaho Conservation Data Center (CDC): The CDC is the central repository in Idaho for information related to the state's rare plant and animal populations. The CDC is part of the Natural Heritage Network.

Natural Heritage Network: A network of Natural Heritage Programs and Conservation Data Centers in all 50 states, several Canadian provinces, and several Latin American and Caribbean countries. The role of these programs is to gather, manage, and distribute detailed information about the biological diversity found within their jurisdictions.

Species of Special Concern: A term used by Natural Heritage Programs and Conservation Data Centers. It includes taxa that are at-risk or potentially at-risk due to rarity, restricted distribution, habitat loss, and/or other factors. The term includes, but is not limited to: species that are listed as "sensitive" or "watch" by the Forest Service; "Special Status" and "watch" by the Bureau of Land Management; or "threatened", "Endangered" or "Candidate" species by the U.S. Fish and Wildlife Service.

[6] The Natural Heritage Network employs a standardized ranking system to denote global and state status (Global [G1-5] and State [S1-5]). Taxa and plant communities are assigned numeric ranks ranging from 1 (critically imperiled) to 5 (demonstrably secure), reflecting the relative degree to which they are "at-risk".

Heritage Program Ranks (Global [G1-5] and State [S1-5]): The Natural Heritage Network employs a standardized ranking system to denote global and state status (Global [G1-5] and State [S1-5]). Taxa and plant communities are assigned numeric ranks ranging from 1 (critically imperiled) to 5 (demonstrably secure), reflecting the relative degree to which they are "at-risk." A number of factors are considered in assigning ranks – the number, size and distribution of known "occurrences" or population trends (if known), habitat quality, narrowness of range of habitat, trends in populations and habitat, threats to the element, and other factors are also considered.

Element Occurrence (EO): A term used by the Natural Heritage Network in reference to the place where a taxon (species, subspecies, or variety of plant or animal) or Ecological (plant) community is documented to occur.

Plant Community Element Occurrence: A stand, or group of stands, of a plant association or community type all located within close proximity, and that meets minimum criteria regarding ecological integrity and conservation status (Rust 2000).

United States National Vegetation Classification (USNVC) system: A system for ecological classification that blends the features of many existing classification systems most useful to conservation. It essentially represents a structured compilation of an enormous amount of fine-scale state and local information on vegetation, and an integration of this information with a modified version of UNESCO's worldwide framework for coarse-scale vegetation classification.

Primary references used for rare plant and rare plant communities' assessments include:

Idaho Conservation Data Center, Department of Fish and Game. 2001. Idaho Conservation Data Center Element Occurrence Data. Arc/Info GIS format. Boise, ID.

Jankovsky-Jones, Mabel. 1997. Conservation Strategy for Southeastern Idaho Wetlands. Idaho Conservation Data Center, Department of Fish and Game. Boise, ID. 39 pp. plus appendices

Jankovsky-Jones, Mabel. 2001. Wetland Conservation Strategy for the Upper Snake River, Portneuf Drainage, and adjacent valleys. Boise, ID. 34 pp. plus appendices

Literature references used in the assessment included:

Rust, Steve K. 2001. Email to author with attachments. On file at Caribou-Targhee Headquarters Office. Idaho Falls, ID.

Rust, Steve K.2000. Representativeness Assessment of Research Natural Areas on National Forest System Lands in Idaho. Gen. Tech. Rep. RMRS-GTR-45. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 129 p.

Grossman, D.H. et al. 1998. International Classification of Ecological Communities: Terrestrial Vegetation of the United States. Volume 1. The National Vegetation Classification System: development, status, and applications. The Nature Conservancy, Arlington, Virginia, USA.

Resource Findings and Assessment Ratings

The information within the tables under "reference findings" for rare plants, rare plant communities and plant communities (reference areas) is a summary of documented Idaho CDC element occurrences within the IRA by general location.

Summary for plant communities in re-evaluation: Plant Communities included here are not major plant communities, i.e. Douglas-fir, aspen, mixed conifer, etc., but plant communities (also referred to as ecological communities or plant associations, with slightly different meanings) that are documented Plant Community Element Occurrences by the Idaho Conservation Data Center. In many cases they are found within Research Natural Areas.

No assessment ratings where made for the entire IRA based on these characteristics. This decision was based primarily on three factors: 1) The element occurrences tend to occupy relatively small areas within the IRAs; and 2) the limitations of available information in providing good indicators to use in rating one IRA as "low", "medium" or "high"; and 3) information used was based on documented element occurrences verses an extensive analysis of where rare plants and plant communities and quality plant communities are suspected to occur by IRA.

Resource Specific Prescription Recommendations

Specific recommendations were made where sufficient information was available. For example, Prescription 2.2 for maintaining RNAs or 2.1.1 for Bloomington Lake (See specific data narrative for Worm Creek). In some cases, areas found to have rare plant communities or reference plant communities are too small for a prescription, but site-specific management is recommended, i.e. maintaining an exclosure.

●Reference Landscapes

Reference Landscapes are places identified in the plan area where the conditions and trends of ecosystem composition, structure, and processes are deemed useful for setting objectives for desired conditions and for judging the effectiveness of plan decisions.

Re-evaluation data within the IRA Characteristics Re-Evaluation Tables were used to evaluate the criteria, which create value or an area when considering it as a Reference Landscape (described in the Resource Findings and Assessment Rating narrative below). GIS map layers were used to determine the approximate acreages of the potential Reference Landscapes, which was also a rating criterion. For Cutthroat strongholds, the fish biologist provided information of which areas within IRAs with cutthroat strongholds as identified in the table, held the most potential for large-scale restoration that would be beneficial to the resource (Capurso, 2002).

This analysis is limited to evaluating the potential of IRAs as reference landscapes. Selection of reference landscape should be collaborative among scientists, managers, and the public. If an area on the forest was chosen it would potentially be formally recognized in the next revision of the Forest plan. In addition, the following literature references were used in the assessment process:

Capurso, Jim. 2002. Email to author. On file at Caribou-Targhee Headquarters Office. Idaho Falls, ID

USDA Forest Service. 2000a. Forest Service Roadless Conservation Final Environmental Impact Statement. Vol. 1. Washington Office. Washington D.C.

USDA Forest Service. 2000b. Forest Service Roadless Area Conservation Final Environmental Impact Statement. Landscape Analysis and Biodiverity Specialist Report. Washingtion Office. Washington D.C.

Resource Findings and Assessment Ratings

The resources findings are based on a combination of factors: acreage, opportunity to study large-ranging animals (i.e. wolverines, lynx) in a roadless setting, opportunity for large-scale vegetation restoration projects, and unique reference values, such as fires, large wetland complexes (i.e. Elk Valley Marsh) or restoration of tall forbs plant communities.

The FEIS for the Roadless rule lists a potential characteristic of IRAs, which are their value as landscapes that can provide comparison areas for evaluation and monitoring. Issues, such as viability of wide-ranging animals, watershed cumulative effects, and restoration of fire dependent ecosystems, require research and monitoring at large scales to address this interest. Recognition of an IRA as a "reference landscape" enables monitoring of long-term environmental change, and improved understanding of the affect of past events and activities and evaluates the effects of past management policies (USDA 2000a, pgs 3-191-192 & USDA 2000b pg 40-42). Unlike designated Research Natural Areas that are established to preserve a wide spectrum of pristine areas that typify important plant communities (FSM 4063), IRAs can provide large expanses where a range of management treatments may be applied and tested.

The ratings, "High, Moderate, and Low," derived from the factors mentioned above; indicate the potential value of a particular area as a reference landscape. As described below, these ratings are based on data provided by specialists as a result of their re-evaluations of the CNF roadless areas. Ratings are relative to each IRA. For example, an IRA with a low rating may be rated as "high" if it was compared to a roaded area not within an IRA.

The Assessment Rating criteria were determined from specialist data as follows:

- The size (acreage) of a Reference Landscape – All of the IRAs are potentially large enough to serve as reference landscapes, however relative to each other the bigger the IRA the greater the potential that the area provides opportunities for large - scale restoration, comparison or study and, most often, have the fewest roads. In this context, "size" provides a simple indicator of potential reference landscape value in the context of scale.
- An opportunity for studying large-ranging animals is an important aspect when determining the value of an area as a reference landscape, because IRAs may provide areas where a researcher could compare the differences between an area with human-

caused disturbances (i.e. roads, trails, etc.) and one without. As an indicator to rate this value, identified security areas were used (See wildlife section).

- An opportunity for studying the effects of a large-scale restoration project is valuable when determining the value of an area as a Reference Landscape because our knowledge about the effects of management activities over long periods of time and on large landscapes is very limited. (Information from the Ecosystem Disturbances, Water, Invasive Plant Species, and Fisheries Biological Strongholds sections of the tables.)

In relation to Reference Landscapes, IRAs containing "unique" characteristics were rated using a "high," "moderate" or "low" rating based on the following:

High – IRAs that are relatively large (greater than 20,000 acres), with security areas for wildlife, and an identified opportunity for large-scale restoration were rated high overall. If an IRA was found to have a specific indicator of reference landscape value, but not others, the IRA was rated "high" for the specific value and "low" or "moderate" otherwise.

Moderate – IRAs with a moderate rating are generally those between the size of 10,000 and 20,000 acres that may or may not have some identified indicator of reference landscape potential value.

Low – IRAs that are relatively small (less than 10,000 acres), with no identified security areas, or large-scale restoration opportunities, or unique reference values were rated low.

Resource Specific Prescription Recommendations

Maintaining the potential value as a Reference Landscape is related to the resource used as an indicator. A general recommendation of "...maintaining the reference value..." is stated in the tables because the value as a reference landscape is not a stand-alone value, but dependent on the other resource findings. For example, if a large wildlife security area is identified, the prescription(s) recommended is the same as that under "wildlife" for the security area.

No prescription would preclude the use of inventoried roadless areas for future research and monitoring, but some may reduce the commitment to a natural setting if subjected to commodity production and development, or if the prescription would not allow for a wide-range of experimental treatments (i.e. mechanical thinning) for large-scale restoration projects.

●Semi-Primitive Recreation, Summer and Semi-Primitive, Winter

Semi-primitive is a class on the Recreation Opportunity Spectrum. (See EIS Glossary for further definitions of ROS classes.)

Semi-Primitive Recreation, Summer (snow free): Evaluation of this class is used to assess the potential of an area for outdoor Semi-Primitive (motorized and non) recreation during the snow free season. These areas provide recreation opportunities, including, but not limited to, hiking, camping, picnicking, wildlife viewing, hunting, fishing, and off-road vehicle use.

Semi-Primitive Recreation, Winter (snow season): Evaluation of this class is used to assess the potential of an area for outdoor Semi-Primitive (motorized and non) recreation during the snow season. These areas provide recreation opportunities, including, but not limited to, cross-country skiing, snow-shoeing, and snowmobiling.

The Caribou National Forest was inventoried into ROS classes as part of the 1985 planning process. In 2001 the Forest ROS inventory was updated to reflect current conditions and management, and digitized into GIS.

The Caribou's ROS inventory and the current travel plan were used to evaluate the existing settings for semi-primitive recreation opportunities, both snow and snow-free, offered by roadless areas. In addition the following literature references were used in the assessment of this characteristic:

ROS User Guide

1994 Caribou Forest Travel Plan

1998 Idaho Statewide Comprehensive Outdoor Recreation and Tourism Plan
Projections of Outdoor Recreation Participation to 2050, USDA Forest Service

1994 CNF Travel Plan Assessment

Idaho Department of Parks and Recreation Snowmobile Registration Records
1984-1994 Rim Use Records

Resource Findings and Assessment Ratings

To match the diversity of recreation interests with appropriate opportunities, the Caribou National Forest offers a variety of recreation settings. These settings are differentiated by the amount of development and other attributes, and then incorporated into a planning tool called the Recreation Opportunity Spectrum (ROS). The ROS describes eight recreation opportunity classes that are defined by the type of activities, differences in the settings, and what levels of management a visitor may experience within each class. The ROS classes represent a range of experiences from a primitive setting with low visitor use and very little site modification to an urban setting where visitors may see an unlimited number of people with highly developed facilities and a high level of site management. The ROS classes are used to allocate different types of recreation opportunities on the land. These allocations help visitors identify the setting that best provides for their desired activities and experiences. (See Appendix B for more complete descriptions of ROS classes.)

Roadless areas are valued for the primitive and semi-primitive recreation opportunities they provide. Forest Service research indicates that there may be an imbalance between the growing demand for semi-primitive recreation opportunities, and the extensive, undeveloped land settings they require (Projections of Outdoor Rec., Pg. 439). These undeveloped settings are available within the ROS classes of Primitive, Semi-primitive Non-motorized (SPNM) and Semi-primitive Motorized (SPM). Due to proximity to major roads or development, some roadless areas also have Roaded Natural and Roaded Modified classes within them. These classes are widely available on the CNF and other public lands and are not discussed here.

Primitive, SPNM and SPM settings are moderate to large in size. The ROS User Guide states, "The size of an area is used as an indicator of the opportunity to experience self-sufficiency as related to the sense of vastness of a relatively undeveloped area" (pg.20). The quality of semi-primitive recreation improves if an area is greater than 2,500 acres, or large enough to offer the feeling of remoteness. Smaller acreages can provide a semi-primitive experience, if the area has heavy vegetation or steep topography to provide screening, or is contiguous to a Primitive area, (ROS User Guide, pg. 16-20).

In 1985, CNF lands were inventoried and classified into the ROS classes for the snow-free season. This inventory was updated and put into a GIS map layer in 2001. The 2001 CNF ROS inventory map can be found in the Recreation section of this document.

Forest settings change dramatically from summer to winter, and area that is Roaded Natural in summer, may have a semi-primitive setting during the winter. ROS classes are not the same for snow and snow-free seasons. For this analysis the snow season ROS was determined using the two classes of SPNM and SPM. For more information on the snow season ROS determination see Appendix B. The 2001 snow season ROS inventory map can be found in the Recreation section of this document.

Areas within IRAs classified as Primitive, SPNM and SPM were rated as having "Very High", "High," "Moderate" or "Low" values for a primitive or semi-primitive experience. The ratings reflect the size of primitive and semi-primitive areas, current use patterns, public comments and the presence of popular motorized and non-motorized trails and winter routes. Acres were determined using GIS data. Use patterns were based on district staff field observations and 1984-1994 RIM use records. The evaluation also considers forest-wide allocation of SPNM and SPM by acre and percentage. Public comments reflect an interest in the amount and percentages of SPNM and SPM offered by the forest as a whole, not just what occurs within IRAs.

Snow-Free Recreation

During the snow-free seasons, there are 9,478 acres of Primitive, 188,872 acres of SPNM, and 477,318 acres of SPM on the CNF. The remaining 35 percent or 366,417 acres are managed as Roaded Modified or Roaded Natural.

Most of the forest is open to hiking, backpacking, biking and horseback riding, but users may encounter motorized vehicles. A statewide assessment indicates that non-motorized opportunities need to be retained or increased, as demand may meet or exceed supply of this experience. (Idaho SCORTP, pg.34). About nineteen percent or approximately 198,350 acres of the CNF offer a Primitive or SPNM experience.

The Forest has only one area classified as Primitive; the core of Caribou Mountain IRA. This area was given a "Very High" value, due to its high acreage and scarcity on the Forest. Large SPNM areas, over 2,500 acres that were either very popular for semi-primitive non-motorized uses and/or close to a community were given a "High" value. If an area was

small, less than 2,500, and had little or no screening from vegetation or topography and low use, it was rated as having a "low" value for SPNM recreation. All other SPNM areas were rated as "moderate."

According to a statewide assessment demand for SPM opportunities may exceed supply, (Idaho SCORTP, pg. 34). The CNF provides 477,318 acres, or 46 percent of the forest for SPM opportunities. Public comment indicates that many people are not as concerned with the amount of acres the CNF provides for SPM experiences, but wanted more motorized trails; more trails designed for ATVs; more trails for motorcycles only and better trail information. The 1994 Caribou Forest Travel Plan Assessment found that the forest's motorized trail system is not meeting user demand, not due of amount of acres allocated to motorized recreation, but due to poor trail condition and lack of trail access, trailhead facilities, and trail information.

Large SPM areas over 2,500 acres that were either very popular for semi-primitive motorized uses and/or close to a community were given a "high." If an area was smaller, less than 2,500 acres, had low use motorized trails or very steep topography, it was rated as having a "low" value for semi-primitive motorized recreation. All other SPM areas were rated as "moderate."

Snow Season Recreation

Most of the forest is open to cross-country skiing, snow shoeing and snowboarding, but users may encounter snowmobiles. Approximately 32,100 acres or 3 percent of the CNF offers a semi-primitive non-motorized opportunity in the winter. Some of the areas currently closed to snowmobile use in the winter, and classed as SPNM, are closed for their value as big game winter range.

Activity days of cross-country skiing are estimated to increase by 18 percent by 2050, for the Rocky Mountain region the increase in activity days is 242 percent, (Projections of Outdoor Recreation, pg. 327). Public comment also notes the increase in the sport and the need for the CNF to meet the demand now and in the future.

SPNM areas that were popular for skiing and/or close to a community were given a "High" value. If an area receives little ski use, and/or has very steep topography, it was rated as having a "Low" value for SPNM winter recreation. All other areas were given a "Moderate" value for SPNM winter recreation.

Approximately 967,900 acres or 97 percent of the CNF offers a semi-primitive motorized opportunity in the winter. Most of the forest is open to snowmobiles. Big game winter range areas and some cross-country ski routes are closed to snowmobile use in the winter.

According to state records, snowmobile registrations are at 36,000 annually (Idaho Department of Parks and Recreation data). Public comment and the statewide assessment did not identify a lack of snowmobile opportunity, but the assessment surveys indicated snowmobilers want more groomed routes, signs, and trail information (Idaho SCOPTP, pg. 86).

SPM areas that were popular for snowmobiling and/or close to a community were given a "High." If an area had little snowmobile use, or had very steep topography, it was rated as having a "Low" value for SPM winter recreation. All other areas were given a "Moderate" value for SPM winter recreation.

Resource Specific Prescription Recreation

Considering national and statewide projections for recreation use, and public comment; area prescriptions should retain and/or increase some SPNM areas for summer and winter, to meet current and future demand.

Generally speaking, SPM acres, both summer and winter, are meeting current demand. Recommendations identify portions of Bonneville Peak IRA and Toponce IRA be managed as SPNM during the winter. The west slope of Bonneville Peak is popular for back-country skiing, and a back-country ski hut system is located on the eastern edge of the Toponce IRA. Portions of Bear Creek and Mead Peak IRAs will be managed as SPNM for wildlife concerns and to provide additional SPNM opportunity. The Mt. Naomi area is currently managed as SPNM, but most of the area is too inaccessible in winter for non-motorized recreation. Non-motorized use in Mt. Naomi during the winter is very low. This area should be managed as SPM.

Public comment identified the need for more cross-country ski trails managed as SPNM. Specific areas and routes that would create a quality ski experience will be considered when the CNF's Travel Plan is revised. (See Appendix B for more information on site-specific travel planning.)

●Landscape Character and Scenic Integrity

The scenery visible to people visiting or living adjacent to the CNF constitutes the Forest's scenic resource. Scenery is the general appearance of a place or landscape, or the features of a landscape. The character of a landscape varies by location and is dependent on natural influences such as: geology, vegetation, hydrologic features, landforms, and is also affected by human developments and impacts. The following reference materials were used in the assessment of this characteristic:

1985 Visual Quality Objectives Maps

1985 Forest Plan, Appendix C

Landscape Aesthetics, A Handbook for Scenery Management, Agriculture Handbook Number 701

Resource Findings and Assessment Ratings

Scenery Management on National Forest system lands uses the Scenery Management System (SMS) to evaluate and retain the scenic landscapes of the forest. The SMS process considers a given landscape character, and the amount of human alterations that are visible in the landscape. Some cultural elements add interest to a landscape, such as a rustic cabin or split rail fence. Other human activities, such as logging and roads, can distract from the natural appearance of a landscape. Another factor considered in scenery management is public concern for the scenery of an area. People see all of the national forest lands from somewhere at some time, therefore, all national forest landscapes have value as scenery. Many people view these areas for long periods of time, such as landscapes directly adjacent to highways or residential areas. Many people enjoy and benefit from maintaining the natural appearance of these landscapes.

The scenic desired future condition or scenic integrity objective (SIO) of a landscape is determined by the landscape's character, degree of natural appearance and public concern for its appearance.

SIOs range from "Very High" to "Low." Areas that have pristine scenery with little evidence of human activity and/or are ecologically unique are given a "Very High" SIO. A highly attractive landscape seen from a major travelway would be given a "High" SIO. A natural appearing landscape seen from a popular campground would be given a SIO of "Moderate." More remote areas that have electronic sites, harvest units, or high contrast roads and trails would have a SIO of "Low." "Low" SIO still requires visual changes to be (Landscape Aesthetics).

The scenery of the Caribou National Forest's IRAs was evaluated using the CNF 1985 Visual Resource Inventory Maps and Appendix C of the 1985 Plan. (See Appendix B for more information on the process used to access scenic integrity and SIOs for roadless areas.)

The assessment ratings used existing scenic condition, and the Visual Quality Objectives (VQO) set forth in the 1985 Forest Plan to assign SIOs to landscapes within the roadless areas.

Elk Valley Marsh is a unique high elevation wetland and was given a SIO of "Very High." Portions of many Caribou roadless areas are highly visible from Interstate 15, US Highway 89 and various state highways and valley communities. These areas were given a "High" or "Moderate" SIO depending on the degree of natural appearance and proximity to viewers. Less visible areas with more visual evidence of human activities were given a SIO of "Low."

Resource Specific Prescription Recommendations

Prescriptions for the CNF should retain or enhance the existing scenic resources of IRAs. Recommendations include moderate to high SIOs for semi-primitive recreation areas that are seen as foreground by many people who have a high expectation of natural appearing surroundings. These areas include: Bear Creek, Bonneville Peak, Caribou City, Mead Peak, Scout Mountain, Stump Creek, Toponce, West Mink, and Worm Creek. These SIOs are compatible with SPNM and SPM ROS settings.

●Oil/Gas and Phosphate Leases, Locatable Minerals, and Mineral Materials

These commodities provide uses of Forest resources that meet some economic as well as societal needs. Geologic potentials for oil/gas and phosphate[7] are assessed in order to evaluate prospective lease options. Locatable mineral potential (generally precious metals, such

[7] Where USFS lands are involved, the FS provides the BLM with formal recommendations for phosphate lease issuance and development proposals, but final authority for leasing and mining related activities belongs exclusively to the BLM.

as gold, silver, and copper, that are administered under 1872 Mining laws) and mineral material sources (i.e. gravel) are also determined for the above purposes.

Oil and Gas: The oil/gas potential for each of the IRAs was taken from the "Environmental Assessment for Oil and Gas Leasing on Lands Administered by the Bureau of Land Management's Pocatello and Medicine Lodge Resource Areas, and Cooperating Caribou National Forest." This report was completed in 1985 and included an oil/gas potential report that was developed to evaluate the geologic conditions that would help indicate the likelihood for the accumulation of oil/gas deposits.

Phosphate: The potential for the occurrence of phosphate deposits generally follows that used in the current (1985) Forest Plan, Appendix L. The location and number of existing Federal Phosphate leases was taken from BLM leasing records. The BLM is the Federal Agency given the authority to lease federally owned minerals, including those on National Forest System Lands. The U.S. Geological Survey conducted mineral exploration and surveys to determine the presence of potential phosphate deposits. Those lands with a high potential that were considered to have competitive leasing interest were formally designated by the USGS (1969, 1978-1980) as "Known Phosphate Leasing Areas (KPLAs)."

Locatable Minerals: The potential for the occurrence of locatable minerals (precious metals, base metals, and some industrial minerals) used in this appendix, generally follows that used in the existing Forest Plan, Appendix L. Some modifications to the ratings used in the existing Forest Plan were made after consulting current BLM mining claim records.

No other solid leasable minerals (coal, sodium, potassium, solid hydrocarbons, etc.) are known to occur in quantities large enough for mining on the Forest; they will not be discussed further.

Resource Findings and Assessment Ratings

Oil and Gas: The "overthrust belt" is a very large geologic structure known to contain oil/gas reserves in the adjacent portions of northeastern Utah and southwestern Wyoming. The overthrust belt also extends into southeast Idaho and underlies a major portion of the Forest. Because the overthrust belt includes geologic structures and characteristics generally considered favorable for the accumulation of oil/gas resources, portions of the Forest have been given a "high" potential for the occurrence of oil/gas reserves.

However, the 1985 oil/gas potential report; the most recent assessment for the Forest, is out of date, and probably contains some ratings that are higher than what they would be if a new, updated oil/gas potential report were to be completed. For example, the 1990 "Oil and Gas Potential Report for the Wasatch-Cache National Forest in Utah and Wyoming" states that lands in the Bear River Range, south of the Idaho-Utah state line, have a "low" potential, while adjacent lands of the Bear River Range north of the state line, as displayed in the 1985 report, have a moderate or high potential. The same is true on the northern part of the Forest. A 1992 "Oil and Gas Potential Report for the Targhee National Forest" shows lands immediately north of the Forest boundary with a moderate potential, while the 1985 report shows the adjacent lands south of the Forest boundary with a "high" potential. These apparent discrepancies are pointed out here to show the need for an updated oil/gas potential report for the Caribou NF.

Current regulations require the preparation of appropriate NEPA documents that would amend the revised Forest Plan prior to any oil/gas leasing on the Forest. A new oil/gas potential report would be a part of any NEPA document that may be prepared to consider future oil/gas leasing on the Forest. At present, no oil/gas leases exist on the Forest.

The potential for the occurrence of oil/gas resources within the various IRAs, indicated in this Appendix, was taken from the 1985 oil/gas potential report referred to above. The ratings given in that report were based on geologic factors and conditions, like the probable presence of source rocks, reservoir rocks, proper maturation of the hydrocarbons, and the presence of geologic structures or traps that could allow the accumulation of oil/gas resources. Also considered in the report is information obtained from seismic exploration and exploratory wells drilled.

Phosphate: Phosphate deposits on Federal lands are managed under the 1920 Mineral Leasing Act, as amended. Under this act, and the existing Federal Regulations at 43 CFR 3500, the Bureau of Land Management (BLM) is the designated Federal agency having the authority to issue or modify Federal Phosphate leases and/or approve exploration and development activities on those leases, including approval of mining and reclamation plans. When the BLM issues a Federal Phosphate lease, it conveys to the lessee the exclusive right to explore for and develop (mine) the phosphate resources contained in the lease, subject to existing laws and regulations.

Where National Forest System lands are involved, the Forest Service provides the BLM with formal recommendations for lease issuance and development proposals, but the final authority for the issuance of leases and the approval of on-lease mining related activities belongs exclusively to the BLM. An analysis of the anticipated impacts related to leasing or mining activities, as well as the development of mitigation measures, conditions of approval, etc. are determined through the NEPA process. Reclamation plans, water management plans and bonds are required. The appropriate Federal and State agencies prior to any surface disturbance must approve all activities. Areas disturbed by mining related activities are required to be reclaimed.

The development of a lease usually requires the disturbance of adjacent, unleased lands as well, for such things as haul roads, power lines, water wells, sediment control structures, office/shop facilities, and communication sites. Because of these needs, the actual surface disturbance associated with a phosphate mine encompasses more than the leased lands, usually hundreds of acres more. Conversely, not every acre included in a lease will be disturbed through mining activity because of where and how the phosphate deposit is situated in the lease. All of these off-lease disturbances are authorized and administered by the Forest Service through the issuance of Special Use Permits. Disposal of phosphate mine overburden waste products are no longer permitted on Forest Service Special Use Permits.

In the 1960s and 1970s, the U.S. Geological Survey (USGS) did considerable field reviews and exploration work to determine the presence of phosphate deposits in southeast Idaho. Based on these studies, the USGS made formal designations of "Known Phosphate Lease Areas" (KPLAs) for those areas they deemed to have a competitive interest for leasing. These KPLAs often indicate areas that may be affected by future exploration, leasing, and mining activities.

The Smoky Canyon Mine is currently operating in or adjacent to an IRA. The mined-out Mt. Fuel Mine also lies partially within an IRA. Other areas that have received phosphate exploration or are proposed for exploration also exist in IRAs. Because existing phosphate leases and KPLAs are present in IRAs, future mining related disturbances should be expected on some of these IRA areas.

Potential ratings for phosphate were developed based on the known presence of phosphate bearing rocks in outcrop or near the surface. Areas that contain leases or KPLA have a "high" potential, because they indicate phosphate-bearing rocks at or very near the surface. Areas within one mile of a lease of KPLA were given a "moderate" potential; areas within one to two miles were miles of a KPLA or lease were assigned a "low" potential; while areas more than two miles from a lease of KPLA were given a "no known potential" rating. Many areas may be underlain by phosphate bearing rocks, but if the deposits are too deeply buried and unaltered, they are not economically feasible to mine or to process using current methods and technologies.

Locatable Minerals: Mining related activity for other than the recovery of phosphate on the Forest is currently very limited. Perlite was mined from a deposit within the Forest boundary up until the early 1990s on the north end of the Elk Horn Mountains, north of Malad, Idaho. Large deposits of unmined perlite remain in the area. Gold mining, along with minor silver and copper mining, occurred in the Caribou Mountain area from lode and/or placer deposits. Although mining activity was extensive in the Caribou Mountain area in the late 1800s; the only activity that remains today is "recreational" panning, sluicing, and suction dredging of limited magnitude. Relatively few of the once numerous mining claims exist in this area today. Scattered prospecting has occurred throughout the Forest in the past, but little occurs today, with very few active mining claims remaining outside of the perlite deposit area, a block of limestone claims and the Caribou Mountain area.

The ratings for locatable minerals generally followed that in the existing (1985) Forest Plan, modified by existing conditions. Those ratings are based on the following: Areas in the near vicinity of patented claims that have produced, or are producing, significant values or areas that are in the same geologic environment are rated "high," as are areas having a dense clustering of unpatented mining claims. Areas having a number of scattered, unpatented mining claims are rated "moderate." All other areas are rated "low" because insufficient exploration has been done to justify a "no" potential.

Resource Specific Prescription Recommendations

Oil/Gas: No specific prescriptions were applied based on oil/gas resources, because additional NEPA to analyze any future leasing would need to be prepared; that NEPA would amend the Revised Forest Plan, and applicable prescriptions would be made at that time.

Phosphate: A management prescription of 8.2.2 is applied to all lands currently included in an approved mining and reclamation plan or approved exploration plan, or lands that lie within an area currently being analyzed through NEPA for proposed activity. A prescription of 8.2.1 is assigned to all inactive, unmined phosphate leases or unleased KPLA areas.

As described above, it should be noted that mining related disturbances generally extend onto adjacent unleased lands, covered by Forest Service Special Use Permits.

Locatable Minerals: Areas included in approved Plans of Operation for locatable minerals and for developed gravel sources are given a prescription of 8.2.2. No prescription is applied to lands with inactive, existing mining claims because operations are not approved. The 1872 mining laws, as amended, cover the development of locatable minerals. These laws allow the development of locatable mineral deposits, subject to existing laws and regulations. If proposals for locatable operations are received, NEPA will be completed and the Revised Forest Plan amended, if necessary.

●Special Use Permits, Utility Corridors, and Other Features

Special Use Permits are considered a special authorization, which is revocable and terminable, that provides permission, without conveying an interest in land, to occupy and use National Forest System lands or facilities for specific purposes.

A **Utility Corridor** is a linear strip of land, under special use authorization, defined for the present or future location of utility facilities (i.e. power lines, pipe lines, etc.) within its boundaries.

Other Features may include areas in IRAs that may offer unique characteristics and/or values that are not disclosed under any other Re-Evaluation Characteristic category. Examples may include, but are not limited to, places for local events, areas valued for collection of non-timber forest products, or where past laws, policies, or directions have significantly influenced the management of an area (i.e. a 1985 Land and Resource Management Plan settlement area).[8]

Information concerning the number and location of Special Use Permits and utility corridors was obtained from Ranger District personnel.

The acreage of non-Federal lands totally surrounded by lands in IRAs was determined by consulting the "Roadless Area Re-Inventory, Land and Resource Management Plan, Caribou National Forest and Curlew National Grassland, June, 1996" and from BLM records for Mineral Patent Surveys.

IDT members and/or District personnel disclosed data points in the "Other" category.

Resource Findings and Assessment Ratings

Special Use Permits (SUPs) exist in, or adjacent to, many of the IRAs. These SUPs include a variety of permitted uses, including, but not limited to, the following: outfitter and guide permits, electronics (communications) sites, water development sites, power transmission lines, summer homes, yurts, livestock management structures, organizational camps, buried pipelines, water diversion structures, and various mining related facilities/structures. Most of the SUPs that involve surface disturbance are too small to be displayed on the maps included in the Revised Forest Plan.

A few tracts of non-Federal (state or private) lands are located completely inside IRAs. Only those areas that were totally surrounded by IRAs were included in the tables as "in-holdings." Non-Federal lands that were on the edge of an IRA or that had "cherry-stemmed" access routes to them were not included in this appendix. Access to the non-Federal lands totally surrounded by IRA lands could be an issue.

The "Other" category includes items that did not fit under any other Re-Evaluation Characteristic category, but needed to be disclosed in this document.

There are no Assessment Ratings for these categories as their purpose is just to disclose IRA relevant points that have little or no bearing on the overall management decisions for each roadless area.

Resource(s) Specific Prescription Recommendations

Utility corridors (power transmission lines, buried pipelines, etc.) are given an 8.1 prescription. Other SUPs generally do not have a specific prescription applied to them, but the rights granted by the SUP need to be guaranteed for as long as the SUP is in force. Generally, these areas are too small to be displayed on the maps in the Revised Forest Plan.

[8] 1985 Land and Resource Management Plan settlement areas were precluded from all timber harvest activities for a specified period. (This time period has expired.)

INVENTORIED ROADLESS AREA RE-EVALUATIONS

This section of the Appendix R presents a detailed discussion of each individual roadless area. A brief description of the roadless area location is presented to orient the reader on the ground. Specific information about resources, special features, and wildlife habitat is also included. A summarized review of specific public comments on individual roadless areas pertaining to future management options is presented. A table showing the application of management prescriptions within the roadless areas provides the reader with a comparison between management prescriptions in Alternative 7, the preferred alternative in the Draft EIS and Alternative 7R, the Selected Alternative in the Record of Decision, along with the decision rationale for the final management prescription application.

In order to organize the specialists' re-evaluation findings using the characteristics described in the previous section, each separate roadless area evaluation includes a table that displays each of the characteristics on the left-hand side of the table; the resource specialist findings for that particular roadless area, and a recommendation for the application of a management prescription(s) based on these findings.

#04615 BEAR CREEK ≈21,050 ACRES

Description:

Bear Creek Roadless Area is located in Bonneville County in Southeast Idaho. The area includes most of the Caribou Range between Fall Creek Road on the north, McCoy Creek Road on the south, and Bear Creek-Jensen Creek Road on the east. It is adjacent to the Targhee Bear Creek IRA, which is managed as 6.1b (livestock grazing).

Approximately 61 percent of the Bear Creek IRA contains unstable soils and 44 percent of the area has a high potential for soil erosion. It lies outside of the twenty-mile radius around Soda Springs, a sensitive receptor, but is within 200 kilometers of a Class I area (Yellowstone and Grand Teton National Parks). Approximately 96 percent of watersheds in this IRA are rated "red." No 303(d) streams are present in the IRA.

Current vegetation composition consists of aspen/conifer, some stands of Douglas-fir on northern exposures and sage/grass on southern exposures and along the south end of the IRA. No commercial harvest has occurred, but some roads and small fires are evident. Herbicide applications were applied to sagebrush in the Caribou Basin in the late 1960's and early 1970's. Conifers are encroaching into late-seral aspen stands. Insects are not evident, likely due to the mixed species composition in the area. Fire hazard is high due to conifer encroachment into late-seral aspen and fuel buildup in older, multi-canopy stands of mixed conifer and Douglas-fir. Invasive species are found on approximately 0.2 percent (36 acres) of the IRA. Species include Canada thistle (26 acres) and Musk thistle (10 acres).

Great gray owls are the known TES occurrence in this IRA. While the area has little forested cover (16 percent), it ranks high for lynx linkage habitat. This is due to the large area of secure habitat (68 percent), and it's proximity to the Targhee, to the north, and the Bridger-Teton to the east. Both of these areas have mapped Lynx Analysis Units, and are thought to provide suitable habitat for lynx. Because the area has no motorized roads or trails, the area provides security for those species affected by human disturbance or access (wolves and wolverine). About 68 percent of the area is in security.

This IRA is about 70 percent grass/shrub. The remaining portion (13 percent) is in aspen/conifer cover. The small acreage of forested vegetation provides little habitat for forest-associated species. While the area is dominated by grass/shrub habitats, it is over ten miles from known lek locations and provides little habitat for sage grouse.

Part of this IRA lies in Noss' South Caribou-Grays Lake mega site. The Noss study placed the site in Quadrant 1 and the irreplaceability score is high at 75.8. The study placed an emphasis on aspen, willow riparian and meadows in this site. Elk habitat is some of the best and this area has the highest density of elk in southeast Idaho (Noss, *et al,* 2001). It is rated high for this analysis. Because a low percentage of the vegetation is at high departure from PFC (17 percent), this area ranks high for providing habitat suitable for most species.

Wildlife recommendations for this area include maintaining the security area as a year-round non-motorized area (3.1a). This management prescription would maintain the existing condition and provide a secure area for species such as wolverine and wolves, and provide linkage habitat for lynx. This area is important because of its location between the Greater Yellowstone Ecosystem and Preuss Range to the south.

McCoy Creek and its tributaries are Yellowstone cutthroat trout stronghold streams and rate high for protection and restoration.

No documented occurrences of rare plants and rare plant communities exist and no plant community reference areas are known. The large wildlife security area (14,250 acres) could serve as a reference landscape. In addition large-scale restoration opportunities for watershed and aquatic habitat could also provide reference landscapes. No unique reference value for the IRA has been identified.

The area contains 13,824 acres of summer semi-primitive non-motorized opportunity and approximately 6,035 acres of summer semi-primitive motorized recreation opportunity. The remaining 1,189 acres is managed as roaded modified. The entire IRA is open to cross-country winter snowmobiling.

Moderate to low scenic integrity exists in the IRA. Approximately 5,241 acres are managed with the visual quality objective of partial retention (moderate), and 15, 807 acres are managed for modification (low).

The IRA lies within the "overthrust" belt. No leases currently exist for oil and gas or phosphate. Locatable minerals include patented mining claims with previous mining activity evident along the southern-most edge of the IRA. A potential rock source for road surfacing material lies just inside the IRA boundary.

One outfitter and guide operates within the IRA. The area also contains one communication tower. No utility corridors are present within the IRA.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer and winter, motorized cross-country travel.
3. Should be managed as wilderness or with similar protections due to highly erodible red soils and outstanding wildlife reserves.
4. Designate as wilderness or maintain roadless qualities, and prohibit ORVs, and limit aggressive grazing by sheep.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Bear Creek	04615	21,048	2.1.4	0	2.1.4	649	New Rx applied to Caribou City and Lander Trail historic areas
			2.8.3	2,388	2.8.3	2,388	No change. Riparian/Wetland Emphasis Area
			3.1	12,611	3.1	13,241	Lynx/wolverine habitat area, habitat connectivity, low recreation use, unstable soils, watershed restoration
			3.2	0	3.2	2,454	Manageability of existing uses, terrain limiting for snowmobiles
			3.3	3,112	3.3	0	Shifted acres to 2.1.4, 3.1 and 3.2 prescriptions because of watershed condition, unstable soils, YCT fisheries
			5.3	210	5.3	0	Shifted acres to 2.1.4, 3.1 and 3.2 prescriptions because of watershed condition, unstable soils, YCT fisheries
			6.2	0	6.2	2,316	Rangeland vegetation management, consolidation of Rx's
			6.3	2,727	6.3	0	Shifted acres to new 6.2, 3.1, and 3.2 prescriptions, consolidation of Rx's
Total IRA Acres				**21,048**		**21,048**	

Acres from GIS run dated July 26, 2002

Table R.1. IRA Characteristics Re-Evaluation: Bear Creek # 04615

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	61 % Unstable 44 % Erosion hazard	High	Rx 3.1
Air	**Sensitive Receptor:** Soda Springs, ID	Non-restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	96% Red 4% Green No 303(d) streams	High restoration potential	Rx 3.1 for restoration/preservation within the watershed.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Low High	Rx 3.3 to restore aspen stands.
Invasive Plant Species	0.2 % of the IRA (36 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access for management.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	High High High Low N/A	Rx 3.1.a to maintain the non-motorized character of the area.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	High Low	Rx 3.1.a to maintain the non-motorized character of the area.
Fisheries Biological Strongholds	McCoy Creek and its tributaries are Yellowstone cutthroat trout stronghold streams.	High	Rx 2.8.3 with INFISH in all riparian areas and Rx 3.1 in watersheds with Yellowstone cutthroat trout stronghold(s).
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Wildlife security area (≈14,250 acres). Large-scale restoration opportunities for watershed and cutthroat trout habitat.	High overall	Any Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 13,824 acres SPM: 6,035 acres Roaded Modified: 1,189 acres	High value SPNM Moderate value SPM	Maintain SPNM and SPM setting.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 21,041 acres	Moderate SPM value at lower elevation areas	Maintain SPM setting.
Landscape Character & Scenic Integrity	Partial Retention (moderate): 5,241 ac. Modification (low): 15,807 ac.	Moderate to low scenic integrity	An Rx that raises scenic integrity objectives in the SPNM setting.
Oil & Gas	IRA lies within the overthrust belt. No existing leases	High Potential	No Rx recommendation.
Phosphate	No existing leases	No known potential	No Rx recommendation.
Locatable Minerals	Mining claims, some with previous mining activity, occur along the southern-most edge of IRA.	High potential along McCoy Creek, low elsewhere	No Rx Recommendation.
Mineral Materials	Potential rock source for road Surfacing material exists.		Any Rx that does not prohibit development of mineral material rock.
Special Use Permits, Utility Corridors, Other	Communications tower Big Elk Outfitter and Guide		Any Rx that does not impede permit compliance.

04154 BONNEVILLE PEAK ≈ 32,170 ACRES

Description:

This IRA is within Bannock and Caribou counties on the Westside Ranger District of the Caribou National Forest 4.5 miles east of the city of Inkom, Idaho.

Approximately 18 percent of the area is considered unstable. No erosion hazard exists in the area. This IRA is inside the twenty-mile radius around both sensitive receptors - Pocatello and Soda Springs, Idaho. It is outside the 200-kilometer radius of a Class I area. Approximately 98 percent of the IRA is in moderate, or "yellow,'" watershed condition. The remaining 2 percent is considered "green." No 303(d) streams are present.

The IRA's vegetation is composed of mountain brush, sagebrush, quaking aspen, Douglas-fir and mixed conifer. In the early to mid 1990's one unit of the North Pebble Timber Sale was harvested. Bob Smith fires occurred in 2000. Aspen decline is rated high due to late seral aspen stands and conifer encroachment. Insect Hazard is considered moderate due to mixed species composition and mature Douglas-fir stands. These are not "old growth" Douglas-fir stands. Some mixed conifer is also present. The Fire Hazard is also rated as moderate, because of the species mix with large amounts of aspen and smaller areas of aspen/conifer or mixed conifer stands. Approximately 0.7 percent (216 acres) of the IRA contains invasive species. Species include 95 acres of Canada thistle, 77 acres of Dyers Woad, and 44 acres of Musk thistle. The area is rated as "medium" for invasive species.

Idaho Fish and Game personnel have expressed concerns for mule deer in this IRA (See EIS and Wildlife Process Paper for rationale). Known TES occurrences for this IRA include Townsends Big-eared bat and wolverine. The IRA is located on the Westside District and is not considered to provide linkage habitat for lynx. Two fairly large security areas exist around Bonneville Peak and Haystack Mountain. Because of the large amount of security (35 percent), this area has high potential for habitat for wolverines and wolves. Wolverines in the mountain range have been recorded.

This IRA contains a mix of aspen (30 percent) and conifer (23 percent), with smaller amounts of grass/shrub (15 percent). Based on the amount of forested cover, it ranks as moderate potential for habitat for forest-associated species. Because of the small amount of grass/shrub, small patch size, and distance to known sage grouse leks (less than 5 miles), this area rates low for providing habitat for sage grouse.

Noss, *et al* (1999) placed this area in the Portneuf site. This site ranked in Quadrant 1, but the irreplaceability was placed at 51, which is moderate. They mention significant herds of mule deer, and growing herds of elk. For this analysis, it ranked high. Because of the amount of habitat at high departure from PFC (32 percent), the area ranks as moderate potential.

Wildlife recommendations for this IRA include: 1) maintaining the winter range in Rx 2.7.1 as mapped in Alternative 7, and 2) maintaining the two large security areas as 3.1(b), non-motorized in the summer, to provide secure summer habitat for species, such mule deer and wolverine, and maintaining the north-south major ridge system as a travel corridor for wildlife.

The Caribou-Targhee National Forest Fish Distribution Survey was used on streams in this IRA in 2001. Inman, Robbers Roost, Pebble, and North Fork Pebble Creeks were identified as Yellowstone cutthroat trout stronghold streams. The salmonid community in Pebble Creek also consisted of hatchery non-native trout, but they were outnumbered by the native Yellowstone cutthroat trout. Aquatic and habitat restoration are rated "High."

No documented occurrences or rare plants have been completed. Inman Creek contains a rare plant community. The Big Springs headwaters area of Pebble Creek and USFS lands near the BLM Robbers Roost RNA/ACEC contain reference areas for rare plant communities. The large wildlife areas identified by the Wildlife Biologist could serve as a reference landscape. No unique reference value for this IRA has been identified.

The IRA supports 13,172 acres of summer semi-primitive non-motorized recreation and 15,272 acres of summer semi-primitive motorized recreation. Winter semi-primitive motorized recreation occurs on 32,110 acres. Approximately 90 acres are within the Pebble Creek Ski Area and are managed as winter semi-primitive non-motorized.

A Visual Quality Objective of "Retention" (high) occurs on 12,083 acres on the western edge of this IRA, because it is highly visible from U.S. Interstate 15. Approximately 19,703 acres maintain partial retention (moderate) objectives, and 381 acres are managed for modification (low).

No leasable oil, gas, or phosphate, and no locatable or mineral materials exist within the IRA. A phosphate slurry pipeline runs along the northern boundary but is outside the IRA. One outfitter and guide is permitted in the area. The area also contains small acreages of state and private land.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer, motorized travel on designated routes and winter motorized cross-country.
3. New motorized trail construction should be permitted.
4. Area should be non-motorized during the winter to provide cross-country skiers with semi-primitive recreation opportunities.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Bonneville Peak	04154	32,167	2.7.1	9,226	2.7.1	9,232	Big game winter range, minor adjustment to boundary for alignment with topo/cultural feature
			2.8.3	1,667	2.8.3	1,667	No change. Riparian/Wetland Emphasis Area
			3.2	15,250	3.2	10,841	Manageability of existing uses and access, stable soils, moderate watershed conditions, YCT fisheries
			3.3	0	3.3	2,590	Watershed restoration, aspen regeneration for late seral aspen and conifer encroachment
			4.2	772	4.2	772	No change, developed recreation area under Special Use Permit
			5.2	0	5.2	695	Maintenance of stand integrity, past harvest area, past fire disturbance, management access
			6.1	5,251	6.1	0	Shifted acres to new 6.2 Rx for rangeland vegetation management
			6.2	0	6.2	6,370	Rangeland vegetation management, consolidation of Rxs
Total IRA Acres				**32,166**		**32,167**	

Acres from GIS run dated July 26, 2002

Table R. 2. IRA Characteristics Re-Evaluation: Bonneville Peak # 04154

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	18% Unstable 0% Erosion hazard	Moderate	Rx 2.7.1, 3.1, and/or 3.2
Air	**Sensitive Receptors:** Pocatello, ID and Soda Springs, ID	Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	98% Yellow 2% Green No 303(d) streams	Moderate overall condition	No recommendations.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Moderate Moderate	Rx 5.1 - In North Pebble Timber Sale area and Reed Canyon and Rx 3.3 to allow for restoration of aspen and treatment of mixed conifer.
Invasive Plant Species	0.7% of the IRA (216 acres)	Medium	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	N/A High High Moderate Low	Rx 3.1.a in the two large security areas, Bonneville Peak and Haystack Mountain, (≈4,000 acres) in order to maintain the suitability of the north-south ridge system as a travel corridor and provide security for large carnivores, big game, and other species affected by human disturbance.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	High Moderate	Rx 2.7.1 to maintain winter range outlined in Alternative 7.
Fisheries Biological Strongholds	Yellowstone cutthroat trout stronghold streams are present	High	Rx 2.8.3 with INFISH in all riparian areas and Rx 3.1 in watersheds with YCT stronghold(s).
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas: USFS land near BLM Robber's Roost RNA, Big Springs	None Inman Creek	Site-specific management and mitigation are recommended. Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Wildlife security area (≈8,400 acres).	High Overall	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 13,172 acres SPM: 15,272 acres Roaded Modified: 3,723 acres	High value for SPNM High value for SPM	Maintain SPNM and SPM settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 90 acres Pebble Creek Ski Area SPM: 32,110 acres	High value for SPNM and SPM	Manage the backside of Bonneville Peak for a SPNM setting. Maintain remaining SPM acres.
Landscape Character & Scenic Integrity	Retention (High): 12,083 ac. Partial Retention (moderate): 19,703 ac. Modification (low): 381 ac.	High scenic integrity on western edge for I-15 corridor.	Maintain existing scenic integrity as scenic integrity objectives.
Oil & Gas	No existing leases	Moderate potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Outfitter and Guide, Pebble Creek Ski Area (adjacent), Phosphate slurry pipeline, 680 acres on in-holdings		Rx that does not impede permit compliance.

#04161 CARIBOU CITY ≈ 79,103 ACRES

Description:

The Caribou City IRA is within Bonneville County, Idaho, on the Soda Springs Ranger District and the Palisades Ranger District. The area is situated approximately one mile east of the Grays Lake National Wildlife Refuge and .25 miles southwest of the Palisades Reservoir.

Approximately 75 percent of this IRA is considered unstable with 31 percent of the area having a high erosion hazard. Afton, Wyoming and Soda Springs, Idaho are considered sensitive receptors for air quality. The southwest corner of the IRA is inside the twenty-mile radius of Soda Springs, Idaho. The entire IRA is not within 200 kilometers of a Class I area. About 70 percent of the watersheds in the IRA are rated "red" with 29 percent "yellow and 1 percent "green." No 303(d) streams are found in the IRA.

The IRA's vegetation is composed of aspen/conifer, Douglas-fir, lodgepole pine, mixed conifer, pure aspen and sagebrush. This IRA has the highest number of forested vegetation acres with a "high" fire hazard rating (27,352), and the second highest number of acres with a "high" insect hazard rating (10,681) as well as "high" aspen decline rating (20,098). Mature conifer is found in large, nearly continuous, blocks of several hundred acres in the vicinity of historic Caribou City. Aspen succeeding to conifer is found in large blocks on the south end of the IRA, north of State Highway 34. In 1988, this IRA experienced the largest, high intensity, stand-replacing wildfire to occur on the Forest in the past 80 years, in primarily mature conifer vegetation. Invasive species exist on 0.1 percent (80 acres) of the area. Species include Canada thistle (56 acres) and Musk thistle (24 acres).

Known occurrences of lynx (1955, 1978-9), and wolves (1983) have been recorded in the IRA. The area lies adjacent to the Palisades country to the north and the Bridger-Teton to the east making it important for movements of species from the Greater Yellowstone Ecosystem. This IRA is also part of an area Idaho Department of Fish and Game has been managing for trophy elk hunting. This area rated high for lynx linkage habitat, based on: 1) the presence of major drainages (Tincup and Trail Creeks) and Bald Mountain/TincupMountain ridges, which could provide movement corridors; 2) proximity to GYE and importance for movements to the south; 3) the area has 34 percent conifer cover; 4) large amount of security (66 percent) and 5) has historic records of use by lynx. Because of the large amount of security (66 percent), this area also ranks high for wolverine and wolves. The security area lies in the Old Baldy/Caribou Mountain/Tincup Mountain area.

This IRA has forested cover over 34 percent of the area, ranking it moderate for forest-associated species. The area has 36 percent grass/shrub; it is over ten miles from the nearest known sage grouse lek and is rated low for sage grouse. The IRA is located in Noss' South Caribou-Grays Lake site. They placed it in Quadrant 1 and the irreplaceability score is high at 75.8. Noss, *et al* (2001) emphasize aspen, willow riparian and meadows as important in the area. They also recognize the area as providing excellent elk habitat with the highest density of elk in southeast Idaho. Because this site lies in Quadrant 1, it ranks high for this category. Based on the amount of vegetation at high departure from PFC (28 percent), this area ranks as moderate potential.

The IRA is within the McCoy Creek, Jackknife Creek, Tincup Creek, and Grays Lake Drainages. McCoy Creek, Jackknife Creek, Tincup Creek, and their fish-bearing tributaries are considered Yellowstone cutthroat trout stronghold streams. Brown trout also occur in the lower reaches of these streams. Eagle Creek, within the Grays Lake Drainage has not yet been surveyed, but it is also suspected to be occupied by Yellowstone cutthroat trout. Assessment rating is "High."

Documented rare plants occur near Caribou Mountain, although no rare plant communities have been documented. The area has not been identified as containing plant community reference areas. The large wildlife security area identified by the Wildlife Biologist could serve as a reference landscape. Large-scale restoration efforts for watershed or aquatic habitat could also serve as reference landscapes. The 1988 Trail Creek Fire site (9,600 acres) could serve as a reference landscape for wildfire recovery. Overall, the area ranks "high" for reference landscapes.

This IRA provides an array of recreational opportunities. Approximately 47,695 acres are managed for summer semi-primitive non-motorized use and 3,379 acres are managed for summer semi-primitive motorized use. About 9,000 acres are managed as "primitive," the only area on the forest with this recreation opportunity. The remaining 19,046 acres are managed as roaded modified. In the winter about 80,000 acres are open to cross-country snowmobile use. The area also supports an annual snowmobile race under a special use authorization.

Scenic integrity rates high (retention) on 632 acres adjacent to the Tincup Scenic Byway. About 63,150 acres are managed for partial retention (moderate), 14,946 acres for modification (low), and only 388 acres for maximum modification (very low).

The IRA lies within the overthrust belt and contains two abandoned exploratory oil and gas well sites. No oil and gas or phosphate leases currently exist within the IRA. The area supports several existing mining claims. Underground and placer operations have produced precious and non-precious metals. Exploration and "recreational panning" still occur in the area.

The area has also produced paleontological resources.

An above ground power line and a buried optic cable run along the Tincup Scenic Byway. The area also contains about 280 acres of private land.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized travel on designated routes and winter motorized cross-country.
2. Designate it as wilderness, to protect critical "core" habitat areas and encourage the preservation and maintenance of the conservation corridor.
3. New motorized trail construction should be permitted.
4. Should remain closed to summer ORVs and the old jeep road up Black Mountain should be more securely closed as ORVs are getting around closure.
5. Protect mountain and surrounding area from prevalent soil erosion.
6. Allow snowmobiling in wilderness recommendation areas.
7. Designate as wilderness or maintain roadless standards as this area is important to elk herds (especially in the winter).

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Caribou City	04161	79,102	1.3	28,239	1.3	25,750	Adjustment of boundary for manageability to topographic/cultural features
			2.1.2	552	2.1.2	1,220	Increased Rx area for visual quality corridor maintenance around historic areas
			2.1.4	0	2.1.4	12,406	New Historic District Rx applied on Cariboo City area
			2.7.1	4,716	2.7.1	4,569	Shifted acres to 2.7.2, Big Game winter range, lower road density standards in 2.7.2
			2.7.2	1,267	2.7.2	1,089	Increased acres from 2.7.1, Big game winter range, lower road density standards in this Rx
			2.8.3	7,920	2.8.3	7,920	No change. Riparian/Wetland Emphasis Area
			3.2	0	3.2	23	Adjustment of Rx boundary for manageability to topographic/cultural features and adjacent prescription area.
			3.3	14,086	3.3	8,836	Unstable soils, watershed restoration, Aspen regeneration, high fire hazard rating, rangeland vegetation restoration
			6.2	0	6.2	17,060	Rangeland vegetation management and restoration needs
			6.3	21,797	6.3	0	Shifted acres to new 6.2 Rx and lost other acres to new historic district area
			8.1u	526	8.1u	230	Adjusted boundaries of Rx area, utility corridor along Tincup Scenic Byway
Total IRA Acres				**79,103**		**79,103**	

Acres from GIS run dated July 26, 2002

Table R.3. IRA Characteristics Re-Evaluation: Caribou City # 04161

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	76% Unstable 31% Erosion Hazard	High	Rx 1.3, Rx 3.1 and/or Rx 3.2
Air	**Sensitive Receptors:** Afton, WY and Soda Springs, ID.	Non-restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	70% Red 29% Yellow 1% Green No 303(d) streams	Moderate restoration potential	Rx 3.1 or Rx 3.3 for restoration or preservation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Moderate High	Rx 3.3 to restore aspen stands. Defer to other specialists for remainder of IRA.
Invasive Plant Species	0.1% of the IRA (80 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	High High High Moderate Low	Rx 1.3 or Rx 3.1a in the large security blocks (50,000 acres). No increase in motorized use to maintain elk habitat and riparian and ridge movement corridors for large carnivores and other species.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	High Moderate	Rx 2.7.1 to maintain winter range outlined in Alternative 7.
Fisheries Biological Strongholds	Yellowstone cutthroat trout stronghold streams are present	High	Rx 2.8.3 with INFISH in all riparian areas and Rx 3.1 in YCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	Caribou Mntn. None None	Rx 1.3 or 3.1b on Caribou Mntn. Then, any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** 1988 Trail Creek wildfire site. Wildlife security area (≈50,000 acres)	High Overall	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	Primitive: 8,982 acres SPNM: 47,695 acres SPM: 3,379 acres Roaded Modified: 19,046 acres	High value for Primitive, SPNM and SPM	Maintain existing recreation opportunity settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 80,024 acres	High values for SPM	Consider offering a non-motorized experience into historic area during site-specific travel planning.
Landscape Character & Scenic Integrity	Retention (High): 632 ac. Partial Retention (moderate): 63,136 ac. Modification (low): 14,946 ac. Max. Modification (Very low) 388 ac.	High to moderate adjacent to Tincup Scenic Byway	Maintain or enhance scenic integrity and rehabilitate acres in Maximum Modification.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	Existing mine claims	High potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Annual snowmobile race, above ground utility line and buried optic cable along Tincup Scenic Byway, 279 acres of private land, paleontological resource protection		Rx that does not impede permittees

#04159 CLARKSTON MOUNTAIN ≈ 22,615 ACRES

Description:

This IRA is within Oneida County, Idaho, Box Elder County, Utah and Cache County, Utah on the Westside Ranger District. The area extends from approximately two miles southeast of Malad, Idaho to 1.5 miles north of Plymouth, Utah.

No portion of this IRA contains unstable soils and 67 percent of the area has a "low" rating for erosion hazard. Sensitive air quality receptors include Malad and Preston, Idaho. The IRA is outside the twenty-mile radius for Pocatello and Soda Springs, Idaho. It is not within 200 kilometers of a Class I area. About 88 percent of the watersheds in this IRA rate a "red" condition, 8 percent rated out as "yellow" and 4 percent rated as "green." No 303(d) streams are found in this IRA.

The IRA's forested vegetation is composed of juniper, small areas of Douglas-fir, aspen/maple, and aspen. Past disturbances include the Fry Canyon Timber Sale in the early 1990's. Aspen decline is rated as "moderate," because older aspen stands are not regenerating adequately to maintain healthy pockets of aspen. The Insect Hazard is low because of the lack of conifer species in the IRA. Fire Hazard rating is low due to limited forested vegetation and related mixed conifer ladder fuels. The IRA rates "medium" for invasive species with 1.4 percent of the area infested. Leafy spurge currently occupies about 313 acres.

Idaho Fish and Game has expressed concerns regarding mule deer (See EIS and Wildlife Process Paper for rationale) in this IRA. Known TES occurrences include goshawks. This IRA is located on the Westside Ranger District and is not considered linkage habitat for lynx. Several security areas can be found in this IRA; about 33 percent of the area is more than .5-miles from a motorized road or trail. Because of the large amount of security, this area has high potential for habitat for wolverines and wolves. Recorded sightings have been documented of wolverines in the mountain range. The area has a long, linear shape adjacent to and intermingled with private lands that could possibly reduce the effectiveness of the security areas.

This IRA is a mix of aspen (20 percent), grass/shrub (38 percent), juniper (36 percent) and only four percent conifer. Based on the amount of forested cover, it ranks as low potential for habitat for forest-associated species. Because of the larger amount of grass/shrub and proximity to known sage grouse leks, this area rates high for providing habitat for sage grouse.

Noss, *et al*, (1999) placed this area in the Bear River site. They noted a loss of wetlands at lower elevations (private lands) and higher-elevations of gentle, open-sagebrush with pockets of conifer and aspen. This site ranked in Quadrant 4 and has an irreplaceability score of 30 and ranks low for this analysis. Because of the amount of habitat at high departure from PFC (55 percent), the area ranks as low potential for this criterion (37 percent of the area is juniper and 20 percent is aspen and aspen/maple).

No fish-bearing streams have been documented in the IRA.

No occurrences of rare plants and rare plant communities have been documented. Gunsight Peak Research Natural Area and the Trail Hollow exclosure are considered plant community reference areas. Large-scale watershed restoration management could provide a reference landscape, but no unique reference value has been identified for this IRA.

The area is managed entirely for summer and winter semi-primitive motorized recreation experiences. High scenic integrity needs to be retained on 2,936 acres that run adjacent to U.S. Interstate 15. Approximately 2,936 acres are managed for partial retention (moderate) and the remaining 10,703 acres are managed for Modification (low).

No oil and gas or phosphate leases exist in this IRA. No active mines or exploration is occurring for locatable minerals. One outfitter and guide holds a Special Use Permit for the area. No utility corridors occur in the IRA. The IRA is adjacent to Dry Canyon Campground. Approximately 388 acres of private land in-holdings exist in the area.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer, motorized travel on designated routes and winter motorized cross-country.
3. Non-motorized during the summer months.

4. New motorized trail construction should be permitted.

Selected IRA Management Prescriptions: and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Clarkston	04159	22,616	2.2	532	2.2	532	No change, Research Natural Area, landscape reference site
			2.7.1	7,425	2.7.1	7,593	Increased Rx area to topographic/cultural feature, big game winter range
			2.7.2	20	2.7.2	20	No change, identified big game winter range
			2.8.3	1,307	2.8.3	1,307	No change. Riparian/Wetland Emphasis Area
			6.2	0	6.2	13,164	Rangeland vegetation management and minor aspen restoration
			6.3	13,332	6.3	0	Shifted acres to new Rx 6.2 and lost acres to 2.7.1 larger Rx area
Total IRA Acres				**22,616**		**22,616**	

Acres from GIS run dated July 26, 2002

Table R.4. IRA Characteristics Re-Evaluation: Clarkston Mountain # 04159

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 67% Erosion Hazard	Low	Rx 2.2, Rx 2.7.1, and/or Rx 6.2 for rangeland/watershed improvements
Air	**Sensitive Receptors**: Malad and Preston, ID.	Non-restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	88% Red 8% Yellow 4% Green No 303(d) streams	High restoration potential	Rx 3.3 or Rx 6.2 for restoration or preservation of watershed and rangeland vegetation/habitat.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate Low Low	Rx 6.3 to restore rangeland vegetation to PFC and improve watershed condition.
Invasive Plant Species	1.4% of the IRA (313 acres)	Medium	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	N/A High High Low High	Draft EIS proposed hunting season road density reduction from 1.1 to 1.0 mi/mi^2 in Alternative 7. This should be maintained for mule deer in hunting season.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	High Moderate	Rx 2.7.1 to maintain winter range outlined in Alternative 7. This Rx will also maintain sage grouse habitat. Any Rx that allows vegetation treatments for restoration. IRA has low potential for PFC habitat due to the large amount of aspen/maple and juniper (12,500 acres).
Fisheries Biological Strongholds	Yellowstone cutthroat trout stronghold streams are present	High	Rx 2.8.3 with INFISH in all riparian areas. Rx 3.1 in YCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None RNA/Trail Hollow	Rx 2.2 on Gunsight Peak RNA. Site-specific management/mitigation in Trail Hollow exclosure.
Reference Landscapes	**Unique Reference Value:** Gunsight Peak RNA	Moderate within RNA	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 22,615 acres	Moderate value SPM	Maintain existing recreation opportunity settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 22,615 acres	Moderate value for SPM	Maintain existing recreation opportunity settings.
Landscape Character & Scenic Integrity	Retention (High): 2,936 ac. Partial Retention (moderate): 8,976 ac. Modification (low): 10,703 ac.	High scenic integrity on western edge adjacent to U.S. Interstate 15.	Maintain existing scenic integrity.
Oil & Gas	No existing leases	Moderate potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	Existing mine claims	Low potential	No recommendation
Mineral Materials	None		No recommendation
Special Use Permits, Utility Corridors, Other	Outfitter and Guide, 388 acres of private land		Rx that does not impede permittee

#04158 DEEP CREEK ≈ 7,100 ACRES

Description:

The Deep Creek IRA lies within Oneida County, Idaho on the Westside Ranger District. It is approximately five miles east of Malad City, Idaho.

The area is relatively stable with no unstable areas known to occur within the IRA. About 78 percent of the area has an erosion hazard. All of the watersheds within the IRA are considered "red." Approximately 1.1 miles of Deep Creek has been listed as a water quality limited stream on the State of Idaho's 303(d) list.

The IRA's vegetation composition is primarily sagebrush/grass with some small areas of aspen/maple. Aspen decline, on those acres with aspen present, is rated high because of the lack of adequate regeneration on these sites. The Insect and Fire Hazard ratings are low due to the lack of coniferous forests. No known invasive species infestations occur in this IRA.

Idaho Fish and Game has expressed concerns regarding mule deer (See EIS and Wildlife Process Paper for rationale) in this IRA. The IRA is located on the Westside Ranger District and does not provide linkage habitat for lynx. The area offers little in the way of wildlife security areas, only about four percent of the entire IRA. Because of the lack of security, this area has low potential for habitat for wolverines and wolves.

This IRA is dominated by grass/shrub (88 percent) and no conifer. Based on the absence of forested cover, it ranks low for potential habitat for forest-associated species. Because of the larger amount of grass/shrub and proximity to known sage grouse leks, this area rates high for providing habitat for sage grouse. Noss, *et al*, (1999) placed this area in the Bear River site. They noted a loss of wetlands at lower elevations (private lands) and higher-elevations of gentle, open-sagebrush with pockets of conifer and aspen. This site ranked in Quadrant 4 and has an irreplaceability score of 30 and ranks low for this analysis. Because of the low amount of habitat at high departure from PFC (12 percent), the area ranks as high potential for habitat.

No fish-bearing streams have been documented in this IRA.

No documented rare plants, rare plant communities or plant community reference areas have been identified in the IRA. No unique reference value for this IRA has been identified. Large-scale watershed restoration opportunities could provide a reference landscape.

The entire IRA is managed for summer and winter motorized recreation use. Overall, scenic integrity is low. Partial rent ion (moderate) is maintained on 737 acres and Modification (low) is maintained on the remainder of the IRA (6.352 acres).

No oil and gas or phosphate leasing exists in the IRA. No locatable minerals are being mined or explored.

One outfitter and guide is permitted in the area along with two water transmission lines. No utility corridors are found in this IRA.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized travel on designated routes and winter motorized cross-country.
2. New motorized trail construction should be permitted.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Deep Creek	04158	7,089	2.1.2	0	2.1.2	165	Applied Visual Quality maintenance Rx to travel corridor
			2.7.1	1,958	2.7.1	1,958	No change, Big game winter range
			2.8.3	263	2.8.3	263	No change. Riparian/Wetland Emphasis Area
			6.2	0	6.2	4,703	Rangeland vegetation management
			6.3	4,868	6.3	0	Shifted acres to 2.1.2 Rx and new 6.2 Rx
Total IRA Acres				**7,089**		**7,089**	

Acres from GIS run dated July 26, 2002

Table R.5. IRA Characteristics Re-Evaluation: Deep Creek # 04158

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 78% Erosion Hazard	Low	Rx 2.2, Rx 2.7.1, and/or Rx 6.2 for rangeland/watershed improvements
Air	**Sensitive Receptors**: Malad and Preston, ID.	Non-restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Red 1.1 miles of 303(d) stream on Deep Creek	High restoration potential	Rx 3.3 or Rx 6.2 for restoration or preservation of watershed and rangeland vegetation/habitat.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Low Low	Rx 6.3 to restore rangeland vegetation to PFC and improve watershed condition.
Invasive Plant Species	No known infestations	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	N/A Low Low Low High	Draft EIS proposed hunting season road density reduction from 1.1 to 1.0 mi/mi^2 in Alternative 7. This should be maintained for mule deer in hunting season.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low Low	Rx 2.7.1 to maintain winter range outlined in Alternative 7. Any Rx that allows vegetation treatments for restoration and improvement in sage grouse habitats.
Fisheries Biological Strongholds	None present	Low	Rx 2.8.3 with INFISH in all riparian areas.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Large-scale watershed restoration	Low overall	Any Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 7,089 acres	High value SPM	Maintain existing recreation opportunity settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 7,089 acres	High value for SPM	Maintain existing recreation opportunity settings.
Landscape Character & Scenic Integrity	Partial Retention (moderate): 737 ac. Modification (low): 6,352 ac.	Overall low scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	Moderate potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		No recommendation
Special Use Permits, Utility Corridors, Other	Outfitter and Guide, two water transmission lines, cultivated field		Rx that does not impede permit compliance

#04164 DRY RIDGE ≈ 23,300 ACRES

Description:

The Dry Ridge Roadless Area is within Caribou and Bear Lake Counties, Idaho on the Soda Springs and Montpelier Ranger Districts. It lies approximately fourteen miles east of Soda Springs, Idaho.

About eight percent of the IRA is considered unstable with 22 percent of the area having an erosion hazard. The IRA is close to Afton, Wyoming and Soda Springs, Idaho and is inside the twenty-mile radius around the sensitive receptor of Soda Springs, Idaho. It is also within 200 kilometers of a Class I area.

About 88 percent of the area's watersheds are rated "yellow" and the remaining 12 percent is rated "green." No 303(d) streams are found in this IRA.

The IRA's vegetation is composed on aspen in the northeastern section. Douglas-fir and mixed conifer are found throughout the remaining area. Timber sales and mining activities are occurring adjacent to the area. Aspen decline is rated as moderate, because of conifer encroachment and the lack of adequate aspen regeneration. Insect and Fire Hazard ratings are moderate due to the presence of older Douglas-fir, mixed conifer and lodgepole pine. The aspen/conifer stands on the south end of the IRA contribute to a lower overall insect hazard rating for this area. Fuel buildup in the older Douglas-fir, mixed conifer and aspen/conifer areas result in a Fire Hazard rating of moderate. Invasive species, primarily Dyers woad, have infested about 8 percent (1,871 acres) of the area.

Known occurrences have been recorded for lynx (1960's), goshawks and great gray owls in the IRA. A large aspen block exists on the edge of Dry Valley that has been identified as important for big game calving and fawning. This area rated moderate for lynx linkage habitat, based on: 1) the presence of a major north-south ridge (Schmid/Dry to Summit Pass to Hawk Peak), which could provide a movement corridor; 2) the area has 33 percent conifer cover; 3) about 25 percent of the IRA offers wildlife security areas, and 4) known occurrences in the area. Because of the moderate amount of security (25 percent), this area also ranks moderate for wolverine and wolves.

This IRA has conifer cover over 33 percent of the area, ranking it moderate for forest-associated species, with about 22 percent of the area in aspen. About 30 percent of the area is covered in grass/shrub but is five to ten miles or more from the nearest known sage grouse leks. It is rated low for sage grouse. This IRA was not ranked by Noss, *et al*, (2001) and is ranked low for this analysis. Based on the amount of vegetation at high departure from PFC (32 percent), this area ranks as moderate potential.

Slug and Stewart Creeks are the major streams in the area. Slug Creek is inhabited by non-native brook trout. Stewart Creek is inhabited by Yellowstone cutthroat trout.

No rare plants, rare plant communities or plant community references areas have been documented in the IRA. Wildlife Security areas identified by the Wildlife Biologist could provide a reference landscape adjacent to a highly developed landscape where mining and past timber activities have occurred. No Unique Reference Value has been identified for the area.

About 1,650 acres are managed for summer semi-primitive non-motorized recreation experiences, while 16,710 acres are managed for summer semi-primitive motorized recreation. The area also contains about 5,000 acres of Roaded Modified due to mining and timber sale activities nearby. In the winter, approximately 4,500 acres within a wildlife closure are managed for winter semi-primitive non-motorized experiences. The remainder of the area is open to cross-country snowmobiling.

The area has moderate scenic integrity. Retention (High) objectives are used to manage approximately 1.515 acres. Partial retention (moderate) objectives are used to manage 11.549 acres, and Modification (low) is used on 10,242 acres.

This IRA lies within the overthrust belt. No oil and gas leases exist at the present time. The IRA contains a mined out phosphate mine, approximately 2,620 acres of existing phosphate leases, and about 800 acres on unleased KPLA designated land. No active locatable mining or exploration is occurring in the area. One gravel pit source is immediately adjacent to the IRA near the Summit View Campground.

One outfitter and guide is permitted to operate within the IRA. In addition, special use permits include a railroad spur. A phosphate slurry pipeline runs adjacent to the IRA. A power line is evident near the western edge of the IRA.

Summarized Specific IRA Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer and winter motorized cross–country, except in areas where travel is limited to designated trails or closed under the current Travel Plan.
3. Non-motorized during the summer months.

Selected IRA Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Dry Ridge	04164	23,307	2.7.1	1,925	2.7.1	1,925	No change, big game winter range
			2.7.2	2,434	2.7.2	2,686	Increased Rx area to topographic/cultural feature, big game winter range
			2.8.3	781	2.8.3	781	No change. Riparian/Wetland Emphasis Area
			3.2	12,356	3.2	8,923	Manageability of existing uses, lost acres to 5.2 and 2.7.2
			5.1	2	5.1	0	Combined into Rx 5.2
			5.2	0	5.2	3,525	Aspen regeneration due to conifer encroachment and consolidation with adjacent Rx
			6.2	0	6.2	5,368	Rangeland vegetation management and restoration
			6.3	5,710	6.3	0	Shifted acres to new Rx 6.2 and lost acres to 2.7.2 larger Rx area
			8.1u	37	8.1u	42	Minor boundary adjustment, utility corridor
			8.2.2	62	8.2.2	57	Minor boundary adjustment, inactive lease, managed under 3.2 Rx until lease activated
Total IRA Acres				**23,307**		**23,307**	

Acres from GIS run dated July 26, 2002

Table R.6. IRA Characteristics Re-Evaluation: Dry Ridge # 04164

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	8% Unstable 22% Erosion Hazard	Low	Rx 3.2, Rx 5.1, and/or Rx 8.2.2. to manage for existing/adjacent uses.
Air	**Sensitive Receptors**: Afton, Wyoming, Soda Springs, Idaho.	Non-restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	88% Yellow 12% Green No 303(d) streams present	Moderate overall condition	No recommendation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate Moderate Moderate	Rx 5.1 adjacent to Stewart and on Hess Park timber sale areas. Rx 6.2 and Rx 3.2 as outlined in Alternative 7.
Invasive Plant Species	8% of area (1,871 acres)	High	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate Moderate Moderate Moderate Low	Rx 3.1a in the security area along Dry Ridge aspen block, preventing any increase in development along security area.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low Moderate	Rx 2.7.1 to maintain winter range outlined in Alternative 7. Any Rx that allows for treatment of aspen/conifer stands (2,444 acres).
Fisheries Biological Strongholds	Slug and Stewart Creeks are the major streams. Stewart Creek is inhabited by YCT.	High	Rx 2.8.3 with INFISH in all riparian areas. Rx 3.1 in watersheds with YCT strongholds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** Wildlife security area. No others identified.	High for security area, low elsewhere	Any Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 1,653 SPM: 16,719 acres Roaded Modified: 4,935 acres	Low value SPNM Moderate value for SPM	Maintain existing recreation opportunity settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 4,520 acres (wildlife closure) SPM: 18,786 acres	Moderate value for SPM Low value for SPNM	Maintain existing recreation opportunity settings.
Landscape Character & Scenic Integrity	Retention (high): 1,515 ac. Partial Retention (moderate): 11,549 ac. Modification (low): 10,242 ac.	Moderate scenic integrity	Maintain or improve existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	2,620 acres under active lease and 800 acres in unleased KPLA area	High potential on leased and KPLA area. Low elsewhere.	Rx 8.2.2 on active leases and 8.2.1 on inactive KPLA areas. Any Rx that does not restrict development of phosphate resources.
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	Active gravel pit adjacent to IRA		Rx that does not impede access
Special Use Permits, Utility Corridors, Other	Outfitter and Guide, railroad spur, slurry pipeline adjacent to IRA		Rx that does not impede permittee

Description:

The Elkhorn Mountain Roadless Area lies within Bannock and Oneida counties in Idaho on the Westside Ranger District. The center of the area is approximately twelve miles north of Malad City, Idaho.

About 5 percent of this IRA is considered unstable with 34 percent of the area with an erosion hazard. Sensitive air quality receptors include Pocatello and McCammon, Idaho. The IRA is inside the twenty-mile radius for Pocatello on the northern end. The remainder of the area is outside the radius. The IRA is not within 200 kilometers of a Class I area.

Watersheds in this IRA have high potential for restoration. More than 79 percent of the area is rated "red" with the remaining 21 percent rated "yellow." Approximately 2.7 miles of 303(d) streams are found in the area. These water quality limited streams include portions of Hawkins Creek and Wrights Creek.

The IRA's vegetation is composed of Douglas-fir, aspen and sagebrush. Past disturbances include the Old Canyon Timber Sale, Station Canyon Timber Sale and a wildfire in Hawkins Canyon in the summer of 2000. This IRA contains large contiguous stands of mature Douglas fir (about 200 acres), occasionally broken by quaking aspen stands, with over 50 percent of the conifer acres ranking "high" for insect hazard. Currently, a Douglas-fir bark beetle infestation is occurring in the stands. Aspen decline is rated moderate due to the late seral status of aspen in the area. The fire hazard rating is considered high, because of the concentrated pattern of old Douglas-fir and the associated fuel buildup. This IRA has the fifth highest number of acres with a "high" fire hazard rating. Invasive species occupy 0.3% of the area. Species include leafy spurge (86 acres), Canada thistle (34 acres) and Musk thistle (22 acres).

Known TES occurrences include lynx (1960's) and Townsends big-eared bat. This IRA is located on the Westside Ranger District and is not considered linkage habitat for lynx. A moderate amount of security areas occurs in this IRA (24 percent) and rates moderate potential for habitat for wolverines and wolves.

This IRA is about half grass/shrub (49 percent) and 24 percent conifer. Based on the amount of forested cover, it ranks as moderate potential for habitat for forest-associated species. Because of the larger amount of grass/shrub and proximity to known sage grouse leks (leks within five miles to the west), this area rates high for providing habitat for sage grouse. Noss, *et al*, (2001) did not rank this site, and for this analysis it is rated as low. Because of the low amount of habitat at high departure from PFC (17 percent), the area ranks as high potential for habitat.

The streams in the north part of this area drain north into the Snake River Basin and are within the range of Yellowstone cutthroat trout. The streams in the southern part of this area drain south into the Malad drainage and are within the range of Bonneville cutthroat trout. The major drainages in this area include Mill, Indian Mill, and Elk Horn Creeks. Mill Creek is unusual in that it splits and flows into both basins. During the 2001 Forest Fish Distribution Survey, the salmonid community in Mill Creek was dominated by non-native rainbow trout, although some native cutthroat trout existed. Indian Mill Creek was dry and only rainbow trout were collected in Elk Horn Creek. These two streams are in the Malad River drainage.

No documented occurrences of rare plants, rare plant communities or plant community reference areas have been recorded. Large-scale restoration opportunities for Douglas-fir and aspen could provide a reference landscape. The Hawkins wildfire area could also provide a reference area for fire recovery in sagebrush/grass habitat.

Approximately 9,759 acres are managed for summer semi-primitive non-motorized recreation. The majority of the area, about 27,767 acres, is managed for summer semi-primitive motorized experiences. The area also contains 1.324 acres of roaded modified experiences and 3,030 acres of roaded natural experiences. The area is managed primarily for winter semi-primitive motorized recreation on 43,450 acres. A small wildlife closure of 273 acres is managed as winter semi-primitive non-motorized.

Scenic integrity is high for the area (8,196 acres) as seen from U.S. Interstate 15 and is managed for retention. The remainder of the area is managed for partial retention (23,032 acres) and modified (low) on 10,749 acres.

No oil and gas or phosphate leases occur. Numerous unpatented locatable mining claims and inactive mines are located adjacent to the IRA, particularly on the northern portion where perlite is present.

One outfitter and guide is permitted to operate in the area. The area also contains the Mill Creek power line.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer, motorized travel on designated routes and winter motorized cross-country in areas that are currently open under the existing Travel Plan.
3. Non-motorized during the summer months.
4. New motorized trail construction should be permitted.

Selected IRA Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Elkhorn Mountain	04156	41,977	2.7.1	7,561	2.7.1	7,561	No change, big game winter range
			2.7.2	5,107	2.7.2	5,107	No change, big game winter range
			2.8.3	2,057	2.8.3	2,057	No change. Riparian/Wetland Emphasis Area
			5.2	0	5.2	1,786	Stable soils, High insect & disease risk, aspen regeneration due to conifer encroachment, high fire hazard rating
			6.2	0	6.2	25,370	Rangeland vegetation and restoration
			6.3	27,156	6.3	0	Shifted acres to new 6.2 Rx, loss some to 5.2 for aspen regeneration, fuel treatments
			8.2.2	1	8.2.2	1	No change, some potential for perlite
			Private	94	Private	94	No change
Total IRA Acres				**41,976**		**41,976**	

Acres from GIS run dated July 26, 2002

Table R.7. IRA Characteristics Re-Evaluation: Elkhorn Mountain # 04156

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	5% Unstable 34% Erosion Hazard	Low	Rx 2.7.1, Rx 3.2, Rx 5.1 and/or Rx 6.2.
Air	**Sensitive Receptors**: Pocatello and McCammon, Idaho.	Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	79% Yellow 21% Green 2.7 miles of 303(d) streams	High restoration potential	Rx 3.3 or Rx 6.2 for restoration of entire watershed
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate High High	Rx 5.2 in Douglas-fir stands adjacent to Old Canyon and Secret timber sales. Remaining area in Rx 6.2
Invasive Plant Species	0.3% of area (142 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	N/A Moderate Moderate Moderate High	Apply Rx 3.1a on large security block (2,000 acres) around Elkhorn Peak. Maintain sagebrush habitats for sage grouse.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low Low	Rx 2.7.1 and Rx 2.7.2 to maintain winter range outlined in Alternative 7.
Fisheries Biological Strongholds	No cutthroat trout strongholds present	Low	Rx 2.8.3 with INFISH in all riparian areas.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** Hawkins wildfire area for burn recovery	Moderate for wildfire area, low elsewhere	Any Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 9,759 acres SPM: 27,767 acres Roaded Modified: 1,324 acres Roaded Natural: 3,030 acres	Moderate value for SPNM and High value for SPM	Maintain existing recreation opportunity setting or create a larger core area for SPNM.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 273 acres (wildlife closure) SPM: 43,450 acres	High value for SPM Low value for SPNM	Maintain existing recreation opportunity setting.
Landscape Character & Scenic Integrity	Retention (high): 8,196 ac. Partial Retention (moderate): 23,032 ac. Modification (low): 10, 749 ac.	High scenic integrity retained for U.S. Interstate 15	Maintain existing scenic integrity.
Oil & Gas	No existing leases	Moderate potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	Some mining adjacent to IRA	Moderate potential on north end, low elsewhere.	No recommendation
Mineral Materials	None	None	
Special Use Permits, Utility Corridors, Other	Outfitter and Guide, Mill Creek Power line		Rx that does not impede permit compliance

#04111 GANNETT (IDAHO PORTION) ≈ 19,690 ACRES

Description:

The Gannett Springs Roadless Area lies on the west side of U.S. Highway 89, northeast of Montpelier, Idaho on the Idaho/Wyoming state line. This IRA is shared between the Caribou National Forest and the Bridger-Teton National Forest. The Bridger-Teton National Forest has the lead responsibility to evaluate the entire roadless area for wilderness as one unit. About 45,122 acres occur on the Bridger Teton National Forest in Wyoming and the remaining 19,700 acres occur on the Caribou National Forest in Idaho. Only the Idaho portion is addressed here.

About 69 percent of the Idaho portion of this IRA is considered unstable with 16 percent of the area having an erosion hazard. Sensitive air quality receptors include Afton, Wyoming, and Soda Springs, Idaho. The area is within the twenty-mile radius for Soda Springs and is within 200 kilometers of a Class I area.

All watersheds within the IRA are rated as "yellow." No 303(d) streams are present.

The IRA's forested vegetation is composed of aspen and aspen/conifer. Very little disturbance has occurred in the area. Aspen decline rating is moderate, because existing aspen in the area are not adequately regenerating. The Insect hazard rating is low due to the limited amount of conifers. The fire hazard rating is considered moderate due to the presence of mixed stands of aspen and conifer. Invasive species affect 0.5 percent of the area. Species include Dyers woad (95 acres), Musk thistle (3 acres) and Yellow toadflax (2 acres).

Known occurrences of wolf (1991) and goshawks have been documented in the IRA. Elk Valley Marsh, a high-elevation wetland lies adjacent to the area. This area rated moderate for lynx linkage habitat based on: 1) the large amount of security areas (48 percent); and 2) the location adjacent to the Sublette Range/Salt River area managed by the Bridger-Teton. The area would have rated higher, but contains only a small amount of conifer cover and few major travel corridors (riparian and major ridges). Because of the moderate amount of security (48 percent), this area also ranks high for wolverine and wolves.

This IRA has little conifer cover (6 percent), ranking it low for forest-associated species. About 54 percent of the area is in grass/shrub cover. The nearest known sage grouse leks lie about five miles to the south. As a result the area is rated high for potential sage grouse habitat.

This IRA lies in Noss' Gannet Hills site. The Noss study mentions that this area has some of the highest game values in Idaho. This area was placed in Quadrant 2 and has an irreplaceability score of 55. For this analysis it is rated moderate.
Based on the amount of vegetation at high departure from PFC (34 percent), this area ranks as moderate potential.

Tributaries of Crow Creek drain the area. Although the Forest has not surveyed these tributaries, they are likely inhabited by Yellowstone cutthroat trout. Yellowstone cutthroat and brown trout inhabit Crow Creek.

A proposed sensitive plant (red glasswort) has been identified adjacent to the IRA at Elk Valley Marsh. Rare plant communities are present, particularly riparian/wetland communities at Julie's Fence, along Crow Creek and in Elk Valley Marsh. Riparian/wetland plant communities along Crow Creek and in Elk Valley Marsh are considered plant community reference areas. Wildlife security areas identified by the Wildlife Biologist could serve as reference landscapes along with restoration of aquatic habitat for cutthroat trout. Elk Valley Marsh adjacent to the Roadless Area has been identified as having a unique reference value. A 200-acre complex around the marsh has been determined to be eligible for future study for inclusion in the Wild and Scenic River system.

Recreation values are high for summer semi-primitive non-motorized with 9,045 acres managed for this use. Approximately 5,450 acres are managed for summer semi-primitive motorized use. The remainder of the area is managed as Roaded modified (4,196 acres) and Roaded natural (1,000 acres). In the winter, the entire area is managed as semi-primitive motorized.

The area is managed for moderate scenic integrity overall. The area around Elk Valley Marsh is managed for high scenic integrity with eight acres managed for preservation (very high). About 1,384 acres are managed for partial retention (moderate) and the remaining 18,300 acres are managed for modification (low).

The IRA lies within the overthrust belt and has a high potential for oil and gas leasing. Three abandoned oil wells are evident on or near the IRA boundary; however there are no existing leases for oil and gas. The area has no known potential for phosphate and there are no existing leases at this time. In addition, no active mines or exploration are occurring in the area for locatable minerals.

The area has no Special Use permits or utility corridors.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized travel on designated routes and winter motorized cross-country.
2. Manage as wilderness to protect deer, elk, moose and Bonneville cutthroat trout populations and close the "Boulevard jeep trail" so that Gannet and Red Mountain can be managed as one.
3. New motorized trail construction should be permitted.
4. Should be managed as wilderness or with similar protections due to highly erodible red soils and outstanding wildlife reserves.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Gannett Spring	04111	19,691	2.5	187	2.5	187	No change, W&S Rivers eligible site corridor at Elk Valley Marsh
			2.7.1	15	2.7.1	15	No change, big game winter range
			2.7.2	11,425	2.7.2	7,353	Readjustment of big game winter range based on actual use, flight data, and local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line.
			2.8.3	1,114	2.8.3	1,114	No change. Riparian/Wetland Emphasis Area
			3.1	0	3.1	4,304	Wildlife security area, Bonneville cutthroat trout habitat, winter motors outside winter range
			3.2	732	3.2	0	Shifted acres to 3.1Rx, no summer motors
			6.1	25	6.1	0	Shifted acres to new 6.2 Rx
			6.2	0	6.2	6,717	Rangeland vegetation management and minor aspen restoration
			6.3	6,191	6.3	0	Shifted acres to new 6.2 Rx and lost acres to application of 3.1Rx.
Total IRA Acres				**19,689**		**19,690**	

Acres from GIS run dated July 26, 2002

Table R.8. IRA Characteristics Re-Evaluation: Gannett Springs (Idaho portion) # 04111

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	69% Unstable 16% Erosion Hazard	High	Rx 2.7.2, Rx 3.2, and/or Rx 6.2.
Air	**Sensitive Receptors**: Afton, Wyoming and Soda Springs, ID.	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow No 303(d) streams	Moderate overall potential	No recommendation
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate Low Moderate	Rx 3.3 for restoration in aspen and aspen/conifer stands. Remaining area in Rx 6.2
Invasive Plant Species	0.5% of area (100 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate High High Low High	Apply Rx 3.1a on large security blocks near Pinnacle and Worm Creek. Maintain low Open motorized road densities. Maintain sagebrush habitat for sage grouse.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate Moderate	Rx 2.7.1 to maintain winter range outlined in Alternative 7. Any Rx that allows treatment in aspen/conifer (2,128 acres).
Fisheries Biological Strongholds	YCT present in Crow Creek and tributaries	High	Rx 2.8.3 with INFISH in all riparian areas. Rx 3.1 in watersheds with YCT strongholds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Red Glasswort Rare Plant Communities: Plant Community reference areas:	Yes Yes Yes	Rx 2.1.1 or Rx 2.5 at Elk Valley Marsh. Site-specific management and mitigation are recommended.
Reference Landscapes	**Unique Reference Value:** Elk Valley Marsh	High for Elk Valley Marsh and wildlife security areas, low elsewhere	Any Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 9,045 acres SPM: 5,450 acres Roaded Modified: 4,196 acres Roaded Natural: 1,000 acres	High value for SPNM Moderate value for SPM	Maintain existing recreation opportunity setting.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 19,709 acres	Moderate value for SPM	Maintain existing recreation opportunity setting.
Landscape Character & Scenic Integrity	Preservation (very high): 8 ac. Partial Retention (moderate): 1,384 ac. Modification (low): 18,300 ac.	Moderate overall and high at Elk Valley Marsh	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	None known	Low potential	No recommendation
Mineral Materials	None	None	
Special Use Permits. Utility Corridors, Other	None		

#04181 GIBSON (IDAHO PORTION) ≈ 8,400 ACRES

Description:

This IRA lies in Franklin County, Idaho and Cache County, Utah. All of the area is on the old Cache National Forest. The Montpelier Ranger District administers the portion of the area within Idaho. The Logan Ranger District of the Wasatch-Cache National Forest administers the Utah portion. The area straddles the Utah-Idaho border and is located about eight miles west of Bear Lake.

The IRA has no unstable soils present and only 20 percent of the area has an erosion hazard. Sensitive air quality receptors include Logan, Utah and Preston, Idaho. The IRA is inside the twenty-mile radius of a sensitive receptor but outside the 200 kilometers of a Class I area. The watersheds within the IRA are all rated "green." No 303(d) streams are present.

The IRA's forested vegetation is composed of aspen and aspen/conifer on the west side with patches of Englemann spruce and lodgepole pine in and adjacent to Franklin Basin. Other forested areas support Douglas-fir. Past disturbance includes the Franklin Basin Timber Sale completed in the mid 1990's. Aspen decline is rated high on the west side in aspen stands and high on the south side where aspen/conifer exists. These areas are rated high because of conifer encroachment and lack of adequate aspen regeneration. The insect hazard rating is high due to the proportion of aging mixed conifer, spruce/fir and lodgepole pine. The fire hazard rating is considered high in mixed aspen/conifer stands and moderate elsewhere in the area. No known invasive species are present.

Known occurrences of goshawks have been documented in the IRA. This area rated high for lynx linkage habitat based on: 1) the amount of forested cover (43 percent); 2) adjacency to the Wasatch-Cache Gibson Roadless Area which is proposed to be managed as roadless (custodial level only); and 3) Logan River and Beaver Creek are major north-south drainages that connect to the Wasatch-Cache National Forest. Because of the low amount of security (19 percent), this area ranks low for wolverine and wolves.

This IRA provides conifer cover on 43 percent of the area ranking it high for forest-associated species. The area has little grass/shrub (21 percent). The nearest known sage grouse leks lie five to ten miles east of the area, and as a result it is rated low for potential sage grouse habitat.

This IRA was not ranked by Noss, *et al*, (2001) and is rated low for this analysis. Based on the amount of vegetation at high departure from PFC (48 percent), this area ranks as low potential.

A sensitive plant, the Cache pensternon, has been documented at Gibson Basin. No rare plant communities have been identified or documented. The area has no documented plant community reference areas. A wildlife security area (1,600 acres) identified by the Wildlife Biologist could serve as a reference landscape. A specific unique reference value has been identified in the tall forb restoration project. In addition, watershed condition for the entire IRA is rated "green" or excellent providing a unique reference value for other watersheds.

The IRA has a moderate value for summer semi-primitive non-motorized recreation experiences. Approximately 3.722 acres are managed for this use. The remainder of the area is managed for Roaded natural (4,686 acres). In the winter, the entire IRA is managed for semi-primitive motorized (8,320 acres).

Scenic integrity is rated moderate to high for the entire IRA with 308 acres managed for retention (high). The remaining 8,100 acres are managed for partial retention (moderate).

The IRA lies within the overthrust belt and rated as high potential for oil and gas. Currently no oil and gas or phosphate leases exist. No active mining or exploration is occurring for locatable minerals. No Special Use Permits or utility corridors are present.

IRA Specific, Prescribed Management Public Comments (Summarized):

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer, motorized travel on designated routes and winter motorized cross-country.

3. Non-motorized during the summer months.
4. New motorized trail construction should be permitted.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Gibson	04181	8,408	2.8.3	236	2.8.3	236	No change. Riparian/Wetland Emphasis Area
			3.2	8,172	3.2	4,149	Manageability of existing uses, access, shifted acres into 3.3 for aspen regeneration due to conifer encroachment
			3.3	0	3.3	3,233	Stable soils, Watershed restoration, aspen regeneration, BCT habitat
			5.2	0	5.2	790	Past harvest area, maintenance of stand integrity, stable soils, aspen regeneration due to conifer encroachment, high fire hazard rating in aspen/conifer
Total IRA Acres				**8,408**		**8,408**	

Acres from GIS run dated July 26, 2002

Table R.9. IRA Characteristics Re-Evaluation: Gibson (Idaho portion) # 04181

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 20% Erosion Hazard	Low	Rx 3.2, and/or Rx 6.2.
Air	**Sensitive Receptors**: Logan, UT and Preston, ID.	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Green No 303(d) streams	High protection potential	Rx 3.1 to protect watershed condition
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High High Moderate to high	Rx 5.1 in Franklin Basin and Rx 3.3 for restoration in aspen and aspen/conifer stands.
Invasive Plant Species	No known invasions	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	High Low Low High Low	Apply Rx 3.1a on large security area between Logan River and Beaver Creek (1,600 acres).
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	High Moderate	Any Rx that allows treatment in aspen and aspen/conifer that are at high departure from PFC and for restoration of tall forb sites converted to tarweed (4,000 acres)
Fisheries Biological Strongholds	Limited Bonneville cutthroat trout population in Beaver Creek.	Moderate	Rx 2.8.3 with INFISH in all riparian areas.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Cache penstemon Rare Plant Communities: Plant Community reference areas:	Yes None None	Site-specific management and mitigation are recommended.
Reference Landscapes	**Unique Reference Value:** Tall forb restoration on tarweed, excellent condition of IRA watersheds.	Moderate to High	Any Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 3,722 acres Roaded Natural: 4,686 acres	Moderate value for SPNM	Maintain existing recreation opportunity setting.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 8,320 acres	High value for SPM	Maintain existing recreation opportunity setting. Consider creating a SPNM area linked to Utah portion of IRA during site-specific travel planning
Landscape Character & Scenic Integrity	Retention (high): 308 ac. Partial Retention (moderate): 8,100 ac.	Moderate to high scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	None known	Low potential	No recommendation
Mineral Materials	None	None	
Special Use Permits, Utility Corridors, Other	None		

Description:

The Hell Hole Roadless Area is within Bear Lake County, Idaho on the Montpelier Ranger District. It lies approximately four miles east of Montpelier.

About 24 percent of the IRA is considered unstable and 49 percent of the area has an erosion hazard. The only sensitive air quality receptor is Montpelier, Idaho. The IRA lies outside the twenty-mile radius around sensitive receptors and is not within the 200-kilometer distance of a Class I area.

Most of the watersheds (92 percent) in this IRA are rated "red." The remaining portion (8 percent) is rated "yellow." No 303(d) streams have been identified for this area. Overall watershed conditions make this IRA high for watershed restoration activities.

The IRA's vegetation is composed of sagebrush, aspen and a minor component of conifers. No past disturbances, such as timber sales or wildfire, have occurred in the area. The aspen decline rating, insect hazard rating, and fire hazard rating are all low for the area due to the small amount of conifer forests present. Invasive species occur on 0.5 percent of the area. Species include Canada thistle (14 acres), spotted knapweed (6 acres), Musk thistle (2 acres), Russian knapweed (1 acre) and Dyers woad (4 acres).

A known TES occurrence was documented for the wolverine in 1992. The area rates low for lynx linkage habitat based on: 1) the lack of forested cover (4 percent); 2) and lack of adjacent suitable habitat. Because there is no security (0 percent), this area ranks low for wolverine and wolves.

This IRA has conifer cover over 4 percent of the area ranking it low for forest-associated species. The area is predominately grass/shrub (80 percent). It is less than five miles from sage grouse leks to the south, and as a result is rated high for potential sage grouse habitat.

This IRA lies in Noss' Gannett Hills site. The Noss study mentions that this area has some of the highest game values in Idaho. This area was placed in Quadrant 2 and has an irreplaceability score of 55. For this analysis it is rated moderate. Based on the amount of vegetation at high departure from PFC (16 percent), this area ranks as high potential.

This roadless area is drained by Montpelier Creek. Non-native fish (brown trout) occur in Montpelier Creek downstream of Montpelier Reservoir. When this stream reach was sampled in 2000, no Bonneville cutthroat trout were observed.

A sensitive plant, the Starveling milkvetch, has been identified at Wood Canyon. No rare plant communities or plant community reference areas have been documented in the IRA. Large-scale watershed restoration opportunities could provide a reference landscape. This reference area would be small for a large-scale reference because of the relatively small acreage within the IRA, less than 10,000 acres. No unique reference value has been identified for this IRA.

The entire IRA is managed in the summer as Roaded natural (5,310 acres). The area does not offer any semi-primitive experiences. In the winter the entire IRA is managed for semi-primitive motorized. The IRA is managed overall for high scenic integrity. Approximately 900 acres are managed for retention (high) with the remaining area managed for partial retention (moderate).

The IRA lies within the overthrust belt and is rated high for oil and gas potential; however no current leases exist. A moderate potential for phosphate occurs particularly around active lease areas. The remainder of the IRA is rated low for phosphate leasing. No active mines or exploration are occurring for locatable minerals. No Special Use Permits or Utility corridors are present. The USFS maintains a radio communication repeater on Hell Hole Peak.

Summarized IRA Specific Public Comments:

1. Allow summer and winter motorized cross–country, except in areas where travel is limited to designated trails or closed under the current Travel Plan.

2. Non-motorized year-round because of the high ecological and year-round recreational value.

3. New motorized trail construction should be permitted in areas where travel is limited under the current Travel Plan.

4. Non-motorized during the summer months

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Hell Hole	04168	5,308	2.1.2	175	2.1.2	509	Increased Rx area for visual quality maintenance in travel corridor
			2.7.1	483	2.7.1	0	Mapping error. Acres shifted to Rx 6.2
			2.8.3	278	2.8.3	278	No change. Riparian/Wetland Emphasis Area
			3.2	1,352	3.2	0	Shifted acres to new 6.2 Rx for rangeland vegetation management and restoration
			6.2	0	6.2	4,522	Watershed restoration, rangeland vegetation management and restoration for sage grouse, depressed fisheries
			6.3	3,020	6.3	0	Shifted acres to new 6.2 Rx for rangeland vegetation management and restoration for sage grouse
Total IRA Acres				**5,308**		**5,309**	

Acres from GIS run dated July 26, 2002

Table R.10. IRA Characteristics Re-Evaluation: Hell Hole # 04168

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	24% Unstable 49% Erosion hazard	Moderate	Rx 2.7.1, Rx 3.2, or Rx 6.2
Air	**Sensitive Receptors:** Montpelier, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	92% Red 8% Yellow No 303(d) streams	High restoration potential	Rx 3.3 or Rx 6.2
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Low Low Low	Rx 3.3 or Rx 6.2 for watershed restoration.
Invasive Plant Species	0.5% of the IRA (27 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Low Low Low Low High	Maintain sagebrush for sage grouse.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate Low	No recommendation
Fisheries Biological Strongholds	Non-native brown trout, no Bonneville cutthroat trout.	Low	Rx 2.8.3 with INFISH in all riparian areas
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Starveling milkvetch Rare Plant Communities: Plant Community reference areas:	Yes None None	Site-specific management and mitigation are recommended. Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None	Low	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	Roaded Natural: 5,310acres	N/A	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 5,310 acres	High value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 903 ac. Partial Retention (moderate): 4,405 ac.	High scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	Moderate to low potential around leased acreage, low elsewhere in IRA	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	USFS radio repeater		

#04165 HUCKLEBERRY BASIN ≈ 21,100 ACRES

Description:

The Huckleberry Basin Roadless Area is within Caribou and Bear Lake Counties in Idaho on the Soda Springs Ranger District. The area is approximately six miles east of Soda Springs, Idaho.

Only 4 percent of the area is considered unstable and only 19 percent of the area has an erosion hazard. Sensitive air quality receptors include Soda Springs, Idaho. The IRA lies outside the twenty-mile radius of Soda Springs and is not within 200 kilometers of a Class 1 area.

All of the watersheds within the IRA are rated "yellow." Approximately 1.4 miles of 303(d) streams have been identified along Slug Creek.

The IRA's vegetation is composed of aspen, aspen/conifer, Douglas-fir, mixed conifer, and lodgepole pine. Approximately 50 percent of this IRA has been brought under active timber management from the 1980's through the mid 1990's. Several timber sales have occurred, including Big Basin, Wild Flat, Huckleberry, Upper Fossil, The Hole, Rattlesnake, and Upper Dry. This IRA has experienced the heaviest timber management of any of the thirty-four IRAs on the Forest. Aspen decline, insect hazard and fire hazard ratings are all considered moderate due to late seral aspen and lack of regeneration, the presence of older conifer, and the associated fuel buildup in mixed conifer, Douglas-fir and lodgepole pine. Invasive species occur on 2.1 percent of the IRA land base. Species include Canada thistle (39 acres), Dyers woad (310 acres), Musk thistle (54 acres) and Yellow toadflax (39 acres).

Known occurrences of lynx (1973), goshawks and great gray owls have been documented in the IRA. Allowing cross-country travel may conflict with mule deer movements to and from Soda Hills winter range. Swan Lake and Lakey Reservoir appear to be somewhat unique areas; Swan Lake, from a geological perspective and Lakey Reservoir as a low-elevation wetland. This area rated moderate for lynx linkage habitat based on: 1) the presence of a northeast-southwest ridge, which could provide a movement corridor; 2) the area has 28 percent conifer cover; and 3) and only about 8 percent of the area is available for wildlife security areas. Because of the low amount of security (8 percent), this area ranks low for wolverine and wolves.

This IRA has conifer cover over 28 percent of the area ranking it moderate for forest-associated species, with about 22 percent aspen and 16 percent aspen/conifer. About 33 percent of the area is covered in grass/shrub. The area is about five to ten miles from the nearest known sage grouse leks. It is rated moderate for sage grouse.

Parts of this roadless area lie in two of Noss' sites. The Bear River Range site was placed in Quadrant 2 and has an irreplaceability score of 57. The Blackfoot-Salt site is part of the southeast Idaho phosphate belt and includes relatively recent lava flows. The area supports substantial aspen and willow bottoms. This site was placed in Quadrant 2 but has a high irreplaceability score of 88. For this analysis it is rated as moderate. Based on the amount of vegetation at high departure from PFC (38 percent), this area ranks as moderate potential.

The area is drained by Johnson Creek, which was surveyed in 2000 for fish. Only non-native brook trout were observed.

No rare plants or rare plant communities have been documented in this area. The riparian/wetland plant communities at "The Ponds" in Big Basin are considered a plant community reference area, although the area is relatively small. No unique reference value has been identified for this IRA; however the area could be a reference landscape for limited 'natural setting" restoration opportunities.

The majority of the IRA, 15,079 acres, is managed for summer semi-primitive motorized use. The remainder of the area is managed as Roaded modified (6,029 acres). In the winter, the entire IRA is managed for a semi-primitive motorized experience. The area is managed for moderate scenic integrity. Approximately 11,319 acres are managed for Partial Retention (moderate) and the remaining 9,789 acres are managed for Modified (low).

The IRA lies within the overthrust belt and has a high potential for oil and gas; however, there are no existing leases. High potential exist for phosphate on actively leased areas and on KPLA areas. The IRA contains 3,225 acres of existing phosphate leases which are all undeveloped at this time. An additional 3,300 acres of KPLA exists along with 1,500 acres in existing phosphate lease modification, fringe lease prospecting permits, and exploration license applications which are included in the KPLA acres. No active mining or exploration for locatable minerals is occurring.

One outfitter and guide is permitted to operate in the area. No utility corridors are present. This is a favorite area and heavily used by the public for firewood gathering.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer and winter motorized cross–country, except in areas where travel is limited to designated trails or closed under the current Travel Plan.
3. Non-motorized during the summer months.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Huckleberry Basin	04165	21,108	2.7.1	2,975	2.7.1	2,975	No change, big game winter range
			2.8.3	781	2.8.3	781	No change. Riparian/Wetland Emphasis Area
			3.2	16,552	3.2	0	Shifted acres to new 5.2 Rx
			5.2	0	5.2	17,352	Stable soils, past harvest area, timber stand integrity, moderate watershed condition, management access
			6.3	800	6.3	0	Shifted acres to new 5.2 Rx for aspen regeneration, management access to past harvest areas
Total IRA Acres				**21,108**		**21,108**	

Acres from GIS run dated July 26, 2002

Table R.11. IRA Characteristics Re-Evaluation: Huckleberry Basin # 04165

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	4% Unstable 19% Erosion hazard	Low	Rx 2.7.1, Rx 3.2, Rx 6.2, Rx 8.2.2
Air	**Sensitive Receptors:** Soda Springs	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow 1.4 miles of 303(d) streams on Slug Creek	High restoration potential in Slug Creek watershed, low elsewhere	Rx 3.3 or Rx 6.2 on Slug Creek watershed. No recommendation for the remainder of the area.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate Moderate Moderate	Rx 5.1 for active timber management and access to past harvest areas.
Invasive Plant Species	2.1% of the IRA (442 acres)	High	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate Low Low Moderate Moderate	Maintain open motorized route densities and restrict travel to designated routes.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate Moderate	Maintain winter range Rx as in Alt.7. Allowing x-county travel may conflict with mule deer movement to and from Soda Hills. Any Rx that allows restoration for aspen/conifer stands (3,500 acres).
Fisheries Biological Strongholds	Non-native brook trout in Johnson Creek	Low	Rx 2.8.3 with INFISH in all riparian areas
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: The Ponds Plant Community reference areas: The Ponds wetland/riparian areas	None Yes Yes	Site-specific management and mitigation are recommended. Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None	Low	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 15,079 acres Roaded Modified: 6,029acres	Moderate value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 20,103 acres	High value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Partial Retention (moderate): 11,319 ac. Modification (low): 9,789 ac.	Moderate scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	Existing leases: 3,325 acres KPLA areas: 3,300 acres Other: 1,500 acres	High potential on leased and KPLA areas, moderate to low elsewhere	Rx 8.2.2 on active leases, Rx 8.2.1 for inactive leases, KPLA areas, and land where permit action is currently occurring.
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Bear River Outfitter and Guide, Heavy use by public for firewood		Any Rx that does not impede permit compliance.

#04175 LIBERTY CREEK ≈ 15,150 ACRES

Description:

This roadless area lies in Bear Lake and Franklin counties in Idaho on the Cache National Forest administered by the Montpelier Ranger District. It is approximately twelve miles west of Montpelier, south of State Highway 36.

No unstable areas have been identified in this IRA. Approximately 44 percent of the area has an erosion hazard. Sensitive air quality receptors include Soda Springs and Montpelier, Idaho. The IRA is inside the twenty-mile radius of a sensitive receptor. It is not within 200 kilometers of a Class I area.

All of the watersheds in this IRA are rated "yellow." No 303(d) streams are present.

The IRA's vegetation is composed predominantly of aspen, aspen/conifer, spruce/fir, mixed conifer, and Douglas-fir. Past disturbances include timber harvests from the mid to late 1980's in Green Basin, Dry Basin, Mahogany Basin, and Emigration Flat. Aspen decline is rated as moderate due to the large areas where conifer is encroaching into aspen. A lack of adequate aspen regeneration is also evident. The insect hazard rating is also considered moderate because of the mixed species composition and aging conifer stands of spruce/fir and Douglas-fir. The fire hazard rating is considered high as a result of aging aspen/conifer, mixed conifer, and spruce/fir stands. No infestations of invasive species have been identified in the area.

One wolf occurrence was recorded in 1990 in this IRA. The area rated moderate for lynx linkage habitat based on: 1) the amount of forested cover (32 percent); 2) low security (10 percent); and 3) the presence of north-south ridges that may function as travel corridors. Because of the low amount of security (10 percent), this area ranks low for wolverine and wolves.

This IRA has conifer cover over 32 percent of the area ranking it moderate for forest-associated species. About 23 percent of the area is covered with grass/shrub. Sagebrush is found in smaller patches. The area is five to ten miles from the nearest known sage grouse leks, and as a result is rated low for potential sage grouse habitat.

This IRA was not ranked by Noss, *et al*, (2001) and is rated low for this analysis. Based on the amount of vegetation at high departure from PFC (53 percent), this area ranks as low potential.

The major drainages in this area include Copenhagen and Mill Creeks. Copenhagen was fishless on the Forest in 2000. Bonneville Cutthroat trout dominated the salmonid community in Mill Creek. Brook trout were also present.

No rare plants, rare plant communities, or plant community reference areas have been identified or documented in this IRA. No unique reference value has been identified for this IRA; however large-scale restoration opportunities for aquatic habitat could serve as a reference landscape.

The area is primarily managed in the summer for semi-primitive motorized recreation experiences on 6,950 acres. The remainder of the IRA is managed as Roaded Natural (8,197 acres). In the winter, the entire IRA is managed for semi-primitive motorized recreation experiences.

The IRA is managed for high scenic integrity along and adjacent to the Highline National Recreation Trail (6,220 acres). Approximately 8,310 acres are managed for Partial retention (moderate), and the remaining 617 acres are managed for Modification (low).

The area lies within the overthrust belt. Although the potential of oil and gas reserves is high, there are no existing leases. The area has no known potential for phosphate. No active mining or exploration for locatable minerals is occurring in the area.

A Special Use Permit authorizes water transmission ditches along Mink Creek. A power line runs through Copenhagen Canyon.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.

2. Allow summer and winter motorized cross–country.

3. Non-motorized during the summer months.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Liberty Creek	04175	15,147	2.1.2	105	2.1.2	255	Minor adjustment to boundary for visual quality and maintenance of travel corridor expanded
			2.8.3	449	2.8.3	449	No change. Riparian/Wetland Emphasis Area
			3.2	14,057	3.2	2,260	Manageability of existing uses/access, lost some acres to 3.3 for aspen regeneration, old growth mgt.
			3.3	0	3.3	10,290	Stable soils, moderate watershed conditions, BCT habitat, aspen regeneration due to conifer encroachment, old growth spruce and fir protection
			5.1	22	5.1	0	Shifted acres to new 5.2 Rx
			5.2	0	5.2	1,413	Past timber harvest area, maintenance of stand integrity, high fire hazard rating in mixed aspen/conifer, aspen regeneration
			6.1	481	6.1	0	Shifted acres to new 6.2 Rx for rangeland vegetation management and restoration
			6.2	0	6.2	451	Rangeland vegetation management and restoration of Non-forested vegetation toward PFC
			8.1u	33	8.1u	29	Minor boundary adjustment, utility corridor
Total IRA Acres				**15,147**		**15,147**	

Acres from GIS run dated July 26, 2002

Table R.12. IRA Characteristics Re-Evaluation: Liberty Creek # 04175

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 44% Erosion hazard	Low	Rx 3.2, Rx 5.1 or Rx 6.2
Air	**Sensitive Receptors:** Soda Springs, ID and Montpelier, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow No 303(d) streams	Moderate overall condition	No recommendation
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate Moderate High	Rx 5.1, Rx 5.2 of Rx 3.3 to maintain timber sale areas, reduce fire hazard, and regenerate healthy aspen
Invasive Plant Species	No known infestations	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate Low Low Moderate Low	No increase in motorized access on major north-south ridges, except Highline Trail.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low High	Any Rx that allows restoration treatment in aspen/conifer (2,658 ac.)
Fisheries Biological Strongholds	Bonneville cutthroat trout present in Mill Creek.	Low	Rx 2.8.3 with INFISH in all riparian areas, Rx 3.1 in BCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Large-scale opportunities for aquatic habitat restoration	Moderate for BCT watersheds and aspen restoration, low elsewhere.	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 6,950 acres Roaded Natural: 8,197 acres	High value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 15,146 acres	Very high value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 6,220 ac. Partial Retention (moderate): 8,310 ac. Modification (low): 617 ac.	High scenic integrity along Highline National Recreation Trail	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Water transmission ditch in Mink Creek, power line in Copenhagen Canyon		Any Rx that does not impede permit compliance.

#04167 MEADE PEAK ≈ 44,585 ACRES

Description:

The Meade Peak Roadess Area lies in Caribou and Bear Lake counties in Idaho and is administered by the Montpelier Ranger District. The center of this IRA is approximately twenty miles southwest of Afton, Wyoming.

Approximately 17 percent of the area is considered unstable; however, about 64 percent of the area is considered an erosion hazard. Sensitive air quality receptors include Soda Springs and Montpelier, Idaho. The IRA is outside the twenty-mile radius of these sensitive receptors and is not within 200 kilometers of a Class I area.

The majority of the watersheds (67 percent) in the IRA are rated as "yellow." The remaining 37 percent is rated "red." No 303(d) streams are present.

The IRA's forested vegetation is composed of aspen, aspen/conifer, Douglas-fir, lodgepole pine, and mixed conifer. A wildfire occurred in the early 1900's in the area. In addition, the Snowdrift area was treated with prescribed fire, and two timber sales, Clear Creek and Home Canyon, have occurred in the area. The aspen decline rating is high due to older aspen stands and the lack of aspen regeneration in these areas. Conifer encroachment is also evident in many of the aspen stands. The insect hazard and fire hazard ratings are considered moderate, because of the small amount of old growth conifers overall. Some stands of older lodgepole pine exist. Approximately 1.4 percent of the IRA contains invasive species. These species include Canada thistle (11 acres), Dyers woad (547 acres), and Musk thistle (52 acres).

Known occurrences have been documented for lynx (1960's), wolf (1991) and goshawks in the IRA. The area rated moderate for lynx linkage habitat based on: 1) the amount of security areas (31 percent); and 2) the major ridge along Snowdrift Mountain and the major drainage along the Montpelier Canyon drainage. Because of the moderate amount of security (27 percent), this area also ranks moderate for wolverine and wolves.

This IRA has little conifer cover (18 percent) ranking it low for forest-associated species. About 52 percent of the area has grass/shrub cover, which is within five miles of the nearest known sage grouse leks. As a result the area is rated high for potential sage grouse habitat.

This IRA lies in Noss' Gannett Hills site. The Noss study mentions this area has some of the highest game values in Idaho. This area was placed in Quadrant 2 and has an irreplaceability score of 55. For this analysis it is rated moderate. Based on the amount of vegetation at high departure from PFC (31 percent), this area ranks as moderate potential.

The northern part of this area is drained by Crow Creek and is within the Snake River Basin. It is in the range of Yellowstone cutthroat trout. Crow Creek is considered a Yellowstone cutthroat trout stronghold stream. Most of the area drains into the Bear River Basin. Primary streams include Preuss, Montpelier, Georgetown, and Dunns Creeks. Of those streams, Preuss and Whiskey Creek (tributary to Montpelier Creek) are Bonneville cutthroat trout stronghold streams.

Two proposed sensitive plants, Unita Basin Cryptantha and Starveling milkvetch have been documented in Snowslide Canyon and Whiskey Flat. Rare upland plant communities are found within the Meade Peak Research Natural Area and within wetland/riparian communities at the Preuss Creek headwaters on State and Forest Service lands. Meade Peak RNA and the riparian/wetland communities around the Preuss Creek headwaters are considered plant community reference areas. The large wildlife security area identified by the Wildlife Biologist could serve as a reference landscape. The Meade Peak RNA and the Snowdrift prescribed fire treatment area could also serve as unique references values in this RNA.

This IRA is managed in the summer for semi-primitive non-motorized recreation on 9,827 acres and semi-primitive motorized on 11,403 acres. In the winter, a wildlife closure of 6,400 acres is managed as semi-primitive non-motorized. The remaining 34,277 acres are managed for semi-primitive motorized recreation experiences.

Retention of high scenic integrity is maintained along and adjacent to Highway 30, the city of Georgetown, Idaho and Crow Creek Road. Partial retention (moderate) is maintained on 28,457 acres, while Modification (low) scenic integrity is maintained on 13,084 acres.

The IRA lies within the overthrust belt and has a high potential for oil and gas reserves; however, there are no existing oil and gas leases

in the area. The IRA borders on mined areas in the northwest section in Georgetown Canyon. An underground mine area is located in the southwest corner of the IRA in Home Canyon. Approximately 1,140 acres are leased for phosphate mining. An additional 2,580 acres have been identified as a KPLA area. High potential exists for phosphate ore on the leased acreage and in the KPLA area. Moderate to low potential exists around the leased acreage. The remainder of the IRA has a low potential for phosphate. No active mining or exploration for locatable minerals is occurring in the area.

No Special Uses and no utility corridors are found in the area. The State of Idaho owns a 636-acre in holding.

Summarized IRA Specific Public Comments:

1. Allow summer and winter motorized cross–country, except in areas where travel is limited to designated trails or closed under the current Travel Plan.
2. Non-motorized year-round because of the high ecological and year-round recreational value.
3. New motorized trail construction should be permitted.
4. Non-motorized during the summer months.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Meade Peak	04167	44,587	2.1.2	64	2.1.2	350	Increased Rx area for visual quality maintenance along travel corridors
			2.2	309	2.2	309	No change, Research Natural Area, landscape reference site, rare plants
			2.7.1	1,052	2.7.1	680	Lost some acres to 3.1 for wildlife security area and readjustment of big game winter range based on actual use, flight data, local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line.
			2.7.2	7,002	2.7.2	6,952	Lost some acres to 3.1 for wildlife security area
			2.8.3	2,229	2.8.3	2,229	No change. Riparian/Wetland Emphasis Area
			3.1	0	3.1	4,692	Wildlife security area, non-motorized year-round, lynx, wolverine and goshawk presence
			3.2	29,541	3.2	0	Lost acres to wildlife security area, shifted remaining area to new 6.2 Rx for rangeland restoration
			5.2	0	5.2	1,075	Home Canyon timber harvest area, maintenance of stand integrity, management access, aspen regeneration due to conifer encroachment
			6.1	85	6.1	0	Shifted acres to new 6.2 Rx for rangeland vegetation management and restoration
			6.2	0	6.2	28,298	YCT habitat, BCT habitat, Rangeland vegetation management and restoration
			6.3	4,277	6.3	0	Shifted acres to new 6.2 Rx for rangeland vegetation management and restoration
			8.1u	28	8.1u	0	Mapping error
Total IRA Acres				**44,587**		**44,585**	

Acres from GIS run dated July 26, 2002

Table R.13. IRA Characteristics Re-Evaluation: Meade Peak # 04167

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	17% Unstable 64% Erosion hazard	Moderate	Rx 2.2, Rx 2.7.1, Rx 2.7.2, Rx 3.2, or Rx 6.2
Air	**Sensitive Receptors:** Montpelier and Soda Springs, Idaho	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	37% Red 63% Yellow No 303(d) streams	Moderate restoration potential	Rx 3.3 for watershed restoration
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Moderate Moderate	Rx 3.3 or Rx 6.2 for watershed and aspen restoration. Rx 5.1 on small acreage in Home Canyon and Clear Creek Timber Sale areas.
Invasive Plant Species	1.4% of the IRA (610 acres)	Medium	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate Moderate Moderate Low High	Rx 3.1a on security area that is east of Meade Peak (Beaver Dam Creek area). Maintain sagebrush for sage grouse.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate Moderate	Maintain winter range outlined in Alternative 7. Any Rx that would allow treatment of aspen (4,518 acres).
Fisheries Biological Strongholds	Yellowstone cutthroat trout in Crow Creek. BCT trout in Preuss Creek.	High	Rx 2.8.3 with INFISH in all riparian areas. Rx 3.1 on YCT and BCT watershed strongholds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Unita Basin Cryptantha and Starveling milkvetch Rare Plant Communities: Meade Pk RNA and Preuss Creek Plant Community reference areas: RNA and Preuss Creek	Yes Yes Yes	Rx 2.2 on Meade Peak RNA, Rx that is non-motorized in the summer in Cryptantha and milkveetch habitat. Site-specific management and mitigation are recommended.
Reference Landscapes	**Unique Reference Value:** Rx burn area in Snowdrift, RNA	High Overall	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 9,827 acres SPM: 11,403 acres	High value for SPNM and SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 6,400 acres SPM: 38,277 acres	High value for SPM Moderate value for SPNM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 3,045 ac. Partial Retention (moderate): 28,457 ac. Modification (low): 13,084 ac.	High scenic integrity on Hwy 30, George-town and Crow Creek Rd.	Maintain or improve existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	Leased: 1,140 acres KPLA areas: 2,580 acres	High potential on leased and KPLA area, moderate to low elsewhere	Rx 8.2.2 on active leases, Rx 8.2.1 on KPLA areas. No recommendation for remaining area.
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	636 acres of State land in-holdings		

Description:

The Mink Creek Roadless Area lies within Franklin and Bear Lake Counties in Idaho on a portion of the old Cache National Forest now administered by the Montpelier Ranger District. It is located about twenty miles northeast of Preston, Idaho.

No unstable areas are found in this IRA. Approximately 28 percent of the area has an erosion hazard. Sensitive air quality receptors include Preston, Soda Springs, and Montpelier, Idaho. None of these sensitive receptor areas are within the twenty-mile radius. The IRA is not within 200 kilometers of a Class I area.

All of the watersheds in this IRA are rated as "yellow." Approximately 0.6 miles of Mink Creek has been identified on the State of Idaho's 303(d) list as being water quality limited.

The IRA's forested vegetation is composed of aspen, Douglas-fir, aspen/conifer, mixed conifer, and maple. Past disturbances include the Dry Basin and Mass Canyon timber sales in the early 1990's and located adjacent to the IRA. The aspen decline, insect and fire hazard ratings are all considered moderate in this IRA due to the presence of aging Douglas-fir, mixed conifer stands, and older aspen stands that are not experiencing adequate regeneration. Invasive species occupy approximately 0.2 percent of the IRA. Species include Canada thistle (13 acres), Musk thistle (2 acres), poison hemlock (14 acres) and Russian knapweed (5 acres).

One wolf occurrence (1993) and goshawks have been documented in the IRA. This area rated moderate for lynx linkage habitat based on: 1) the amount of forested cover (26 percent); 2) low security (13 percent); and 3) the presence of the Mink Creek drainage that may function as a travel corridor. Because of the low amount of security (13 percent), this area ranks low for wolverine and wolves.

This IRA has conifer cover over 26 percent of the area ranking it moderate for forest-associated species. About 14 percent of the area is in grass/shrub cover in smaller patches. The IRA is between five and ten miles from the nearest known sage grouse leks, and as a result is rated low for potential sage grouse habitat.

This IRA is in part of Noss' Bear River Range site. This site was placed in Quadrant 2 and has an irreplaceability score of 57. It is rated as moderate for this analysis. Based on the amount of vegetation at high departure from PFC (41 percent), this area ranks as low potential.

The major drainages in this area include Strawberry and Mink Creeks. Strawberry Creek was fishless when sampled on the Forest in 2001. A low frequency of Bonneville cutthroat trout was observed by DEQ on private land downstream in 2000. Mink Creek was dominated by brook trout; although a low frequency of Bonneville cutthroat trout remain in the stream.

No rare plants, rare plant communities or plant community reference areas have been documented in the IRA. No unique reference value has been identified. Large-scale restoration opportunities for the Mink Creek watershed could serve as a reference landscape.

The majority of the IRA (10,193 acres) is managed in the summer for semi-primitive motorized experiences. The remainder of the IRA is managed as Roaded Natural (6,151 acres). In the winter, the entire IRA is managed for semi-primitive motorized use.

High scenic integrity retention is maintained adjacent to Highway 36 and the Highline National Recreation Trail. Partial retention (moderate) is maintained on 12,294 acres. Modification (low) is maintained on 776 acres.

The eastern portion of the IRA lies within the overthrust belt and has a high potential for oil and gas reserves; however, no oil and gas leases currently exist. The western portion of the IRA has a moderate potential for oil and gas reserves. The area does not contain any phosphate leases and no known phosphate potential exists in the area. No active mining or exploration is occurring for locatable minerals.

A water diversion for the Mink Creek Power Plan is managed under a Special Use Permit. A power line is adjacent to the southern boundary of the IRA.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer and winter motorized cross–country.
3. Non-motorized during the summer months.
4. Area should be non-motorized during the winter to provide cross-country skiers with semi-primitive recreation opportunities.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Mink Creek	04176	16,344	2.1.2	150	2.1.2	357	Increased Rx area for visual quality maintenance along travel corridors
			2.7.2	5,763	2.7.2	5,763	No change, big game winter range
			2.8.3	579	2.8.3	579	No change. Riparian/Wetland Emphasis Area
			3.2	9,529	3.2	6,915	Manageability of existing uses/access, lost some acres to 5.2 Rx
			5.1	2	5.1	0	Shifted acres to new 5.2 Rx
			5.2	0	5.2	2,702	Dry Basin past harvest area, maintenance of stand integrity, stable soils, mgt. access, moderate watershed conditions
			6.1	292	6.1	0	Shifted acres to new 5.2 Rx for aspen regeneration
			8.1u	28	8.1u	28	No change, utility corridor
Total IRA Acres				**16,343**		**16,344**	

Acres from GIS run dated July 26, 2002

Table R.14. IRA Characteristics Re-Evaluation: Mink Creek # 04176

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 28% Erosion hazard	Low	Rx 2.7.1, Rx 3.2, Rx 5.2 or Rx 6.2
Air	**Sensitive Receptors:** Preston, Soda Springs, and Montpelier, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow 0.6 miles of 303(d) streams on Mink Creek	Moderate restoration potential for Mink Creek watershed	Rx 3.1 or Rx 3.3 for Mink Creek watershed. No recommendation for the remaining area.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate Moderate Moderate	Rx 3.3 or Rx 6.2 for watershed restoration. Small expansion of Rx 5.1 adjacent to past sale areas for management.
Invasive Plant Species	0.2% of the IRA (34 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate Low Low Moderate Low	Rx 3.1a and maintain low development of new roads/trails in Mink Creek drainage bottom.
Wildlife Biological Strongholds	Reed Noses Findings: Departure from Vegetation PFC:	Moderate High	Rx 2.7.2 outlined in Alternative 7 and any Rx that allows restoration of aspen/conifer (6,750 acres)
Fisheries Biological Strongholds	Low densities Bonneville cutthroat trout in Mink Creek	Moderate	Rx 2.8.3 with INFISH in all riparian areas
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Large-scale restoration of Mink Creek watershed.	Moderate for Mink Creek, low elsewhere	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 10,193 acres Roadbed Natural: 6,151 acres	High value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 16,343 acres	High value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 3,274 ac. Partial Retention (moderate): 12,294 ac. Modification (low): 776 ac.	High scenic integrity on Hwy 36 and the Highline Nat'l Recreation Trail	Maintain or improve existing scenic integrity.
Oil & Gas	No existing leases	High potential in eastern section, moderate potential in western section	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Water diversion-Mink Cr. Power plant, power line adjacent to southern boundary		Rx that does not impede permit compliance.

#04758 MOUNT NAOMI (IDAHO PORTION) ≈ 28,115 ACRES

Description:

The Idaho portion of this IRA lies within Franklin County, Idaho. The west edge of the area is about four miles east of the community of Franklin, Idaho. The Mount Naomi Roadless Area originally included a combined area of 94,068 acres in Utah on the Wasatch-Cache National Forest and a portion in Idaho on the old Cache National Forest administered by the Caribou National Forest. Utah wilderness legislation in 1984 designated 44,350 acres of the roadless area in Utah as wilderness. The public was notified at that time that the Idaho portion would be evaluated and any recommendations included in the Caribou National Forest Plan, rather than the entire area being included in the Wasatch-Cache National Forest Plan.

The IRA contains no unstable areas. About 20 percent of the area has an erosion hazard. Sensitive air quality receptors include Preston, Idaho and Logan Utah. The IRA is inside the twenty-mile radius of sensitive receptors. It is not within 200-kilometers of a Class I area.

Approximately 72 percent of the watersheds in the IRA are rated "yellow." The remaining 28 percent are rated "green." The area contains 1.3 miles of 303(d) stream segments along Maple Creek.

The IRA's vegetation is composed of maple, sagebrush, aspen, Douglas-fir, mixed conifer, and spruce/fir. In the early 1990's the Forest completed the Franklin Basin Timber Sale, immediately adjacent to the IRA, because of spruce beetle infestations. The aspen decline, insect hazard, and fire hazard ratings are all considered to be moderate in the area. Older aspen stands are not regenerating adequately and are experiencing conifer encroachment. Aging conifer and aspen with a component of mixed conifer are evident in the area. Invasive species occupy 2.4 percent of the IRA. Species include Canada thistle (100 acres), Dyers woad (562 acres) and Whitetop (2 acres).

Known occurrences have been documented for goshawks and wolverine (1993) in the IRA. This area rated high for lynx linkage habitat based on: 1) the amount of forested cover (20 percent); 2) adjacency to a Wasatch-Cache National Forest roadless area that is currently being proposed for wilderness; 3) the Wilderness Peak ridge, a north-south ridge that connects to the Wasatch-Cache National Forest and 4) high security (40 percent). Because of the high amount of security (40 percent), this area ranks high for wolverine and wolves.

Conifer vegetation covers about 20 percent of the IRA ranking it low for forest-associated species. Grass/shrub vegetation occurs on about 29 percent, but is over ten miles from the nearest known sage grouse leks. As a result, the area is not rated as potential sage grouse habitat.

This IRA was not ranked by Noss, *et al*, (2001) and is rated low for this analysis. Based on the amount of vegetation at high departure from PFC (27 percent), this area ranks as moderate potential.

Bonneville cutthroat trout strongholds exist in every major drainage in the area, including Logan River, Maple Creek, Sugar Creek and Cub River. Non-native salmonids exist in Cub River. Brook trout have established a self-sustaining population, and rainbow trout are stocked annually.

The Cache penstemon, a sensitive plant, has been documented at Wilderness Peak, Hodge Nibley Creek, Crooked Creek, White Canyon and Franklin Basin. No rare plant communities or plant community reference areas have been documented in the area. Wildlife security areas identified by the Wildlife Biologist could serve as a reference landscape, as well as large-scale restoration opportunities for aquatic habitat. The portion of the IRA recommended for wilderness is considered a unique reference value for this IRA.

The majority of the IRA (14,343 acres) is managed in the summer for semi-primitive non-motorized experiences. Approximately 1,431 acres are managed in the summer for semi-primitive motorized recreation experiences and 349 acres are managed for Roaded Modified. The remainder of the IRA is managed as Roaded Natural (12,342 acres). In the winter, approximately 28,077 acres are managed for semi-primitive non-motorized use.

The area is managed for very high scenic integrity because of its juxtaposition to the Utah wilderness portion. High scenic integrity retention is maintained on 1,744 acres. Partial retention (moderate) is maintained on 13,866 acres. Modification (low) is maintained on 12,505 acres.

The potential for oil and gas reserves is moderate to high; however the area does not have any current oil and gas leases at this time. No known potential exists for phosphate ore. No active mining or exploration for locatable minerals is occurring.

The IRA contains 40 acres of private land in-holdings.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized travel on designated trails under the current Travel Plan.
2. Designate it as wilderness, to protect critical "core" habitat areas and encourage the preservation and maintenance of the conservation corridor.
3. Winter motorized cross-country travel, except in areas where travel is closed under the current Travel Plan.
4. New motorized trail construction should be permitted in area where travel is limited under the current Travel Plan.
5. Allow snowmobiling in wilderness recommendation areas.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Mount Naomi	04758	28,116	1.3	13,509	1.3	12,711	Readjustment of big game winter range based on actual use, flight data, and local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line.
			2.7.2	1,554	2.7.2	2,401	Increased Rx area for manageability to topographic/cultural feature
			2.8.3	1,501	2.8.3	1,501	No change. Riparian/Wetland Emphasis Area
			3.2	11,166	3.2	9,343	Manageability of existing uses/access, lost some acres to new 5.2 Rx
			4.3	0	4.3	331	Cub River Special Recreation Management Area
			5.2	0	5.2	1,829	Past harvest areas, maintenance of timber stand integrity, management access, minor aspen regeneration
			6.1	386	6.1	0	Shifted acres to new 5.2 Rx for aspen regeneration due to late seral aspen stands, lack of natural regeneration
Total IRA Acres				**28,116**		**28,116**	

Acres from GIS run dated July 26, 2002

Table R.15. IRA Characteristics Re-Evaluation: Mount Naomi (Idaho Portion) # 04758

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 20% Erosion hazard	Low	Rx 1.3, Rx 3.1, Rx 5.1, and Rx 6.2
Air	**Sensitive Receptors:** Preston, ID and Logan, UT	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	72% Yellow 28% Green 1.3 miles of 303(d) streams on Maple Creek	High restoration potential	Rx 3.1 or Rx 3.3 for Maple Creek watershed. No recommendation for the remaining area.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate Moderate Moderate	Rx 3.3 or any prescription compatible with Rx 1.3 to promote aspen regeneration in the area.
Invasive Plant Species	2.4% of the IRA (664 acres)	High	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	High High High Low N/A	Rx 1.3 for wilderness portion, Rx 3.1a in Wilderness Peak ridge area to maintain low road density and connectivity of habitat with adjacent wilderness and roadless areas to the south on the Wasatch-Cache National Forest.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low Moderate	Rx 2.7.2 as outlined in Alternative 7
Fisheries Biological Strongholds	Bonneville Cutthroat trout strongholds present in all major drainages.	High	Rx 2.8.3 with INFISH in all riparian areas, and Rx 3.1 in all BCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Cache penstemon Rare Plant Communities: Plant Community reference areas:	Yes None None	1.3 or 3.1b on entire IRA and/or any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** Recommended portion for wilderness designation	High overall	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 14,343 acres SPM: 1,431 acres Roaded Modified: 349 acres Roaded Natural: 12,342 acres	High value for SPNM and low value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 28,077 acres	Low value for SPNM	Provide for SPM experience due to high public interest in snowmobiling in the area.
Landscape Character & Scenic Integrity	Retention (High): 1,744 ac. Partial Retention (moderate): 13,866 ac. Modification (low): 12,505 ac.	Very high scenic integrity, adjacent to existing wilderness	Maintain or improve existing scenic integrity.
Oil & Gas	No existing leases	Moderate to High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	40 acres of private land		

#04155 NORTH PEBBLE ≈5,480 ACRES

Description:

The North Pebble Roadless Area lies within Caribou County, Idaho on the Westside Ranger District. It is approximately nine air miles northwest of the community of Bancroft, Idaho.

Approximately 14 percent of the IRA is considered unstable and 18 percent of the area has an erosion hazard. The sensitive air quality receptor is Pocatello, Idaho. The IRA is inside the 20-mile radius for this sensitive receptor. It is more than 200 kilometers from a Class I area.

All of the watersheds in this IRA are rated as "yellow." No 303(d) streams are present.

The IRA's vegetation is composed primarily of mountain brush, aspen, and Douglas-fir. The North Pebble Timber Sale area is adjacent to the IRA. The aspen decline rating for the area is considered high because of the large component of aging (late seral) aspen and the lack of adequate regeneration. The insect hazard rating is considered low because the area displays mixed species composition with a small amount of conifer types present. The fire hazard rating is moderate because of aging conifer and aspen and moderate fuel buildups in the area. Invasive species occur on 0.3 percent of the area. Species include Musk thistle (9 acres) and Yellow toadflax (8 acres).

Idaho Department of Fish and Game has expressed concerns for mule deer in this IRA (See EIS and Wildlife Process Paper for rationale). This IRA is located on the Westside Ranger District and is not considered to provide linkage habitat for lynx. One relatively large security area occurs between Hornet and Trail Canyons. Because of the large amount of security (41 percent), this area has high potential for wolverine and wolf habitat. Wolverines have been recorded in the mountain range.

This IRA is a mix of aspen (40 percent) and mountain brush (38 percent), with smaller amounts of grass/shrub and conifer. Based on the amount of forested cover (14 percent), it ranks as low potential for habitat for forest-associated species. The area contains a small amount of grass/shrub (7 percent) but the closest know sage grouse leks are more than ten miles to the east. For these reasons, this area rates low for providing habitat for sage grouse.

This area was not identified as a conservation site by Noss, *et al*, (2001) and is rated low for this analysis. Because of the amount of aspen habitat at high departure from PFC (40 percent), the area ranks as low potential.

No fish-bearing streams have been identified in this IRA.

No rare plants, rare plant communities, or plant community reference areas have been identified or documented. The large security areas identified by the Wildlife Biologist could serve as reference landscapes. No unique reference value has been identified for this IRA.

Approximately 2,353 acres are managed in the summer for semi-primitive non-motorized recreation expiries, while 2,783 acres are managed for semi-primitive motorized experiences. The remainder of the area (349 acres) is managed as Roaded Modified.

The entire IRA area has moderate scenic integrity and is maintained in Partial Retention (moderate).

Oil and gas potential in the area is moderate. There are no existing oil and gas leases. No known potential for phosphate exists, and no active mining or exploration for locatable minerals is occurring.

One outfitter and guide is permitted to operate in the IRA. A power line runs adjacent to the IRA and a phosphate slurry line runs adjacent to the northern boundary of the IRA.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized travel limited to designated routes.
2. Non-motorized year-round because of the high ecological and year-round recreational value.
3. Allow winter, motorized travel in areas open under the current Travel Plan.

4. New motorized trail construction should be permitted.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
North Pebble	04155	5,485	2.8.3	134	2.8.3	134	No change. Riparian/Wetland Emphasis Area
			3.2	1,996	3.2	3,815	Increased Rx acres from 6.1 Rx, manageability of existing uses/access
			5.1	1,375	5.1	0	Shifted acres to new Rx 5.2 for consolidation of Rx's
			5.2	0	5.2	1,535	Maintenance of timber stand integrity, past harvest area, management access, aspen regeneration due to conifer encroachment
			6.1	1,979	6.1	0	Shifted acres to 3.2 Rx and to new 5.2 Rx for consolidation of Rx's
Total IRA Acres				**5,484**		**5,484**	

Acres from GIS run dated July 26, 2002

Table R.16. IRA Characteristics Re-Evaluation: North Pebble # 04155

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	14% Unstable 18% Erosion hazard	Moderate	Rx 3.2, or Rx 6.2
Air	**Sensitive Receptors:** Pocatello, ID	Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow No 303(d) streams	Moderate condition overall	No recommendation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Low Moderate	Rx 3.3 or Rx 6.2 for watershed restoration and aspen management.
Invasive Plant Species	0.3% of the IRA (17 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	N/A High High Low Low	3.1a on large security area near South hornet Canyon to provide habitat for mule deer during hunting season and secure habitat for wolves/wolverines.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low High	Rx 2.7.2 as outlined in Alternative 7, and Rx that allows for aspen management (2,200) acres.
Fisheries Biological Strongholds	No fish-bearing streams present	Low	Rx 2.8.3 with INFISH in all riparian areas
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Wildlife security areas, although relatively small for large-scale reference area.	High to moderate for security areas, low elsewhere.	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 2,353 acres SPM: 2,783 acres Roaded Modified: 349 acres	High value for SPNM and SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 5,784 acres	High value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Partial Retention (moderate): 5,484 ac.	Moderate scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	Moderate potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Outfitter and Guide, power line adjacent to IRA, phosphate slurry line adjacent to IRA		Rx that does not impede meeting permit conditions.

#04157 OXFORD MOUNTAIN ≈ 40,870 ACRES

Description:

This IRA is located within Bannock, Franklin and Oneida Counties, Idaho on the Westside Ranger District. It includes the mountain range south of the community of Downey, Idaho between US Highway 91 and U.S. Interstate 15.

About 7 percent of the IRA is considered unstable. Approximately 25 percent of the area has an erosion hazard. Sensitive air quality receptors include Malad and Preston, Idaho. The IRA is within a twenty-mile radius of these sensitive receptors, but is more than 200 kilometers from a Class I area.

The majority of watersheds (89 percent) in this IRA are rated as "red." The remaining 11 percent is rated "yellow." Approximately 1.8 miles of 303(d) stream segments have been identified on Deep Creek.

The IRA's forested vegetation is composed of aspen, aspen/maple, and Douglas-fir. Past disturbance includes a wildfire in the aspen/maple component and the Dry Canyon Timber Sale. The aspen decline rating is considered high due to the large component of aging aspen and the lack of adequate regeneration. The insect and fire hazard ratings are considered moderate. Douglas-fir bark beetles are evident in older stand, but the area affected is only a small component of the entire roadless area. Aging conifer and aspen with moderate fuel buildups are the reason for the moderate fire hazard rating. Invasive species, primarily leafy spurge (34 acres), occupy 0.08 percent of the area.

This IRA is located on the Westside Ranger District and is not considered to provide linkage habitat for lynx. A moderate amount of security area exists in this IRA (27 percent) and rates moderate potential for habitat for wolverines and wolves.

This IRA has about an even mix of grass/shrub (33 percent) and aspen/maple (31 percent), with lesser amounts of aspen and conifer. Based on the amount of forested cover (13 percent), it ranks as low potential for habitat for forest-associated species. Because of the amount of grass/shrub (33 percent) and its proximity to known sage grouse leks (within five miles), this area rates moderate for providing habitat for sage grouse.

This area lies partly in Noss' Bear River site. The Noss study notes a loss of wetlands at the lower elevations (private land), with higher elevations of gentle, open-sagebrush with pockets of conifer and aspen. This site ranked out in Quadrant 4 and has an irreplaceability score of 30. It is rated low for this analysis. Because of the high amount of habitat at high departure from PFC (52 percent), the area ranks as low potential for habitat.

The north half of this area drains into the Snake River Basin and is within the range of Yellowstone cutthroat trout. Cherry Creek is the major drainage in the north part of the area. Native fish populations have been displaced by non-native brook trout and rainbow trout. The south half of this area drains in the Bear River Basin and is within the range of Bonneville cutthroat trout. The major drainages in the south half of this area include First, Second, and Third Creeks that drain into Deep Creek Reservoir. While First Creek is occupied by brook trout and cutthroat trout, Second and Third Creeks have only cutthroat trout in their salmonid communities.

No rare plants, rare plant communities, or plant community reference areas have been documented or identified in this IRA. The wildlife security areas identified by the Wildlife Biologist could serve as reference landscapes, as well as large-scale watershed restoration opportunities. No unique reference value has been identified for this area.

Approximately 12,170 acres are managed for summer semi-primitive non-motorized recreation experiences, while 25,732 acres are managed in the summer for semi-primitive motorized experiences. The remaining area (2,969 acres) is managed for Roaded Modified experiences. In the winter, the entire IRA is managed for semi-primitive motorized recreation experiences.

The western portion of the IRA is managed for high scenic integrity because it is adjacent and visible from U.S. Interstate 15. The eastern portion is also managed for high scenic integrity, because of the viewshed from Highway 91. Approximately 692 acres are managed for retention (high). Partial retention (moderate) is maintained on 32,978 acres and Modification (low) is maintained on 7,201 acres.

The IRA has a moderate potential for oil and gas reserves; however, no oil and gas leases exist at this time. No known potential for phosphate exists. The IRA contains areas on the northern portion that have experienced exploratory drilling in the past. Signs of historic prospecting are evident; however, no active mining or exploration for locatable minerals is occurring.

One outfitter and guide is permitted to operate in the IRA.

IRA Specific, Prescribed Management Public Comments (Summarized):

1. Allow summer, motorized travel limited to designated routes.
2. Non-motorized year-round because of the high ecological and year-round recreational value.
3. Allow winter, motorized cross-country.
4. Non-motorized during the summer months.
5. New motorized trail construction should be permitted.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Oxford Peak	04157	40,871	2.1.2	0	2.1.2	408	Applied Rx for visual quality maintenance along travel corridors
			2.7.2	8,924	2.7.2	8,719	Lost some acres to Rx 2.1.2 and to new 5.2 Rx
			2.8.3	2,282	2.8.3	2,282	No change. Riparian/Wetland Emphasis Area
			5.2	0	5.2	720	Maintenance of stand integrity, past harvest area, past fire disturbance, management access, aspen regeneration due to lack of natural regeneration
			6.2	0	6.2	28,742	Watershed restoration, BCT habitat, rangeland vegetation management, consolidation of Rxs
			6.3	29,665	6.3	0	Shifted acres to new 6.2 Rx and lost acres to 5.2 for consolidation of Rx's and aspen regeneration needs
Total IRA Acres				**40,871**		**40,871**	

Acres from GIS run dated July 26, 2002

Table R.17. IRA Characteristics Re-Evaluation: Oxford Mountain # 04157

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	7% Unstable 25% Erosion hazard	Low	Rx 2.7.2, Rx 3.2, and/or Rx 6.2
Air	**Sensitive Receptors:** Malad and Preston, Idaho	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	89% Red 11% Yellow 1.8 miles of 303(d) streams on Deep Creek	High restoration potential	Rx 3.3 or Rx 6.2 on entire IRA for watershed restoration.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Moderate Moderate	Rx 5.1 in New and Dray Canyons for specific conifer stands, Rx 3.3 or Rx 6.2 for watershed and aspen restoration
Invasive Plant Species	0.08% of the IRA (34 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	N/A Moderate Moderate Low High	Rx 3.1a on large security area around Oxford Mountain to maintain big game security during hunting season.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low High	Maintain winter range as outlined in Alternative 7 and any Rx that allows restoration of aspen and juniper (21,000 acres)
Fisheries Biological Strongholds	Bonneville cutthroat trout present in Second and Third Creeks	High	Rx 2.8.3 with INFISH in all riparian areas and Rx 3.1 in BCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Wildlife Security areas and large-scale watershed restoration opportunities	Low	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 12,170 acres SPM: 25,732 acres Roaded Modified: 2,969 acres	High value for SPNM and SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPPM: 41,071 acres	High value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 692 ac. Partial Retention (moderate): 32,978 ac. Modification (low): 7,201 ac.	High scenic integrity adjacent to Hwy 91 and Interstate 15	Maintain existing scenic integrity.
Oil & Gas	No existing leases	Moderate potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Moderate to Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Outfitter and Guide		

Description:

This IRA lies within Bear Lake County, Idaho on the old Cache National Forest now administered by the Montpelier Ranger District. It is located approximately six miles west of Bloomington, Idaho.

This IRA has no unstable areas. About 48 percent of the area has an erosion hazard. Sensitive air quality receptors include Preston and Montpelier, Idaho. Both of these receptors are within the twenty-mile radius. The IRA is more than 200 kilometers from a Class I area.

All of the watersheds within the IRA are rated as "yellow." No 303(d) streams are present.

The IRA's forested vegetation is composed of aspen, mixed conifer, spruce/fir, aspen/conifer, Douglas-fir and lodgepole pine. Past disturbance includes Dick's Retreat Timber Sale, windthrow damage in the late 1990's and subsequent salvage activities, and a wildfire in 2000. The aspen decline rating is considered high due to the large component of aging aspen in the area that are not adequately regenerating. The insect and fire hazard ratings are considered moderate due to the mixed species composition, a high percentage of aspen, and old conifers in the western portion of the IRA. Fuel loading along the western boundary of the IRA is occurring. Invasive species occupy 0.6% of the area. Species include Canada thistle (21 acres), Dyers woad (33 acres) and Musk thistle (3 acres).

This area rated moderate for lynx linkage habitat, based on: 1) the amount of forested cover (28 percent); 2) moderate security (22 percent) and 3) potential travel corridor from Paris Peak Ridge up to Highline. Because of the amount of security (22 percent), this area ranks moderate for wolverine and wolves.

This IRA has conifer cover over 28 percent of the area ranking it moderate for forest-associated species. About 24 percent of the area has a grass/shrub cover in small isolated patches. The grass/shrub component is within two to ten miles of the nearest known sage grouse leks, and as a result, is rated low for potential sage grouse habitat.

This IRA was not identified as a conservation site by Noss, *et al.* and this criteria rated low. Based on the amount of vegetation at high departure from PFC (54 percent), this area ranks as low potential.

Non-native fish dominates the salmonid community in Bloomington and Paris Creeks. Extremely low frequencies of Bonneville cutthroat trout occur in these streams.

A proposed sensitive plant, the Wasatch bladderpod, occurs at the Paris Ice Cave. No rare plant communities or plant community reference areas have been documented in the area. The large wildlife security areas identified by the Wildlife Biologist could serve as a reference landscape. In addition areas within the IRA that have been treated with prescribed fire or have experienced wildfire activity serve as a unique reference value in this IRA.

The majority of the IRA (4,623 acres) is managed in the summer for semi-primitive motorized recreation experiences. The remaining area (4,193 acres) is managed for Roaded Natural recreation experiences. In the winter, the entire IRA (8,816 acres) is managed for semi-primitive motorized recreation experiences.

Overall, the area is managed for moderate scenery integrity. Retention (high) is maintained on 281 acres and Partial Retention (moderate) is maintained on the remaining 8,536 acres.

The IRA has a high potential for oil and gas reserves; however no oil and gas leases exist in the area at the present time. No known potential for phosphate exists, and no active mining or exploration for locatable minerals is occurring. Special Use Permits include water diversion structures on Paris Creek, a yurt in Bloomington Canyon maintained by Idaho State University, a water diversion ditch for Utah Power & Light, and an electronic site on Paris Peak. A utility power line runs along the northern boundary of the IRA.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized cross-country, except in areas where travel is limited to designated routes under the current Travel Plan.

2. Non-motorized during the summer months.
3. Allow winter, motorized cross-country.
4. Non-motorized year-round because of the high ecological and year-round recreational value.
5. New motorized trail construction should be permitted in areas where travel is limited under the current Travel Plan.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Paris Peak	04177	8,816	2.7.1	2,027	2.7.1	0	Readjustment of big game winter range based on actual use, flight data, and local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line. Acres shifted to Rx 3.3 for aspen regeneration and watershed restoration
			2.7.2	8	2.7.2	0	Shifted acres to 3.3 Rx for aspen regeneration
			2.8.3	267	2.8.3	267	No change. Riparian/Wetland Emphasis Area
			3.2	6,494	3.2	0	Shifted some acres to 3.3 Rx for aspen regeneration due to lack of natural regeneration, late seral aspen
			3.3	0	3.3	7,440	Aspen regeneration due to lack of natural regeneration, high composition of mixed species in western section of IRA
			5.1	6	5.1	0	Shifted acres to new 5.2 Rx for consolidation of Rx's
			5.2	0	5.2	1,093	Maintenance of stand integrity, past harvest area, windthrow disturbance area, management access, aspen regeneration
			6.1	4	6.1	0	Shifted acres to new 6.2 Rx for consolidation of Rx's
			6.2	0	6.2	4	Rangeland vegetation management, consolidation of Rx's, aspen regeneration needs
			8.1u	12	8.1u	12	No change, utility corridor
Total IRA Acres				**8,818**		**8,816**	

Acres from GIS run dated July 26, 2002

Table R.18. IRA Characteristics Re-Evaluation: Paris Peak # 04177

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 48% Erosion hazard	Low	Rx 2.7.1, Rx 3.2, Rx 5.1 or Rx 6.2
Air	**Sensitive Receptors:** Preston and Montpelier, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow No 303(d) streams	Moderate overall condition	No recommendation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Moderate Moderate	Rx 5.1, Rx 3.3 or Rx 6.2 for watershed and aspen restoration.
Invasive Plant Species	0.6% of the IRA (57 acres)	Medium	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate Moderate Moderate Moderate Low	Rx 3.1a on security area at Harry's Hollow.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low High	Maintain winter range outlined in Alternative 7 and any Rx that allows restoration treatments on aspen, mixed conifer, riparian areas and tall forb communities.
Fisheries Biological Strongholds	Low frequencies of Bonneville cutthroat trout in Bloomington and Paris Creeks.	Moderate	Rx 2.8.3 with INFISH in all riparian areas
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Wasatch bladderpod Rare Plant Communities: Plant Community reference areas:	Yes None None	Site-specific management and mitigation are recommended. Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** Rx fire and wildfire. Also Wildlife Security area	Moderate for security and burned areas, low elsewhere.	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 4,623 acres Roaded Natural: 4,193 acres	High value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 8,816 acres	High value for SPM	Maintain existing recreation settings. Consider SPNM backcountry skiing in site-specific travel planning
Landscape Character & Scenic Integrity	Retention (High): 281 ac. Partial Retention (moderate): 8,536 ac.	Moderate scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Water diversions, Yurt, electronic site, power line along northern boundary		

#04160 POLE CREEK ≈ 3,660 ACRES

Description:

The Pole Creek Roadless Area lies within Bonneville County, Idaho on the Soda Springs Ranger District and the Palisades Ranger District of the Caribou-Targhee National Forest. The area is approximately twelve miles north of Wayan, Idaho.

The majority of this IRA, 84 percent, is considered unstable. Approximately 57 percent of the area has an erosion hazard. Afton, Wyoming is a sensitive air quality receptor and is within the twenty-mile sensitive receptor radius. The IRA is also within 200 kilometers of a Class I area.

All of the watersheds within the IRA are rated "red." No 303(d) streams are present.

The IRA's vegetation is composed of lodgepole pine plantations, aspen/conifer, aspen, sage/grass, Douglas-fir, and mixed conifer. Past disturbance includes extensive timber harvest in the Brockman area and a wildfire in 2000. Aspen decline is rated high due to older aspen and the lack of adequate regeneration in these areas. The insect and fire hazard ratings are considered moderate due to past disturbance, the large component of aging aspen, and active fuel treatments on conifer and aspen sites. Invasive species occupy only 0.08% of the area. Species include Canada thistle (1 acre) and Musk thistle (2 acres.)

This area rates low for lynx linkage. This is based on the low amount of forested cover (23 percent), lack of security (0 percent). A ridge ties into the Brockman area and is adjacent to a Targhee roadless area, which is being managed for timber. This area has no security areas and is rated low for wolverine and wolves.

Vegetation cover in the IRA is about 36 percent grass/shrub, 23 percent conifer, 21 percent aspen/conifer and 16 percent aspen. Based on the amount of forested habitat, the area is rated moderate for forest-associated species. The grass/shrub component is over ten miles from any known sage grouse leks and is not considered habitat for sage grouse.

The IRA lies in Noss's South Caribou-Grays Lake mega site. The irreplaceability score is high at 75.8 and is placed in Quadrant 1. The Noss study placed an emphasis on aspen, willow riparian and meadows in this site. Elk habitat is some of the best, and this area has the highest density of elk in southeast Idaho (Noss, *et al*, 2001). This IRA is rated high for this analysis. Because a moderate percentage of the vegetation is at high departure from PFC (37 percent), this area ranks moderate for providing habitat suitable for most species.

Tributaries of McCoy Creek drain this IRA. These tributaries are considered stronghold streams for Yellowstone cutthroat trout.

No rare plants, rare plant communities, or plant community reference sites have been documented in the area. Large-scale watershed and aquatic habitat restoration opportunities could serve as reference landscapes. No unique reference value for the area has been identified.

The majority of the area is managed in the summer for semi-primitive motorized recreation on 2,749 acres. The remainder of the area (913 acres) is managed for Roaded Modified experiences. In the winter, the entire IRA is managed for semi-primitive motorized recreation experiences.

The area is managed for moderate scenic integrity. Approximately 3,633 acres are maintained in Partial Retention (moderate). The remaining 2,245 acres is maintained in Modification (low).

The IRA lies within the overthrust belt. The potential for oil and gas reserves is high, but there are no current leases. No known potential for phosphate exists. Current and historic gold mining activity occurs along McCoy Creek immediately adjacent to the southern boundary of the IRA. No active mining or exploration for locatable minerals is occurring within the IRA boundary.

One outfitter and guide service is permitted to operate in the IRA.

Summarized IRA Specific Public Comments:

1. Non-motorized during the summer months.

2. Allow summer motorized, cross-country except in areas where travel is closed under the current Travel Plan.
3. Non-motorized year-round because of the high ecological and year-round recreational value.
4. Allow winter, motorized cross-country.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Pole Creek	04160	3,662	2.1.4	0	2.1.4	47	Historic mining area in McCoy Creek to preserve those features for future study and interpretation. Rx includes direction for restoring fisheries in McCoy Creek.
			2.8.3	189	2.8.3	189	No change. Riparian/Wetland Emphasis Area
			3.3	2,102	3.3	3,077	Unstable soils, high erosion rating, YCT habitat, increased acres in Rx from Rx 5.3 for aspen regeneration in mixed stands and lack of natural regeneration
			5.3	213	5.3	0	Shifted acres to Rx 3.3 for aspen regeneration in mixed stands and lack of natural regeneration and watershed restoration needs
			6.2	0	6.2	349	Rangeland vegetation management and watershed restoration
			6.3	1,157	6.3	0	Shifted some acres to Rx 6.2 and the remaining acres into Rx 3.3 for aspen regeneration and watershed restoration
Total IRA Acres				**3,661**		**3,662**	

Acres from GIS run dated July 26, 2002

Table R.19. IRA Characteristics Re-Evaluation: Pole Creek # 04160

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	84% Unstable 57% Erosion hazard	Moderate	Rx 2.7.1, Rx 3.2, or Rx 6.2
Air	**Sensitive Receptors:** Afton, WY	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Red No 303(d) streams	High restoration potential	Rx 3.1, or Rx 3.3 for watershed restoration
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Low Low	Rx 5.1 to protect lodgepole pine plantations and continue to manage them, Rx 3.3 or Rx 6.2 for watershed and aspen restoration.
Invasive Plant Species	0.08% of the IRA (3 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Low Low Low Moderate N/A	Due to small size of IRA and lack of security areas, no recommendation.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	High Moderate	Any Rx that allows restoration on habitats at risk (1,350 acres)
Fisheries Biological Strongholds	Yellowstone cutthroat trout present in McCoy Creek tributaries	High	Rx 2.8.3 with INFISH in all riparian areas, Rx 3.1 in YCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Large-scale watershed and aquatic habitat restoration opportunities	Moderate for restoration opportunities, low elsewhere.	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 2,749 acres Roaded Modified: 913 acres	Moderate value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 3,633 acres	High value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Partial Retention (moderate): 1,416 ac. Modification (low): 2,245 ac.	Moderate scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Outfitter and Guide		Any Rx that does not impede compliance with permit

Description:

The Red Mountain Roadless Area lies within Bear Lake County, Idaho on the Montpelier Ranger District. It is located approximately four miles northwest of the community of Geneva, Idaho, and one mile west of the Idaho-Wyoming State line.

The majority (76 percent) of this IRA is considered unstable. Approximately 29 percent of the area has an erosion hazard. Sensitive air quality receptors include Afton, Wyoming and Montpelier, Idaho. These two communities are within the twenty-mile radius around sensitive receptors. The IRA is not within 200 kilometers of a Class I area.

Approximately 88 percent of the watersheds in this IRA are rated "red." The remaining 12 percent is rated "yellow." About 5.7 miles of 303(d) stream segments exist along Preuss and Dry Creeks.

The IRA's forested vegetation is composed of aspen, Douglas-fir, mixed conifer, lodgepole pine, and aspen/conifer. No significant or recent disturbances have occurred in the area. Aspen decline is considered high in the area due to aging and older aspen stands that are not adequately regenerating. The insect hazard rating is low due to the small proportion of conifer and the large component of aspen. The fire hazard rating is considered moderate, because of the presence of aspen/conifer and conifer along the northern and western boundaries of the IRA. Invasive species occupy 0.1 percent of the IRA. Species include Canada thistle (5 acres), Dyers woad (4 acres), Henbane (1 acre), and Musk thistle (4 acres).

Known occurrences of goshawks have been recorded in the IRA. This area rated low for lynx linkage habitat based on: 1) the low amount of security areas (16 percent); 2) low amount of forested cover (7 percent); 3) the proximity to the Salt River area managed by the Bridger-Teton; and 4) north-south drainages of Beaver and Dry Creek may act as travel corridors. Because of the low amount of security (16 percent), this area also ranks low for wolverine and wolves.

This IRA has little conifer cover (7 percent) ranking it low for forest-associated species. About 50 percent of the area has a grass/shrub cover. These areas are within two miles of the nearest known sage grouse leks, and as a result, these areas rated high for potential sage grouse habitat.

The area lies in Noss' Gannet Hills site. The Noss study mentioned that this area has some of the highest game values in Idaho. This area was placed in Quadrant 2 and has an irreplaceability score of 55. For this analysis it is rated moderate. Based on the amount of vegetation at high departure from PFC (42 percent), this area ranks as low potential.

Dry and Preuss Creeks primarily drain the area. Both of these streams are stronghold streams for Bonneville cutthroat trout.

No rare plants, rare plant communities, or plant community reference areas have been documented in the area. Large-scale watershed and aquatic habitat restoration opportunities could serve as reference landscapes. Large stands of old aspen and natural landslides in the area are considered as having unique reference value.

The entire IRA is managed for Road Modified (2,074 acres) and Roaded Natural (11,627 acres) in the summer. During the winter, the entire IRA is managed for semi-primitive motorized recreation experiences, with the exception of the closure of some areas because of active mining activities.

This IRA is managed for moderate scenic integrity. Partial retention (moderate) is maintained on 6,921 acres. Modification (low) is maintained on 6,779 acres.

The IRA lies within the overthrust belt. Although the potential for oil and gas reserves is high in the area, no oil and gas leases currently exist. No known potential for phosphate and no active mining or exploration of locatable minerals is occurring at this time.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized travel limited to designated routes, and winter, motorized cross-country.
2. Manage as wilderness to protect deer, elk, moose and Bonneville cutthroat trout populations, and close the "Boulevard jeep trail" so that Gannet and Red Mountain can be managed as one.

3. New motorized trail construction should be permitted.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Red Mountain	04170	13,701	2.7.1	1,578	2.7.1	1,770	Increased acres in Rx to match topo/cultural features for manageability
			2.8.3	1,259	2.8.3	1,259	No change. Riparian/Wetland Emphasis Area
			3.1	0	3.1	5,863	Wildlife Security Area, sage grouse habitat
			6.2	0	6.2	4,808	Rangeland vegetation management and restoration for sagebrush habitats, BCT habitat
			6.3	10,863	6.3	0	Lost acres to Wildlife Security Area in 3.1 Rx and remaining acres shifted to new 6.2 Rx
Total IRA Acres				**13,700**		**13,700**	

Acres from GIS run dated July 26, 2002

Table R.20. IRA Characteristics Re-Evaluation: Red Mountain # 04170

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	76% Unstable 29% Erosion hazard	High	Rx 2.7.1, Rx 3.1 or Rx 3.2
Air	**Sensitive Receptors:** Afton, WY and Montpelier, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	88% Red 12% Yellow 5.7 miles of 303(d) streams along Preuss and Dry Creeks	High restoration potential	Rx 3.1, Rx 3.3 or Rx 6.2 for restoration and protection.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Low Moderate	Rx 3.3 or Rx 6.2 for watershed and aspen restoration.
Invasive Plant Species	0.1% of the IRA (14 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Low Low Low Low High	Rx 3.1a on large security area between Preuss and Dry Creeks to maintain non-motorized area and any Rx that maintains sagebrush for sage grouse.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate High	Maintain winter range outlined in Alt 7 and any Rx that allows for restoration of aspen (5,800 acres).
Fisheries Biological Strongholds	BCT are present in Preuss and Dry Creeks	High	Rx 2.8.3 with INFISH in all riparian areas and Rx 3.1 in BCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** Old aspen stands, and natural landslide areas. Large-scale watershed/aquatic habitat restoration opportunities.	Moderate for natural landslides and BCT habitat, low elsewhere	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	No SPM in this IRA Roaded Modified: 2,074 ac. Roaded Natural: 11,627 ac.	N/A	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 13,689 acres	Moderate value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 903 ac. Partial Retention (moderate): 4,405 ac.	Moderate scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	None		

#04166 SAGE CREEK ≈ 12,710 ACRES

Description:

The Sage Creek Roadless Area is within Caribou County, Idaho on the Soda Springs Ranger District. It is located approximately ten miles southwest of Afton, Wyoming.

Only 2 percent of the IRA is considered unstable. Approximately 23 percent of the area has an erosion hazard. Sensitive air quality receptors are Afton, Wyoming and Soda Springs, Idaho. The IRA is within the twenty-mile sensitive receptor radius. It is also within 200 kilometers of a Class I area.

The majority of the watersheds, about 88 percent, in this IRA are rated "yellow." The remaining 12 percent are rated "green." No 303(d) streams are present.

The IRA's forested vegetation is composed of aspen, Douglas-fir, mixed conifer, lodgepole pine, and aspen/conifer. Past disturbance includes the South Fork, Pole Canyon, and Sage Creek Timber Sales and historic and active mining activities. Aspen decline is rated high in the area due to aging and older aspen stands with conifer encroachment occurring on these sites. The insect and fire hazard ratings are both moderate for the area due to the older conifer composition and fuel buildup in the understory. Invasive species occupy 0.2 percent of the area. Species include Canada thistle (17 acres) and Musk thistle (5 acres.)

Known occurrences of wolf (1985), three-toed woodpecker, goshawks, and great gray owls have been recorded in the IRA. This area rated high for lynx linkage habitat based on: 1) the presence of a major north-south ridge, which could provide a movement corridor; 2) the area has 41 percent conifer cover; 3) location midway between the Targhee and south end of the Preuss Range; and 4) area offers about 9 percent for security areas. Because of the low amount of security (9 percent), this area also ranks low for wolverine and wolves.

This IRA has conifer cover over 40 percent of the area ranking it high for forest-associated species. About 22 percent of the area has grass/shrub in smaller patches. These patches are between five and ten miles from the nearest known sage grouse leks. These areas are rated low for sage grouse habitat.

This IRA was not ranked by Noss, *et al,* (2001) and is ranked low for this analysis. Based on the amount of vegetation at high departure from PFC (36 percent), this area ranks as moderate potential.

Sage, Manning, and Deer Creeks drain the area. They are tributaries to Crow Creek. Although Forest surveys have not been completed on these streams, they are likely inhabited by Yellowstone cutthroat trout since Crow Creek is a stronghold stream.

No rare plants, rare plant communities, or plant community references areas have been documented in the area. The Deer Creek watershed is not impacted by mining as are the surrounding watersheds. This area could have unique reference value as relatively undisturbed area adjacent to highly disturbed areas. Large-scale aquatic habitat restoration opportunities could serve as reference landscapes.

A large portion of the IRA is managed in the summer for semi-primitive motorized recreation experiences (10,674 acres). The remaining area (2,037 acres) is managed for Roaded Modified experiences. In the winter, the entire IRA is managed for semi-primitive motorized recreation experiences.

The area has low scenic integrity. Partial retention (moderate) is maintained on 4,043 acres. Modification (low) is maintained on 8,668 acres.

The IRA lies within the overthrust belt. Although the area has high potential for oil and gas reserves, there are no existing oil and gas leases. The IRA contains about 3,000 acres under active phosphate leases and an additional 2,400 acres in KPLA areas. An active phosphate mine is present. At the current time, a phosphate prospecting permit and a lease modification application are in progress. In addition, two expired exploration licenses exist. All of these additional activities concern land within the IRA.

Several phosphate mine-related Special Use Permits are present. The USFS has a radio repeater in the area, and a Special Use Permit is in effect for a two-acre fenced special use area. A phosphate slurry pipeline runs along the northern boundary of the area. A power line

is also located on the northeastern IRA boundary.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer and winter, motorized cross-country, except in areas where travel is limited to designated trails or closed under the current Travel Plan.
3. Non-motorized during the summer months.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Sage Creek	04166	12,711	2.7.2	3,436	2.7.2	2,021	Readjustment of big game winter range based on actual use, flight data, and local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line. Acres shifted to Rx 6.2.
			2.8.3	855	2.8.3	855	No change. Riparian/Wetland Emphasis Area
			3.2	8,373	3.2	0	Shifted acres to 5.2 Rx for aspen regeneration due to conifer encroachment
			5.1	4	5.1	0	Shifted acres to 5.2 Rx for aspen regeneration due to Conifer encroachment
			5.2	0	5.2	6,110	Stable soils, maintenance of timber stand integrity, past harvest area, management access, aspen regeneration due to conifer encroachment
			6.2	0	6.2	3,682	Moderate watershed conditions, rangeland vegetation management and restoration, YCT habitat
			8.2.2	43	8.2.2	43	No change, active phosphate lease
Total IRA Acres				**12,711**		**12,711**	

Acres from GIS run dated July 26, 2002

Table R.21. IRA Characteristics Re-Evaluation: Sage Creek # 04166

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	2% Unstable 23% Erosion hazard	Low	Rx 2.7.2, Rx 3.2, Rx 5.1, Rx 6.2 and Rx 8.2.2
Air	**Sensitive Receptors:** Afton, WY and Soda Springs, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	88% Yellow 12% Green No 303(d) streams	Moderate overall condition	No recommendation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Moderate Moderate	Rx 5.1, Rx 3.3 or Rx 6.2 for watershed and aspen restoration.
Invasive Plant Species	0.2% of the IRA (22 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	High Low Low High Low	No recommendation of this IRA due to its irregular shape and lack of security areas.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low Moderate	Any Rx that would allow restoration of aspen areas
Fisheries Biological Strongholds	Yellowstone cutthroat trout assumed to be present in Sage, Manning, and Deer Creeks	High	Rx 2.8.3 with INFISH in all riparian areas and Rx 3.1 in YCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** Deer Creek Watershed Large-scale aquatic habitat restoration opportunities	High for Deer Creek, moderate to low elsewhere	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 10,674 acres Roaded Modified: 2,037 acres	Moderate value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 12,709 acres	Moderate value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Partial Retention (moderate): 4,043 ac. Modification (low): 8,668 ac.	Low scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	Active leases: 3,000 acres KPLA areas: 2,400 acres	High potential on leased and KPLA areas, moderate to low elsewhere.	Rx 8.2.2 on active leases and SUP areas, Rx 8.2.1 on inactive leases, KPLA's and prospecting and exploration areas.
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Several phosphate SUPs, SUP for 2-acre fenced area, phosphate slurry line and power line on northern end of IRA, USFS radio repeater		Any Rx that does not impede permit compliance.

#04163 SCHMID PEAK ≈ 7,110 ACRES

Description:

Schmid Peak Roadless Area is located in Caribou County, Idaho on the Soda Springs Ranger District. It is located approximately seventeen miles northeast of Soda Springs.

None of the area within the IRA boundary is considered unstable. Only 12 percent of the area has an erosion hazard. Afton, Wyoming and Soda Springs, Idaho are the two sensitive air quality receptors. Both of these communities lie within the twenty-mile sensitive receptor radius. In addition, this IRA is within 200 kilometers of a Class I area.

The majority of watershed (93 percent) in this IRA are rated "Green." The remaining 7 percent is rated "yellow." Approximately 2.4 miles of 303(d) stream segments are present on Diamond Creek.

The IRA's forest vegetation is composed of Douglas-fir, aspen, lodgepole pine, mixed conifer and aspen/conifer. Past disturbance includes timber harvest activities in Diamond Creek, Bench, Campbell and Mosquito Creek areas. Mining activity occurs in Maybe Canyon. Aspen decline is considered low for this area because of the small component of aspen in the vegetation composition of the area. Insect and fire hazard ratings are considered moderate due to stands of aging conifer, particularly Douglas-fir, lodgepole pine, and mixed conifer, and the associated fuel buildup in these areas. Invasive species occupy 0.5 percent of the area. Species include Canada thistle (1 acre), Musk thistle (10 acres), and Yellow toadflax (23 acres).

This IRA is rated moderate for lynx linkage habitat based on: 1) the area has 51 percent conifer cover; 2) about 33 percent of the area offers security areas, and 3) the location of the IRA between Caribou Mountain and Bear Creek IRAs to the north and Preuss to the south. Because of the amount of security (33 percent), this area ranks high for wolverine and wolves. This IRA has conifer cover over 51 percent of the area ranking it high for forest-associated species, with about 19 percent aspen. About 25 percent of the area has grass/shrub cover. These areas are located between five and ten miles or more from the nearest known sage grouse leks and are rated moderate for sage grouse.

This IRA is in part of Noss' Blackfoot-Salt site. The Blackfoot-Salt site is part of the southeast Idaho phosphate belt and includes relatively recent lava flows. The area supports substantial aspen and willow bottoms. This site was placed in Quadrant 2 but has a high irreplaceability score of 88. For this analysis it is rated as moderate. Based on the amount of vegetation at high departure from PFC (20 percent), this area ranks as high potential.

The salmonid community in Diamond Creek is dominated by Yellowstone cutthroat trout. Brook trout are also present.

No rare plants, rare plant communities, or plant community references areas have been documented in this IRA. Wildlife security areas and large-scale restoration opportunities on the Diamond Creek watershed could serve as reference landscapes. The wildlife security area in an IRA that is heavily developed from mining and timber activities has unique reference value.

The majority of the IRA is managed in the summer for semi-primitive motorized recreation on 6,577 acres. The remainder of the area (539 acres) is managed as Roaded Modified in the summer. During the winter the entire IRA is managed for semi-primitive motorized recreation experiences.

This IRA has low scenic integrity. The majority of the area (4,112 acres) is retained in Modification (low).

The IRA lies within the overthrust belt. Although high potential for oil and gas reserves exist, there are no existing oil and gas leases in the area. The IRA contains 600 acres of leases and 120 acres of unleased KPLA land. Some mined and inactive leases are adjacent to the IRA. No active mining or exploration for locatable minerals is occurring at this time.

One outfitter and guide service is permitted to operate in the IRA. A utility power line runs adjacent to the IRA boundary on the east side. A phosphate slurry line runs along the southern boundary of the IRA.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer and winter, motorized cross-country, except in areas where travel is limited to designated trails or closed under the current Travel Plan.
3. Non-motorized during the summer months.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Schmid Peak	04163	7,116	2.7.2	573	2.7.2	572	No Change, big game winter range
			2.8.3	328	2.8.3	328	No change. Riparian/Wetland Emphasis Area
			3.2	0	3.2	3,788	Manageability of existing uses/access
			3.3	5,500	3.3	1,927	Lost acres to 3.2 Rx, remaining acres identified for fuel reduction
			5.1	1	5.1	0	Shifted acres into 5.2 Rx for consolidation of Rx's
			5.2	0	5.2	278	Stable soils, good watershed condition, past timber harvest, mining disturbances, management access
			6.2	0	6.2	195	Rangeland vegetation management and restoration to PFC
			6.3	689	6.3	0	Shifted acres into 3.2 and 3.3 Rx for consolidation of Rx's
			8.1u	26	8.1u	26	No change, utility corridor
Total IRA Acres				**7,117**		**7,114**	

Acres from GIS run dated July 26, 2002

Table R.22. IRA Characteristics Re-Evaluation: Schmid Peak # 04163

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 12% Erosion hazard	Low	Rx 2.7.2, Rx 3.3, Rx 5.1, Rx 6.2, Rx 8.2.2
Air	**Sensitive Receptors:** Afton, WY and Montpelier, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	7% Yellow 93% Green 2.4 miles of 303(d) streams segments on Diamond Creek	Moderate preservation potential	Rx 3.3 or Rx 5.2 on Diamond Creek watershed. Rx 3.1 or Rx 3.2 on remaining area.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Low Moderate Moderate	Rx 5.1 to manage aging conifer and increasing fuels loading.
Invasive Plant Species	0.5% of the IRA (34 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate High High High Moderate	Rx 3.1a on security area in Campbell Canyon area to provide secure habitat in an area heavily impacted by mining.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate Low	No recommendation
Fisheries Biological Strongholds	Diamond Creek is dominated by Yellowstone cutthroat trout	High	Rx 2.8.3 with INFISH in all riparian areas and Rx 3.1 in YCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** Wildlife Security Area in heavily impacted IRA. Large-scale aquatic habitat restoration	Moderate overall	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 6,577 acres Roaded Modified: 539 acres	Moderate value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 7,112 acres	Moderate value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Modification (low): 4,112 ac.	Low scenic integrity	Maintain or improve existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	Active leases: 600 acres KPLA areas: 120 acres	High potential on leased and KPLA areas; moderate to low elsewhere in IRA	8.2.1 on inactive leases and KPLAs.
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Outfitter and Guide, power line on east boundary, phosphate slurry line on south boundary.		Any Rx that does not impede compliance with permit.

#04152 SCOUT MOUNTAIN ≈ 22,610 ACRES

Description:

The Scout Mountain Roadless Area is within Bannock County, Idaho on the Westside Ranger District. The center of the area is located about thirteen miles southeast of Pocatello, Idaho in the Bannock Mountain range.

This IRA contains no unstable areas. Approximately 30 percent of the area has an erosion hazard. Pocatello, Idaho is the sensitive air quality receptor and lies inside the twenty-mile sensitive receptor radius. The IRA is not within 200 kilometers of a Class I area.

The majority of the watersheds, about 90 percent, are rated "yellow." The remaining watersheds are rated "Green." Approximately 0.4 miles of 303(d) stream segment is present on Mink Creek.

The IRA's vegetation is composed of sagebrush/grass, Douglas-fir, and aspen. Past disturbance includes the Valve House Timber Sale and salvage activities near the Scout Mountain Campground. Aspen decline is considered low for the area, because aspen is a very small component of the overall vegetation composition. Insect and fire hazard ratings are moderate due to the presence of aging Douglas-fir and associated fuel loading. Invasive species occupy 0.2 percent of the IRA. Species include Canada thistle (22 acres) and Musk thistle (33 acres).

The flammulated owl is the known TES occurrence in this IRA. This IRA is located on the Westside Ranger District and is not considered to provide linkage habitat for lynx. Several security areas are evident across the east side of the area. Because of the amount of security (21 percent), this area has moderate potential for habitat for wolverines and wolves.

This IRA contains a mix of conifer (21 percent) and grass/shrub (63 percent). Based on the amount of forested cover, it ranks as low potential for habitat for forest-associated species. Although a large amount of grass/shrub habitat is evident, it is over ten miles from the nearest known sage grouse lek and is not considered sage grouse habitat.

Noss, *et al*, (1999) placed this area in the Portneuf site. This site ranked in Quadrant 1, but the irreplaceability was placed at 51, which is moderate. The Noss study mentions significant herds of mule deer and growing herds of elk. This IRA is rated high for this criterion. Because of the low amount of habitat at high departure from PFC (6 percent), the area ranks as high potential.

The major drainages in the Scout Mountain Roadless Area include Indian, Walker, Bell Marsh, Goodenough, South Fork Mink, and East Fork Mink Creeks. Of those streams, Walker, Bell Marsh, Goodenough, South Fork Mink, and East Fork Mink Creeks are considered Yellowstone cutthroat trout stronghold streams. Yellowstone cutthroat trout were the only salmonid observed in each of these streams, except East Fork Mink Creek, where a low population of brook trout was also observed.

No rare plants, rare plant communities or plant community reference sites have been documented in this area. The wildlife security areas identified by the Wildlife Biologist could serve as reference landscapes, along with large-scale restoration opportunities for the Mink Creek watershed. No unique reference value has been identified for this IRA.

Approximately 9,031 acres are managed in the summer for semi-primitive non-motorized recreation. About 4,480 acres is managed for semi-primitive motorized use. The remaining 5,432 acres is managed as Roaded Natural. In the winter, about 4,480 acres are managed as semi-primitive non-motorized inside a wildlife exclosure. The remaining 18,130 acres is managed for semi-primitive motorized use.

The area is managed for high scenic value because of its proximity to Pocatello, Idaho. Retention (high) is maintained on 7,486 acres. Partial retention (moderate) is maintained on 5,512 acres, and Modification (low) is maintained on 9,609 acres.

The IRA has a moderate potential for oil and gas reserves; however, there are no existing oil and gas leases. No known potential exists for phosphate in the area. Past locatable mineral exploration of the area is evident on small known reserves, mineral patents, and numerous prospect areas. An historic mine is located just north of the IRA. No active mining or exploration is occurring at the present time.

The area also contains a summer home site. One outfitter and guide is permitted to operate in the IRA. A portion of the East Mink Creek cross-country ski area is within the IRA boundaries, but the majority is outside the area. Several electronic sites are visible atop Scout Mountain. This IRA contains 630 acres of state land and 50 acres of private in-holdings.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized with travel limited to designated routes.
2. Non-motorized year-round because of the high ecological and year-round recreational value.
3. Allow winter, motorized cross-country.
4. New motorized trail construction should be permitted.
5. Area should be non-motorized during the winter to provide cross-country skiers with semi-primitive recreation opportunities.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Scout Mountain	04152	22,607	2.1.2	97	2.1.2	207	Increased acres for visual quality maintenance in travel corridors
			2.7.2	3,547	2.7.2	5,799	Increased Rx area to coincide with current travel plan restrictions and user compliance
			2.8.3	1,069	2.8.3	1,069	No change. Riparian/Wetland Emphasis Area
			3.2	16,051	3.2	11,206	Manageability of existing uses/access, some acres shifted to 3.3 for watershed restoration and 303(d) stream improvements and 6.2 for rangeland restoration
			3.3	0	3.3	1,134	Watershed restoration and 303(d) stream improvements, YCT habitat
			4.3	1,602	4.3	1,672	Dispersed recreation areas in the watershed.
			5.2	0	5.2	225	Maintenance of timber stand integrity, past harvest area, mgt. access
			6.1	242	6.1	0	Shifted acres to new 6.2 Rx for rangeland vegetation management and restoration
			6.2	0	6.2	1,296	Rangeland vegetation management and restoration
Total IRA Acres				**22,608**		**22,608**	

Acres from GIS run dated July 26, 2002

Table R.23. IRA Characteristics Re-Evaluation: Scout Mountain # 04152

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 30% Erosion hazard	Low	Rx 2.7.2, Rx 3.2, Rx 4.3 or Rx 6.2
Air	**Sensitive Receptors:** Pocatello, ID	Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	90% Yellow 10% Green 0.4 miles of 303(d) stream segments on Mink Creek	High restoration potential on Mink Creek watershed, low elsewhere	Rx 3.1, Rx 3.3, Rx 5.2 or Rx 6.2 on Mink Creek watershed. No recommendation for remaining area
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Low Moderate Moderate	Rx 3.1, Rx 3.3 or Rx 6.2 for watershed restoration.
Invasive Plant Species	0.2% of the IRA (55 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	N/A Moderate Moderate Low N/A	Rx 3.1a on either Walker Peak, Walker Creek, peak north of Goodenough Creek, or Old Tom Mountain area to maintain a non-motorized habitat area.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	High Low	Maintain winter range outlined in Alternative 7
Fisheries Biological Strongholds	Bonneville cutthroat trout in Walker, Bell Marsh, Goodenough, SF Mink, and EF Mink Creeks.	High	Rx 2.8.3 with INFISH in all riparian areas, Rx3.1 in YCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Wildlife security areas and Mink Creek watershed restoration opportunities	High overall	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	APNM: 9,031 acres SPM: 4,076 acres Roaded Natural: 5,432 acres	Very high value for SPNM and SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 4,480 acres SPM: 18,130 acres	High value for SPNM and SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 7,486 ac. Partial Retention (moderate): 5,512 ac. Modification (low): 9,609 ac.	High scenic integrity	Maintain or improve existing scenic integrity.
Oil & Gas	No existing leases	Moderate potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Moderate potential in Valve House and EF Mink Creek, low elsewhere	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Summer home site, Ridge Outfitter and Guide, Cross-country ski area, electronic sites at Scout Mountain		Any Rx that does not impede compliance with permit.

#04172 SHERMAN PEAK ≈7,760 ACRES

Description:

This unit lies in Bear Lake County, Idaho on the old Cache National Forest administered by the Montpelier Ranger District. It is east of Eightmile Creek Road about twelve miles south of Soda Springs.

This IRA has no know unstable areas and no erosion hazard. Sensitive air quality receptors include Soda Springs and Grace, Idaho. The IRA is within a twenty-mile radius of Soda Springs. It is not within 200 kilometers of a Class I area.

All of the watersheds within this IRA are considered "yellow." No 303(d) streams are present.

The IRA's vegetation is composed of aspen/conifer, Douglas-fir, sagebrush/grass, and aspen. Past disturbance includes timber sales in the Nounan Peak and Mill Canyon areas. Aspen decline for the area is considered high due to the presence of conifer encroachment into aspen. The insect hazard rating is considered low due to mixed species composition in the area. The fire hazard rating is high, because of aging conifer and its encroachment into aspen with associated fuel buildup. Invasive species occupy 0.06% of the IRA. Species include Musk thistle (5 acres).

This IRA is one of three, including Soda Point and Stauffer Creek that encompasses the northern quarter of the Bear River Range and makes up a portion of continuous roadless area along most of the northeast exposure of this range. Portions of the northeast side of the Soda Point IRA and the north end of the Sherman Peak IRA are located on the Forest boundary and form an urban interface with the Bailey Creek subdivision. When combined with two adjacent IRA's, they encompass 37,316 acres, have the third highest number of forested vegetation acres with a "high" fire hazard rating (16,923), and the fifth highest number of acres with a "high" insect (5,295) and aspen decline rating (13,402). They make up a large block of mature conifer, principally Douglas-fir, and aspen succeeding to conifer on this highly visible landscape from State Highway 30 and Soda Springs, Idaho.

A lynx occurrence (1972) has been recorded in the IRA. This area rated moderate for lynx linkage habitat based on: 1) the amount of forested cover (40 percent); 2) low security (21 percent); and 3) the presence of north-south ridge along Sherman Peak that may function as a travel corridor. Because of the amount of security (21 percent), this area ranks moderate for wolverine and wolves.

This IRA has conifer cover over 40 percent of the area, ranking it moderate for forest-associated species. Approximately 19 percent of the area is in grass/shrub cover but these areas are five to ten miles from the nearest known sage grouse leks and is not considered potential sage grouse habitat.

This IRA was not ranked by Noss, *et al*, (2001) and is rated low for this analysis. Based on the amount of vegetation at high departure from PFC (43 percent), this area ranks as low potential.

The salmonid community in Eightmile Creek is dominated by non-native brook trout. Bonneville cutthroat trout are still present in low densities. The salmonid community in Pearl Creek is dominated by Bonneville cutthroat trout, although brook trout are present in low densities.

No rare plants, rare plant communities or plant community reference areas are documented in the area. Wildlife security areas identified by the Wildlife Biologist and large-scale restoration opportunities for native trout habitat could serve as reference landscapes. No unique reference value has been identified for the area.

The area is managed in the summer for semi-primitive non-motorized experiences on 1,389 acres. A portion, about 2,554 acres, is managed for semi-primitive motorized recreation. The remaining 3,813 acres are managed for Roaded Natural. In the winter, the entire IRA is managed for semi-primitive motorized recreation experiences.

The area is managed for retention (high) on 428 acres, primarily along the eastern side. Partial retention (moderate) is maintained on 2,259 acres, and Modification (low) is maintained of 5,069 acres.

The IRA lies within the overthrust belt. Although oil land gas reserve potential is high for the area, there are no existing oil and gas leases. No known potential for phosphate exists, and no active mining or exploration for locatable minerals is occurring in the area.

Utah State University is permitted to operate an avalanche forecasting hut. The area contains one electronic site.

Summarized IRA Specific Public Comments:

1. Allow winter, motorized cross-country.
2. Non-motorized year-round because of the high ecological and year-round recreational value.
3. Allow summer, motorized cross-country, except in areas where travel is closed under the current Travel Plan.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Sherman Peak	04172	7,756	2.8.3	348	2.8.3	348	No change. Riparian/Wetland Emphasis Area
			3.2	7,402	3.2	5,975	Shifted acres to 5.2 Rx for aspen regeneration due to conifer encroachment and high fire hazard rating
			5.1	6	5.1	0	Shifted acres to 5.2 Rx to consolidate Rx's
			5.2	0	5.2	1,433	Maintenance of timber stand integrity, past harvest area, mgt. access, aspen regeneration due to conifer encroachment, high fire hazard rating
Total IRA Acres				**7,756**		**7,756**	

Acres from GIS run dated July 26, 2002

Table R.24. IRA Characteristics Re-Evaluation: Sherman Peak # 04172

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 0% Erosion hazard	Low	Rx 2.7.2, Rx 3.2, Rx 5.1 or Rx 6.2
Air	**Sensitive Receptors:** Soda Springs and Grace, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow No 303(d) streams	Moderate overall condition	No recommendation
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Low High	Rx 5.1, or Rx 3.3 or Rx 6.2 for aspen restoration and fire hazard reduction activities.
Invasive Plant Species	0.06% of the IRA (5 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate Moderate Moderate Moderate N/A	Rx 3.1a for wildlife security area near Sherman Peak to preclude building new trails.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low High	Any Rx that treats aspen/conifer (3,000 acres) to move toward PFC.
Fisheries Biological Strongholds	Bonneville cutthroat trout in Eightmile and Pearl Creeks.	High	Rx 2.8.3 with INFISH in all riparian areas, Rx 3.1 in BCT watershed strongholds
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Wildlife Security area near Sherman Peak and BCT habitat	Moderate for wildlife security area and BCT habitat, low elsewhere.	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 1,389 acres SPM: 2,554 acres Roaded Natural: 3,813 acres	Moderate value for SPNM, High value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 7,756 acres	High values for SPM	Maintain existing recreation settings. Consider SPNM area for x-country skiing during site-specific travel planning.
Landscape Character & Scenic Integrity	Retention (High): 428 ac. Partial Retention (moderate): 2,259 ac. Modification (low); 5,069 ac.	High scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Avalanche forecasting hut, electronic site		Any Rx that does not impede compliance with permit

#04171 SODA POINT ≈23,130 ACRES

Description:

The Soda Point Roadless Area lies in Caribou and Bear Lake Counties, Idaho on the old Cache National Forest administered by the Montpelier Ranger District. The center of the area is about seven miles south of Soda Springs, Idaho.

No unstable areas are found in this IRA. About 28 percent of the area has an erosion hazard. Soda Springs and Grace Idaho are sensitive air quality receptors and are within the twenty-mile sensitive receptor radius. The IRA is not within 200 kilometers of a Class I area.

Approximately 3 percent of the areas watersheds are rated "red." The remaining watersheds are considered "yellow." No 303(d) streams are present.

The IRA's vegetation is composed of aspen/conifer, Douglas-fir, maple, mountain mahogany, and aspen. Past disturbance includes the McPherson Timber Sale. Aspen decline rating is considered high due to the high proportion of the aging conifer/aspen. The insect hazard rating is considered low to due the mixed species composition of the area. The fire hazard rating is considered high, because of the aging aspen/conifer and its encroachment into aspen areas and the associated fuel buildup. Invasive species occupy 27.6 percent of the area. Species include leafy spurge (2 acres), Dyers woad (6,348 acres), Musk thistle (4 acres), and Whitetop (22 acres).

This IRA is one of three, including Sherman Peak and Stauffer Creek that encompasses the northern quarter of the Bear River Range, and makes up a continuous band along most of the northeast exposure of this range. Portions of the northeast side of the Soda Point IRA and the north end of the Sherman Peak IRA are located on the Forest boundary, and form an urban interface with the Bailey Creek subdivision. When combined with two adjacent IRA's, they encompass 37,316 acres, have the third highest number of forested vegetation acres with a "high" fire hazard rating (16,923), and the fifth highest number of acres with a "high" insect (5,295) and aspen decline rating (13,402). They make up a large block of mature conifer, principally Douglas-fir, and aspen succeeding to conifer on this highly visible landscape from State Highway 30 and Soda Springs, Idaho.

A known occurrence for the boreal owl has been recorded in the IRA. This area rated moderate for lynx linkage habitat based on: 1) the amount of forested cover (31 percent); 2) low security (15 percent); and 3) the presence of a north-south ridge that may function as a travel corridor. Because of the low amount of security (15 percent), this area ranks low for wolverine and wolves.

This IRA has conifer cover over 31 percent of the area, ranking it moderate for forest-associated species. About 8 percent of the area is in grass/shrub cover, but these areas over ten miles from the nearest known sage grouse leks and are not considered potential sage grouse habitat.

Parts of this roadless area lie in Noss' Bear River Range site. The Bear River Range site was placed in Quadrant 2, and has an irreplaceability score of 57. It ranks moderate for this criteria. Based on the amount of vegetation at high departure from PFC (34 percent), this area ranks as moderate potential.

Bailey Creek is dominated by non-native brook trout, although some Bonneville cutthroat trout remain. Most drainages in this area are dry/fishless.

No rare plants, rare plant communities, or plant community reference areas have been documented in this IRA. Large scale restoration opportunities could serve as reference landscapes. No unique reference value has been identified for this area. Large-scale restoration opportunities could serve as reference landscapes in the area. The area contains a Research Natural Area and an ungrazed municipal watershed. These areas have unique reference value.

The area is managed in the summer for semi-primitive non-motorized recreation experience on 3,486 acres, and for semi-primitive motorized experience on 11,184 acres. The remaining 8,457 acres are managed for Roaded Natural. In the winter 3,486 acres are managed for semi-primitive non-motorized recreation. The remaining 19,635 acres is managed for semi-primitive motorized experiences.

Retention (high) is maintained on 9,537 acres adjacent to Soda Springs, Idaho and State highways 34 and 30. Partial retention (moderate) is maintained on 8,518 acres, and Modification (low) on 5,072 acres.

The IRA lies within the overthrust belt. Although the potential for oil and gas reserves is high in the area, there are no existing leases. No known potential exists for phosphate ore, and no active mining or exploration for locatable minerals is occurring.

The area contains several electronic sites administered under Special Use Permits.

Summarized IRA Specific Public Comments:

1. Allow summer and winter, motorized cross-country except in areas where travel is limited to designated trails under the current Travel Plan.
2. Non-motorized year-round because of the high ecological and year-round recreational value.
3. New motorized trail construction should be permitted in areas where travel is limited under the current Travel Plan.
4. Due to potential adverse effects to water quality, particularly in Bailey Creek, no timber sales should be allowed in this IRA.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Soda Point	04171	23,127	2.1.3	1,302	2.1.3	0	Dropped Municipal Watershed Rx, not Congressionally designated. Shifted acres to 2.7.2 Rx.
			2.2	908	2.2	908	No change, Research Natural Area, landscape reference site
			2.7.1	9,794	2.7.1	3,579	Readjustment of big game winter range based on actual use, flight data, and local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line. Acres shifted to Rx 2.7.2 or Rx 3.3.
			2.7.2	648	2.7.2	1,130	Increased acres by shifting 2.1.3 acres for lower road density in big game winter range
			2.8.3	1,773	2.8.3	1,773	No change. Riparian/Wetland Emphasis Area
			3.2	7,545	3.2	7,341	Shifted some acres to new 5.2 Rx for aspen regeneration and fuel reduction in interface areas.
			3.3	0	3.3	1,156	Aspen regeneration and rangeland vegetation management, fuels treatments.
			5.2	0	5.2	7,238	Stable soils, moderate watershed condition, aspen regeneration and fuel reductions for interface area
			6.1	1,156	6.1	0	Shifted acres to new 5.2 Rx for aspen regeneration and fuel reductions in interface area
Total IRA Acres				**23,126**		**23,125**	

Acres from GIS run dated July 26, 2002

Table R.25. IRA Characteristics Re-Evaluation: Soda Point # 04171

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 28% Erosion hazard	Moderate	Rx 2.13, Rx 2.2, Rx 2.7.1, Rx 3.2, Rx 5.1 or Rx 6.1
Air	**Sensitive Receptors:** Soda Springs and Grace, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	3% Red 97% Yellow No 303(d) streams	Moderate overall condition	No recommendation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Low High	Rx 5.1, or Rx 3.3 or Rx 6.2 for aspen restoration and fire hazard reduction activities.
Invasive Plant Species	27.6% of the IRA (6,376 acres)	High	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate Low Low Moderate N/A	Maintain the RNA designation and municipal watershed, because they provide wildlife benefits as undeveloped areas.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate Moderate	Maintain winter range as outlined in Alternative 7. Any Rx that allows restoration of aspen (6,700 acres).
Fisheries Biological Strongholds	Bonneville cutthroat trout in Bailey Creek.	Moderate	Rx 2.8.3 with INFISH in all riparian areas
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** RNA and Grace municipal watershed. Large scale aspen restoration areas	Moderate to high	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 3,486 acres SPM: 11,184 acres Roaded Natural: 8,457 acres	Moderate value for SPNM, high value for SPM due to Highline Trail	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 3,486 acres SPM: 5,310 acres	Low value for SPNM High value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 9,537 ac. Partial Retention (moderate): 8,518 ac. Modification (low): 5,072 ac.	High scenic integrity adjacent to Soda Springs and highways 34 and 30	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation.
Phosphate	No existing leases	No known potential	No recommendation.
Locatable Minerals	No active mines or exploration	Low potential	No recommendation.
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Electronic sites		Any Rx that does not impede compliance with permit.

#04178 STATION CREEK ≈ 9,680 ACRES

Description:

The Station Creek Roadless Area lies in Franklin, Idaho on the old Cache National Forest administered by the Montpelier Ranger District. It is located approximately eleven miles northeast of Preston, Idaho.

Approximately 3 percent of the area is unstable. About 3 percent of the IRA has an erosion hazard. Sensitive air quality receptors are Preston, Idaho and Logan, Utah. The IRA is within the twenty-mile sensitive receptor radius. It is not within 200 kilometers of a Class I area.

Watersheds in the IRA are rated as "yellow." No 303(d) streams are present.

The IRA's vegetation is composed of maple, sage/grass, Douglas-fir and aspen. No significant disturbance has occurred in the area. Aspen decline is rated as moderate due the small portion of the area with aspen present. Limited amounts of aspen/conifer occur along the southeast boundary. The insect and fire hazard ratings are both considered low, because of the small amount of conifers present in the area and the limited amount of forested vegetation. Invasive species occupy 3.4 percent of the area. Species include Canada thistle (54 acres), Dyers woad (255 acres) and Poison hemlock (16 acres).

Goshawks have been documented and reported in the IRA. This area rated low for lynx linkage habitat based on: 1) the amount of forested cover (8 percent); and 2) low security (0 percent). Because of the low amount of security (0 percent), this area ranks low for wolverine and wolves.

This IRA has conifer cover over 8 percent of the area ranking it low for forest-associated species. About 40 percent of the area has grass/shrub cover in smaller patches. These areas are over ten miles from the nearest known sage grouse leks and are not considered potential sage grouse habitat.

This area was not ranked as a conservation site by Noss, *et al*, (2001). It received a low ranking for this analysis. Based on the small amount of vegetation at high departure from PFC (6 percent), this area ranks as high potential.

Birch Creek in the Mink Creek system and Worm Creek are the major drainages in the area. Bonneville cutthroat trout were the only salmonid in Birch Creek. Worm Creek was dry.

No rare plants, rare plant communities, or plant community reference areas have been documented in this IRA. Aquatic habitat restoration opportunities for Bonneville cutthroat trout in the Birch Creek area could serve as a reference landscape. No unique reference value has been identified for this area.

Approximately 4,614 acres are managed for summer semi-primitive motorized recreation. The remaining 5,066 acres is managed for Roaded Natural. In the winter, the entire roadless area is managed for semi-primitive motorized recreation experiences.

The area is maintained for moderate scenic integrity. Approximately 531 acres are maintained in retention (high). Partial retention (moderate) is maintained on 7,502 acres and Modification (low) in maintained on the remaining 1,648 acres.

The area has a moderate potential for oil and gas reserves; however there are no existing leases at this time. No known potential for phosphate exist, and no active mines or exploration for locatable minerals is occurring.

A power line runs along the northern boundary of the IRA. The Hull Valley Boy Scout Camp is adjacent to the IRA.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer and winter, motorized cross-country.
3. Non-motorized during the summer months.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Station Creek	04178	9,681	2.7.2	3,100	2.7.2	2,524	Readjustment of big game winter range based on actual use, flight data, local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line. Acres shifted to Rx 6.2.
			2.8.3	423	2.8.3	423	No change. Riparian/Wetland Emphasis Area
			3.2	3,724	3.2	693	Manageability of existing uses/access, large number of acres shifted to 6.2 for rangeland vegetation management and restoration
			6.1	2,417	6.1	0	Shifted acres to new 6.2 Rx for rangeland vegetation management and restoration
			6.2	0	6.2	6,022	Stable soils, moderate watershed conditions, BCT habitat, rangeland vegetation management and restoration
			8.1u	18	8.1u	18	No change, utility corridor
Total IRA Acres				**9,682**		**9,680**	

Acres from GIS run dated July 26, 2002

Table R.26. IRA Characteristics Re-Evaluation: Station Creek # 04178

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	3% Unstable 3% Erosion hazard	Low	Rx 2.7.2, Rx 3.2, or Rx 6.1
Air	**Sensitive Receptors:** Preston, ID and Logan, UT	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow No 303(d) streams	Moderate overall condition	No recommendation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate Low Low	Rx 3.3 or Rx 6.2 for watershed protection and limited aspen restoration.
Invasive Plant Species	3.4% of the IRA (325 acres)	High	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Low Low Low Low N/A	No recommendation.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low Low	Rx 2.7.2 to maintain winter range as outlined in Alternative 7
Fisheries Biological Strongholds	Bonneville cutthroat trout in Birch Creek.	High	Rx 2.8.3 with INFISH in all riparian areas, Rx 3.1 in BCT stronghold watersheds
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Aquatic habitat restoration for BCT in Birch Creek area	Low	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 4,614 acres Roaded Natural: 5,066 acres	High value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 9,681 acres	Moderate value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 531 ac. Partial Retention (moderate): 7,503 ac. Modification (low): 1,648 ac.	Moderate scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	Moderate potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Power line on northern boundary, IRA adjacent to Hull Valley BSC		

#04173 STAUFFER CREEK ≈ 6,430 ACRES

Description:

The Stauffer Creek IRA lies within Bear Lake County, Idaho on the old Cache National Forest administered by the Montpelier Ranger District. It is located about seven miles west of Georgetown, Idaho.

No areas within this IRA are considered unstable. Approximately 18 percent has an erosion hazard. Sensitive air quality receptors include Soda Springs and Montpelier, Idaho. The IRA is inside the twenty-mile sensitive receptor radius. It is more than 200 kilometers of Class I areas.

All of the watersheds in the IRA are rated "yellow." Approximately 0.2 miles of 303(d) stream segment is located on Stauffer Creek.

The IRA's vegetation is composed of aspen/conifer, Douglas-fir, lodgepole pine, and mixed conifer. Past disturbance includes the Nounan Peak, Stauffer Creek, Alder Flat, Meadow Creek and Co-op timber sale areas. Aspen decline is considered high for the area, because of the large areas of aspen/conifer. The insect hazard is rated as moderate due to the presence of older conifer that is moderated by mixed species composition when considering the IRA as a whole. The fire hazard rating is considered high in the area due to the presence of aging conifer, aspen/conifer and the associated fuel buildup. No known infestations of invasive species are present.

This IRA is one of three (including Sherman Peak and Soda Point) that encompass the northern quarter of the Bear River Range, and makes up a continuous band along most of the northeast exposure of this range. Portions of the northeast side of the Soda Point IRA and the north end of the Sherman Peak IRA are located on the Forest boundary and form an urban interface with the Bailey Creek subdivision. When combined with two adjacent IRA's, they encompass 37,316 acres, have the third highest number of forested vegetation acres with a "high" fire hazard rating (16,923), and the fifth highest number of acres with a "high" insect (5,295) and aspen decline rating (13,402). They make up a large block of mature conifer, principally Douglas-fir, and aspen succeeding to conifer on this highly visible landscape from State Highway 30 and Soda Springs, Idaho.

Goshawks have been documented and recorded in the IRA. This area rated low for lynx linkage habitat based on: 1) the amount of forested cover (32 percent); 2) low security (5 percent); and 3) the presence of a few small drainages but no major ridges that may function as travel corridors. Because of the low amount of security (5 percent), this area ranks low for wolverine and wolves.

This IRA has conifer cover over 32 percent of the area ranking it moderate for forest-associated species. About 25 percent of the area is in grass/shrub cover but is over ten miles from the nearest known sage grouse leks. These areas are not considered potential sage grouse habitat.

This area was not ranked as a conservation site by Noss, *et al*, (2001). It received a low ranking for this analysis. Based on the amount of vegetation at high departure from PFC (46 percent), this area ranks as low potential.

Bonneville cutthroat trout strongholds are present in Stauffer, Co-op and Skinner Creeks.

No rare plants, rare plant communities, or plant community reference areas have been documented in the area. Large-scale aquatic habitat restoration opportunities in the Stauffer Creek watershed could serve as a reference landscape. No unique reference value has been identified for this area.

Approximately 3,777 acres are managed in the summer for semi-primitive motorized recreation experiences. The remaining 2,656 acres are managed for Roaded Natural. In the winter, the entire IRA is managed for semi-primitive motorized recreation uses.

A moderate scenic integrity is maintained for the area, because the western edge of the IRA is visible from Highway 30. Partial retention (moderate) is maintained on 3,378 acres, and Modification (low) is maintained on 3,055 acres.

The IRA lies within the overthrust belt. Although the area has a high potential for oil and gas reserves, there are no existing leases. No know potential exists for phosphate, and no active mining or exploration for locatable minerals is occurring.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer and winter, motorized cross-country.
3. Non-motorized during the summer months.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Stauffer Creek	04173	6,433	2.7.2	1,955	2.7.2	0	Readjustment of big game winter range based on actual use, flight data, local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line. Acres shifted to Rx 3.2
			2.8.3	418	2.8.3	418	No change. Riparian/Wetland Emphasis Area.
			3.2	4,060	3.2	6,015	Manageability of existing uses/access.
Total IRA Acres				**6,433**		**6,433**	

Acres from GIS run dated July 26, 2002

Table R.27. IRA Characteristics Re-Evaluation: Stauffer Creek # 04173

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 18% Erosion hazard	Low	Rx 2.7.2, Rx 3.2, or Rx 5.1
Air	**Sensitive Receptors:** Soda Springs and Montpelier, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow 0.2 miles of 303(d) streams on Stauffer Creek	Moderate restoration potential in Stauffer Creek watershed, low elsewhere	Rx 3.1, Rx 3.3 or Rx 6.2 on Stauffer Creek watershed. No recommendation for remaining area.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Moderate High	Rx 5.1, or Rx 3.3 or Rx 6.2 for aspen restoration and fire hazard reduction activities.
Invasive Plant Species	No known infestations	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Low Low Low Moderate N/A	No recommendation.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low High	Rx 2.7.2 maintain as outlined in Alternative 7. Any Rx that allows for aspen restoration (3,000 acres).
Fisheries Biological Strongholds	Bonneville cutthroat trout strongholds in Stauffer, Co-op and Skinner Creeks	High	Rx 2.8.3 with INFISH in all riparian areas, Rx 3.1 in BCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Aquatic habitat restoration for BCT	Moderate for Stauffer Creek, low elsewhere	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 3,777 acres Roaded Natural: 2,656 acres	Moderate value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 6,432 acres	High value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Partial Retention (moderate): 3,378 ac. Modification (low): 3,055 ac.	Moderate scenic integrity on western edge seen from Highway 30	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	None		

#04162 STUMP CREEK ≈97,300 ACRES

Description:

The Stump Peak Roadless Area is within Caribou County, Idaho and Lincoln County, Wyoming on the Soda Spring Ranger District. It is located approximately twenty miles northeast of Soda Springs, Idaho and ten miles northwest of Afton, Wyoming. The Tincup Highway is the northern boundary of the area.

Approximately 49 percent of this IRA is considered unstable. About 31 percent of the area has an erosion hazard. Soda Springs, Idaho and Afton, Wyoming are sensitive air quality receptors and are within the twenty-mile sensitive receptor radius. This IRA is within 200 kilometers of a Class I area.

About half (49 percent) of the IRA's watersheds are rated "yellow." The remaining 51 percent are rated "green." An estimated eight miles of 303(d) stream segments have been identified on Boulder Creek.

The IRA's vegetation is composed of Douglas-fir, lodgpole pine, aspen/conifer and mixed conifer. Past disturbance includes the Diamond Flat and Bacon Salvage timber sale areas. Mining activities are occurring in Smokey Canyon. The Brown's Canyon wildfire occurred just adjacent to the IRA.

This IRA has the largest number of forested vegetation acres (66,768). It has the second highest number of forested vegetation acres with a "high" fire hazard rating (26,616), and the highest number of acres with a "high" insect hazard rating (12,562) and aspen decline rating (20,448). The north half of the IRA, north of Stump Creek and the Lander Cutoff Trail, is dominated by mountains of the Caribou Range where large blocks of aspen are succeeding to conifer and mature conifer stands. The southern portion, dominated by Webster Ridge, has large blocks of primarily mature lodgepole pine and Douglas fir. In 1994, the south half of this IRA, which adjoins the Caribou Mountain IRA, experienced the second largest high intensity, stand-replacing wildfire to occur on the Forest in the past eighty years, in primarily mature conifer vegetation. The aspen decline rating is considered moderate due to large blocks of aspen/conifer on the north end and smaller blocks on the south end. The insect and fire hazard ratings are both high for the area due to aging conifer and conifer encroachment into aspen stands. Invasive species occupy 0.2 percent of the area. Species include leafy spurge (22 acres), Canada thistle (80 acres), Henbane (3 acres), Musk thistle (47 acres) and Yellow toadflax (6 acres).

Known occurrences of great gray owl have been documented in the IRA. The area lies south of the historic Caribou City country and the Bridger-Teton National Forest to the east making it important for movements of species from the Greater Yellowstone Ecosystem. Idaho Department Fish and Game has been managing for trophy elk hunting in this area as well. The IRA rated high for lynx linkage habitat, based on: 1) the presence of several major drainages and ridges, which could provide movement corridors; 2) proximity to GYE and importance for movements to the south; 3) the area has 48 percent conifer cover; and 4) large amount of security (26 percent). Because of the amount of security (26 percent) this area ranks moderate for wolverines and wolves. Wildlife security areas are available in several areas, including Terrace Canyon, Lander Creek/Stump Peak and Scheiss Creek.

This IRA has forested cover over 48 percent of the area ranking it high for forest-associated species. The area has 30 percent grass/shrub within five to ten miles of the nearest known sage grouse lek and is rated moderate for sage grouse.

This IRA is in part of Noss' Blackfoot-Salt site. The Blackfoot-Salt site is part of the southeast Idaho phosphate belt and includes relatively recent lava flows. The area supports substantial aspen and willow bottoms. This site was placed in Quadrant 2 but has a high irreplaceability score of 88. For this analysis it is rated as moderate. Based on the amount of vegetation at high departure from PFC (21 percent), this area ranks as moderate potential.

Major drainages include Tincup, Toms, Stump, Horse, Timothy, Bacon, Webster, and Drainey Creeks. Yellowstone cutthroat trout strongholds exist in Tincup, Stump, Horse, and Drainey Creeks. Timothy and Bacon Creeks have not been surveyed, but they are assumed to be inhabited by Yellowstone cutthroat.

The area contains no documented rare plants. Rare plant communities have been documented in the upland and riparian communities in the Horse Creek Research Natural Area. This RNA has also been identified as having unique reference values. Large wildlife security areas identified by the wildlife biologist, aspen restoration opportunities, and large-scale aquatic habitat restoration for native trout could serve as reference landscapes.

In the summer approximately 4,069 acres are managed as semi-primitive non-motorized recreation. About 85,426 acres is managed for semi-primitive motorized, and the remaining 7,806 acres are managed as Roaded Modified. In the winter, about 6,200 acres are managed for semi-primitive non-motorized recreation, and the remaining 91,189 acres are managed for semi-primitive motorized recreation experiences.

The area is maintained in retention (high) scenic integrity adjacent to the historic Lander Trail, Tincup Scenic Byway, and Star Valley, Wyoming. Partial retention (moderate) is maintained on 69,604 acres. Modification (low) is maintained on 20,232 acres.

The IRA lies within the overthrust belt. Although a high potential exists for oil and gas resources, there are no existing leases. The IRA contains 160 acres of phosphate leases along the south and southeastern edge, and 100 acres of KPLA areas. An active phosphate mine exists adjacent to the southeast boundary of the IRA. No active mining or exploration for locatable minerals is occurring.

One outfitter and guide is permitted in the IRA. Historical and interpretive trips are conducted along the Lander Trail. A power line runs along the southwestern boundary of the IRA. The area also has produced significant paleontological resources.

Summarized IRA Specific Public Comments:

1. Allow summer and winter, motorized cross-country except in areas where travel is limited to designated trails or closed under the current Travel Plan.
2. Should be managed as wilderness or with similar protections due to highly erodible red soils and outstanding wildlife reserves.
3. No new roads should be built and no timber sales should be developed in the northern half of this IRA due to the instability of the soils (slumpy red clay beds).

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Stump Creek	04162	97,302	2.1.2	396	2.1.2	1,169	Increased Rx acres for Visual Quality maintenance along travel corridors
			2.1.5	0	2.1.5	1,316	Applied new Rx to Lander Trail historic site corridor
			2.2	496	2.2	496	No change, Research Natural Area, landscape reference site
			2.7.2	17,231	2.7.2	18,800	Increased Rx area to match topo/cultural features for manageability, big game winter range
			2.8.3	6,367	2.8.3	6,367	No change. Riparian/Wetland Emphasis Area
			3.1	0	3.1	5,985	Wildlife Security Area, wolverine habitat, lynx habitat
			3.2	71,685	3.2	53,221	Manageability of existing uses/access, some acres shifted to 2.1.5 for Lander trail, 2.1.2 for visual quality maintenance along travel corridors, 5.2 for insect, disease and fire hazard management
			5.1	5	5.1	0	Shifted acres to 5.2 Rx for insect, disease, and fire hazard reduction
			5.2	0	5.2	6,847	Maintenance of stand integrity, past harvest area, management access, insect, disease and fire hazard reductions
			6.1	715	6.1	0	Shifted acres to new 6.2 Rx for consolidation of Rx's
			6.2	0	6.2	2,983	Increased Rx area to include some acres from 3.2 Rx, rangeland vegetation management and restoration
			6.3	287	6.3	0	Shifted acres to new 6.2 Rx for consolidation of Rx's
			8.1u	119	8.1u	116	Minor boundary adjustment for utility corridor
			8.2.2	0	8.2.2	1	Phosphate lease
Total IRA Acres				**97,296**		**97,301**	

Acres from GIS run dated July 26, 2002

Table R.28. IRA Characteristics Re-Evaluation: Stump Creek # 04162

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	49% Unstable 31% Erosion hazard	High	Rx 2.7.1, Rx 2.2, Rx 3.1, Rx 3.2, or Rx 6.2
Air	**Sensitive Receptors:** Soda Springs, ID and Afton, WY	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	49% Yellow 51% Green 8 miles of 303(d) streams on Boulder Creek	High restoration potential in Boulder Creek, low elsewhere	Rx 3.1, Rx 3.3 or Rx 6.2 on Boulder Creek, no recommendation for remaining area.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate High High	Rx 3.3, Rx 5.1 or Rx 6.2 on southern portion, Rx 3.3 or 6.2 on northern portion for watershed and aspen restoration.
Invasive Plant Species	0.2% of the IRA (158 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species(forested habitat):** **Management Indicator Species (grass/shrub habitat):**	High Moderate Moderate High Moderate	Rx 3.1a on security areas in Terrence Canyon, Lander/Stump Peak, Scheiss Creek for non-motorized secure areas for wolverines and elk during hunting season.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate Moderate	Maintain winter range as outlined in Alternative 7
Fisheries Biological Strongholds	YCT in Tincup, Toms, Stump, Horse, Timothy, Bacon, Webster and Drainey Creeks	High	Rx 2.8.3 with INFISH in all riparian areas, Rx 3.1 in Ct stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Horse Creek RNA Plant Community reference areas: Horse Creek RNA	None Yes Yes	Maintain Rx 2.2 in RNA, then any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** RNA Wildlife security areas, aspen and aquatic habitat restoration	High Overall	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 4,069 acres SPM: 85,426 acres Roaded Modified: 7,806 acres	High value for SPNM and SPM	Maintain existing recreation settings and consider increase in SPNM in site-specific travel planning
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 6,192 acres SPM: 91,189 acres	High value for SPNM and SPM	Maintain existing recreation settings and consider increase in SPNM in site-specific travel planning.
Landscape Character & Scenic Integrity	Retention (High): 7,466 ac. Partial Retention (moderate): 69,604 ac. Modification (low): 20,232 ac.	High scenic integrity on Lander Trail, Tincup Scenic Byway, Star Valley	Maintain or improve scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	Active leases: 160 acres KPLAs: 100 acres	High potential on lease and KPLAs, Moderate to low elsewhere	Rx 8.2.2 on active leases, Rx 8.2.1 on inactive and KPLA areas, no recommendation for remaining area.
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Outfitter and guide, Interpretive trips on Lander trail, power line adjacent to IRA, paleontological resources		Any Rx that does not impede compliance with permit.

#04180 SWAN CREEK MOUNTAIN (IDAHO PORTION) ≈7,430 ACRES

Description:

This Idaho portion of this IRA lies within Bear Lake and Franklin Counties, Idaho on the old Cache National Forest now administered by the Montpelier Ranger District. The Utah portion is located in Rich and Cache Counties, Utah on the old Cache National Forest now administered by the Logan Ranger District. The area straddles the Utah-Idaho state line and is located about three miles west of Fish Haven, Idaho. The Idaho portion contains approximately 6,156 acres, which is addressed in this discussion. The remaining 9,569 acre-portion is in Utah and is addressed in the Wasatch-Cache National Forest's forest planning process.

None of the Idaho portion of this IRA is considered unstable. About 39 percent of the Idaho portion has an erosion hazard. Montpelier, Idaho and Logan, Utah are sensitive air quality receptors. Both of these communities are within the twenty-mile sensitive receptor area. The IRA is more than 200 kilometers from a Class I area.

Approximately 76 percent of the watersheds in this IRA are rated "yellow," the remaining 24 percent is rated "Green." No 303(d) streams are present in the Idaho portion.

The IRA's vegetation is composed of mixed conifer, Douglas-fir, aspen, aspen/conifer, lodgepole pine and spruce/fir. Past disturbance includes the Fish Haven, Swan Flat, and Old Logan Road timber sale areas. Aspen decline is rated as moderate due to aging aspen and lack of adequate regeneration. The insect and fire hazard ratings are considered high, because of the presence of older conifers, conifer encroachment into aspen, and the associated fuel buildup. The eastern side of this IRA is on the Forest boundary and borders private land with summer homes. It also borders big game winter range. Although the Idaho portion of this IRA is relatively small, over 80 percent of the area is covered with mature coniferous vegetation with the largest block of multi-canopy mixed conifer on the forest (subalpine fir, Douglas fir, Engelmann spruce, and lodgepole pine). These forests, with their preponderance of shade-tolerant tree species, develop into dense stands with live fuels in the understory and tree crowns extending to the forest floor. This characteristic adds to the "high" fire hazard rating for this IRA. No infestations of invasive species have been identified in this area.

Known occurrences of goshawks and flammulated owls have been recorded in the IRA. This area rated moderate for lynx linkage habitat, based on: 1) the amount of forested cover (57 percent); 2) adjacency to a Wasacht-Cache roadless area being proposed for "custodial" management; and 3) amount of security (15 percent). Because of the low amount of security (15 percent), this area ranks low for wolverine and wolves.

This IRA has conifer cover on 57 percent of the area ranking it high for forest-associated species. The area has little grass/shrub (15 percent), generally found in small patches and located between two to five miles of the nearest known sage grouse leks to the east. As a result the area is rated low for potential sage grouse habitat.

This IRA was not ranked by Noss, *et al*, (2001) and is rated low for this analysis. Based on the amount of vegetation at high departure from PFC (30 percent), this area ranks as moderate potential.

Fish Haven Creek, the only major drainage, is dominated by non-native brook trout. No BCT trout have been documented in the area.

No rare plants, rare plant communities, or plant community reference areas have been documented in this IRA. Large-scale restoration opportunities for fuels reduction could serve as a reference landscape. No unique reference value has been identified in this IRA.

In the summer the area is managed for semi-primitive motorized recreation experiences on 4,704 acres. The remaining 2,725 acres is managed as Roaded Natural. In the winter, the entire IRA (7,330 acres) is managed for semi-primitive motorized recreation.

Partial Retention (moderate) scenic integrity is maintained across the entire IRA, because it is adjacent to Bear Lake Valley and U.S. Highway 89.

The IRA lies within the overthrust belt. Although the potential is high for oil and gas reserves, there are no leases at the present time. No know potential exists of phosphate, and no active mining or exploration is occurring for locatable minerals.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized with travel limited to designated routes.
2. Non-motorized during the summer months.
3. Allow winter, motorized cross-country.
4. Non-motorized year-round because of the high ecological and year-round recreational value.
5. New motorized trail construction should be permitted.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Swan Mountain	04180	7,428	2.7.1	2,043	2.7.1	956	Readjustment of big game winter range based on actual use, flight data, local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line. Acres shifted to Rx 3.3
			2.8.3	140	2.8.3	140	No change. Riparian/Wetland Emphasis Area
			3.2	5,246	3.2	0	Shifted acres to 3.3 Rx for aspen regeneration
			3.3	0	3.3	6,332	Aspen regeneration, reduction of insect, disease and fire hazard ratings, maintenance of timber stand integrity, past harvest area, management access
Total IRA Acres				**7,429**		**7,428**	

Acres from GIS run dated July 26, 2002

Table R.29. IRA Characteristics Re-Evaluation: Swan Creek Mountain (Idaho portion) # 04180

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 39% Erosion hazard	Low	Rx 2.7.1, Rx 3.2, or Rx 5.1
Air	**Sensitive Receptors:** Montpelier, ID and Logan, Utah	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	76% Yellow 24% Green No 303(d) streams	Moderate overall condition	No recommendation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate High High	Rx 5.1, Rx 3.3 or Rx 6.2 for aspen restoration and fuel buildup.
Invasive Plant Species	No known infestations	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species (forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Moderate Low Low High Low	Any Rx that allows for restoration of tarweed that is present in tall forb communities (acres are unknown at this time).
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low Moderate	Maintain winter range as outlined in Alternative 7
Fisheries Biological Strongholds	Non-native brook trout in Fish Haven, No BCT documented	Low	Rx 2.8.3 with INFISH in all riparian areas
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Large-scale fuels reduction activities	High for fuels reduction areas, low elsewhere	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 4,704 acres Roaded Natural: 2,725 acres	High value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 7,330 acres	High value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Partial Retention (moderate): 7,428 ac.	Moderate scenic integrity adjacent to Bear Valley and US Hwy. 89	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	Moderate to low potential around leased acreage, low elsewhere in IRA	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	None		

#04169 TELEPHONE DRAW ≈ 4,920 ACRES

Description:

The Telephone Draw Roadless Area is within Bear Lake County, Idaho on the Montpelier Ranger District. It is located approximately seven miles east of Montpelier and four miles west of Geneva, Idaho.

Approximately 23 percent of the IRA is considered unstable. About 59 percent of the area has an erosion hazard. Montpelier, Idaho and Afton Wyoming are sensitive air quality receptors. Both of these communities are within the twenty-mile sensitive receptor radius. The IRA is more than 200 kilometers from a Class I area.

All of the watersheds in this IRA are rated "Red." About 1.8 miles of 303(d) stream segments have been identified in Snowslide Canyon.

The IRA's vegetation is composed of sagebrush/grass, lodgepole pine, and Douglas-fir. No major disturbance has occurred in the area. Aspen decline, insect and fire ratings are all considered low for the area, because of the small amount of aspen and coniferous forest. Invasive species occur on 0.2 percent of this IRA. Species include Canada thistle (1 acre) and Dyers woad (8 acres).

This area rates low for lynx linkage habitat, based on: 1) the lack of forested cover (3 percent); 2) amount of security (28 percent); and 3) lack of adjacent suitable habitat. Because of the amount of security (28 percent), this area ranks moderate for wolverine and wolves.

This IRA has conifer cover on only 3 percent of the area ranking it low for forest-associated species. The area is predominately grass/shrub (96 percent). It is located within two to five miles of known sage grouse leks to the east, and as a result, is rated high for potential sage grouse habitat.

This IRA lies in Noss' Gannet Hills site. The Noss study mentions that this area has some of the highest game values in Idaho. This area was placed in Quadrant 2, and has an irreplaceability score of 55. For this analysis it is rated moderate. Based on the amount of vegetation at high departure from PFC (1 percent), this area ranks as high potential.

This IRA is dominated by non-native fish, primarily brook trout. Low frequencies of Bonneville Cutthroat trout exist in Snowslide and Montpelier Creeks.

A proposed sensitive plant, the Unita Basin Cryptantha, and the sensitive plant, starveling milkvetch occur at or near Montpelier Reservoir, Snowslide Canyon, Telephone Draw, and east of Geneva Summit. No rare plant communities or plant community reference areas have been documented in the IRA. Large-scale watershed restoration opportunities could serve as landscape references. No unique reference value has been identified in the area.

In the summer the IRA is managed for semi-primitive motorized recreation on 3,212 acres. The remaining 1,706 acres are managed for Roaded Natural. In the winter, approximately 2,880 acres in a wildlife exclosure are managed for semi-primitive non-motorized recreation. The remaining 2,063 acres are managed for semi-primitive motorized recreation.

Overall, the IRA in managed for moderate scenic integrity. Retention (high) is maintained on 368 acres. Partial retention (moderate) is maintained on 4,316 acres. Modification (low) is maintained on the remaining 234 acres.

The IRA lies within the overthrust belt. Although the area has a high potential for oil and gas reserves, there are no existing leases. No known potential exits for phosphate, and no active mining or exploration of locatable minerals is occurring.

Summarized IRA Specific Public Comments:

1. Allow winter, motorized cross-country, except in areas where travel is limited or closed under the current Travel Plan.
2. Non-motorized year-round because of the high ecological and year-round recreational value.
3. Allow summer, motorized with travel limited to designated routes.

4. Non-motorized during the summer months.
5. New motorized tail construction should be permitted.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Telephone Draw	04169	4,918	2.1.2	36	2.1.2	81	Increased Rx acres for visual quality maintenance in travel corridors
			2.7.1	4,308	2.7.1	3,297	Readjustment of big game winter range based on actual use, flight data, local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line. Acres shifted to Rx 6.2.
			2.8.3	228	2.8.3	228	No change. Riparian/Wetland Emphasis Area
			4.3	0	4.3	2	Dispersed recreation area
			6.2	0	6.2	1,310	Watershed restoration, rangeland vegetation management and restoration, Rx consolidation
			6.3	345	6.3	0	Shifted acres to new 6.2 Rx for consolidation of Rx's
Total IRA Acres				**4,917**		**4,916**	

Acres from GIS run dated July 26, 2002

Table R.30. IRA Characteristics Re-Evaluation: Telephone Draw # 04169

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	23% Unstable 49% Erosion hazard	Moderate	Rx 2.7.1, Rx 3.2, and/or Rx 6.2
Air	**Sensitive Receptors:** Montpelier, ID and Afton, Wyoming	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Red 1.8 miles of 303(d) streams in Snowslide Canyon	High restoration potential	Rx 3.3 or Rx 6.2 for watershed restoration
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Low Low Low	Rx 3.3 or Rx 6.2 for watershed restoration.
Invasive Plant Species	0.2% of the IRA (9 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species (forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Low Moderate Moderate Low High	Maintain sagebrush for sage grouse.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate Low	Maintain winter range as outlined in Alternative 7.
Fisheries Biological Strongholds	Low density of BCT in Snowslide and Montpelier Creeks.	Moderate	Rx 2.8.3 with INFISH in all riparian areas
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Starveling milkvetch, Unita Basin Cryptantha Rare Plant Communities: Plant Community reference areas:	Yes None None	Non-motorized Rx to protect sensitive plants. Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Large-scale watershed restoration activities	Moderate for watershed, low elsewhere.	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 3,212 acres Roaded Natural: 1,706 acres	High value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 2,880 acres SPM: 2,063 acres	Very High value for SPM, moderate value for SPNM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 368 ac. Partial Retention (moderate): 4,316 ac. Modification (low): 234 ac.	Moderate scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	None		

#04153 TOPONCE ≈18,300 ACRES

Description:

This roadless area unit is located within Bannock and Caribou Counties, Idaho on the Westside Ranger District. It is located approximately twelve air miles east of Pocatello, Idaho

About 6 percent of this IRA is considered unstable. About 36 percent has an erosion hazard. Pocatello, Idaho is the only sensitive air quality receptor and is within the twenty-mile sensitive receptor radius. The IRA is more than 200 kilometers from a Class 1 area.

The majority of watersheds (98 percent) in this IRA are rated "Yellow." No 303(d) streams are present.

The IRA's vegetation is composed of mountain brush, sagebrush/grass, aspen, Douglas-fir, and aspen/conifer. Past disturbance includes a minor amount of prescribed fire treatment, minor windthrow stand damage, and harvest on adjacent State of Idaho land. Aspen decline is rated high due to the age of existing aspen in the area and the lack of adequate regeneration. The Insect hazard rating is considered low, due to the small amount of coniferous trees in the area. The fire hazard is moderate, because of the presence of aspen/conifer, older conifer, and the associated fuel buildup. Invasive species occupy approximately 1.9 percent of the area. Species include Canada thistle (28 acres), Musk thistle (42 acres), and Tall larkspur (274 acres).

The Idaho Department of Fish and Game has expressed concern for mule deer in the area (See EIS and Wildlife Process Paper for rationale). Known TES occurrences for this IRA include Townsends Big-eared bat. This IRA is located on the Westside Ranger District and is not considered to provide linkage habitat for lynx. Only one fairly large security area exists along the northern part of the IRA. Because of the large amount of security (75 percent), this area has high potential for habitat for wolverines and wolves. Observations of wolverine have been recorded in the mountain range.

This IRA is a mix of aspen (30 percent), grass/shrub (13 percent) and conifer (6 percent), with smaller amounts of other types. Based on the amount of forested cover, it ranks as low potential for habitat for forest-associated species. Although this area has a small amount of grass/shrub and is within five to ten miles of known sage grouse leks, it rates high because of the contiguous acres of sagebrush.

This IRA was not included as a conservation site in Noss, *et al*, (2001) and this criteria rated low for this analysis. Because of the amount of habitat at high departure from PFC (37 percent), the area ranks as moderate potential.

The Middle and South Forks of Toponce Creek are considered Yellowstone cutthroat trout stronghold streams. In the Middle Fork, Yellowstone cutthroat trout make up the entire salmonid community. In the South Fork, hatchery rainbow trout are stocked by the Idaho Department of Fish & Game; however, the majority of the salmonid community consists of Yellowstone cutthroat trout.

No rare plants, rare plant communities or plant community reference areas have been documented in the IRA. Wildlife security areas identified by the Wildlife Biologist and large-scale aquatic habitat restoration for Yellowstone cutthroat trout could serve as reference landscapes. No unique reference value has been identified in the area.

In the summer the area is managed for semi-primitive non-motorized recreation on about 16,240 acres. The remaining 2,056 acres are managed for Roaded Modified. In the winter, approximately 853 acres in a wildlife exclosure are managed for semi-primitive non-motorized recreation. The remaining 17,443 acres are managed for semi-primitive motorized recreation experiences.

The area is managed for overall moderate scenery integrity. Approximately 1,379 acres are maintained for retention (high) scenic integrity. Partial retention (moderate) is maintained on 7,624 acres. Modification (low) is maintained on 9,653 acres.

The area has a moderate potential for oil and gas reserves; however, there are no existing leases at the present time. No known potential exists for phosphate. The IRA contains an abandoned copper mine in the southwest corner of the area. No active mining or exploration for locatable minerals is occurring.

One outfitter is permitted to operate in the area. McNab and Inman yurts are maintained by Idaho State University. The IRA is adjacent to a phosphate slurry pipeline along the southern boundary.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow winter, motorized cross-country.
3. Area should be non-motorized during the winter to provide cross-country skiers with semi-primitive recreation opportunities.
4. An area around the McNabb yurt should be designated as non-motorized winter use.
5. Area should be non-motorized year-round in order to protect the peaks, which are sacred to the "Indians," and the side on the Fort Hall Indian Reservation is kept in good condition.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Toponce	04153	18,296	2.7.1	1,134	2.7.1	1,144	Minor adjustment of Rx boundary to topo/cultural feature for manageability
			2.8.3	1,307	2.8.3	1,307	No change. Riparian/Wetland Emphasis Area
			3.1	11,814	3.1	6,865	Wildlife Security Area, wolverine habitat, sage grouse habitat, shifted some acres to 6.2 Rx for aspen regeneration in late seral stands
			6.1	4,031	6.1	0	Shifted acres to new 6.2 Rx for rangeland vegetation management and restoration for sagebrush, Rx consolidation
			6.2	0	6.2	8,970	YCT habitat, rangeland vegetation management and restoration of sagebrush
			8.1u	10	8.1u	10	No change, utility corridor
Total IRA Acres				**18,296**		**18,296**	

Acres from GIS run dated July 26, 2002

Table R.31. IRA Characteristics Re-Evaluation: Toponce # 04153

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	6% Unstable 36% Erosion hazard	Moderate	Rx 2.7.1, Rx 3.1, or Rx 6.2
Air	**Sensitive Receptors:** Pocatello, ID	Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	98% Yellow No 303(d) streams	High restoration potential	No recommendation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Low Moderate	Rx 3.3 or Rx 6.2 for aspen restoration and fuels reduction.
Invasive Plant Species	1.9% of the IRA (344 acres)	Medium	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species (forested habitat):** **Management Indicator Species (grass/shrub habitat):**	N/A High High Low High	Rx 3.1a on large security area in the western portion of this IRA. Maintain sagebrush for sage grouse.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low Moderate	Maintain winter range as outlined in Alternative 7.
Fisheries Biological Strongholds	Yellowstone cutthroat trout in middle and south fork of Toponce Creek	Low	Rx 2.8.3 with INFISH in all riparian areas, Rx 3.1 in YCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Wildlife security areas, aquatic habitat restoration areas	High for security areas, low elsewhere.	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 16,240 acres Roaded Modified: 2,056 acres	High value for SPNM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 853 acres SPM: 17,443 acres	High values for SPM and low value for SPNM	Maintain existing recreation settings. Consider increase in SPNM during site-specific travel planning.
Landscape Character & Scenic Integrity	Retention (High): 1,379 ac. Partial Retention (moderate): 7,264 ac. Modification (low): 9,653 ac.	Moderate scenic integrity	Maintain or improve existing scenic integrity.
Oil & Gas	No existing leases	Moderate potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Outfitter & Guide, McNab and Inman yurts, phosphate slurry line adjacent to IRA		Any Rx that does not impede permit compliance.

Description:

The West Mink Roadless Area is within Bannock and Power Counties, Idaho on the Westside Ranger District. The center of the area is about six miles south of Pocatello, Idaho in the Bannock Mountain range.

None of the IRA is considered unstable. About 31 percent of the area has an erosion hazard. Pocatello, Idaho is the only sensitive air-quality receptor and is located within the twenty-mile sensitive receptor radius. The IRA is more than 200 kilometers from a Class I area.

All of the watersheds in the IRA are rated "Yellow." No 303(d) streams are present. The Pocatello Municipal watershed lies within the IRA and has been congressionally designated to protect domestic use water for the city of Pocatello. This area has been given a special management prescription (2.1.3) and will be managed according to the direction in the Caribou National Forest Revised Forest Plan.

The IRA's vegetation is composed of sagebrush/grass, Douglas-fir, mountain brush, aspen and aspen/conifer. The only past disturbance is the Crystal timber sale area. The aspen decline rating is moderate for the area, due to the presence of primarily older aspen stands and the lack of adequate regeneration. The Insect and fire hazard ratings are moderate due to the presence of aging Douglas-fir, conifer encroachment into aspen areas, and associated fuel buildup. Invasive species occupy 2.0 percent of the IRA. Species include Canada thistle (25 acres), Musk thistle (15 acres), Poison hemlock (4 acres), and tall larkspur (360 acres).

Known TES occurrences for this IRA include the flammulated owl. Idaho Partners in Flight have designated Mink Creek/Cherry Springs area as an Important Bird Area. This IRA is located on the Westside Ranger District and is not considered to provide linkage habitat for lynx. A few small security areas are available in this IRA. Because of the amount of security (24 percent), this area has moderate potential for habitat for wolverines and wolves.

This IRA is a largely a mix of conifer (17 percent) and grass/shrub (55 percent). Based on the amount of forested cover, it ranks as low potential for habitat for forest-associated species. Although there is a large amount of grass/shrub habitat, it is located more than ten miles from the nearest known sage grouse lek and is not considered sage grouse habitat.

Noss, *et al*, (1999) placed this area in the Portneuf site. This site ranked in Quadrant 1. The irreplaceability was placed at 51, which is moderate. The study mentions significant herds of mule deer and growing herds of elk. This IRA is rated high for this criterion. Because of the low amount of habitat at high departure from PFC (14 percent), the area ranks as high potential.

West Mink Roadless Area is inhabited by Yellowstone cutthroat trout, a Regional Forester's Sensitive Species. West Fork Mink and Gibson Jack Creeks are the primary streams in the area. They are considered Yellowstone cutthroat trout stronghold streams. The West Fork of Mink Creek was dominated by Yellowstone cutthroat trout. A low frequency of brown trout inhabits the lower reach of the stream. Gibson Jack Creek, a source for Pocatello's drinking water, has high quality habitat. Yellowstone cutthroat trout are the only salmonid observed in Gibson Jack Creek.

Other major drainages in the area include City and Midnight Creeks. No fish were observed in City Creek on the Forest in 2001, although habitat was good. Midnight Creek was dry on the Forest when sampled in 2001. However, Midnight Creek, downstream of the Forest boundary, was inhabited by Yellowstone cutthroat trout as the sole salmonid, making it a stronghold stream.

No rare plants have been documented in the IRA. Upland and wetland/riparian plant communities in the Gibson Jack and West Fork Mink Creek Research Natural Areas, and a rare riparian plant community at the Cherry Springs Natural Area have been identified as rare plant communities, and as plant community reference areas. The two RNA's in this roadless area provide unique reference values. Large-scale aquatic restoration for native Yellowstone cutthroat trout could serve as a reference landscape.

The area is one of the nearest natural recreation areas to Pocatello, Idaho and enjoys heavy use in the summer and winter. In the summer, approximately 10,350 acres are managed for semi-primitive non-motorized recreation. Semi-primitive motorized recreation is featured on 8,904 acres. The remaining 1,392 acres are managed for Roaded Natural. In the winter,

approximately 9,558 acres are managed for semi-primitive non-motorized recreation, including a cross-country ski area. The remaining 11,094 acres are managed for semi-primitive motorized recreation experiences.

Overall the area is maintained for high scenic integrity, because of heavy public use year-round and its close location to Pocatello, Idaho. Retention (high) is maintained on 3,655 acres, and partial retention is maintained on 3,503 acres. The remaining 13,487 acres are maintained in Modification (low).

A moderate potential exists for oil and gas reserves; however, there are no existing leases at this time. No known potential exist for phosphate, and no active mining or exploration of locatable minerals is occurring.

One outfitter and guide is permitted to operate in the area. A waterline exists to Pocatello, Idaho for non-culinary purposes. A power line runs along the northwestern corner of the IRA. Approximately 80 acres within the IRA are privately owned.

Summarized IRA Specific Public Comments:

1. Allow summer, motorized with travel limited to designated routes.
2. Non-motorized year-round because of the high ecological and year-round recreational value.
3. Allow winter, motorized cross-country.
4. Area should be managed as roadless, with no new roads or timber harvests, due to its high recreation values. Grazing should also be eliminated for the same reason and because cattle spread noxious weeds.
5. New motorized trail construction should be permitted.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
West Mink	04151	20,646	2.1.2	231	2.1.2	632	Increased Rx acres for visual quality maintenance along travel corridors
			2.1.3	5,020	2.1.3	5,001	Minor boundary adjustment, Pocatello Municipal Watershed Area
			2.2	2,716	2.2	2,716	No change, Research Natural Area, landscape reference site
			2.7.2	1,136	2.7.2	1,512	Increased acres from 3.2 to match current travel plan restrictions and user compliance. Big game winter range
			2.8.3	1,250	2.8.3	1,250	No change. Riparian/Wetland Emphasis Area
			3.2	8,939	3.2	8,606	Manageability of existing uses/access, some acres shifted to 2.1.2 for visual quality maintenance, 5.2 past timber harvest area management
			5.2	0	5.2	901	Maintenance of timber stand integrity in past harvest area, management access
			6.1	1,326	6.1	0	Shifted acres to 3.2 Rx for consolidation of Rx's
			8.1u	28	8.1u	28	No change, utility corridor
Total IRA Acres				**20,646**		**20,646**	

Acres from GIS run dated July 26, 2002

Table R.32. IRA Characteristics Re-Evaluation: West Mink # 04151

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 31% Erosion hazard	Low	Rx 2.1.3, Rx 2.2, Rx 2.7.1, and/or Rx 3.2
Air	**Sensitive Receptors:** Pocatello, ID	Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow No 303(d) streams	Moderate overall conditions	No recommendations
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate Moderate Moderate	Rx 5.1 in the vicinity of the Crystal Timber Sale, Rx 3.3 for aspen restoration and fuel reduction.
Invasive Plant Species	2.0% of the IRA (404 acres)	High	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species (forested habitat):** **Management Indicator Species (grass/shrub habitat):**	N/A Moderate Moderate Low N/A	Maintain Rx for RNAs and municipal watershed. Undeveloped nature of these areas is a benefit to wildlife
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	High Low	Maintain winter range as outlined in Alternative 7
Fisheries Biological Strongholds	WF Mink and Gibson Jack, and Midnight Creeks are YCT strongholds	High	Rx 2.8.3 with INFISH in all riparian areas, Rx 3.1 in YCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Two RNAs, Cherry Springs Natural Area Plant Community reference areas: Two RNAs, Cherry Springs Natural Area	None Yes Yes	Rx 2.2 on RNAs and any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** Two RNA's and ungrazed municipal watershed. Large-scale aspen restoration	High overall	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 10,350 acres SPM: 8,904 Roaded Natural: 1,392 acres	Very high value for SPNM and high value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 9,558 acres SPM: 11,094 acres	High value for SPNM and SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 3,655 ac. Partial Retention (moderate): 3,503 ac. Modification (low): 13,487 ac.	High scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	Moderate potential	No recommendation.
Phosphate	No existing leases	No known potential	No recommendation.
Locatable Minerals	No active mines or exploration	Low potential	No recommendation.
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Outfitter and Guide, non-culinary waterline for Pocatello, power line on northwestern end of IRA, 80 acres of private land.		Any Rx that does not impede compliance with permit

#04174 WILLIAMS CREEK ≈9,920 ACRES

Description:

The Williams Creek Roadless Area lies in Franklin and Bear Lake Counties, Idaho on the old Cache National Forest administered by the Montpelier Ranger District. It is located about fifteen miles west of Montpelier, Idaho.

About 4 percent of the area is considered unstable and approximately 21 percent has an erosion hazard. Sensitive air quality receptors include Soda Springs, Preston, and Montpelier, Idaho. The IRA is within the twenty-mile sensitive receptor radius. It is more that 200 kilometers from a Class I area.

All of the watersheds within the IRA are rated "yellow." Approximately 0.1 mile of 303(d) stream segment has been identified on Strawberry Creek.

The IRA's forested vegetation is composed of aspen, aspen/conifer, maple, Douglas-fir, mountain mahogany, lodgepole pine, mixed conifer and spruce/fir. Past disturbance includes the Upper Cully, North Fork Emigration, Squirrel Hollow and Right Fork Williams Creek timber sale areas. Aspen decline is considered high in the area due to older aspens stands and the lack of adequate regeneration. The Insect hazard rating is considered moderate due to the presence of older Douglas-fir and lodgepole pine. The Fire hazard rating is high, because of the aging conifer and aspen and the associated fuel buildup. Invasive species occupy 0.7 percent of the IRA. Species include Canada thistle (15 acres), Dyers woad (2 acres) and Musk thistle (49 acres).

This area rated low for lynx linkage habitat, based on: 1) the amount of forested cover (20 percent); 2) low security (3 percent); and 3) the presence of Williams Creek and Main Canyon that may function as travel corridors. Because of the low amount of security (3 percent), this area ranks low for wolverine and wolves.

This IRA has conifer cover over 20 percent of the area ranking it low for forest-associated species. The area has about 8 percent in grass/shrub cover that is more than ten miles from the nearest sage grouse lek; it is not considered potential sage grouse habitat.

Parts of this roadless area lie in Noss' Bear River Range site. The Bear River Range site was placed in Quadrant 2, and has an irreplaceability score of 57. It ranks moderate for this criteria. Based on the amount of vegetation at high departure from PFC (48 percent), this area ranks as low potential.

Williams Creek is the only major drainage and has a self-sustaining population of non-native rainbow trout.

No rare plants, rare plant communities or plant community reference areas have been documented in the area. Large-scale watershed restoration efforts for water quality improvement in Strawberry Creek could serve as a reference landscape. No unique reference value has been identified in this IRA.

In the summer the IRA is managed for semi-primitive motorized recreation on 2,741 acres. The remaining 7,455 acres are managed for Roaded Natural. In the winter, the entire IRA (9,922 acres) is managed for semi-primitive motorized.

Retention (high) scenic integrity is maintained on 2,578 acres, primarily adjacent to Highway 36 and the Highline National Recreation Trail. Partial retention is maintained on 4,159 acres.

The IRA has a high to moderate potential for oil and gas reserves; however, there are no existing leases at the present time. No known potential exists for phosphate, and no active mines or exploration is occurring for locatable minerals.

Two power lines run adjacent to the IRA: one on the northern boundary and one on the southern boundary.

Summarized IRA Specific Public Comments:

1. Non-motorized year-round because of the high ecological and year-round recreational value.
2. Allow summer and winter, motorized cross-country.
3. Non-motorized during the summer months.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Williams Creek	04174	9,917	2.1.2	258	2.1.2	565	Increased Rx acres for visual quality maintenance along travel corridors
			2.7.2	5,024	2.7.2	1,939	Readjustment of big game winter range based on actual use, flight data, local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line. Acres shifted to Rx 3.2.
			2.8.3	218	2.8.3	218	No change. Riparian/Wetland Emphasis Area
			3.2	4,389	3.2	2,395	Shifted acres to 2.1.3 and 5.2 to topo/cultural features for manageability and adjacent Rx consolidation
			5.2	0	5.2	4,775	Maintenance of timber stand integrity, past harvest area, management access
			8.1u	29	8.1u	25	Minor boundary adjustment, utility corridor
Total IRA Acres				**9,918**		**9,917**	

Acres from GIS run dated July 26, 2002

Table R.33. IRA Characteristics Re-Evaluation: Williams Creek # 04174

Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	4% Unstable 21% Erosion hazard	Low	Rx 2.7.2, Rx 3.2, and/or Rx 5.1
Air	**Sensitive Receptors:** Soda Springs, Preston, and Montpelier, ID	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	100% Yellow 0.1 mile of 303(d) streams on Strawberry Creek	High restoration potential in Strawberry Creek, low elsewhere	Rx 3.1, Rx 3.3 or Rx 5.2 on Strawberry Creek, no recommendation for remaining area.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	High Moderate High	Rx 5.1 around timber sale units, Rx 3.3 for watershed and aspen restoration.
Invasive Plant Species	0.7% of the IRA (66 acres)	Medium	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species (forested habitat):** **Management Indicator Species (grass/shrub habitat):**	Low Low Low Low N/A	No recommendation.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Moderate Low	Maintain winter range as outlined in Alternative 7, any Rx that allows restoration of aspen (4,800 acres)
Fisheries Biological Strongholds	Self-sustaining rainbow trout population in Williams Creek	Low	Rx 2.8.3 with INFISH in all riparian areas
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Rare Plant Communities: Plant Community reference areas:	None None None	Any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** None Watershed restoration in Strawberry Creek	Moderate for Strawberry Creek, low elsewhere	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPM: 2,471 acres Roaded Natural: 7,446 acres	High value for SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPM: 9,922 acres	Very high value for SPM	Maintain existing recreation settings.
Landscape Character & Scenic Integrity	Retention (High): 2,758 ac. Partial Retention (moderate): 4,159 ac.	High scenic integrity adjacent to Hwy 36 and Highline National Recreation Trail	Maintain or improve existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation.
Phosphate	No existing leases	No known potential	No recommendation.
Locatable Minerals	No active mines or exploration	Low potential	No recommendation.
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	Two power lines running adjacent to IRA: one on north boundary, one on south boundary.		Any Rx that does not impede compliance with permit.

Description:

The Worm Creek Roadless Area lies within Bear Lake and Franklin Counties, Idaho on the old Cache National Forest administered by the Montpelier Ranger District. The center of the area is located about eight miles west of St. Charles, Idaho.

None of the area is considered unstable, and only about 35 percent of the IRA has an erosion potential. Sensitive air quality receptors include Preston and Montpelier, Idaho and Logan, Utah. These communities are within the twenty-mile sensitive receptor radius. The IRA is more than 200 kilometers from a Class I area.

The majority of the watersheds in this IRA, about 91 percent, are rated "yellow." The remaining 9 percent is rated "green." No 303(d) streams are present.

The IRA's vegetation is composed of sagebrush/grass, aspen, aspen/conifer, Douglas-fir, mixed conifer, spruce/fir, mountain mahogany, and lodgepole pine. Past disturbance includes windthrow stand damage, timber harvest in Egan Basin, Green Canyon, Bloomington, and Middle Fork of Bloomington. Prescribed fire treatments have occurred on a limited basis. The aspen decline rating is moderate for the area, due to older aspen and lack of adequate regeneration. The Insect hazard and fire ratings are high, because of the presence of older conifer and its distribution throughout the IRA, past salvage activities adjacent to St. Charles Canyon in lodgepole pine, and fuel buildup in the understory. Invasive species occupy 0.1 percent of the area. Species include Canada thistle (41 acres) and Musk thistle (4 acres).

Known occurrences of goshawks, Townsends big-eared bat and flammulated owl have been recorded in the IRA. This area rated high for lynx linkage habitat, based on: 1) the amount of forested cover (32 percent); 2) the presence of several east-west drainages that may act as movement corridors; and 3) a moderate amount of security (24 percent). Because of the amount of security (24 percent), this area ranks moderate for wolverine and wolves.

This IRA has conifer cover over 32 percent of the area ranking it moderate for forest-associated species. About 29 percent of the area has grass/shrub cover in small, scattered patches within five to ten miles of the nearest known sage grouse leks. The area rates low for sage grouse habitat.

This IRA was not ranked by Noss, *et al*, (2001) and is rated low for this analysis. Based on the amount of vegetation at high departure from PFC (36 percent), this area ranks as moderate potential.

Primary drainages include Bloomington, Worm and St. Charles Creek. Worm Creek was dry when surveyed in 2000. St. Charles Creek is dominated by Bonneville cutthroat trout.

The proposed sensitive plant species, Ryberg's Musineon, Green spleenwort, and Wasatch bladderpod, have been documented at Bloomington Lake. A sensitive plant species, Cache penstemon, has been documented at Cub Peak. Rare plant community occurrences have been documented in the Worm Creek area. Upland plant communities in St. Charles Creek Research Natural Area and plant communities associated with Bloomington Lake cirque are also documented as rare plant communities. The St. Charles Creek RNA and upland plant communities in Worm Creek are identified as plant community reference areas. Bloomington Lake is a proposed Special Management Area with tall forb restoration opportunities. This area has been identified as having unique reference values. Wildlife security areas identified by the Wildlife Biologist could serve as landscape references.

In the summer about 7,958 acres are managed for semi-primitive non-motorized recreation and for semi-primitive motorized recreation on 12,676 acres. The remaining 21,808 acres is managed as Roaded Natural. In the winter, about 1,600 acres in a wildlife closure is managed for semi-primitive non-motorized recreation experiences. The remaining 40,891 acres is managed for semi-primitive motorized recreation.

Retention (high) scenic integrity is maintained on 8,515 acres. Partial retention (moderate) is maintained on 32,900 acres, and Modification (low) is maintained on 1,017 acres.

The IRA lies within the overthrust belt. Although the potential is high for oil and gas reserves, there are no existing leases. No known potential exist for phosphate. One patented inactive mine claim and other past exploration and prospecting is evident in the area; however, no active mining or exploration for locatable minerals is occurring at the present time.

Summarized IRA Specific Public Comments:

1. Area should not be a wilderness recommendation.
2. Area should be non-motorized during the winter in order to protect moose populations (snowmobiles are detrimental to their survival) and because it is hard on elk calving.
3. Allow summer motorized with travel limited to designated routes.
4. Allow winter motorized cross-country except in areas where travel is limited under the current Travel Plan.
5. New motorized trail construction should be permitted.

Selected IRA Management Prescriptions and Rationale:

Roadless Area	IRA No.	1996 Acres	Rx in Alt 7	Acres	Rx in Alt 7R	Acres	Decision and Rationale for Rx Application in Selected Alternative
Worm Creek	04179	42,442	2.1.1	198	2.1.1	198	No change, Bloomington Lake Special Management Area
			2.2	314	2.2	314	No change, Research Natural Area, landscape reference site
			2.5	1,189	2.5	1,189	No change, Wild & Scenic Rivers eligible site corridor on St. Charles Creek
			2.7.1	8,354	2.7.1	5,843	Readjustment of big game winter range based on actual use, flight data, local knowledge of area, topographic features, such as watershed lines or elevation breaks with existing roads as boundary line. Acres shifted to Rx 3. 2 and Rx 3.3 to correspond with adjacent prescription.
			2.8.3	1,857	2.8.3	1,857	No change. Riparian/Wetland Emphasis Area
			3.2	27,571	3.2	11,993	Shifted about 50% of the acres to 3.3 Rx for aspen regeneration and fuel reduction activities, remaining acres maintain existing uses and access to area
			3.3	0	3.3	14,837	Aspen regeneration due to conifer encroachment and for reduction of fuels
			4.3	0	4.3	1	Dispersed recreation area
			5.2	0	5.2	830	Maintenance of timber stand integrity in past harvest area, management access, aspen regeneration, fuels reduction
			6.1	2,952	6.1	0	Shifted acres to new 6.2 Rx for consolidation of Rx's, rangeland vegetation management
			6.2	0	6.2	5,373	Moderate watershed conditions, rangeland vegetation management and restoration, BCT habitat
			8.1u	8	8.1u	8	No change, utility corridor
Total IRA Acres				**42,443**		**42,443**	

Acres from GIS run dated July 26, 2002

Table R.34. IRA Characteristics Re-Evaluation: Worm Creek # 04179

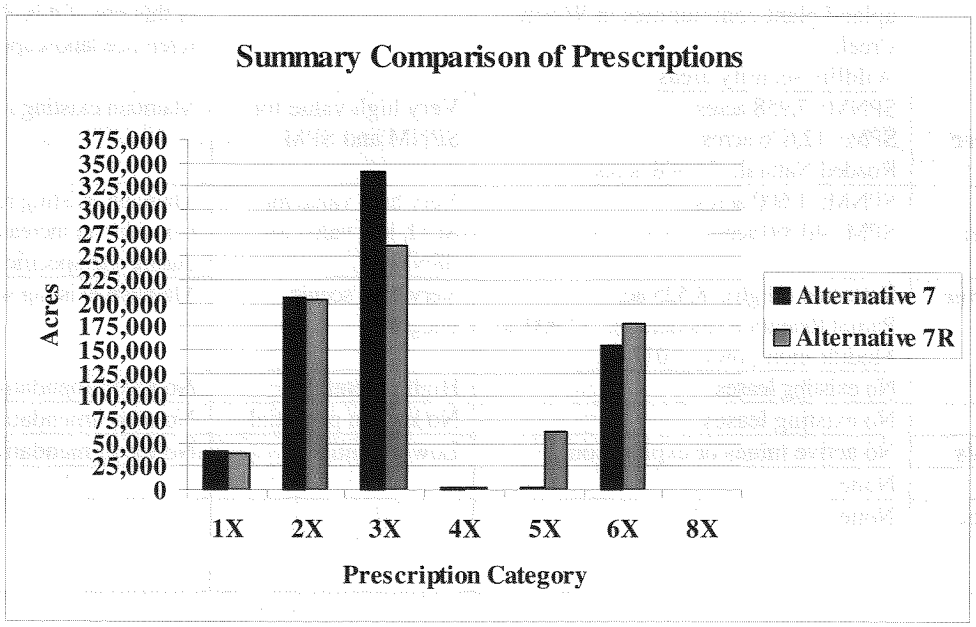
Characteristic	Resource Findings	Assessment Rating	Prescription Recommendation(s)
Soil	0% Unstable 35% Erosion hazard	Low	Rx 2.1.1, Rx 2.7.1, Rx 3.2, Rx 4.3, and/or Rx 6.1
Air	**Sensitive Receptors:** Montpelier, ID, Preston, Id, and Logan, UT	Non-Restrictive	Any Rx that would not exceed the limits of a Class I area.
Water	91% Yellow 9% Green No 303(d) streams	Moderate overall conditions	No recommendation.
Ecosystem Disturbances	**Aspen Decline:** **Insect Hazard:** **Fire Hazard**	Moderate High High	Rx 3.3 or Rx 6.2 for aspen restoration and fuels reduction.
Invasive Plant Species	0.1% of the IRA (45 acres)	Low	Use IPM management approach on infestations and any Rx that allows motorized access.
Threatened, Endangered, & Sensitive Species Habitat	**T & E Species:** lynx **T & E Species:** wolf **Sensitive Species:** wolverine **Sensitive Species (forested habitat):** **Management Indicator Species (grass/shrub habitat):**	High Moderate Moderate Moderate Low	Rx 3.1a on two large security areas: Limekiln Lake/Worm Lake and Dry Creek at the Forest boundary.
Wildlife Biological Strongholds	Reed Noss Findings: Departure from Vegetation PFC:	Low Moderate	Maintain winter range as outlined in Alternative 7. Any Rx that allows aspen restoration (6,300 acres).
Fisheries Biological Strongholds	St. Charles Creek is dominated by Bonneville cutthroat trout.	High	Rx 2.8.3 with INFISH in all riparian areas, Rx 3.1 in BCT stronghold watersheds.
Rare Plants, Rare Plant Communities, & Plant Communities	Rare Plants: Proposed and sensitive plants at Bloomington Lake and Cub Peak Rare Plant Communities: RNA and Bloomington Lake cirque headwall Plant Community reference areas: RNA and upland plant communities in Worm Creek	Yes Yes Yes	Rx 2.1.1 on Bloomington Lake Area, Rx 2.2 on St. Charles RNA, and any Rx that maintains or improves native vegetation.
Reference Landscapes	**Unique Reference Value:** RNA and upland plant communities in Worm Creek Wildlife security areas	High overall	Rx that maintains the reference value of this site, if it is chosen as a reference landscape.
Semi-Primitive Recreation: Summer (Snow Free)	SPNM: 7,958 acres SPM: 12,676 acres Roaded Natural: 21,808 acres	Very high value for SPNM and SPM	Maintain existing recreation settings.
Semi-Primitive Recreation: Winter (Snow Season)	SPNM: 1,600 acres SPM: 40,891acres	Very high value for SPM, low value for SPNM	Maintain existing recreation settings. Consider an increase in SPNM during site-specific travel planning.
Landscape Character & Scenic Integrity	Retention (High): 8,525 ac. Partial Retention (moderate): 32,900 ac. Modification (low): 1,017 ac.	Very high scenic integrity	Maintain existing scenic integrity.
Oil & Gas	No existing leases	High potential	No recommendation
Phosphate	No existing leases	No known potential	No recommendation
Locatable Minerals	No active mines or exploration	Low potential	No recommendation
Mineral Materials	None		
Special Use Permits, Utility Corridors, Other	None		

Summary Table of Prescription Changes Between Alternative 7 and Alternative 7R

Acres from GIS run dated July 26, 2002

Management Prescription	Rx Acres in Alternative 7	Rx Acres in Alternative 7R	Change in acres (+ or -)
1.3	41,747	38,461	-3,286
2.1.1	198	198	No change
2.1.2	2,065	5,919	+3,854
2.1.3	6,323	5,001	-1,322
2.1.4	0	13,101	+13,101
2.1.5	0	1,316	+1,316
2.2	5,275	5,275	No change
2.5	1,377	1,377	No change
2.7.1	66,575	53,100	-13,475
2.7.2	80,151	74,388	-5,763
2.8.3	44,263	44,263	No change
3.1	24,425	40,950	+16,525
3.2	292,179	159,953	-132,226
3.3	24,800	60,852	+36,052
4.2	772	772	No change
4.3	1,602	2,005	+403
5.1	1,424	0	-1,424
5.2	0	63,154	+63,154
5.3	424	0	-424
6.1	21,342	0	-21,342
6.2	0	178,073	+178,073
6.3	132,887	0	-132,887
8.1u	902	573	-329
8.2.2	107	102	-5
TOTAL ACRES	**748,838***	**748,833***	

* Acre differences due to rounding



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