United States
Department of
Agriculture

Forest Service

**Intermountain
Region**

**Targhee
National
Forest**

# Final Environmental Impact Statement

## 1997 Revised Forest Plan
## Targhee National Forest

FINAL ENVIRONMENTAL IMPACT STATEMENT
for the
TARGHEE NATIONAL FOREST
FOREST PLAN REVISION

Bonneville, Butte, Clark, Fremont, Jefferson,
Lemhi, Madison, and Teton Counties, Idaho

and

Lincoln and Teton Counties, Wyoming


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ABSTRACT This Final Environmental Impact Statement documents the analysis of seven alternatives, which were developed for possible management of the 1 8 million acres administered by the Targhee National Forest in Idaho and Wyoming Alternatives developed in detail are identified as 1, 2, 3, 3M, 4, 5 and 6 Alternative 3-M is the Forest Service's Selected Alternative

This FEIS has been prepared following public review periods for the DEIS and Proposed Revised Land and Resource Management Plan, during which approximately 12,000 comments were received from 2,300 individuals or organizations

# TABLE OF CONTENTS

## LIST OF FIGURES

## LIST OF TABLES

# SUMMARY OF THE FINAL ENVIRONMENTAL IMPACT STATEMENT FOR THE TARGHEE MANAGEMENT PLAN

## INTRODUCTION

The purpose of the summary of the Final Environmental Impact Statement (FEIS) for the Revised Forest Plan (Revision) is to provide the reader with a quick overview of the planning process, the issues, and the alternatives, including the Selected, that will affect the management of the Targhee National Forest (Forest) for the next ten years and beyond

The FEIS considers and evaluates an array of alternatives, identifying the Selected This summary does not cover the Revision The Revision carries out the actions of the Selected Alternative and provides key decisions for the long-term management of the Forest Readers wanting more in-depth information on the FEIS and Revision may write or call the Targhee National Forest Supervisor's Office at P O Box 208, St Anthony, Idaho 83445, (208) 624-3151

## LOCATION AND SETTING FOR THE FOREST

The Forest is an administrative unit of the Department of Agriculture, Forest Service, encompassing approximately 1 8 million acres Established by President Theodore Roosevelt in 1908, the Forest is named in honor of a Bannock Indian warrior The Supervisor's Office is located in St Anthony, Idaho with District offices located in Dubois, Island Park, Ashton, Idaho Falls, and Driggs, Idaho The Forest is bordered by six other National Forests

The Forest lies almost entirely within the Greater Yellowstone Ecosystem, an area of 12 million acres and the largest remaining block of relatively undisturbed plant and animal habitat in the contiguous United States

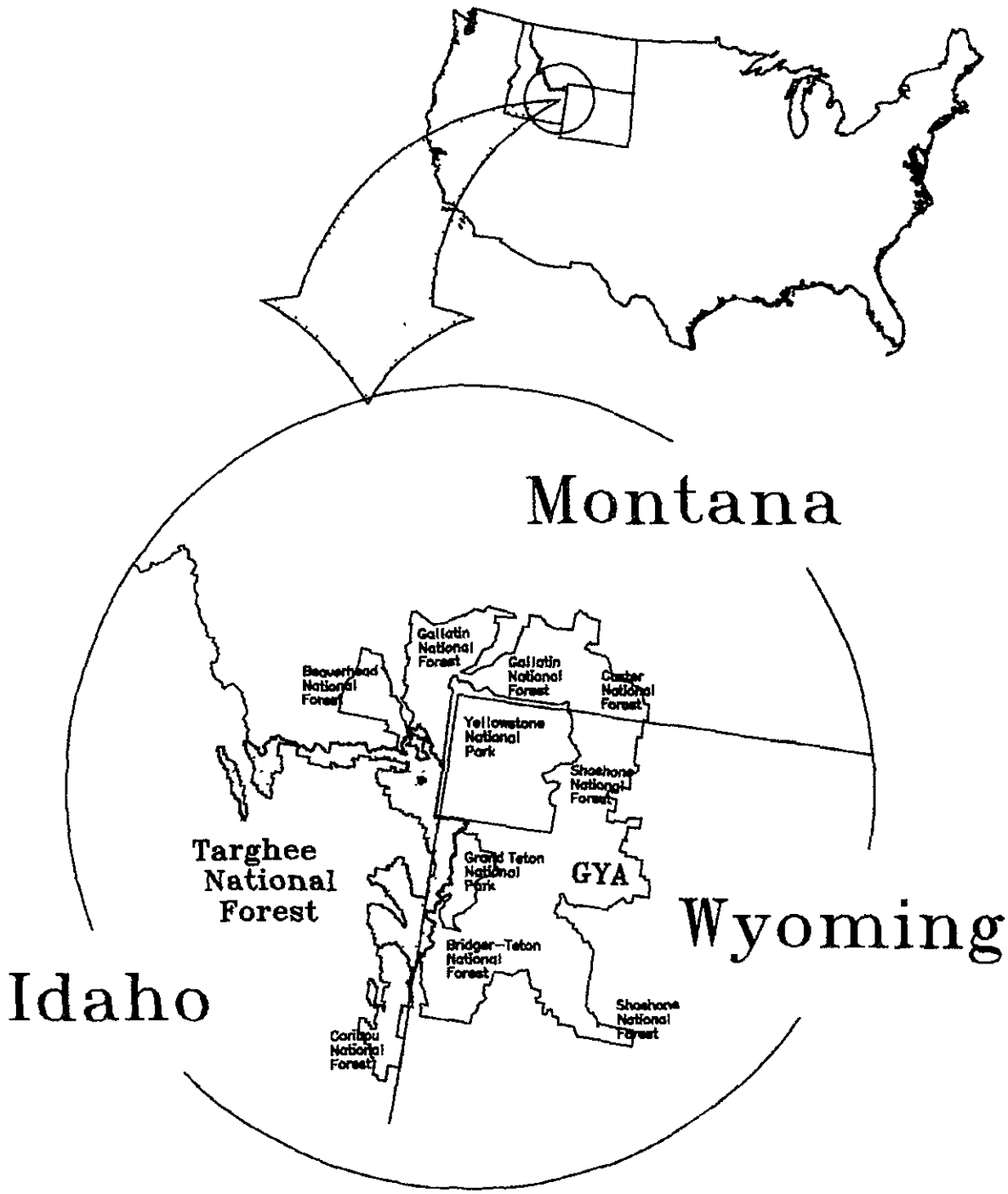
On a larger scale, the Forest lies along the Continental Divide, at the uppermost reaches of the Columbia River Basin, an ecosystem of 40 million acres extending from western Washington to the southeastern Idaho border and encompassing parts of Oregon, Montana, Wyoming, Nevada and Utah The Forest includes all or portions of several distinct mountain ranges, including the Lemhi, Beaverhead, Bitterroot, Centennial, Henry's Lake, Teton, Big Hole, Caribou, and Snake River Ranges Elevations range from near 5,000 feet on the Snake River to over 12,000 feet on the Forest's most western reaches The Forest contains the Island Park Caldera and several reservoirs Topography ranges from rolling foothills to rugged, glaciated mountain peaks

Although most of the land is dry and semi-arid, 190 stream headwaters situated on the Forest provide varied vegetation to support a multitude of uses The area has cold, moist winters and hot dry summers Average annual precipitation, most of which falls as snow, increases with elevation As little as ten inches of precipitation falls in lower valleys and as much as forty inches occurs at the highest elevations Wide temperature extremes exist, with summer temperatures at lower elevations exceeding 100 degrees Fahrenheit and winter temperatures at higher elevations falling to less than 40 degrees below zero Fahrenheit

## NEED FOR CHANGE

The original Targhee Forest Plan, approved in 1985, emphasized an extensive salvage and reforestation program of dead lodgepole killed by a massive mountain pine beetle epidemic over the previous 30 years

Figure S-1. Vicinity Map of Targhee National Forest on a National Scale



This rate of salvage caused, in effect, a departure from a sustained yield of timber harvest and could not be continued beyond the first decade (1985 - 1995) in an environmentally sound manner Monitoring of activities during this time showed it was increasingly difficult to meet the standards and guidelines in the 1985 Plan New information on resource needs and various management practices became evident during this time, and by 1990 it was apparent that a full revision was needed More specific needs for change are as follows

- The salvage program has ended Use of the many roads built during salvage operations by increasing numbers of people is causing unwanted effects to wildlife, riparian areas, and soil productivity

- The need to review and incorporate new knowledge and techniques continues, especially in wildlife habitat management For example, recent studies indicate motorized road and trail densities play a crucial role in availability of suitable habitat for elk and grizzly bears Standards for management activities near nesting and foraging habitat for goshawks and other raptors are needed to protect these crucial areas Results of studies analyzing fish habitat in the Upper Columbia River Basin are pointing out new ways to manage fisheries Some of these findings have widespread implications that the revision process was intended to address

- *Although much of the lodgepole pine component on the Forest has been salvaged, there is still a* need to use timber harvest as a tool to reach ecosystem objectives, supply a variety of timber products for local use, deter other epidemics like the mountain pine beetle outbreak, and manage the potential for a devastating wildfire, like the Yellowstone Wildfires of 1988

## DESIRED FUTURE CONDITION FOR THE YEAR 2007 AND BEYOND

Based on public, other resource management agencies, and Forest Service employee participation between 1991-1994, a set of goal statements emerged that collectively represent what ideal conditions would be for the Targhee National Forest These statements, called "Desired Future Conditions for the Year 2007 and Beyond" are the foundation for the goals, objectives, standards and guidelines developed in the Revised Forest Plan They have changed from the desired future conditions (DFC) described in the 1985 Plan, reflecting changes in conditions and values of the local communities and knowledge gained over the decade These titles of the DFCs also show how the analysis and documents are organized, and are described as follows

### Ecosystem Processes and Patterns DFC:

A mosaic of age classes and types of vegetation are sustained through time and exist across the landscape Natural disturbances such as insects, disease and fires continue their natural roles in the ecosystem The Forest functions as an integral part of the Greater Yellowstone Ecosystem as well as adjacent systems, sustaining habitat and conditions necessary for free movement of wildlife

### Biological and Physical DFC:

Riparian zones (aquatic influence zones) are healthy and productive Aquatic systems are allowed to function naturally while protecting flows for downstream consumptive uses Riparian area integrity contributes to productive fisheries and excellent water quality Native plant and animal species are favored over undesirable non-native species and sustained populations of all native and desirable species thrive Habitat conditions contribute toward the recovery of threatened, endangered and sensitive species

**Forest Use and Occupation DFC:**

Growing and diverse recreational, cultural, visual, historical, and prehistoric management, interpretive, and spiritual needs are accommodated based on the capability of the ecosystem to sustain these uses Recreation use is managed to minimize conflicts between incompatible uses and provide high levels of satisfaction Year-round human access is managed to provide both motorized and nonmotorized opportunities A system of trails and support facilities exist which are compatible with resource capabilities Roadless characteristics are preserved in the proposed wilderness areas and in existing wildernesses

**Production of Commodity Resources DFC:**

Commodity production, such as timber, firewood, mining, livestock forage, or outfitting and guide services are conducted at sustainable levels and maintain the capability of the land to produce an even flow and variety of goods and services for present and future generations Timber harvest, prescribed fires and livestock grazing are tools used to achieve desired ecological vegetation conditions Forest products are provided to sustain social and economic values and needs of the local communities within limits which maintain ecosystem health

## KEY ISSUES

Although there were over 70 issues and concerns identified by the public and Forest employees, seven key issues were the ultimate driving force for developing the alternatives and for the recommended direction of the Revised Forest Plan The key issues address areas of controversy

**Key Issue 1: Sustainability, Fire and Natural Disturbances**

An ecosystem is a large, complex, integrated system of living and nonliving components that interact and change continually Healthy ecosystems are those that retain all of their parts and functions for future generations even though vegetation patterns, human uses or other conditions may change Understanding ecological processes (fire and other natural disturbances) and how these processes shaped vegetation patterns over time in a landscape are important steps toward implementing Ecosystem Management (EM)

EM is a new philosophy of management for the Forest Service, and different interpretations and approaches are possible in working toward implementation The Forest is the first in the Greater Yellowstone Area (GYA) to revise its Forest Plan and incorporate EM principles in the revision Many activities and projects are being considered for the application and implementation of EM, new information and conclusions lag behind the need to meet the timeline for the revision of the Forest Plan

**Key Issue 2: Riparian**

Riparian areas lie adjacent to water and are composed of vegetation communities dependent upon or tolerant to the presence of free or unbound water near the ground surface Riparian areas are associated with lakes, reservoirs, potholes, springs, bogs, wet meadows, and ephemeral, intermittent or perennial streams Although riparian areas constitute less than five percent of the total land base, they are the most productive areas in terms of plant and animal species diversity and consumptive use

Riparian areas are essential breeding, rearing and feeding grounds for many species of wildlife and affect fish habitat They serve people as important sources for water and flood control and for recreational

purposes such as camping, fishing, floating and aesthetics A healthy riparian area indicates that most, if not all, of the associated water and soil components are also healthy Because of the myriad of competing uses for these highly valuable pieces of land, the variability between the alternatives was considered significant

**Key Issue 3: Security for Elk**

The Forest provides habitat for a number of species ( a potential of 85 mammals, 300 birds, 17 reptiles and amphibians based on range maps) For most species there were no significant differences in the management of their habitat between alternatives Rather, standards and guidelines were developed to maintain a variety of habitat conditions across the forest

The best data and analysis existed for elk security, which had the highest wildlife variance among the alternatives Elk are also wide-ranging animals, so their habitat encompasses virtually the entire Forest Security for elk was chosen as a key issue relating to future hunting conditions and opportunities and cooperative relations with Fish and Game Departments Observations and studies by the Idaho Department of Fish and Game (IDFG), University of Idaho, and Forest Service scientists have determined that as motorized road and trail densities increase, elk security declines Portions of the Forest have high densities of trails and roads open to motorized use due to the extensive road building associated with the salvage of dead lodgepole Salvage activity is largely completed and new knowledge about impacts of road densities upon wildlife is available The Revision examines the range of management alternatives related to security for elk

**Key Issue 4: Grizzly Bear Management**

Portions of the Forest are within the Yellowstone Grizzly Bear Ecosystem which has been divided into Bear Management Units (BMUs) Portions of the Forest are within three BMUs and feature grizzly bear recovery As with all Threatened, Endangered and Sensitive (TES) species, all alternatives must meet the Endangered Species Act (ESA) The importance of managing motorized access is one of the most influential parameters affecting grizzly bear habitat security

New information accumulated over the last 10 years provides better insight and direction regarding effective management of roads, timber and human activities in grizzly bear habitat The one variation between alternatives that makes the BMU issue significant is the density of open motorized roads and trails in BMUs Which roads will be closed in BMUs, how many miles and in what manner?

**Key Issue 5: Access**

The Forest currently has 1,985 miles of open road and 773 miles of open trail "Open" means road and trail miles without restrictions on motorized use There are currently road and trail miles with restrictions on motorized use as follows 806 miles of restricted system road (73 miles with seasonal restrictions and 733 miles with yearlong restrictions) and 628 miles of restricted trail

Recreational motorized use has increased over the last decade The 1985 Plan allows cross-country motorized travel across much of the Forest and has no established road density standards Access to the Forest during non snow months is a significant variable among the alternatives Comments in the early planning stages were supportive of more or fewer road and trail closures depending on a variety of factors Those supporting road and trail closures want more protection and fewer impacts upon wildlife, TES species, soils and water and fisheries, less visual, garbage and noise pollution, reduced maintenance and law enforcement costs, and more opportunity for escape and solitude Those supporting continued or

more road and trail access want access for hunting, fishing, berry-picking, camping, hiking and other recreational pursuits, and increased opportunities for sight-seeing and challenging cross-country travel for off-highway vehicles Motorized access is considered a key element for enjoyment and use of the Forest by persons with disabilities and the elderly

**Key Issue 6: Management of Roadless Areas**

The Forest has 16 areas which qualify as roadless, totaling 841,000 acres The Wyoming portion of the Palisades Roadless Area was designated by Congress as a Wilderness Study Area in the Wyoming Wilderness Bill of 1984 Portions of three roadless areas in Idaho were recommended as wilderness in the 1985 Forest Plan, but no legislative action has been taken to resolve the roadless area question in Idaho During the last planning period, parts of some roadless areas were roaded as part of the salvage program As motorized recreation demands increase, pressure also increases to maintain the roadless character of the remaining roadless areas The significant difference between alternatives in the management of roadless areas is in the amounts of acres recommended for wilderness Those arguing for more acres of Congressionally designated wilderness want the assurance of preservation of biological diversity, protection from resource uses and national recognition of wilderness character Those opposed to more acres designated wilderness want roadless areas to be left as roadless or to be developed to allow motorized access for recreation, oil and gas, timber and other industries requiring access

**KEY ISSUE 7: Timber Harvest**

Previously, large scale salvage of dead and dying timber was conducted as a temporary departure from sustained yield management Since the goals of harvest of dead timber have largely been met, the Forest is returning to sustained yield management

Two local mills, once dependable bidders for salvage and other wood harvest, are now closed but local demand remains high The ESA, Grizzly Bear Recovery Plan and Guidelines, EM principles, increased knowledge about the impacts of motorized use of roads and trails upon the Forest's wildlife resources, and other factors have resulted in a greatly reduced availability of scheduled timber harvest, called the allowable sale quantity (ASQ) The issue of timber harvest does not include firewood, since the amount of firewood quantity does not vary between the alternatives Some people desiring a greater harvest of timber from the Forest often cite the effects upon the local economy Others have expressed a concern over the reduction in payments to local governments (25 percent of Forest receipts go to county treasuries) associated with the reduced harvest levels They also want to maximize harvest of the remaining dead or mature wood Some argue that small harvests in the fire dependent lodgepole are contrary to historically based EM principles Those supporting a greater reduction in timber harvest are concerned about motorized trail and road uses that impact wildlife, reductions in the amount and distribution of late successional forest, fisheries, riparian areas, soil and water, aesthetics and other resources

**THE ALTERNATIVES**

Before creating alternatives, the Forest put together an "Analysis of the Management Situation (AMS)," which looked at current conditions and direction of the Forest Alternatives were developed by using the AMS data that identified problem areas that needed changing All alternatives comply with applicable laws and regulations

The alternatives reflected a range of options that responded to the issues, the DFCs and the need for change The interdisciplinary team (IDT) evaluated the significant physical, biological, economic and social effects of each alternative that was considered in detail

The Forest analyzed in detail seven alternatives, the Leadership Team (LST) recommended Alternative 3M to the Regional Forester and the public for review in the DEIS Based on input received from the public, the Tribes, other government agencies and Forest Service personnel, Alternative 3M was revised As shown in the FEIS, Alternative 3M is the Selected Alternative

**The Alternative Continuum**

The numbering scheme for alternatives ranges from 1-6, with Alternative 3M being the Selected and Alternative 1 being the No Action, i e continue the Current Forest Plan Alternative As the numbers increase from Alternative 2 through 6, they move generally toward

*Greater protection of wildlife habitat
*Greater protection of riparian areas
*More protection for BMUs
*More security for elk
*More nonmotorized, dispersed recreation opportunities
*More recommended wilderness
*Less cross-country motorized use
*Fewer open roads and trails
*Reduced livestock grazing and timber harvest
*Less lasting visual impacts from management activities

**Alternative 1 (Continue the 1985 Forest Plan, No Action)**

The purpose of Alternative 1 is to continue management of the Forest under the 1985 Forest Plan, updated since finalized with amendments, new direction, particularly the recent litigation for the grizzly bear, and, changes for new listings of sensitive wildlife species over the last ten years Timber harvest occurs at the highest levels possible within the management constraints required for TES wildlife species like the grizzly bear and goshawk Vehicle access is reduced from current levels due to the implementation of the Interagency Grizzly Bear Guidelines and better road management across the Forest Cross-country, motorized access in summer and winter would continue close to current levels Riparian, wildlife and recreation values are emphasized in specific areas of the Forest

**Alternative 2**

The purpose of Alternative 2 is to resolve the needs for change by emphasizing cross-country and winter motorized access and timber production, while adding more restrictions to summer, cross-country access Timber harvest occurs at the highest levels of any of the alternatives within the management constraints required for maintaining TES species habitat Riparian, wildlife and heritage resource values are emphasized in specific areas of the Forest

**Alternative 3**

The purpose of Alternative 3 is to resolve the needs for change by emphasizing management of wildlife habitat and sustaining timber harvest levels within wildlife constraints Grizzly bear recovery affects motorized use allowed in each BMU Cross-country, summer, motorized vehicle use is restricted to specific areas

**Alternative 3-Modified (3M), Selected Alternative**

The purpose of Alternative 3M is to resolve the needs for change by emphasizing wildlife habitat management and providing a comprehensive habitat management strategy for the grizzly bear Motorized access, timber harvest levels and livestock grazing are all reduced from levels allowed in the 1985 Forest Plan Riparian areas with cutthroat trout are further protected Cross-country, summer, motorized vehicle use is restricted to specific areas

**Alternative 4**

Alternative 4 emphasizes watershed and wildlife habitat improvement and a reduction in timber harvest Riparian areas receive increased emphasis Motorized access is restricted to designated routes and summer motorized access is less than in previous alternatives

**Alternative 5**

The purpose of Alternative 5 is to meet the needs for change by reducing the focus on human management and human disturbance of wildlife and riparian habitat Motorized access is restricted to designated routes and more roads are closed in BMUs

**Alternative 6**

The purpose of Alternative 6 is to meet the needs for change by de-emphasizing human management and human disturbance of wildlife and riparian habitat to the lowest level of all the alternatives Timber harvest is not scheduled

**CHANGES BETWEEN DRAFT AND FINAL**

This FEIS reflects many changes made since the Draft Environmental Impact Statement (DEIS) was issued These changes were based on input received from the public and from Forest Service employees

The great bulk of the changes that were made apply to Alternative 3M As originally developed, Alternatives 2-6 could be viewed as lying along a continuum on which scheduled timber harvest gradually decreased, reliance on human management activity decreased, livestock grazing decreased and so on With the changes that have been incorporated into Alternative 3M there now are exceptions to that continuum generalization We considered the possibility of applying the changes made to Alternative 3M to other alternatives to maintain a certain logical consistency within the continuum We ultimately rejected that idea because

- The continuum was a useful device for outlining how alternatives compared with one another—but it is not essential All the information for the different alternatives is still presented
- The recommendations adopted in Alternative 3M were still within the range of ideas previously identified in the other alternatives
- Making a great many changes in other alternatives might make it harder for those familiar with the previous work to follow the final documents

Most of the changes between the draft and final EIS were minor The a summary of the changes of possible interest to a wide range of readers follows

• Standards and Guidelines for Old Growth have been added
• Proper Functioning Condition (PFC) is now used instead of Patch Size Constraints as the primary measure of EM
• Direction has been added to both use more prescribed fire and to develop fire plans
• Objectives, standards and guidelines have been added to address the needs of cutthroat trout.
• New direction has been added to address bighorn sheep habitat needs
• The Game Retrieval provision has been eliminated from the Selected Alternative
• The direction to phase out the Rainey Creek feed ground has been eliminated
• Potential ground-disturbing acreages have increased
• Constraints used in formulating the scheduled timber harvest (Allowable Sale Quantity, ASQ) were reapplied so as to meet as fully as possible all constraint requirements on non-ASQ lands. This effectively increased the amount of timber that could be harvested ASQ's for all the alternatives increased accordingly
• Non-Interchangeable Component (NIC) volumes have been more explicitly identified
• The amount of harvest that can be conducted for EM purposes (outside the Forest's ASQ and fuelwood programs) has been capped at 20 MMBF per decade in all alternatives
• Numerous updates of information, inclusions of additional sources and clarifications have been incorporated
• Many changes have been made in the status of different roads and trails in the Selected Alternative The net effect of these actions is an increase in motorized vehicle designated routes
• Protection for the Ute Ladies' Tresses (a threatened plant) has been added to all alternatives
• Cross-country snowmachine use in designated winter range areas has been prohibited in all alternatives
• Snowmachine date restrictions on large parts of the Forest have been removed or greatly reduced in Alternative 3M
• Planned additional snowmachine trail mileage has decreased to 93 in Alternative 3M.
• The contents and the priorities for Monitoring & Evaluation (M&E) were re-examined and modified
• Numerous changes were made to Forestwide Standards and Guidelines and individual prescriptions in response to public and employee input affecting things like goshawk management, grizzly bear management and range utilization
• Dates for application of the Snow Season travel map have been changed
• Many changes were made in terms of how different areas on the Forest would be managed in the Selected Alternative, including
  - Some 33,000 acres of the Diamond Peak area is now a recommended wilderness
  - Six acres of the recently-authorized Sheep Mountain RNA have been identified on the Forest
  - Approximately 13,000 acres have been added to the southern edge of the Italian Peaks recommended wilderness
  - The southern boundary of the Mt Jefferson Roadless Area has been adjusted to more accurately reflect the roadless area
  - A portion of the Forest near Heart Mountain has been moved into range management
  - A winter range prescription area in the Italian Peaks Recommended Wilderness has been reassigned to the recommended wilderness prescription
  - A winter range prescription area north of Spencer has been changed to range management
  - The Davis Lakes area now has scheduled timber harvest
  - An area one quarter mile either side of Upper Mesa Falls on the Henry's Fork has been changed to eligible scenic river rather than eligible wild river
  - Approximately 1,500 acres of roadless area in Ruby Creek now has scheduled timber harvest
  - The area adjacent to the road to Grand Targhee is now non-ASQ Visual Quality Maintenance
  - The large intermingled public/private land area east of the Big Holes now has scheduled timber harvest
  - An area along the Pine Creek-Rainey Creek front has been changed to a winter range prescription
  - An area close to the Palisades Summer Home area is now a winter range prescription
  - An area in the northwest corner of the Caribou subsection is now range management
  - McCoy Creek has been deleted as an eligible wild, scenic, or recreational river
  - The Smokey Hollow area has been removed from scheduled timber harvest

Figure S-2. Forest Structure and Composition

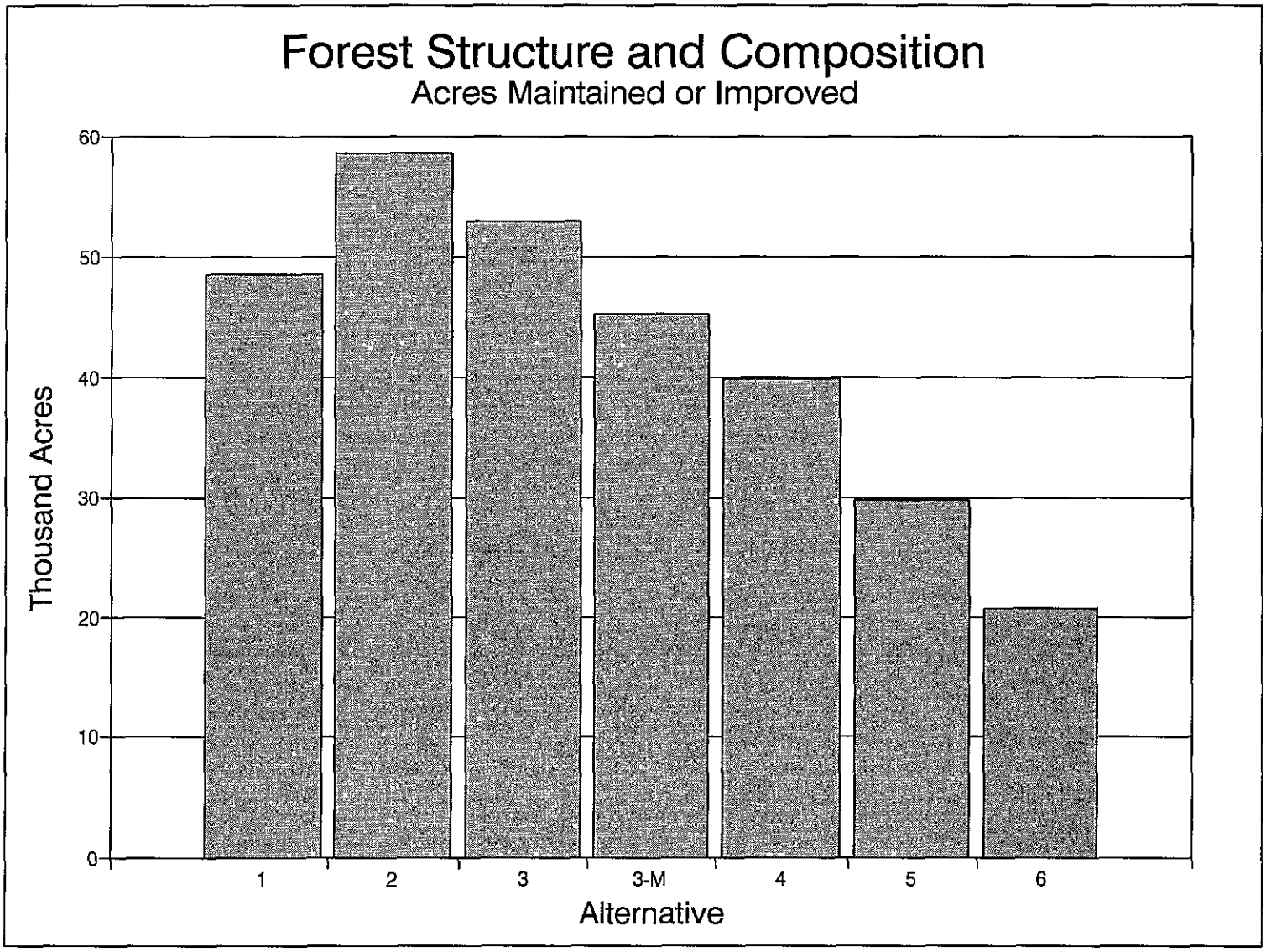


Figure S-3. Riparian Vegetation

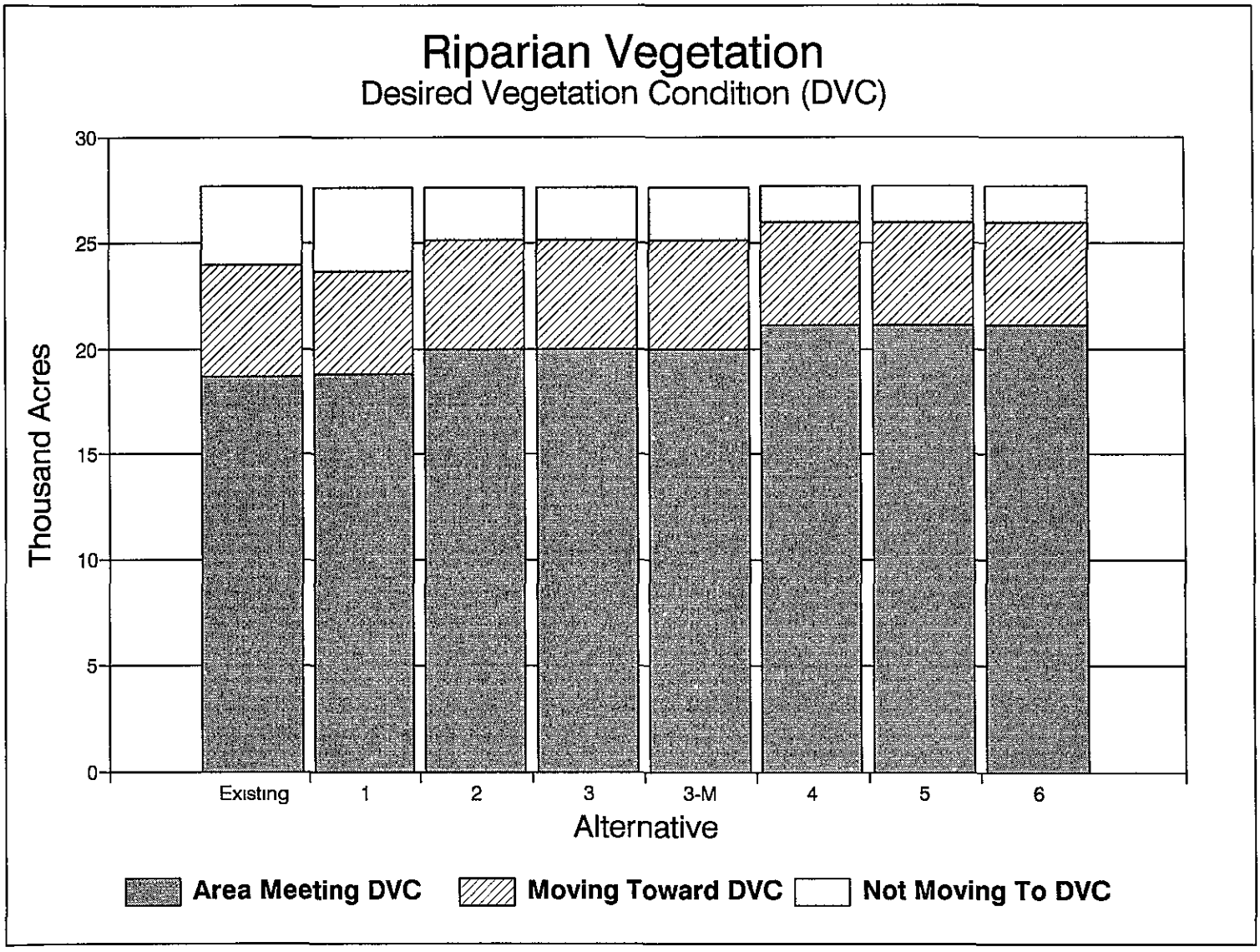


Figure S-4 Elk Vulnerability

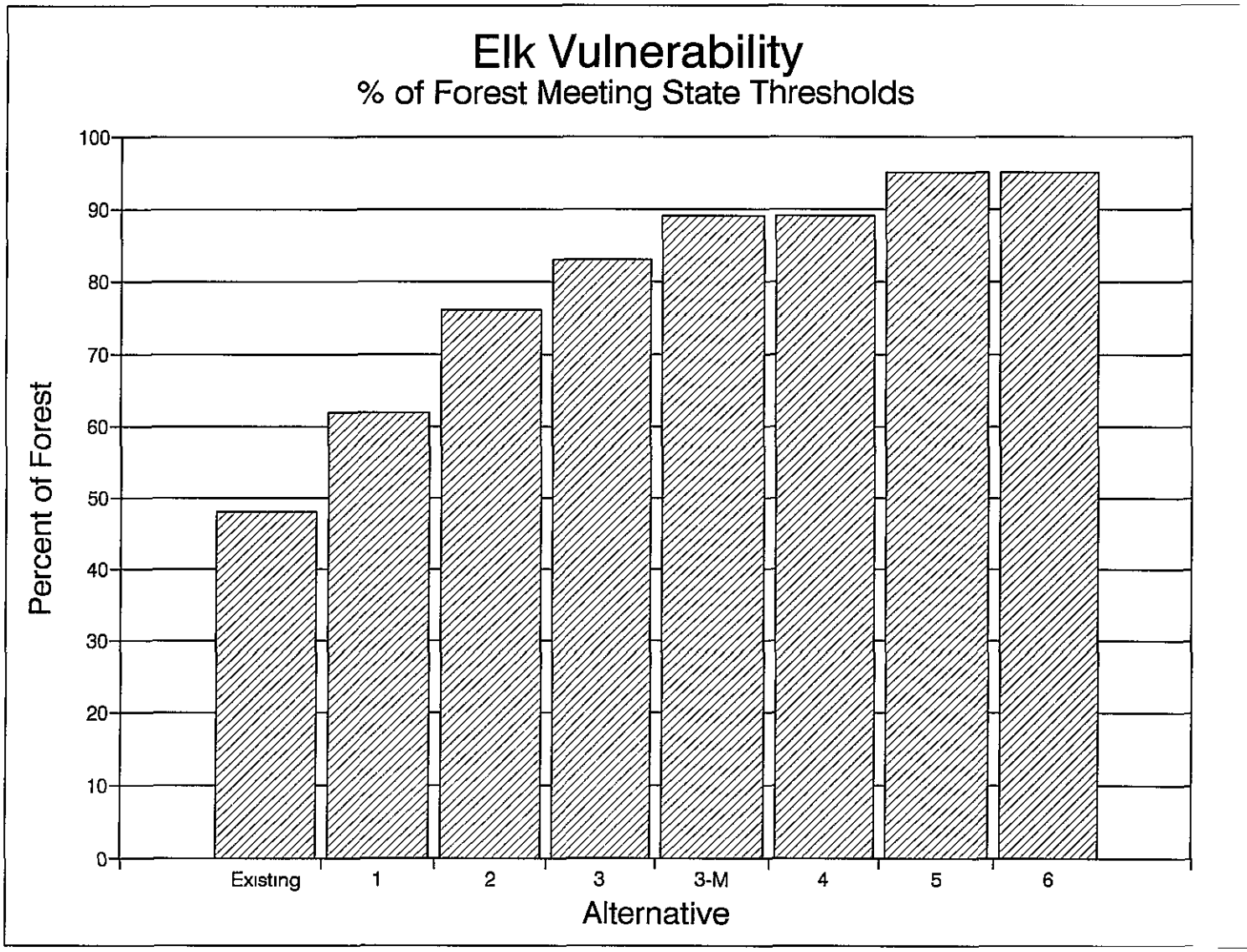


Figure S-5. Bear Management Units

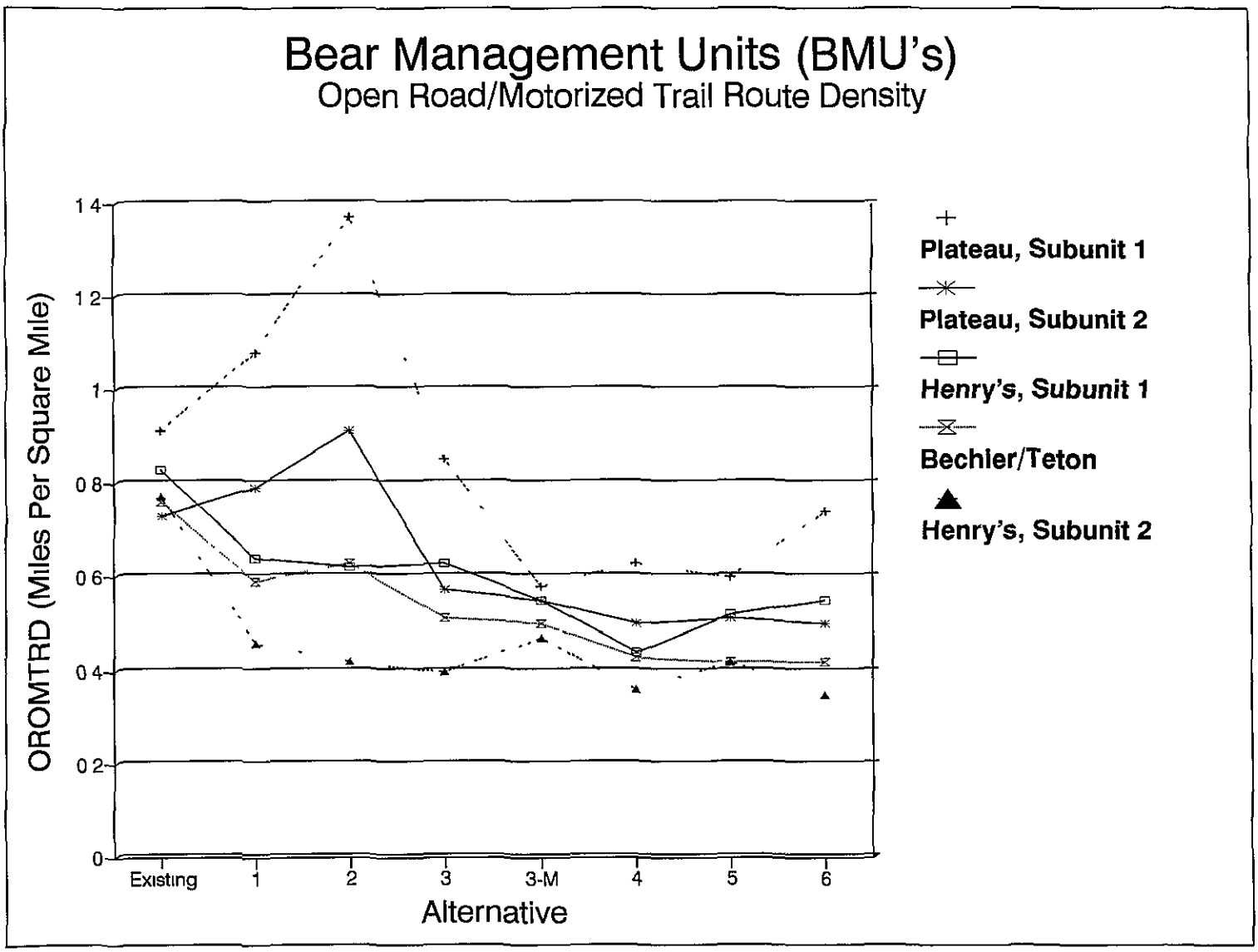


Figure S-6 Open Roads and Motorized Trails.

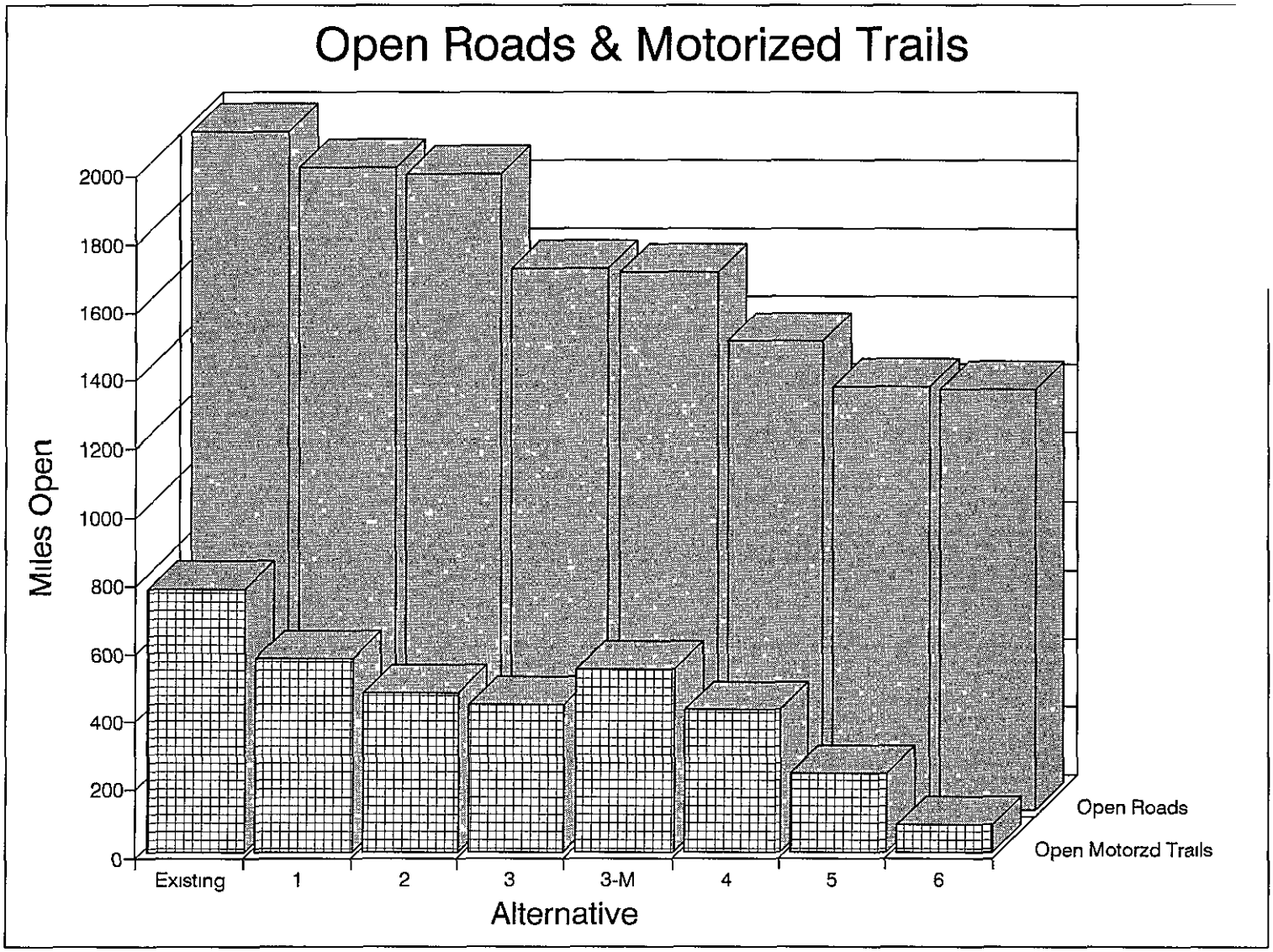


Figure S-7 Recommended Wilderness

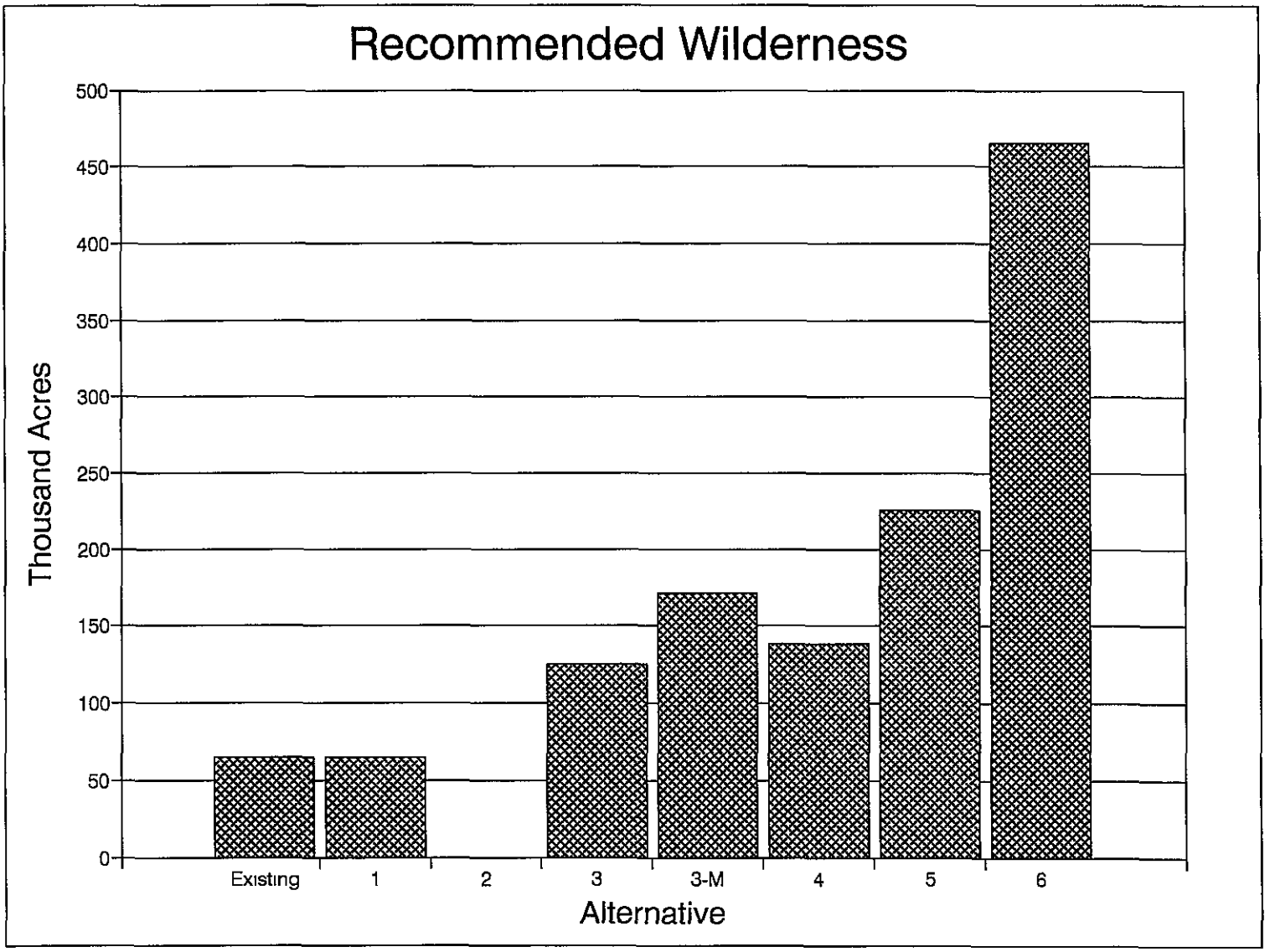
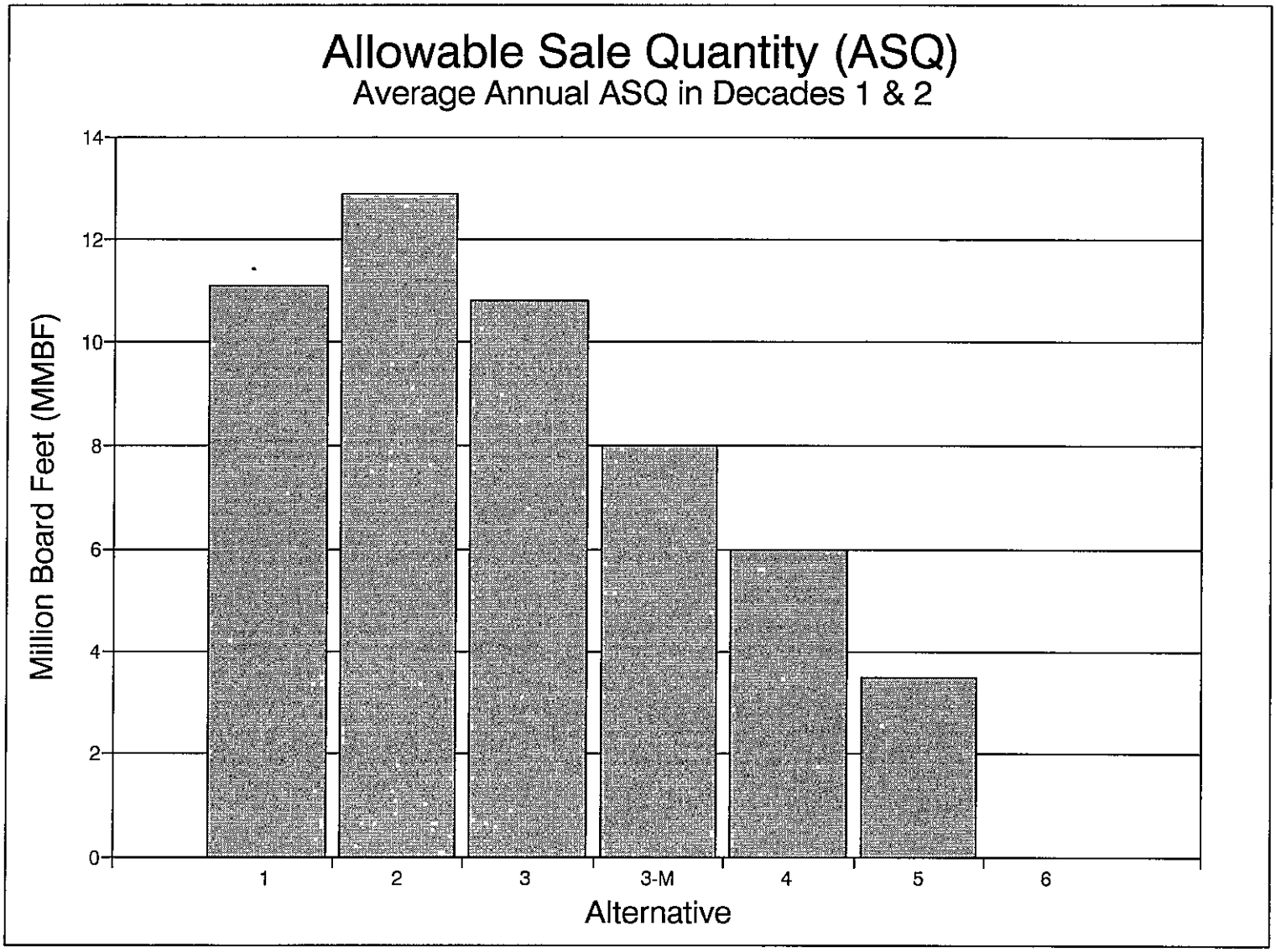


Figure S-8. Allowable Sale Quantity



# Chapter 1

# Purpose and Need for a Forest Plan Revision

# CHAPTER I
# PURPOSE AND NEED FOR A FOREST PLAN REVISION

## READER'S GUIDE - In this chapter you will find:

General Information about the Targhee National Forest
Legal Background for Preparing Forest Plan Revisions
Decisions Made in an EIS
Decisions Made in a Forest Plan Revision
Summary of the 1985 Targhee National Forest Management Plan
Reasons for Revising the Forest Plan (Need for Change)
Public's Role in Scoping and Issues
How the Key Forest Issues Were Selected
Issue Components Used to Organize EIS and Plan
Key Issues That Drove the Alternatives
What is an Issue Indicator
Summary of Key Issues and Key Indicators
Issue Indicators That Are Not Key
Desired Future Condition for the Year 2007

## GENERAL INFORMATION: LOCATION AND SETTING FOR THE TARGHEE NATIONAL FOREST

The Targhee National Forest (hereafter usually referred to as "the Forest") is an administrative unit of the U S Department of Agriculture, Forest Service, encompassing approximately 1 8 million acres Established by President Theodore Roosevelt in 1908, the Forest is named in honor of a Bannock Indian warrior The Shoshone-Bannock Tribe has ancestral Treaty Rights to uses of the Forest The Forest Supervisor's Office is located in St Anthony, Idaho, with District offices located in Dubois, Island Park, Ashton, Idaho Falls and Driggs, Idaho The Forest is bordered by six other National Forests (N F ) Part of the Caribou N F is administered by the Forest and part of the Forest is administered by the Bridger-Teton N F

The majority of the Forest lies in eastern Idaho and the remainder in western Wyoming (Figure I-1) Situated next to Yellowstone National Park (the Park) and Grand Teton National Park (GTNP), the Forest is home to a diverse number of wildlife and fish, including TES species, wilderness, scenic panoramas and intensively managed forest lands

The Forest lies almost entirely within "the Greater Yellowstone Area (GYA)" or "the Greater Yellowstone Ecosystem (GYE)," an area of 12 million acres which is the largest remaining block of relatively undisturbed plant and animal habitat in the contiguous United States The area continues to gain prominence for its ecological integrity

On a larger scale, the Forest lies entirely within the Upper Columbia River Basin (UCRB), an ecosystem of 40 million acres extending from western Washington to the southeastern Idaho border and encompassing parts of Montana, Wyoming, Nevada and Utah The Forest includes all or portions of several distinct mountain ranges, including the Lemhi, Beaverhead, Bitterroot, Centennial, Henry's Lake, Teton, Big Hole, Caribou and Snake River Ranges Elevations range from near 5,000 feet on the Snake River to over 12,000 feet on the Forest's most western reaches The Forest contains the Island Park Caldera and several reservoirs Topography ranges from rolling foothills to rugged, glaciated mountain peaks

Vicinity Map of Targhee National Forest
on a National Scale

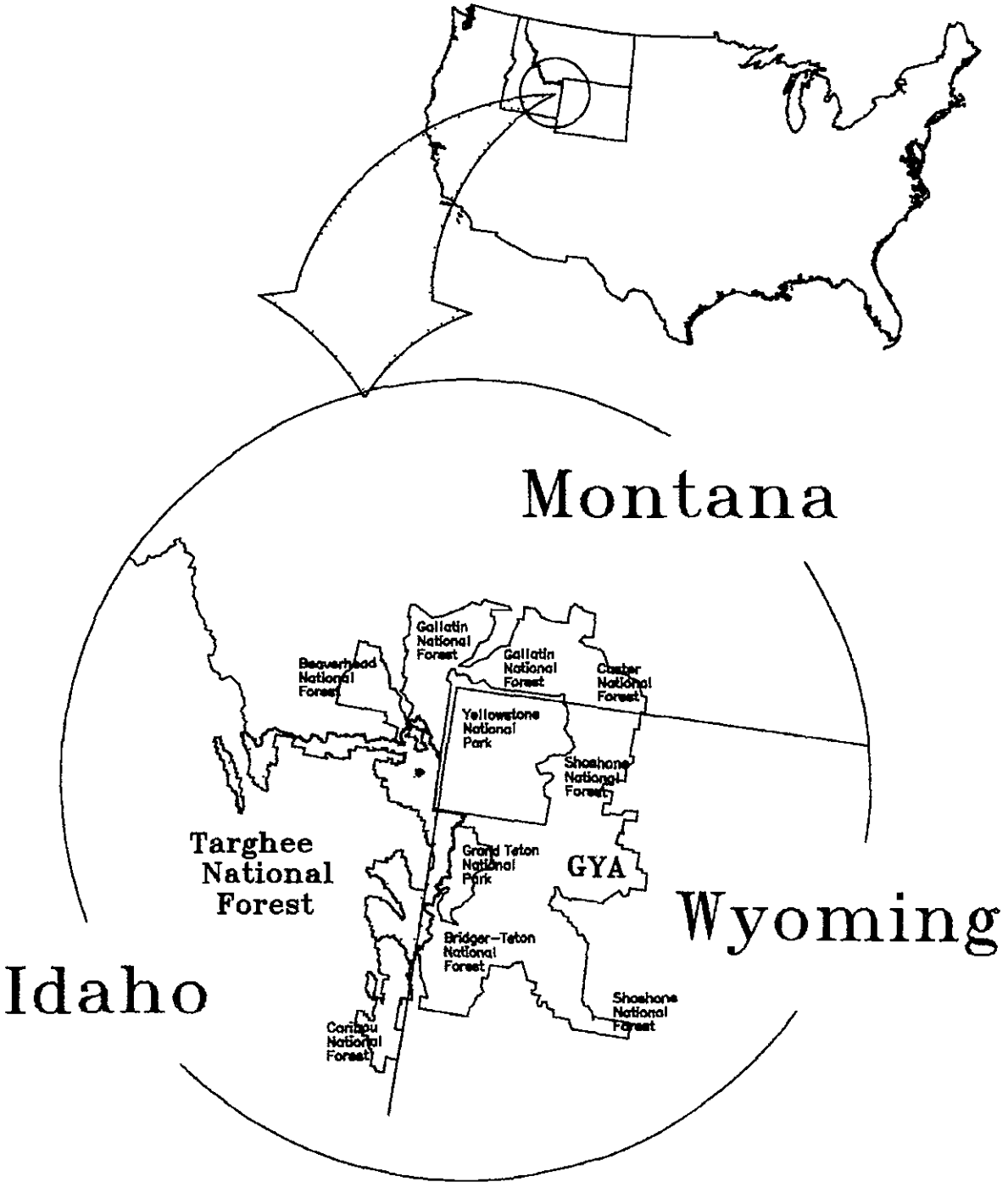



Figure I-1

Although most of the land is dry and semiarid, 190 stream headwaters situated on the Forest provide varied vegetation to support a multitude of uses The area has cold, moist winters and hot, dry summers Average annual precipitation, most of which falls as snow, increases with elevation As little as 10 inches of precipitation falls in lower valleys and as much as 40 inches occurs at the highest elevations Wide temperature extremes exist with summer temperatures at lower elevations sometimes exceeding 100 degrees Fahrenheit and winter temperatures at higher elevations falling to 40 degrees Fahrenheit below zero and lower

## LEGAL BACKGROUND FOR PREPARING FOREST PLAN REVISIONS

The National Forest Management Act (NFMA) of 1976 requires the Forest Service to develop 10 year integrated land management plans for units of the National Forest System within the framework of a public involvement process NFMA directs the Forest Service to review and/or update forest plans every 10 to 15 years or more frequently when resource and management conditions have changed significantly The plans must include management guidelines, an assessment of suitability of the lands, and consistency with the two other laws relating to the management of National Forests The Multiple Use-Sustained Yield Act of 1960, and the Forest and Rangeland Renewable Resources Planning Act (RPA) of 1974 A Management Plan for the Forest was finalized in 1985 This is the first revision of that plan

## DECISIONS MADE IN AN EIS

An Environmental Impact Statement (EIS) is a document that proposes two or more alternatives to a proposed action of significance for public review and input One alternative is always a 'No Action' Alternative, another is the proposed action or preferred alternative In this FEIS, the No Action is Alternative 1 Other alternatives are also considered and evaluated, according to the guidelines in the NFMA

The FEIS explains the need for change, the proposed action, the issues and concerns, the alternatives considered during the decision making process, the consequences of implementing the alternatives and the Selected Alternative

The proposed action and Selected Alternative in this FEIS is 3-Modified (3M) More discussion about 3M can be found in Chapter II

## DECISIONS MADE IN A FOREST PLAN REVISION

The Forest Plan Revision carries out the actions of the Selected Alternative It provides key decisions for the long-term management of the Forest These decisions include.

- Forestwide multiple-use goals and objectives, including a description of the DFC for the Forest
- Forestwide standards and guidelines
- Management direction and prescriptions
- Land suitable for resource use and production
- Monitoring and evaluation requirements
- Recommendations to Congress for Wilderness and Wild/Scenic and Recreational River Designations

## SUMMARY OF THE 1985 TARGHEE NATIONAL FOREST MANAGEMENT PLAN

The 1985 Forest Plan was started in 1980, but was not finalized until 1985 due to national requirements by Congress in 1982 for reevaluations of roadless areas in forest plans

The forest vegetation is approximately 37 percent lodgepole pine and 17 percent lodgepole/Douglas-fir mix (see Figure III-3), a fire-dependent, short-lived tree species with a mature "old-growth" lifespan of 100-160 years It regenerates rapidly after most disturbances, allowing it to dominate forest composition As forest succession advances, lodgepole pine tends to be gradually replaced by more shade-adapted tree species in the absence of further disturbances Beginning in the 1950s and continuing to the early 1980s, an extensive mountain pine beetle infestation attacked 90 percent of the lodgepole pine forest The natural beetle infestation was not outside the natural range of variation for such forests, nor were the subsequent large fires in the late 1980s Mountain pine beetle epidemics and large fire events are characteristic of lodgepole pine forests Hence these forests are subject to rapid changes in forest structures and vegetation patterns

The 1985 Forest Plan emphasized the harvest of dead and dying lodgepole and artificial regeneration where applicable The plan also predicted an abrupt decline from the high level of lodgepole supply within the next decade

## REASONS FOR REVISING THE FOREST PLAN (Need for Change)

The original Targhee Forest Plan, approved in 1985, emphasized an extensive salvage and reforestation program of dead lodgepole killed by a massive mountain pine beetle epidemic over the previous 30 years This rate of salvage caused, in effect, a departure from a sustained yield of timber harvest and could not be continued beyond the first decade (1985 - 1995) in an environmentally sound manner Monitoring of activities during this time showed it was increasingly difficult to meet the standards and guidelines in the 1985 Plan New information on resource needs and various management practices became evident during this time, and by 1990 it was apparent that a full revision was needed More specific needs for change are as follows

- The salvage program has ended Use of the many roads built during salvage operations by increasing numbers of people is causing unwanted effects to wildlife, riparian areas, and soil productivity

- The need to review and incorporate new knowledge and techniques continues, especially in wildlife habitat management For example, recent studies indicate motorized road and trail densities play a crucial role in availability of suitable habitat for elk and grizzly bears Standards for management activities near nesting and foraging habitat for goshawks and other raptors are needed to protect these crucial areas Results of studies analyzing fish habitat in the Upper Columbia River Basin are pointing out new ways to manage fisheries Some of these findings have widespread implications that the revision process was intended to address

- Although much of the lodgepole pine component on the Forest has been salvaged, there is still a need to use timber harvest as a tool to reach ecosystem objectives, supply a variety of timber products for local use, deter other epidemics like the mountain pine beetle outbreak, and manage the potential for a devastating wildfire, like the Yellowstone Wildfires of 1988

## PUBLIC'S ROLE IN SCOPING AND ISSUES

The public and Forest employees played an important role in determining the context of management for the Forest over the next 10-15 years Public involvement has taken place at every stage of the revision process Process Paper A describes the public involvement that occurred

## HOW THE KEY FOREST ISSUES WERE SELECTED

The following outlines the Forest's approach to defining the key issues

- A list of issues and concerns from the public was complied, resulting in an issue paper released in November 1992, listing over 70 issues and concerns

- A compatible list of "Issue Questions" was simultaneously developed These needed to be addressed in the EIS alternatives and in the Revision, this list was also released in November 1992 and was tied to the issues and concerns

- Issues and concerns were then categorized into "Issue Components" or "Issue Areas," a planning approach to help with the development and structure of the EIS and Plan

- The "Issue Indicators," the units of measurement tied to the issues and concerns, were chosen

- The alternatives were reviewed to determine which issue indicators have the greatest variables and which issue indicators remain relatively constant or the same

- The "Key Issues" were identified as those issues and concerns having the greatest and most significant variation among the alternatives

## ISSUE COMPONENTS USED TO ORGANIZE EIS AND PLAN

"Issue Components" are an organizational planning approach used to group similar issues and concerns. Key issues, alternatives, the rest of the EIS and the Revision are consistently divided into the following issue components, in this order

Ecological Processes and Patterns
Physical Elements
Biological Elements
Forest Use and Occupation
Production of Commodity Resources

## KEY ISSUES THAT DROVE THE ALTERNATIVES

Although there were over 70 issues and concerns identified by the public and Forest employees, seven key issues were the ultimate driving force for alternative development and determining factors for alternative comparison in the Forest Plan Revision The key issues had the most significance as variables between the alternatives

## WHAT IS AN ISSUE INDICATOR?

Each key issue received an "Issue Indicator," a unit of measurement that shows how the issue is addressed in each alternative The LST, consisting of the Forest Supervisor, his primary staff and the District Rangers studied the issues and selected one major indicator for each issue that best reflected the variability for that issue between the alternatives

## SUMMARY OF KEY ISSUES AND KEY INDICATORS

Key Issue 1 Sustainability, Fire and Natural Disturbances
(Ecological Processes and Patterns Component)
Key Indicators Health of forest structure and composition, and prescribed fire

Key Issue 2 Riparian
(Biological/Physical Component)
Key Indicator Acres not meeting the DVC DVC = riparian vegetation such as deep rooted grasses, shrubs and trees that maintain streambank stability

Key Issue 3 Security for Elk
(Biological Component)
Key Indicator Percent of Forest meeting Elk Vulnerability (EV) thresholds measured by the number of miles of open roads and open motorized trails

Key Issue 4 Grizzly Bear Management
(Biological Component)
Key Indicator Open Road & Open Motorized Trail Route Density (OROMTRD), measured in miles per square mile for BMUs

Key Issue 5 Access
(Forest Use & Occupation Component)
Key Indicator Number of miles of roads/trails open to summer motorized use

Key Issue 6 Management of Roadless Areas
(Forest Use & Occupation Component)
Key Indicator Number of Acres recommended for wilderness

Key Issue 7 Timber Harvest
(Production of Commodity Resources Component)
Key Indicator ASQ

**KEY ISSUE 1: Sustainability, Fire and Natural Disturbances (Issue Component: Ecological Processes and Patterns)**

**Issue Discussion:** An ecosystem is a large, complex, integrated system of living and nonliving components that interact and change continually Healthy ecosystems are those that retain all of their parts and functions for future generations even though vegetation patterns, human uses or other conditions may change Understanding ecological processes (fire and other natural disturbances) and how these processes shaped vegetation patterns over time in a landscape are important steps toward implementing EM

EM is a new philosophy of management for the Forest Service, and different interpretations and approaches are possible in working toward implementation The Forest is the first in the GYA to revise its Forest Plan and incorporate EM principles in the revision Many activities and projects are being studied toward the application and implementation of EM Their new information and conclusions will be used to adaptively manage the Forest and modify direction in the Revised Plan, where needed

The most pressing and debated question is, "How do we achieve sustainability incorporating fire and natural disturbances, to achieve healthy ecosystems?" This remains a very complex issue and we are just beginning to understand and experiment with some approaches to implementing EM However, more information and research is emerging that provides a good foundation from which to begin We are using adaptive management to monitor and test assumptions and strategies And we will make course corrections as we conduct projects and evaluate results

**Sustainability, Fire and Natural Disturbances Key Issue Indicators:** The primary indicator for this issue is health of forest structure and composition This indicator is measured as the total acres where EM based activities will result in maintenance or improvement of forest structure and composition

The secondary indicator is prescribed fire as measured by the number of acres where prescribed fire may be used to maintain or improve ecological sustainability

The PFC (sustainability) of forested ecosystems can be assessed through an evaluation of four criteria, structure, composition, disturbance regime and pattern Forest structure relates to the relative proportions of grasses, forbs, shrubs and trees, the relative ages of trees, the tree densities, etc Forest composition relates to the relative proportions of tree species The disturbance regimes affecting forested ecosystems are associated with fire (natural and prescribed), wind, insects, pathogens or flood and human induced disturbances, such as logging and grazing

All four criteria are directly or indirectly affected by timber harvest and fire management practices EM mandates that silvicultural activities, including timber harvest and prescribed fire, will contribute to maintaining or improving ecosystem sustainability

**KEY ISSUE 2: Riparian (Issue Component: Biological/Physical Elements)**

**Issue Discussion:** Riparian areas lie adjacent to water and are composed of vegetation communities dependent upon or tolerant to the presence of free or unbound water near the ground surface Riparian areas are associated with lakes, reservoirs, potholes, springs, bogs, wet meadows, and ephemeral, intermittent or perennial streams Although riparian areas constitute less than five percent of the total land base, they are the most productive areas in terms of plant and animal species diversity and consumptive use

Riparian areas are essential breeding, rearing and feeding grounds for many species of wildlife and affect fish habitat They serve people as important sources for water and flood control and for recreational purposes such as camping, fishing, floating and aesthetics A healthy riparian area indicates that most, if not all, of the associated water and soil components are also healthy Because of the myriad of competing uses for these highly valuable pieces of land, the variability between the alternatives was considered significant

**Riparian Key Issue Indicator:** The key indicator showing the differences between the alternatives for riparian areas is DVC The riparian area's health is indicated by the amounts and types of vegetation along the banks, with highest preference to deep-rooted grasses, shrubs and trees that maintain

streambank stability and that have a high rate of recovery Riparian areas meeting DVC currently meet the Forest Plan Revision objectives to maintain or enhance riparian vegetation, aquatic habitat and water quality

**KEY ISSUE 3: Security for Elk (Issue Component: Biological Element)**

**Issue Discussion:** The Forest provides habitat for a number of species ( a potential of 85 mammals, 300 birds, 17 reptiles and amphibians based on range maps) For most species there were no significant differences in the management of their habitat between alternatives Rather, standards and guidelines were developed to maintain a variety of habitat conditions across the forest The best data and analysis existed for elk security, which had the highest wildlife variance amongst the alternatives Elk are also wide-ranging animals, so their habitat encompasses virtually the entire Forest Security for elk was chosen as a key issue relating to future hunting conditions and opportunities and cooperative relations with Fish and Game Departments Observations and studies by the IDFG, University of Idaho and Forest Service scientists have determined that as motorized road and trail densities increase, elk security declines Portions of the Forest have high densities of trails and roads open to motorized use due to the extensive road building associated with the salvage of dead lodgepole Salvage activity is largely completed and new knowledge about impacts of road densities upon wildlife is available The Revision examines the range of management alternatives related to security for elk

**Security for Elk Key Issue Indicator** The best indicator for showing the differences between alternatives for elk security is, "the percentage of the Forest meeting State Fish and Game vulnerability thresholds for elk " The primary factors the Forest Service controls related to EV analysis, are the density of open motorized roads and trails and the amount of area open to cross-country, off-highway vehicle travel

EV is defined as a measure of elk susceptibility to being killed during the hunting season EV models help managers predict elk mortality rates As cross-country off-highway vehicle travel and motorized road and trail densities (measured in miles per square mile on a watershed basis) increase, the security for elk decreases and the mortality rate increases

**KEY ISSUE 4: Grizzly Bear Management (Issue Component: Biological Element)**

**Issue Discussion:** Portions of the Forest are within the Yellowstone Grizzly Bear Ecosystem which has been divided into BMUs Portions of the Forest are within three BMUs and feature grizzly bear recovery As with all TES species, all alternatives must meet the ESA The importance of managing motorized access is one of the most influential parameters affecting grizzly bear habitat security

New information accumulated over the last 10 years provides better insight and direction regarding effective management of roads, timber and human activities in grizzly bear habitat The one variation between alternatives that makes the BMU issue significant is the density of open motorized roads and trails in BMUs Which roads will be closed in BMUs, how many miles and in what manner?

**Grizzly Bear Key Issue Indicator.** The key issue indicator for BMUs is OROMTRD Studies show that the importance of managing access is one of the most influential components affecting habitat security for grizzly bears By managing motorized access, the Forest can minimize human interaction and potential grizzly bear mortality, minimize displacement from important habitats, and minimize habituation to humans

**KEY ISSUE 5: Access (Issue Component: Forest Use and Occupation)**

**Issue Discussion:** The Forest currently has 1,985 miles of open road and 773 miles of open trail "Open" means road and trail miles without restrictions on motorized use There are currently road and trail miles with restrictions on motorized use as follows 806 miles of restricted road (73 miles with seasonal restrictions and 733 miles with yearlong restrictions), 628 miles of restricted trail

Recreational motorized use has increased over the last decade The 1985 Plan allows cross-country motorized travel across much of the Forest and has no established road density standards Access to the Forest during non snow months is a significant variable among the alternatives Comments in the early planning stages were supportive of more or fewer road and trail closures depending on a variety of factors Those supporting road and trail closures want more protection and fewer impacts upon wildlife, TES species, soils and water, and fisheries, less visual, garbage and noise pollution, reduced maintenance and law enforcement costs, and more opportunity for escape and solitude Those supporting continued or more road and trail access want access for hunting, fishing, berry-picking, camping, hiking and other recreational pursuits, and increased opportunities for sight-seeing and challenging cross-country travel for off-highway vehicles Motorized access is considered a key element for enjoyment and use of the Forest by persons with disabilities and the elderly For more information on public comments, refer to Appendix A

**Access Key Issue Indicator:** The indicator that best shows differences between alternatives is the Number of Miles of Road/Trails Open to Summer Motorized Use The greater the number of miles of roads and trails open to motorized use, the greater the increased recreational benefits and hunting/ fishing access to users of motorized vehicles including persons with disabilities

**KEY ISSUE 6: Management of Roadless Areas (Issue Component: Forest Use and Occupation)**

**Issue Discussion:** The Forest has 16 areas which qualify as roadless, totaling 841,000 acres The Wyoming portion of the Palisades Roadless Area was designated by Congress as a Wilderness Study Area in the Wyoming Wilderness Bill of 1984 Portions of three roadless areas in Idaho were recommended as wilderness in the 1985 Forest Plan, but no legislative action has been taken to resolve the roadless area question in Idaho During the last planning period, parts of some roadless areas were roaded as part of the salvage program As motorized recreation demands increase, pressure also increases to maintain the roadless character of the remaining roadless areas The significant difference between alternatives in the management of roadless areas is in the amounts of acres recommended for wilderness Those arguing for more acres of Congressionally designated wilderness want the assurance of preservation of biological diversity, protection from resource uses and national recognition of wilderness character Those opposed to more acres designated wilderness want roadless areas to be left as roadless or to be developed to allow motorized access for recreation, oil and gas, timber and other industries requiring access

**Management of Roadless Areas Key Issue Indicator:** The indicator best showing differences between alternatives related to the management of roadless areas is the number of acres recommended for wilderness Once a roadless area is designated as wilderness by Congress, it is managed in perpetuity for nonmotorized, scientific and dispersed recreational purposes Roadless areas not recommended as wilderness may be managed as roadless areas or for some other use during each planning cycle

**KEY ISSUE 7: Timber Harvest (Issue Component: Production of Commodity Resources)**

**Issue Discussion** Previously, large scale salvage of dead and dying timber was conducted as a temporary departure from long term sustained yield (LTSY) management Since the goals of harvest of dead timber have largely been met, the Forest will return to management within LTSY for the future

Two local mills, once dependable bidders for salvage and other wood harvest, are now closed but local demand remains high The ESA, Grizzly Bear Recovery Plan and Guidelines, EM principles, availability of dead lodgepole, increased knowledge about the impacts of motorized use of roads and trails upon the Forest's wildlife resources and other factors have resulted in a greatly reduced availability of scheduled timber harvest, i e the ASQ The issue of timber harvest does not include firewood, since the amount of firewood quantity does not vary between the alternatives Some people desiring a greater harvest of timber from the Forest often cite the effects upon the local economy Others have expressed a concern over the reduction in payments to local governments (25 percent of Forest receipts go to county treasuries) associated with the reduced harvest levels They also want to maximize harvest of the remaining dead or mature wood Some argue that small harvests in the fire dependent lodgepole are contrary to historically based EM principles Those supporting a greater reduction in timber harvest are concerned about motorized trail and road uses that impact wildlife, reductions in the amount and distribution of late successional forest, fisheries, riparian areas, soils and water, aesthetics and other resources

**Timber Harvest Key Indicator:** The key indicator for timber harvest that portrays the differences between alternatives is the ASQ ASQ does not include firewood and is defined as the quantity of timber that may be sold from the area of suitable land for a time period specified in a Forest Plan This quantity is usually expressed on an annual basis as an "average" ASQ

## ISSUE INDICATORS THAT ARE NOT KEY

When the Forest designed the alternatives around the issues, a number of issue indicators were created Specialists analyzed the consequences for all of the different alternatives It soon became clear that most of the consequence indicators were either the same in all alternatives or had minor variations, making them less significant than the key issue indicators

Although most of Chapters I and II focus on the key issues and indicators, the remaining issues and indicators are addressed in Chapters III and IV and the standards and guidelines in the Forest Plan Revision For example, firewood availability is an issue Although not a key issue, firewood is addressed in the Revision and the effects and consequences remains the same in all the alternatives

Confusion may exist over the lack of inclusion of significant resources such as water and soils as key issues Why aren't these considered key issues? All the alternatives comply with state and federal quality standards, there was only a slight range of variability and the condition of soil and water is interconnected with the condition of riparian areas The key issue of Riparian Areas became the symbol and captured the essence of the significance of differences for soil and water resources Table II-1 lists most of the issue components and indicators Process Paper A refers to the complete list of issues published in the AMS document, November, 1992 The following summarizes those indicators

- Wild and Scenic Rivers Recommendations
- Research Natural Areas
- Visual Quality
- Developed Recreation, nonmotorized

- Heritage Resources
- Cave Management
- Predator Control
- Noxious Weeds
- Outfitter and Guides
- Summer Homes & Other Special Use Permits
- Management of Existing Wilderness & Wilderness Study Areas
- Firewood
- Old Growth Standards and Guidelines
- Unscheduled Harvest
- Bald Eagle - Forestwide standards and guidelines same in all alternatives
- Peregrine Falcon - Forestwide standards and guidelines same in all alternatives
- Ute Ladies' Tresses - Forestwide standards and guidelines same in all alternatives
- Sensitive Species (these include three-toed woodpecker, flammulated owl, boreal owl, great gray owl, goshawk, trumpeter swan, spotted frog habitat, common loon, harlequin duck) - Forestwide standards and guidelines same in all alternatives
- Sensitive Species (these include wolverines, lynx, fisher) - small variation in habitat quality or quantity, generally in the realm of one to three percent change from existing conditions
- *Sensitive Species (plants listed in current Forest Sensitive Species plant list) - Forestwide standards* and guidelines same in all alternatives

## DESIRED FUTURE CONDITION FOR THE YEAR 2007 and BEYOND

*After issues are identified, one of the first steps in the revision process is to develop goals for the DFC of* the Forest by the year 2007 and beyond

The Forest plays an integral part in the GYA as well as in adjacent systems, observing the broad visions and principles in the Greater Yellowstone Coordinating Committee (GYCC) Framework document (GYCC, 1991) Habitat and conditions necessary for free movement of wildlife are sustained

Based on public and employee comments between 1991-1994, a set of goal statements emerged that collectively represent a new general management direction for the Forest. The goal statements were tied to the key issues driving the plan, evolving into a new DFC for the Forest More specific DFCs for particular portions of the Forest are outlined in the Forest Plan Revision

The DFC is described in terms of the five components, Ecological Processes and Patterns, Physical Elements, Biological Elements, Forest Use and Occupation and Production of Commodity Resources *The Biological and Physical are combined because of their interconnectivity The DFC is broader than the* seven key issues that are driving the alternatives and the decisions

**Ecosystem Processes and Patterns DFC:**

A mosaic of age classes and types of vegetation are sustained through time and exist across the landscape Natural disturbances such as insects, disease and fires continue their natural roles in the ecosystem The Forest functions as an integral part of the Greater Yellowstone Ecosystem as well as adjacent systems, sustaining habitat and conditions necessary for free movement of wildlife

**Biological and Physical DFC:**

Riparian zones (aquatic influence zones) are healthy and productive Aquatic systems are allowed to function naturally while protecting flows for downstream consumptive uses Riparian area integrity contributes to productive fisheries and excellent water quality Native plant and animal species are favored over undesirable non-native species and sustained populations of all native and desirable species thrive Habitat conditions contribute toward the recovery of threatened, endangered and sensitive species

**Forest Use and Occupation DFC:**

Growing and diverse recreational, cultural, visual, historical, and prehistoric management, interpretive, and spiritual needs are accommodated based on the capability of the ecosystem to sustain these uses Recreation use is managed to minimize conflicts between incompatible uses and provide high levels of satisfaction Year-round human access is managed to provide both motorized and nonmotorized opportunities A system of trails and support facilities exist which are compatible with resource capabilities Roadless characteristics are preserved in the proposed wilderness areas and in existing wildernesses

**Production of Commodity Resources DFC:**

Commodity production, such as timber, firewood, mining, livestock forage, or outfitting and guide services are conducted at sustainable levels and maintain the capability of the land to produce an even flow and variety of goods and services for present and future generations Timber harvest, prescribed fires and livestock grazing are tools used to achieve desired ecological vegetation conditions Forest products are provided to sustain social and economic values and needs of the local communities within limits which maintain ecosystem health

Chapter

II

# Alternatives Including the Proposed Programmatic Action (Preferred Alternative)

# CHAPTER II
# ALTERNATIVES INCLUDING THE PROPOSED PROGRAMMATIC ACTION (SELECTED ALTERNATIVE)

## READER'S GUIDE - In this chapter you will find:

How the Alternatives Were Formulated
The Alternative Continuum and Descriptions of the Seven Alternatives
Alternatives Considered but Eliminated from Detailed Study
Comparison of the Environmental Effects Depicted by Issue Indicators (Tables)

## HOW THE ALTERNATIVES WERE FORMULATED

In Chapter I, we discussed the issues, issue indicators, reasons for the need for change and the DFCs This chapter will explain how alternatives were formulated and how each alternative addressed the issues

Forestwide standards and guidelines specify management requirements that apply throughout the Forest Management prescriptions say how different portions of the Forest will be managed differently from one another

Forest lands meet many different needs Some of these needs are mutually exclusive, for example, a wilderness area is not set up to provide developed recreation sites for motorized users It is more common that many uses coexist on the same land A single piece of land may provide habitat for grizzly bear, security cover for elk, grazing for livestock, timber for harvesting and so on This multiplicity of uses is allowed in the prescriptions Land that provides crucial winter range for elk may address that need whether the land is placed in a winter range prescription, in a recommended wilderness prescription or a range management prescription

For purposes of managing the Forest though, people need to have ready access to the management direction that applies to any particular piece of land That would not be possible if they had to look up separate management prescriptions for grizzly bear habitat, elk security cover, livestock grazing, timber harvesting and then face the question of which to apply

The Forest has adopted a convention that any single piece of land has only one prescription applied to it in any given alternative This simplifies management, but it also means that people cannot just look at a given prescription acreage total and assume that it contains all the acreage on the Forest that could possibly fit there For instance, there is more elk and deer winter range on the Forest than is allocated to that prescription

For the most part, when there was a question as to which management prescription should be applied, that prescription was assigned which best described the area's intended future management by the LST As an example, when an eligible wild scenic river was identified in an area recommended for wilderness, the river corridor was assigned an eligible wild river prescription, the surrounding recommended wilderness was assigned a recommended wilderness prescription

Alternatives can be formulated simply by specifying a different mix of management prescriptions for a given area of the Forest For instance, a given portion of the Forest could be designated for a timber management, grizzly bear habitat or recommended wilderness prescription

The alternatives reflected a range of options open to management that responded to the issues, the DFC and the need for change The IDT evaluated the significant physical, biological, economic and social effects of each alternative that was considered in detail The evaluation included aggregate effects of social and economic impacts, outputs of goods and services and overall protection and enhancement of environmental resources

Benchmarks were developed during the formation of the initial Forest Plans Early indications were that additional benchmark work would not be needed for Forest Plan Revisions because the benchmark work had already been completed during the development of the initial Forest Plans

Consequences for nonkey issues are not included in Chapter II discussions, since many of them are addressed the same or with slight variation in every alternative As an example, local communities are noticeably interested in firewood availability Regardless of the alternative, a constant 3 8 million board feet will be available each year in some remaining dead lodgepole and aspen areas Although discussed in Chapters III and IV, firewood was not a key issue and did not drive the selection of the selected alternative Therefore firewood is not discussed in the alternative summaries of Chapter II

## THE ALTERNATIVE CONTINUUM AND ALTERNATIVE DESCRIPTIONS

The numbering scheme for alternatives ranges from 1-6, with Alternative 3M being the Selected and Alternative 1 being the No-Action, or continue the 1985 Forest Plan Alternative The continuum is not perfect, however, it helps to describe the changes which occur As the numbers increase from Alternatives 2 to 6, they move generally toward

*Greater protection of wildlife habitat
*Greater protection of riparian areas
*More protection for BMUs
*More security for elk
*More nonmotorized, dispersed recreation opportunities
*More recommended wilderness
*Less cross-country motorized use
*Fewer open roads and trails
*Reduced livestock grazing and timber harvest
*Less lasting visual impacts from management activities

There are several exceptions to the general trends described above The position of Alternative 3M on the continuum, for instance, could easily vary if one were to focus on certain factors The continuum is presented only as an aid in understanding how the alternatives generally compare to one another It is not correct to assume that these various factors or considerations are at odds with one another Better performance in one category does not necessarily mean worse performance in another For instance, moving acres between a recommended wilderness and nonmotorized prescriptions in a given alternative might have no other effect than a change in acres recommended for wilderness, because management under these prescriptions is otherwise quite similar

All alternatives meet baseline State and Federal Standards, Grizzly Bear Recovery Plan Goals for Greater Yellowstone Ecosystem, ESA, Wilderness Act, Wild and Scenic Rivers Act, National Historical Act, NFMA, Native Americans Act, etc All the alternatives respond to and incorporate the tentative resource objectives set forth in the Recommended 1990 RPA Program

**ALTERNATIVE 1 = Continue the 1985 Forest Plan (No Action)**

The purpose of Alternative 1 is to continue management of the Forest under the 1985 Forest Plan, updated since finalized with amendments, new direction, particularly the recent litigation for the grizzly bear, and changes for new listings of sensitive wildlife species over the last 10 years Timber harvest occurs at the highest levels possible within the management constraints required for TES wildlife species like the grizzly bear and goshawk Vehicle access is slightly reduced from current levels due to the implementation of the Interagency Grizzly Bear Guidelines and better road management across the Forest Cross-country, motorized access in summer and winter would continue close to current levels Riparian, wildlife and recreation values are emphasized in specific areas of the Forest

How the Key Issues and Indicators are addressed in Alternative 1

**1. Sustainability, Fire and Natural Disturbances.** Key Indicators Health of forest structure and composition and prescribed fire

In Alternative 1, forest structure and composition would be maintained or improved on 48,530 acres Prescribed fire could be used to maintain or improve ecosystem sustainability on 1,630,000 acres

**2. Riparian.** Key Indicator Acres not meeting DVC

Approximately 342,000 aquatic influence zone (AIZ) acres would be managed to maintain or enhance riparian vegetation, aquatic habitat and water quality At the end of the first decade, about 4,000 acres would not meet the DVC Fisheries habitat quality would continue at a moderate level Livestock grazing would occur near current levels There would be a slight increase in cattle Animals Unit Months (AUMs) Current levels of sheep grazing would be maintained, in spite of officially closing nine currently vacant sheep allotments and one vacant sheep permit A mosaic of different species and size classes of vegetation would be provided Timber harvest would be allowed within limits and would contribute to the ASQ

**3. Security for Elk.** Key Indicator Percent of Forest meeting state EV thresholds, measured by miles of open motorized roads and trails

In Alternative 1, 62 percent of the Forest (1,136,500 acres) would meet the state EV thresholds The greatest factors under control of the Forest Service that influence elk security are the miles of open motorized roads and trails Alternative 1 would reduce the number of open roads by 103 miles (5 percent) There would be a reduction of open trails by 201 miles (26 percent) The 62 percent of the Forest meeting state EV thresholds is a 14 percentage point increase over the existing level of 48 percent, indicating the potential for a slightly lower proportion of bulls to be harvested during the general hunting season

**4. Grizzly Bear Management (within the BMUs).** Key Indicator· OROMTRD in miles per square mile

Compared to the existing condition, OROMTRD is reduced 23 percent in Henry's Lake BMU Subunit 1, 40 percent in Henry's Lake BMU Subunit 2, and 22 percent in Bechler/Teton BMU OROMTRD is increased 19 percent in Plateau BMU Subunit 1 and 8 percent in Plateau BMU Subunit 2 Off-highway vehicle (OHV) use would continue at current levels of use Alternative 1 has no restrictions on cross-country snowmachine use, except on a small portion of the Plateau BMU Timber harvest could occur with constraints and would contribute to the ASQ

**5. Access.** Key Indicator Number of miles of roads and trails open to summer motorized use.

Alternative 1 would reduce the number of open roads by 103 miles (5 percent) There would be a reduction in open trails by 201 miles (26 percent) Acres available for summer OHV would also be the highest of the alternatives, allowing OHV use on approximately 960,000 acres, about a 15 percent reduction over the current 1,126,000 acres open to OHV use.

**6. Roadless Area Management.** Key Indicator Number of acres recommended for wilderness

Alternative 1 would recommend to Congress 65,000 acres for wilderness designation These are the roadless areas recommended in the 1985 Forest Plan (Italian Peak, Lionhead and Winegar Hole), although no Congressional action has been taken This recommendation is about seven percent of the total acres which presently qualify as roadless.

**7. Timber Harvest.** Key Indicator ASQ

Alternative 1 would harvest timber at a sustainable level of a maximum 110 7 million board feet (MMBF) for the decade (approximately 11 07 MMBF per year) on an estimated 28,380 acres

**ALTERNATIVE 2**

The purpose of Alternative 2 is to resolve the needs for change by emphasizing cross-country, winter access and timber production, while adding more restrictions to summer, cross-country access Timber harvest occurs at the highest levels within the management constraints required for maintaining TES species habitat Vehicle access is slightly reduced to meet requirements of the Interagency Grizzly Bear Guidelines Riparian, wildlife and heritage resource values are emphasized in specific areas of the Forest

How the Key Issues and Indicators are addressed in Alternative 2

**1. Sustainability, Fire and Natural Disturbances.** Key Indicators Health of forest structure and composition and prescribed fire

In Alternative 2, forest structure and composition would be maintained or improved on 58,580 acres Prescribed fire could be used to maintain or improve ecosystem sustainability on 1,750,000 acres

**2. Riparian.** Key Indicator Acres not meeting DVC

Approximately 325,000 AIZ acres would be managed to restore and maintain the health of AIZs in ways that also produce desired resource values, products, protection and enhancement of these areas At the end of the first decade, about 2,500 acres would not meet the DVC Cattle and sheep grazing are both slightly reduced from existing levels Fisheries habitat quality would remain at a moderate level

**3. Security for Elk.** Key Indicator Percent of Forest meeting state EV thresholds, measured by miles of open motorized roads and trails

In Alternative 2, 76 percent of the Forest (1,393,000 acres) would meet the state EV thresholds The greatest factors under control of the Forest Service that influence elk security are the miles of open

motorized roads and trails Alternative 2 would reduce the number of open roads by 122 miles (6 percent) There would be a reduction in open trails by 303 miles (39 percent) The 76 percent of the Forest meeting state EV thresholds is a 28 percentage point increase over the existing level of 48 percent, probably resulting in a potential for a lower proportion of bulls to be harvested during the general hunting season

**4. Grizzly Bear Management (within the BMUs).** Key Indicator OROMTRD in miles per square mile

Compared to the existing condition, OROMTRD is reduced 25 percent in Henry's Lake BMU Subunit 1, 45 percent in Henry's Lake BMU Subunit 2, and 17 percent in Bechler/Teton BMU OROMTRD is increased 51 percent in Plateau BMU Subunit 1 and 25 percent in Plateau BMU Subunit 2 Acres of summer cross-country, motorized access is significantly reduced from Alternative 1 Timber harvest that might occur to achieve grizzly bear habitat objectives would contribute to the ASQ

**5. Access.** Key Indicator Number of miles of roads and trails open to summer motorized use

Alternative 2 would reduce the number of open roads by 122 miles (6 percent) There would be a reduction in open trails by 303 miles (39 percent) Acres available for OHV would also be reduced over recent levels Alternative 2 would allow OHV use on approximately 761,000 acres, about a 32 percent reduction from the current 1,126,000 acres open to OHV use Winter OHV access would be increased, with an additional 206 miles of groomed trails for snowmobiles, for a total of 666 miles.

**6. Roadless Area Management.** Key Indicator Number of acres recommended for wilderness

Alternative 2 would not recommend to Congress any areas for wilderness designation

**7. Timber Harvest.** Key Indicator ASQ

Alternative 2 would harvest timber at a sustainable level of a maximum 129 0 MMBF for the decade (approximately 12 9 MMBF per year) on an estimated 33,080 acres

**ALTERNATIVE 3**

The purpose of Alternative 3 is to resolve the needs for change by emphasizing management of wildlife habitat and sustaining timber harvest levels within wildlife constraints Grizzly bear recovery is enhanced with a reduction in motorized use allowed in each BMU The number of riparian areas meeting the DVC are slightly reduced Cross-country, summer, motorized vehicle use is restricted to specific areas

How the Key Issues and Indicators are addressed in Alternative 3

**1. Sustainability, Fire and Natural Disturbances.** Key Indicators Health of forest structure and composition and prescribed fire

In Alternative 3, forest structure and composition would be maintained or improved on 52,930 acres Prescribed fire could be used to maintain or improve ecosystem sustainability on 1,750,000 acres

**2. Riparian.** Key Indicator Acres not meeting DVC

Alternative 3 would promote the health and function of riparian, wetland and aquatic ecosystems on approximately 448,000 AIZ acres At the end of the first decade, about 2,500 acres would not meet the DVC Fisheries habitat quality would be moderately high Cattle and sheep grazing would occur at reduced levels compared to existing levels Timber harvest could occur in riparian areas to attain the DVCs, but is not scheduled and would not contribute to the ASQ

**3. Security for Elk.** Key Indicator Percent of Forest meeting state EV thresholds, measured by miles of open motorized roads and trails

In Alternative 3, about 83 percent of the Forest (1,521,500 acres) would meet the state EV thresholds The greatest factors under the control of the Forest Service and influencing this are the miles of open motorized roads and trails Alternative 3 would reduce the number of open roads by 396 miles (20 percent) There would be a reduction in open trails by 338 miles (44 percent) The 83 percent of the Forest meeting state EV thresholds is a 35 percentage point increase over the existing level of 48 percent, thereby improving elk security and allowing a higher potential for a lower proportion of bulls to be harvested during the general hunting season

**4. Grizzly Bear Management (within the BMUs).** Key Indicator OROMTRD in miles per square mile

Compared to the existing condition, OROMTRD is reduced 24 percent in Henry's Lake BMU Subunit 1, 48 percent in Henry's Lake BMU Subunit 2, 7 percent in Plateau BMU Subunit 1, 22 percent in Plateau BMU Subunit 2, and 33 percent in Bechler/Teton BMU Almost no summer cross-country, motorized travel would be permitted in the BMUs Snowmachine use is allowed on designated routes throughout the snow season In 96 percent of the Henry's Lake BMU - Subunit 2, 20 percent of the Plateau BMU, and 3 percent Bechler/Teton BMU, cross-country snowmachine use is allowed only from December 15 to April 1 Some timber harvest could occur to improve bear habitat

**5. Access.** Key Indicator Number of miles of roads and trails open to motorized use

Alternative 3 would reduce the number of open roads by 396 miles (20 percent) There would be a reduction in open trails by 338 miles (44 percent) Acres available for summer OHV use would also be reduced over current levels Alternative 3 would allow OHV use on approximately 368,000 acres, about a 67 percent reduction from the current 1,126,000 acres open to OHV use Besides providing wildlife security, summer OHV reductions would prevent other resource damages from OHV use

**6. Roadless Area Management.** Key Indicator Number of acres recommended for wilderness

Alternative 3 would recommend to Congress 125,000 acres for wilderness designation The 125,000 acres would include the 65,000 acres recommended by the 1985 Plan in the Italian Peak, Lionhead and Winegar Hole roadless areas, plus additional roadless acres in each of these areas and the Palisades These acres represent 15 percent of the total acres which presently qualify as roadless on the Forest

**7 Timber Harvest.** Key Indicator ASQ

Alternative 3 would harvest timber at a sustainable level of a maximum 108 3 MMBF for the decade (approximately 10 83 MMBF per year) on an estimated 27,780 acres

**ALTERNATIVE 3M = Alternative 3 Modified (Also the Proposed Programmatic Action and Selected Alternative)**

The purpose of Alternative 3M is to resolve the needs for change by emphasizing wildlife habitat management and providing a comprehensive habitat management strategy for the grizzly bear Motorized access, timber harvest levels and livestock grazing are all reduced from levels allowed in the 1985 Forest Plan Riparian areas with cutthroat trout are further protected with increased vegetation Cross-country, summer, motorized vehicle use is restricted to specific areas

Alternative 3M has been selected as the RPA Alternative because it represents the Forest's best attempt to simultaneously implement multiple-use management, ensure resource sustainability, emphasize the quality of resource outputs and to provide for the economic well-being of rural communities

How the Key Issues and Indicators are addressed in Alternative 3M

**1. Sustainability, Fire and Natural Disturbances.** Key Indicators Health of forest structure and composition and prescribed fire

In Alternative 3M, forest structure and composition would be maintained or improved on 45,170 acres Prescribed fire could be used to maintain or improve ecosystem sustainability on 1,750,000 acres

**2. Riparian.** Key Indicator Acres not meeting DVC

Approximately 512,000 AIZ acres would be managed to promote the health and function of riparian, wetland and aquatic ecosystems under Alternative 3M At the end of the first decade, about 2,500 acres would not meet the DVC Fisheries habitat quality would be moderately high, compared to the current moderate quality rating There would be a moderately rapid rate of recovery of degraded habitats Livestock grazing is reduced to the same levels described in Alternative 3, in addition, a program is initiated to phase out sheep grazing on an opportunity basis on portions of the Island Park and Teton Basin Ranger Districts Timber harvest could occur in riparian areas to attain the DVCs, but is not scheduled and would not contribute to the ASQ

**3. Security for Elk.** Key Indicator Percent of Forest meeting state EV thresholds, measured by miles of open motorized roads and trails

About 89 percent of the Forest (1,631,500 acres) would meet the state EV thresholds The greatest factors under the control of the Forest Service and influencing this are the miles of open motorized roads and trails Alternative 3M would reduce the number of open roads by 408 miles (21 percent) There would be a reduction in open trails by 233 miles (30 percent) The 89 percent of the Forest meeting state EV thresholds is a 41 percentage point increase over the existing level of 48 percent, thereby greatly improving elk security This means the potential would be for a lower proportion of bulls to be harvested during the general hunting season

**4. Grizzly Bear Management (within the BMUs).** Key Indicator OROMTRD in miles per square mile

Compared to the existing condition, OROMTRD is reduced 34 percent in Henry's Lake BMU Subunit 1, 39 percent in Henry's Lake BMU Subunit 2, 36 percent in Plateau BMU Subunit 1, 25 percent in Plateau BMU Subunit 2, and 34 percent in Bechler/Teton BMU Additional access restrictions to improve habitat secu-

rity would be no summer cross-country motorized vehicle use in any of the BMUs, except a small portion in the Bechler BMU No timber harvest would be scheduled in the designated core or secure areas Snowmachine use is allowed on designated routes throughout the snow season Cross-country snowmachine use is allowed from Thanksgiving Day until June 1.

**5. Access.** Key Indicator Number of miles of roads and trails open to motorized use

Alternative 3M would reduce the number of open roads by 408 miles (21 percent) There would be a reduction in open trails by 233 miles (30 percent) The increase in road closures and restrictions would provide increased wildlife security, especially for elk and grizzly bears, and would provide additional protection from other resource damage Acres available for summer OHV use would be reduced allowing OHV use on approximately 121,000 acres, an 89 percent reduction from the current 1,126,000 acres open to OHV use

**6. Roadless Area Management.** Key Indicator Number of acres recommended for wilderness.

Alternative 3M would recommend to Congress 171,000 acres for wilderness designation The 171,000 acres would include the 65,000 acres recommended by the 1985 Plan in Italian Peak, Lionhead and Winegar Hole roadless areas, plus additional roadless acres in each of these areas and the Palisades Over 33,000 acres of the Diamond Peak Roadless area was added Another 12,000 acres was added to the Italian Peaks area due to re-digitizing the southern boundary This recommended 171,000 acres is 20 percent of the total acres which presently qualify as roadless on the Forest

**7 Timber Harvest** Key Indicator ASQ

Alternative 3M would harvest timber at a sustainable level of a maximum 80 0 MMBF for the decade (approximately 8 0 MMBF per year) on an estimated 20,520 acres

**ALTERNATIVE 4**

Alternative 4 emphasizes watershed and wildlife habitat improvement and a reduction in timber harvest Riparian areas receive increased emphasis Motorized access is restricted to designated routes and more roads are closed in some BMUs than in previous alternatives

How the Key Issues and Indicators are addressed in Alternative 4

**1. Sustainability, Fire and Natural Disturbances.** Key Indicators Health of forest structure and composition and prescribed fire

In Alternative 4, forest structure and composition would be maintained or improved on 39,770 acres Prescribed fire could be used to maintain or improve ecosystem sustainability on 1,750,000 acres

**2. Riparian.** Key Indicator Acres not meeting DVC

Approximately 533,000 AIZ acres would be managed to promote the health and function of riparian, wetland and aquatic ecosystems At the end of the first decade, about 1,700 acres would not meet the

DVC Fisheries habitat quality would be high, compared to the current moderate quality rating Degraded habitats would recover rapidly Sheep grazing is reduced compared to existing levels, and the program to phase out sheep grazing on an opportunity basis also occurs under this alternative Cattle grazing levels would be reduced considerably (12 percent) from current levels Timber harvest could occur in riparian areas to attain DVCs, but is not scheduled and would not contribute to ASQ

**3. Security for Elk** Key Indicator Percent of Forest meeting state EV thresholds, measured by miles of open motorized roads and trails

About 89 percent of the Forest (1,631,500 acres) would meet the state EV thresholds The greatest factors under the control of the Forest Service and influencing this are the miles of open motorized roads and trails Alternative 4 would reduce the number of open roads by 613 miles (31 percent) There would be a reduction in open trails by 352 miles (46 percent) The 89 percent of the Forest meeting state EV thresholds is a 41 percentage point increase over the existing level of 48 percent, thereby greatly improving elk security This means the potential would be for a lower proportion of bulls to be harvested during the general hunting season

**4. Grizzly Bear Management (within the BMUs).** Key Indicator OROMTRD in miles per square mile

Compared to the existing condition, OROMTRD is reduced 47 percent in Henry's Lake BMU Subunit 1, 53 percent in Henry's Lake BMU Subunit 2, 31 percent in Plateau BMU Subunit 1, 32 percent in Plateau BMU Subunit 2, and 43 percent in Bechler/Teton BMU Additional access restrictions to improve habitat security would be no cross-country motorized vehicle use in any of the BMUs, except a small portion of the Plateau and Bechler BMUs Snowmachine use is allowed on designated routes throughout the snow season Cross-country snowmachine use is allowed only from December 15 to April 1

**5. Access.** Key Indicator Number of miles of roads and trails open to motorized use

Alternative 4 would reduce the number of open roads by 613 miles (31 percent) There would be a reduction in open trails by 352 miles (46 percent) Alternative 4 would allow OHV use on approximately 79,000 acres, over a 93 percent reduction from the current 1,126,000 acres currently open to OHV use

**6. Roadless Area Management.** Key Indicator Number of acres recommended for wilderness.

Alternative 4 would recommend to Congress 139,000 acres for wilderness designation These acres more than double the 65,000 acres recommended by the 1985 Plan in Italian Peak, Lionhead and Winegar Hole roadless areas, plus additional roadless acres in each of these areas and the Palisades This recommended 139,000 acres is 18 percent of the total acres which presently qualify as roadless on the Forest

**7. Timber Harvest.** Key Indicator ASQ

Alternative 4 would harvest timber at a sustainable level of 60 33 MMBF for the decade (approximately 6 033 MMBF per year) on an estimated 15,470 acres

**ALTERNATIVE 5**

The purpose of Alternative 5 is to meet the needs for change that reduce focus on human management and human disturbances of wildlife and riparian habitat Motorized access is restricted to designated

routes and more roads are closed in BMUs

How the Key Issues and Indicators are addressed in Alternative 5

**1. Sustainability, Fire and Natural Disturbances.** Key Indicators Health of forest structure and composition and prescribed fire

In Alternative 5, forest structure and composition would be maintained or improved on 29,840 acres Prescribed fire could be used to maintain or improve ecosystem sustainability on 1,750,000 acres

**2. Riparian.** Key Indicator Acres not meeting DVC

Approximately 590,000 AIZ acres would be managed to promote the health and function of riparian, wetland and aquatic ecosystems under this alternative At the end of the first decade, about 1,700 acres would not meet the DVC Fisheries habitat quality would be high, compared to the current moderate quality rating Degraded habitats would recover rapidly Sheep grazing is reduced compared to existing levels, and the program to phase out sheep grazing on an opportunity basis also occurs under this alternative Cattle grazing levels would be reduced considerably (12 percent) from current levels

**3. Security for Elk.** Key Indicator Percent of Forest meeting state EV thresholds, measured by miles of open motorized roads and trails

In Alternative 5, about 95 percent of the Forest (1,741,500 acres) would meet the state EV thresholds The greatest factors under the control of the Forest Service and influencing this are the miles of open motorized roads and trails Alternative 5 would reduce the number of open roads by 748 miles (38 percent) There would be a reduction in open trails by 541 miles (70 percent) The 95 percent of the Forest meeting state EV thresholds is a 47 percentage point increase over the existing level of 48 percent, thereby greatly improving elk security This means the potential would be for a lower proportion of bulls to be harvested during the general hunting season

**4. Grizzly Bear Management (within the BMUs).** Key Indicator OROMTRD in miles per square mile

Compared to the existing condition, OROMTRD is reduced 37 percent in Henry's Lake BMU Subunit 1, 45 percent in Henry's Lake BMU Subunit 2, 34 percent in Plateau BMU Subunit 1, 30 percent in Plateau BMU Subunit 2, and 45 percent in Bechler/Teton BMU Additional access restrictions to improve habitat security would be no cross-country motorized vehicle use in any of the BMUs, a small portion of the Plateau and Bechler BMUs Snowmachine use is allowed on designated routes throughout the snow season Cross-country snowmachine use is allowed only from December 15 to April 1 Sheep grazing would end immediately in BMUs and cattle grazing would be considerably reduced

**5. Access.** Key Indicator Number of miles of roads and trails open to motorized use

Alternative 5 would reduce the number of open roads by 748 miles (38 percent) There would be a reduction in open trails by 541 miles (70 percent) Alternative 5 would allow OHV use on approximately 50,000 acres, a 96 percent reduction from the current 1,126,000 acres open to OHV use

**6. Roadless Area Management.** Key Indicator Number of acres recommended for wilderness

*Alternative 5 would recommend to Congress 226,000 acres for wilderness designation These acres are* more than triple the 65,000 acres recommended by the 1985 Plan in Italian Peak, Lionhead and Winegar Hole roadless areas Also included in the total recommended wilderness are additional roadless acres in the Palisades and Garns Mountain areas This recommended 226,000 acres is 28 percent of the total acres which presently qualify as roadless on the Forest

**7. Timber Harvest.** Key Indicator ASQ

Alternative 5 would harvest timber at a sustainable level of 35 1 MMBF for the decade (approximately 3 51 *MMBF per year) on an estimated 9,000 acres*

**ALTERNATIVE 6**

*The purpose of Alternative 6 is to meet the needs for change by de-emphasizing human management and* human disturbance of wildlife and riparian habitat to the lowest level of all the alternatives Timber harvest is not scheduled All access is strongly restricted to designated routes and more roads are closed to reduce human disturbance than in any other alternative

How the Key Issues and Key Indicators are addressed in Alternative 6

**1. Sustainability, Fire and Natural Disturbances.** Key Indicators Health of forest structure and composition and prescribed fire

In Alternative 6, forest structure and composition would be maintained or improved on 20,730 acres Prescribed fire could be used to maintain or improve ecosystem sustainability on 1,750,000 acres

**2. Riparian.** *Key Indicator Acres not meeting DVC*

Approximately 793,000 AIZ acres would be managed to promote the health and function of riparian, wetland and aquatic ecosystems under this alternative At the end of the first decade, about 1,700 acres would not meet the DVC Fisheries habitat quality would be high, compared to the current moderate quality rating Degraded habitats would recover rapidly

**3. Security for Elk.** Key Indicator Percent of Forest meeting state EV thresholds, measured by miles of open motorized roads and trails

About 95 percent of the Forest (1,741,500 acres) would meet the state EV thresholds The greatest factors under the control of the Forest Service and influencing this are the miles of open motorized roads and trails Alternative 6 would reduce the number of open roads by 757 miles (38 percent) There would be a reduction in open trails by 692 miles (90 percent) The 95 percent of the Forest meeting state EV thresholds is a 47 percentage point increase over the existing level of 48 percent, thereby greatly improving elk security This means the potential would be for a lower proportion of bulls to be harvested during the general hunting season

**4. Grizzly Bear Management (within the BMUs).** Key Indicator OROMTRD in miles per square mile

Compared to the existing condition, OROMTRD is reduced 34 percent in Henry's Lake BMU Subunit 1, 55 percent in Henry's Lake BMU Subunit 2, 19 percent in Plateau BMU Subunit 1, 32 percent in Plateau BMU Subunit 2, and 45 percent in Bechler/Teton BMU Additional access restrictions to improve habitat security would be no cross-country motorized vehicle use in any of the BMUs, except in a small portion of the Plateau and Bechler BMUs Snowmachine use is allowed on designated routes throughout the snow season Cross-country snowmachine use is allowed only from December 15 to April 1. Sheep grazing would end immediately in BMUs and cattle grazing would be considerably reduced

**5. Access.** Key Indicator Number of miles of roads and trails open to motorized use

Alternative 6 would reduce the number of open roads by 757 miles (38 percent) There would be a reduction in open trails by 692 miles (90 percent) Acres available for OHV use would also be reduced over current levels Alternative 6 would allow OHV use on approximately 34,000 acres, a 97 percent reduction from the current 1,126,000 acres open to OHV use This approach is consistent with the minimum maintenance level of management emphasized in this alternative

**6. Roadless Area Management.** Key Indicator Number of acres recommended for wilderness

Alternative 6 would recommend to Congress 465,000 acres for Wilderness designation, more than seven times the 65,000 acres recommended by the 1985 Plan in Italian Peak, Lionhead and Winegar Hole roadless areas Also included in the total recommended wilderness are additional roadless acres in the Palisades, Garns Mountain, Bear Creek and Poker Peak areas. This recommended 465,000 acres is 55 percent of the total acres which presently qualify as roadless on the Forest

**7. Timber Harvest.** Key Indicator ASQ

Alternative 6 would not have a scheduled timber harvest Harvest might occur on unscheduled lands, but would be very limited, given the minimum level of human disturbance emphasis of this alternative

## ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Several alternatives were considered but eliminated from detailed study More information about these can be found in Appendix A - Response to Public Comments These alternatives were not fully developed because they closely resembled alternatives that were considered in detail, they did not meet the needs for change, they were missing practical implementation components, or they were inappropriate for other reasons described below

### Maximum Commodity Production and Motorized Access

This alternative called for more Forest land devoted to scheduled timber production than Alternative 1 It provided more designated open motorized routes, allowed less cross-country OHV access, recommended no wilderness designation, proposed elimination of the Palisades Wilderness Study Area, and recommended that eligibility determinations under the Wild and Scenic Rivers Act not be made

Some portions of this proposal were incorporated into Alternative 2 Suggestions that could not be implemented without Congressional action (like those regarding the Palisades Wilderness Study Area and

eligibility under the Wild and Scenic Rivers Act) were not included in any alternative Because large portions of this proposal became part of Alternative 2, further detailed analysis was not necessary

**Maximum Wilderness**

During public involvement activities, it was proposed that all of the Forest's inventoried roadless areas be recommended for wilderness designation After analysis, some inventoried roadless areas were not proposed for wilderness recommendation in our selected Alternative 3M, because they did not score high enough in our rating of wilderness characteristics The Roadless Areas Process Paper (Q) was reanalyzed and updated in response to public comments on the DEIS The updated portion of the process paper is included in Appendix B of this FEIS A maximum wilderness alternative was not developed Alternative 6 was developed in response to the desire for additional recommended wilderness

**Range of Variability**

Many members of the public and several Forest Service employees advocated the development of an alternative that would move the Forest into its "range of variability (ROV) " This would involve learning what ecological conditions existed on the Forest historically and managing for those same conditions This alternative was not developed because the current information on the ROV for the Forest is insufficient Even with this information, ecological variability may be so broad as to provide inadequate direction for an alternative at this time Finally, this type of alternative would not meet NFMA direction to formulate alternatives that incorporate social and economic conditions along with the ecological situation

**Citizens for a User Friendly Forest (CUFF) Alternative**

This alternative was proposed by a citizens group as public comments to the DEIS The elements of their proposal include the following

- amend summer OHV map for Alt 2
- remove date restriction on snowmobile use
- increase ASQ to 20 MMBF with >12 MMBF live and 30 to 50 percent lodgepole
- change 20 percent nonstocked standard to 45 percent
- change mature percent stand from 40 to 30 percent
- define hydrologic disturbance at less than 20 years
- allow sustained harvest in roadless areas and no noninterchangeable component (NIC)
- allow harvest in all BMUs, NIC in Situation 1 habitat
- if 20 MMBF isn't possible, look at departure
- add two areas in Caribou subsection to suitable timber base
- change large 6 1(b) in Caribou subsection to 6 1(a)
- delete forestwide guideline restricting OHV use on slopes of 25-40 percent
- drop Targhee and Robinson Creeks from Wild and Scenic River (W&SR) eligibility
- reduce number of live snag retention trees per acre from 25 to 10
- change 5 1 4(a) to allow cross-country travel from June 15 to prior to big game rifle

We have considered but dismissed this proposal from detailed study for the following reasons A few of the key components (which appear to be within the DFC and Purpose and Need) of this proposed alternative are already depicted by Alternative 2 as updated for ASQ at > 20 MMBF We believe this proposed alternative is not substantially different from the Maximum Commodity Production and Motorized Access alternative presented earlier Also, we believe most of the remaining components of this alternative as recommended above are not advisable because they are not within the DFC and Purpose and Need

outlined in the FEIS Detailed rationale for dismissal of each element of this proposal can be found in Appendix A, Response to Public Comments of this document

**Greater Yellowstone Coalition Alternative**

Several groups who commented on the DEIS recommended consideration of an alternative with a mix of the attributes of Alternatives 3M, 5 and 6 that would

- maintain the AUMs of 3M,
- maintain as much of the ASQ of 3M as possible on a sustainable basis,
- recommend substantially more wilderness than even 5 or 6,
- modify 3M grizzly bear prescription in the Bechler area to provide harvest mitigation,
- create a wildlife linkage corridor in the Centennial Mountains with no ASQ

This alternative was considered but dismissed from detailed study for the following reasons which are further documented in Appendix A These proposals would potentially be within the Purpose and Need and DFC, with the exception of the amount of recommended wilderness The overall Forest DFC did not call for recommending such high levels of inventoried roadless as wilderness Furthermore, a "Maximum Wilderness" alternative was presented previously in this EIS and dismissed because it did not respond to the DFC and because not all of the roadless areas rated high enough in the analysis

**Original Forest Plan as Written**

Alternative 1 reflects current management of the Forest and how it would continue in the future It differs from the original 1985 Plan in some respects Some people have asked for an alternative that comes closer to the letter of the existing Forest Plan The differences between Alternative 1 (which is modeled consistent with the intent of the 1985 Plan) and a strict reading of the 1985 Plan are summarized below They could have been used to shape a separate alternative

- The 1985 Plan called for the harvesting of timber from suitable lands at rates that could not be sustained Because most of this material has already been logged or is no longer merchantable, and because some of it could not be logged because of other resource protection needs, the non-sustainable harvest schedule was not used

- As a part of the Revision process, the Forest reassessed the eligibility of river segments for study as wild, scenic or recreational rivers. That eligibility determination was made, and the Forest has moved to protect the outstandingly remarkable values of the eligible segments in all the alternatives Some people have asked that an alternative be developed which does not include that protection We did not do so because Forest Service policy is to protect the outstandingly remarkable values once eligibility is established

- The provisions of the ESA have not changed since the Forest Plan was put into effect in 1985 However, the understanding of the habitat needs of those species has changed substantially Meeting the needs of these species, in particular the grizzly bear, has substantially changed management on a large portion of the Forest We did not use the previously acceptable approaches for providing grizzly bear habitat because they are not generally accepted in today's scientific community and would not be successfully consulted upon with the United States Department of Interior Fish and Wildlife Service (USFWS)

- The Forest Service has greatly expanded its own list of sensitive species In response to that expanded list, the Forest has had to change management practices to increase habitat protection We have contin-

ued this level of protection because it is designed to prevent these species from being listed as threatened or endangered

## COMPARISON OF ALTERNATIVES

A summary of the environmental impacts and effects (called Indicators) for each alternative and the acres of each prescription area are provided in Table II-1 and Table II-2 Due to the complexity of the consequences displayed in these tables, cumulative impacts are not presented here For a detailed discussion of the effects, consult Chapter IV, "Environmental Consequences "

| Acronyms and Abbreviations Used in Table II-1. | |
|---|---|
| AIZ | Aquatic Influence Zone |
| ASQ | Allowable Sale Quantity |
| BMU | Bear Management Unit |
| Sub | Subunit of a Bear Management Unit |
| C/H | Cattle/Horse |
| CEM | Cumulative Effects Model |
| DVC | Desired Vegetative Condition |
| FSRAMIS | Forest Service Range Analysis Management Information System |
| HE | Habitat Effectiveness |
| HE/HV Index | Percent of Annual Habitat Value |
| HGL | Hydric Greenline |
| HV | Habitat Value |
| FFF | Forest Fire Fighting |
| LE | Law Enforcement |
| M Acres | Thousand Acres |
| M AUM's | Thousand Animal Unit Months |
| M$ | Thousand Dollars |
| MM$ | Million Dollars |
| MMBF | Million Board Feet |
| Max Mod. | Maximum Modification |
| Mod | Modification |
| OHV | Off-Highway Vehicle |
| P R | Partial Retention |
| Reten | Retention |
| S/G | Sheep/Goat |
| VQO | Visual Quality Objective |

TABLE II-1
COMPARISON OF ENVIRONMENTAL EFFECTS

The following pages contain a summary of the environmental effects of the alternatives This summary is drawn from information in Chapter III and IV of the FEIS. Unless otherwise indicated, the information presented for the alternatives is reflective of conditiond in the first decade of Revision implementation Please see these chapters for additional information.

The key issue indicators are displayed first for the components outlined in Chapter 1 Due to the complexity of the issues, there are other indicators that need to be evaluated to adequately address the environmental effects, and those are listed below the key indicators

**ECOLOGICAL PROCESSES AND PATTERNS**

| | Exist Level | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
|---|---|---|---|---|---|---|---|---|
| Key Indicator - Sustainability | | | | | | | | |
| - M Acres where forest structure and composition maintained or improved 1/ | NA | 48 5 | 58 6 | 52 9 | 45 2 | 39 8 | 29 8 | 20 7 |

1/ Estimated acres of silvicultural treatments for the first decade In addition to forest structure and composition, there are other ecosystem criteria we analyzed that contribute to ecologically sustainable ecosystems

All alternatives were evaluated on the ability to use prescribed fire to manipulate ecosystems Aquatic connectivity was determined to be a good indicator of ecosystem pattern

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Other Ecosystem Management Indicators | | | | | | | | |
| - M Acres where prescribed fire is allowed | 1,610 | 1,630 | 1,750 | 1,750 | 1,750 | 1,750 | 1,750 | 1,750 |
| - M Acres aquatic zones where connectivity is maintained | 342 | 342 | 325 | 448 | 512 | 533 | 590 | 793 |

**PHYSICAL**

Most forest management activities impact the soil resource to some extent These activities (recreation, timber harvesting, road building, grazing) were evaluated to determine what environmental effect they will have on the soil resource

The only issue indicators used to evaluate physical elements are related to minerals and the ability to locate, or enter areas on the Forest

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Other Physical Component Indicators | | | | | | | | |
| - M Acres open to locatable and mineral entry | 1,722 | 1,384 | 1,415 | 1,326 | 1,295 | 1,348 | 1,200 | 965 |

| BIOLOGICAL | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Exist Level | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| | | | | | | | | |
| Key Indicator - Riparian Health Issue | | | | | | | | |
| - Riparian M Acres meeting DVC 1/ | 18 7 | 18 8 | 20 0 | 20 0 | 20 0 | 21 1 | 21 1 | 21 1 |
| - moving toward DVC 1/ | 5 3 | 4 9 | 5 2 | 5 2 | 5 2 | 4 9 | 4 9 | 4 9 |
| -not meeting DVC 1/ | 3 7 | 4 | 2 5 | 2 5 | 2 5 | 1 7 | 1 7 | 1 7 |
| Many biological elements can be evaluated in determining what effect proposed management activities can have Water and associated riparian areas can be impacted by activities The other indicators used to assess impacts are related to roading, timber, and grazing activities<br><br>1/ Only includes riparian acres open to grazing (about 79% of the Forest) Does not include acres closed to grazing prior to 1995 Source - FSRAMIS Database | | | | | | | | |
| Other Riparian and Water Indicators | | | | | | | | |
| - # stream crossings 1/ | 2,957 | 2,690 | 2,410 | 2162 | 2,211 | 1,586 | 1,433 | 1,224 |
| - M Acres roaded in AIZ 1/ | 1 1 | 1 O | 0 9 | 0 8 | 0 8 | 0 6 | 0 6 | 0 5 |
| - M Acres impacted by recreation sites in AIZ 1/ | 1 1 | 1 1 | 1 1 | 1 1 | 1 1 | 1 1 | 1 1 | 1 1 |
| - M Acres of timber harvest in headwater areas | 21 6 | 6 8 | 8 0 | 6 7 | 5 0 | 4 0 | 2 5 | 0 |
| - M Acres of timber harvest prescriptions in AIZ 1/ | 10 0 | 28 3 | 45 9 | 29 3 | 0 | 0 | 0 | 0 |
| - Mi cutthroat streams w/min 6" stubble at the HGL | 97 | 97 | 79 | 97 | 83 | 379 | 379 | 379 |
| - Mi fish-bearing streams w/min 4" stubble at the HGL | 323 | 323 | 323 | 2,863 | 2,863 | 2,863 | 2,863 | 2,863 |
| 1/ AIZ widths vary between some alternatives | | | | | | | | |
| | | | | | | | | |
| Key Indicators - Elk Security Issue | | | | | | | | |
| - Elk Vulnerability (EV) % of Forest mtg state thresholds | 48 | 62 | 76 | 83 | 89 | 89 | 95 | 95 |
| Elk security, habitat, effectiveness and winter range were evaluated because these are important biological elements that contribute to huntable populations and State Fish and Game goals or thresholds | | | | | | | | |

| | Existing | 1 | 2 | 3 | 3-M | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| Other Wildlife and Vegetation Indicators | | | | | | | | |
| - Elk habitat effectiveness weighted average | 0 57 | 0 60 | 0 61 | 0 63 | 0 64 | 0 66 | 0 69 | 0 70 |
| - % of winter range acres meeting DVC | 78 | 81 | 82 | 82 | 82 | 84 | 84 | 84 |
| Forested ecosystems and wildlife species associated with these ecosystems were examined as part of the Biological component of ecosystems Specifically, the percent of the Forested ecosystem that is in a mature age class and percent of aspen in mature age class | | | | | | | | |
| - Percent of Forested acres in Mature Age Class | 79 | 76 | 76 | 76 | 77 | 77 | 78 | 78 |
| - Percent of aspen in Mature Age Class | 92 30 | 92 30 | 92 30 | 92 30 | 92 30 | 92 30 | 92 30 | 92 30 |
| - Upland M Acres - meeting DVC 1/ | 1028 40 | 1065 80 | 1083 30 | 1083 30 | 1083 30 | 1105 90 | 1105 90 | 1105 90 |
| - moving toward DVC 1/ | 176 10 | 162 20 | 160 60 | 160 60 | 160 60 | 156 10 | 156 10 | 156 10 |
| -not meeting DVC 1/ | 153 00 | 129 50 | 113 60 | 113 60 | 113 60 | 95 50 | 95 50 | 95 50 |
| 1/ Only includes upland acres open to grazing (about 79% of the Forest) Does not include acres closed to grazing prior to 1995 Source - FSRAMIS Database | | | | | | | | |

| | Existing | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
|---|---|---|---|---|---|---|---|---|
| Key Indicator - Grizzly Bear Management Issue (within the BMUs) | | | | | | | | |
| - OROMTRD 1/ (mi/sq mi ) - Henry's BMU, Sub 1 | 0 83 | 0 64 | 0 62 | 0 63 | 0 55 | 0 44 | 0 52 | 0 55 |
| - Henry's BMU, Sub 2 | 0 77 | 0 46 | 0 42 | 0 40 | 0 47 | 0 36 | 0 42 | 0 35 |
| - Plateau BMU, Sub 1 | 0 91 | 1 08 | 1 37 | 0 85 | 0 58 | 0 63 | 0 60 | 0 74 |
| - Plateau BMU, Sub 2 | 0 73 | 0 79 | 0 91 | 0 57 | 0 55 | 0 50 | 0 51 | 0 50 |
| - Bechler/Teton BMU | 0 76 | 0 59 | 0 63 | 0 51 | 0 50 | 0 43 | 0 42 | 0 42 |
| Many indicators can be used to evaluate effects management activities have on grizzly bears In addition to open motorized roads and trails, total access, the percent of the BMU that is in a core area, and an overall habitat effectiveness/value are used | | | | | | | | |
| Other Grizzly Bear Management Indicators (within the BMUs) | | | | | | | | |
| TMARD 2/ (mi /sq mi ) - Henry's BMU, Sub 1 | 1 24 | 1 00 | 0 86 | 0 99 | 0 74 | 0 60 | 0 64 | 0 64 |
| - Henry's BMU, Sub 2 | 0 85 | 0 59 | 0 60 | 0 60 | 0 54 | 0 53 | 0 55 | 0 51 |
| - Plateau BMU, Sub 1 | 1 77 | 1 79 | 1 47 | 1 51 | 0 99 | 0 95 | 0 90 | 1 11 |
| - Plateau BMU, Sub 2 | 1 87 | 1 85 | 1 72 | 1 00 | 0 74 | 0 66 | 0 70 | 0 66 |
| - Bechler/Teton BMU | 1 26 | 1 12 | 0 92 | 0 68 | 0 67 | 0 54 | 0 55 | 0 52 |
| - % BMU in Designated Core Area -Henry's, Sub 1 | 23 | 30 | 35 | 38 | 38 | 38 | 38 | 38 |
| - Henry's, Sub 2 | 38 | 38 | 9 | 38 | 38 | 41 | 41 | 41 |
| - Plateau, Sub 1 | 0 | 0 | 0 | 0 | 20 | 19 | 22 | 20 |
| - Plateau, Sub 2 | 0 | 0 | 0 | 0 | 17 | 18 | 18 | 18 |
| - Bechler/Teton | 34 | 34 | 31 | 33 | 42 | 33 | 38 | 38 |
| - Grizzly CEM 3/ (Annual HE/HV index) -Henry's, Sub 1 | 62 (-) | 62 (-) | 64 (-) | 67 (-) | 68 (-) | 69 (-) | 69 (-) | 70 (-) |
| - Henry's, Sub 2 | 64 (61) | 64 (61) | 67 (63) | 68 (64) | 67 (63) | 70 (65) | 68 (64) | 70 (65) |
| - Plateau, Sub 1 | 47 (71) | 47 (71) | 53 (74) | 57 (76) | 58 (77) | 63 (79) | 65 (80) | 61 (78) |
| - Plateau, Sub 2 | 45 (90) | 46 (90) | 48 (90) | 60 (92) | 57 (91) | 62 (92) | 63 (92) | 63 (92) |
| - Bechler/Teton | 67 (76) | 67 (76) | 68 (76) | 72 (79) | 72 (79) | 74 (80) | 75 (81) | 75 (81) |

1/ OROMTRD = Open Road and Open Motorized Trail Route Density
2/ TMARD = Total Motorized Access Route Density
3/ The cumulative effects model ratings are the daily per acre averages for Habitat Effectiveness divided by the daily per acre average for Habitat Value A rating of 100 percent would mean no human activity during the spring, summer, fall period The first rating is for the Targhee portion of the BMU/Subunit The rating in parenthesis is for the entire BMU/Subunit For Henry's Lake Subunit 1, the CEM model does not include the 35,170 acres on Henry's Lake Flat, therefore no ratings are shown in parenthesis for the entire BMU/Subunit

| FOREST USE AND OCCUPATION | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Existing | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| Key Indicators - Access Issues | | | | | | | | |
| Miles of open roads | 1,985 | 1,882 | 1,863 | 1,589 | 1,577 | 1,372 | 1,237 | 1,228 |
| Miles of open trails | 773 | 572 | 470 | 435 | 540 | 421 | 232 | 81 |
| Other indicators within the Forest Use and Occupation Issue Component were used to evaluate the seven alternatives Winter access, along with dispersed camping are examples used to complement the access issue | | | | | | | | |
| Other Access Indicators | | | | | | | | |
| - Mi road construction 4/ | NA | 25 46 | 29 67 | 24 92 | 18 43 | 13 88 | 8 07 | 0 00 |
| - Mi of road reconstruction 5/ | NA | 16 60 | 19 95 | 16 25 | 11 66 | 9 05 | 5 27 | 0 00 |
| - Mi of seasonally restricted roads | 73 | 209 | 131 | 115 | 25 | 108 | 63 | 80 |
| - Mi of yearlong restricted roads | 733 | 454 | 242 | 320 | 336 | 198 | 201 | 177 |
| - Mi of reclaimed roads | NA | 246 | 555 | 767 | 853 | 1,113 | 1,290 | 1,306 |
| - Mi restricted trails | 628 | 752 | 854 | 889 | 817 | 903 | 1,092 | 1,242 |
| - Mi nonfunctional trails | NA | 77 | 77 | 77 | 44 | 77 | 77 | 78 |
| - Mi groomed trail for snowmachines | 450 | 456 | 666 | 658 | 554 | 615 | 477 | 355 |
| - M Acres (and percent of forest) open to winter x-country OHV | 1,511 (84%) | 1,511 (84%) | 1,590 (88%) | 1,532 (85%) | 1,334 (74%) | 1,513 (84%) | 1,392 (77%) | 1,107 (61%) |
| - M Acres (and percent of forest) open to summer x-country OHV | 1,126 (62%) | 960 (53%) | 761 (42%) | 368 (20%) | 121 (7%) | 79 (4%) | 50 (3%) | 34 (2%) |
| Key Indicator - Roadless Management Issue | | | | | | | | |
| - M Acres recommend wilderness | 65 | 65 | 0 | 125 | 171 | 139 | 226 | 465 |
| 4/ Road construction per decade does not include temporary roads Estimate is based on 0 23 miles of road construction per MMBF of scheduled timber harvest<br>5/ Road reconstruction per decade Does not include temporary roads Estimate is based on 0 15 miles of road reconstruction per MMBF of scheduled timber harvest | | | | | | | | |

| Other Wilderness and Recreation Indicators | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Existing | 1 | 2 | 3 | 3-M | 4 | 5 | 6 |
| - M Acres roadless 3/ | | | | | | | | |
| - end of decade 1 | 841 | 829 | 816 | 822 | 830 | 829 | 835 | 841 |
| - end of decade 2 | 841 | 817 | 791 | 802 | 818 | 818 | 829 | 841 |
| - M Acres roadless closed to summer OHV | 243 | 243 | 203 | 275 | 273 | 289 | 378 | 614 |
| - M Acres Preservation VQO | NA | 258 | 193 | 327 | 317 | 349 | 419 | 657 |
| - M Acres Reten - P R VQO | NA | 705 | 617 | 578 | 742 | 909 | 946 | 764 |
| - M Acres Reten - Mod VQO | NA | 524 | 481 | 560 | 718 | 439 | 339 | 328 |
| - M Acres P R - Max Mod VQO | NA | 288 | 482 | 313 | 11 | 49 | 15 | 15 |
| - M Acres allocated to dispersed camping | NA | 1 3 | 2 9 | 2 8 | 2 8 | 2 8 | 1 5 | 1 5 |
| - # of jobs 5/ | 2,186 | 2,305 | 2,312 | 2,299 | 2,283 | 2,268 | 2,243 | 2,222 |
| - employee compensation MM$ 6/ | 41 4 | 43 7 | 43 8 | 43 6 | 43 2 | 43 O | 42 5 | 42 1 |
| - 25% Fund Payments govt M$/yr 4/ | 272 | 316 | 349 | 309 | 257 | 217 | 168 | 101 |
| - Pay-in-lieu of Taxes M$/yr | 933 | 1,664 | 1,643 | 1,662 | 1,690 | 1,710 | 1,735 | 1,768 |
| - Annual Forest budget (excluding LE&FFF - MM$/yr) 7/ | 12 8 | 12 3 | 12 6 | 12 7 | 13 5 | 12 3 | 12 2 | 10 3 |
| - Annual Forest budget includes LE&FFF - MM$/yr | 14 | 13 6 | 13 9 | 14 1 | 14 9 | 13 8 | 13 8 | 11 4 |

3/ M acres roadless includes wilderness study area and recommended wilderness, protected by prescriptions This shows how much roadless area would remain
4/ Nominal dollars Existing is the average of the period 1992-1996 Figures shown are for the counties in the Area of Primary Forest Economic Influence (APFEI)
5/ Source IMPLAN model Full and part-time employment, seasonal and yearlong Figures shown for the alternatives are representative of decade 1
6/ Source IMPLAN model 1992 dollar terms Comprises wages, salaries and the value of benefits and any contributions to Social Security and pension funds by the employer and employee
7/ 1996 dollar terms Existing level reflects the period 1991-1993

| PRODUCTION OF COMMODITY RESOURCES | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Existing | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| Key Indicator - Timber Harvest Issue | | | | | | | | |
| - ASQ volume (MMBF per year) | 59 50 1/ | 11 07 | 12 90 | 10 83 | 8 00 | 6 03 | 3 51 | 0 00 |
| Other Production Indicators | | | | | | | | |
| - Potential harvest acres | | 28,380 | 33,080 | 27,780 | 20,520 | 15,470 | 9,000 | 0 |
| - Firewood and products volume (MMBF per year) | 5 40 | 3 80 | 3 80 | 3 80 | 3 80 | 3 80 | 3 80 | 3 80 |
| - M Ac by harvest type Clearcut/Other (per year) | | 72/2 11 | 84/1 63 | 70/2 08 | 52/1 53 | 39/1 15 | 23/ 67 | 0/0 |
| - Unscheduled timber harvest projects (MMBF per year) | | 2 00 | 2 00 | 2 00 | 2 00 | 2 00 | 2 00 | 2 00 |
| - M AUMs Permitted | 149 | 143 | 139 | 138 | *138 | *130 | **121 | **121 |
| - M Ac C/H-S/G allotment -open | 1,466 | 1,371 | 1,371 | 1,371 | *1,371 | *1,371 | **1,245 | **1,245 |
| -closed | 401 | 496 | 496 | 496 | *496 | *496 | **622 | **622 |

* Phase-out of sheep allotments/AUMs in bighorn sheep and grizzly bear habitat is expected to be completed within 30 years No reduction associated with the phase-out is anticipated over the coming decade
** These figures reflect the immediate close of sheep allotments/AUMs in bighorn sheep and grizzly bear habitat
1/ Potential yield (1990-2010) from 1985 Forest Plan, not ASQ

| Table II-2 Prescription (Rx) Area Acres by Alternative (figures may not total due to rounding) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Rx | Name | 1 | 2 | 3 | 3M | 4 | 5 | 6 |
| 1 1 1 | *Wilderness Trails* | *40,198* | - | - | - | - | - | - |
| 1 1 2 | Wilderness Primitive | 10,565 | - | - | - | - | - | - |
| 1 1 3 | Wilderness, Low Use | 32,198 | - | - | - | - | - | - |
| 1 1 4 | Wilderness Moderate Use | 24 703 | - | - | - | - | - | - |
| 1 1 5 | Wilderness, High Use | 26,743 | - | - | - | - | - | - |
| 1 1 6 | Wilderness Opportunity Class I | - | 82 859 | 82,859 | 102,346 | 102,301 | 115,397 | 115,398 |
| 1 1 7 | Wilderness, Opportunity Class II | - | 38,624 | 38,625 | 19,566 | 19,565 | 19,042 | 19,140 |
| 1 1 8 | Wilderness Opportunity Class III | - | 12,954 | 12,954 | 12,572 | 12,572 | - | - |
| 1 2 | Wilderness Study, Snowmachine | 23,564 | 23 564 | 23,541 | 49,225 | 49,225 | 49,225 | 49,225 |
| 1 2(a) | Wilderness Study, No Snowmachine | 25,708 | 25,708 | 25,708 | - | - | - | - |
| 1 3 | Wilderness, Recommended | 62,968 | - | 123,692 | 154,137 | 137,154 | 224,081 | 463,647 |
| 2 1 1 | Special Management Areas | 403 | 403 | 12,690 | 13,627 | 12,690 | 12,690 | 12,690 |
| 2 1 2 | Visual Quality Maintenance | - | 7,826 | 7,837 | 10,001 | 9,666 | 7,265 | 18,546 |
| 2 2 | Research Natural Areas | 11,653 | 11,653 | 11,653 | 11,653 | 11,653 | 11,653 | 11,653 |
| 2 3 | Eligible Wild River | 21,689 | 21,689 | 21,689 | 21,689 | 21,689 | 21,689 | 21,689 |
| 2 4 | Eligible Scenic River | 545 | 16,476 | 15,202 | 15,133 | 15,203 | 15,255 | 15,255 |
| 2 5 | Eligible Recreation River | - | 8,795 | 8,795 | 8,833 | 8,795 | 8,795 | 8,795 |
| 2 6 1(a) | Grizzly Bear Habitat | - | - | 18,036 | 17,052 | 81,351 | 152,208 | 255,123 |
| 2 6 1(b) | Grizzly Bear Habitat | - | - | - | - | 30,721 | 31,185 | 61,944 |
| *2 6 2* | *Grizzly Bear Plateau Core* | - | - | - | *30,815* | - | *30,815* | - |
| 2 6 3 | Grizzly Bear Plateau Security | - | - | - | - | - | 57,154 | - |
| 2 6 4 | Grizzly Bear Plateau Non-Security | - | - | - | - | - | 49,186 | - |
| 2 6 5 | Grizzly Bear Bechler BMU | - | - | - | 19,975 | - | - | - |
| 2 7(a) | Elk Deer Winter Range | 20,499 | 17,928 | 61,691 | 82,257 | 59,032 | 83,151 | 70,933 |
| 2 7(b) | Elk Deer Winter Range | - | 4,710 | 4 710 | 37,586 | 21,385 | 48,873 | 79,930 |
| 2 7(c) | Elk Deer Winter Range | 69,425 | 36 496 | - | - | - | - | - |
| 2 8 1 | Aquatic Influence Zone | - | - | - | - | 164,947 | 151,047 | 115,369 |
| 2 8 2 | Aquatic Influence Zone | - | - | 105,143 | - | - | - | - |
| 2 8 3 | Aquatic Influence Zone | - | - | - | 163,969 | - | - | - |
| 2 9 1 | S Fork Snake Scenic River | 933 | 933 | 933 | 933 | 933 | 933 | 933 |
| 2 9 2 | S Fork Snake Recreation River | 3,812 | 3,812 | 3,812 | 3,812 | 3,812 | 3,812 | 3,812 |
| 3 1 1(a) | Nonmotorized | 87 759 | 142,603 | 97,042 | 46,070 | 66,892 | 69,222 | 81,593 |
| 3 1 1(c) | Nonmotorized | - | - | - | - | - | 22,971 | 22,969 |
| 3 1 1(d) | Nonmotorized | 48,233 | - | - | - | - | - | 13,669 |
| 3 1 2 | Nonmotorized | - | - | - | 26,756 | 26,319 | - | - |
| 3 2(a) | Semi-Primitive Motorized | 287 | 3,843 | 3,843 | - | 13,169 | 13,579 | 13,579 |
| 3 2(b) | Semi-Primitive Motorized | - | 8,200 | 22 925 | 18,341 | 20,399 | - | - |
| 3 2(c) | Semi-Primitive Motorized | 73,744 | 17,977 | 26,942 | 9,309 | 16,166 | 146,207 | 56,226 |
| 3 2(d) | Semi-Primitive Motorized | - | *2,145* | *5,694* | *5 118* | *97,271* | - | - |
| 3 2(f) | Semi-Primitive Motorized | 125 533 | 196 423 | 61,722 | - | - | - | - |
| 3 2(g) | Semi-Primitive Motorized | 11,854 | 49,611 | 121,342 | 49,822 | 48,811 | 95,050 | 229,074 |

| Continued, Table II-2 Prescription (Rx) Area Acres by Alternative | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 3 2(h) | Semi-Primitive Motorized | 77 134 | - | - | - | - | - | - |
| 3 2(i) | Semi-Primitive Motorized | - | - | - | 59,621 | - | - | - |
| 3 2(j) | Semi-Primitive Motorized | - | - | - | 27,128 | - | - | - |
| 4 1 | Developed Recreation Sites | 892 | 892 | 892 | 892 | 892 | 892 | 892 |
| 4 2 | Special Use Permit Rec Sites | 3,931 | 4,009 | 4,009 | 3,956 | 4,009 | 3,825 | 3,743 |
| 4 3 | Dispersed Camping Mgmt | 1,289 | 2,647 | 2,542 | 3,255 | 2,540 | 1,351 | 1,355 |
| 5 1(a) | Timber Management | 235,770 | 100,423 | - | - | - | - | - |
| 5 1(b) | Timber Management | 15,351 | 116,391 | 1,706 | - | - | - | - |
| 5 1(c) | Timber Management | - | 530 | 83,745 | 82,459 | - | - | - |
| 5 1 3(a) | Timber Management No Clearcut | - | 35,453 | 41,735 | 34,354 | - | - | - |
| 5 1 3(b) | Timber Management No Clearcut | - | 10,159 | - | 13,924 | - | - | - |
| 5 1 4(a) | Timber Management Big Game | 25,798 | 173,558 | 91,931 | 6,606 | - | - | - |
| 5 1 4(b) | Timber Management Big Game | 4,379 | 14,792 | 50,467 | 126,437 | 33,639 | - | - |
| 5 1 4(c) | Timber Management Big Game | - | - | 24,526 | 23,354 | - | - | - |
| 5 1 4(d) | Timber Management Big Game | - | - | - | 2,898 | - | - | - |
| 5 1 5 | Timber Management Heritage Res | - | 11 438 | - | - | - | - | - |
| 5 2 1 | Visual Quality Improvement | - | 10,734 | 7,236 | 7,017 | 7,265 | 652 | - |
| 5 2 2 | Visual Quality Maintenance | 14,468 | 12,854 | 16,225 | 14,264 | 12,688 | 11,032 | - |
| 5 3 2(a) | Grizzly Bear Habitat Sit 1 | 86,745 | 63,441 | - | - | - | - | - |
| 5 3 2(b) | Grizzly Bear Habitat Sit 1 | - | 32,440 | 65,862 | - | - | - | - |
| 5 3 3(a) | Grizzly Bear Habitat Sit 2 | 186,663 | 9,315 | - | - | - | - | - |
| 5 3 3(b) | Grizzly Bear Habitat Sit 2 | 30,138 | 14,305 | 61,298 | - | - | - | - |
| 5 3 3(c) | Grizzly Bear Habitat Sit 2 | 12,641 | - | - | - | - | - | - |
| 5 3 3(d) | Grizzly Bear Habitat Sit 2 | - | 69,011 | 114,685 | - | - | - | - |
| 5 3 4 | Grizzly Bear Habitat Sit 2 | - | - | 38,600 | - | 174,286 | - | - |
| 5 3 5 | Grizzly Bear Habitat Outside Core | - | - | - | 216,480 | - | - | - |
| 5 4(a) | Elk Deer Summer Range | 8,844 | 1,957 | 132 | 13,300 | 3,504 | 176,894 | - |
| 5 4(b) | Elk Deer Summer Range | 15,464 | 14,785 | 14,789 | 14,289 | 13,729 | 13,694 | - |
| 5 4(c) | Elk Deer Summer Range | 12,213 | 39,183 | 52,105 | 46,177 | 255,356 | 69,238 | - |
| 5 4(d) | Elk Deer Summer Range | 13,961 | 1,104 | - | - | - | - | - |
| 5 4(e) | Elk Deer Summer Range | 25,039 | - | - | - | 22,908 | - | - |
| 5 7 | Eligible Scenic River | 12,696 | - | - | - | - | - | - |
| 5 8 | Eligible Recreation River | 7,305 | - | - | - | - | - | - |
| 5 9 1 | Alt 1 Aquatic Influence Zone | 67,244 | - | - | - | - | - | - |
| 5 9 2 | Alt 2 Aquatic Influence Zone | - | 116,350 | - | - | - | - | - |
| 6 1(a) | Range Management | 202,701 | 96,969 | 96,970 | - | - | - | - |
| 6 1(b) | Range Management | 1,496 | 96,434 | 95,584 | 157,385 | 171,222 | 32,186 | 17,484 |
| 7 1(a) | Intermingled Public/Private Lands | - | - | - | - | 24,807 | 24,731 | 19,761 |
| 7 1(b) | Intermingled Public/Private Lands | - | - | - | - | 6,097 | 9,575 | - |
| 8 1 | Concentrated Development Areas | 4,544 | 4,577 | 4 544 | 4,639 | 4,544 | 4,526 | 4,527 |
| 8 2 | Proposed Con Dev Areas | - | 32 | 159 | - | - | - | - |
| TOTAL | Targhee Administration* | 1,810 000 | 1,810 000 | 1,810 000 | 1,810 000 | 1,810,000 | 1,810,000 | 1,810,000 |
| * Includes 21 000 acres of water not included in the prescriptions Almost all of these acres are in the Palisades and Island Park Reservoirs | | | | | | | | |

Chapter

# III

# Affected Environment

# CHAPTER III
# AFFECTED ENVIRONMENT

## READER'S GUIDE - In this chapter you will find:

A description of the following components of the Forest and Key Issues

- Introduction to Ecosystem Management
  - Principles
  - Proper Functioning Condition
- Ecological Processes and Patterns
  - Ecological Processes and Disturbances
  - *Ecological Patterns*
- Physical Elements of the Environment
- Biological Elements of the Environment
  - Aquatic and Riparian Ecosystems
  - Terrestrial Ecosystems
- Forest Use and Occupation
  - Access Management
  - Wilderness and Recreation Resource
  - Economic and Social Environment
- Production of Commodity Resources
  - Timber
  - Livestock Grazing

This chapter describes the existing environment that will be affected by implementation of any of the alternatives It describes the existing physical, biological and social environment of the Forest and the surrounding area Information contained in this section appears in the same order as the components outlined in Chapter 1

## INTRODUCTION TO ECOSYSTEM MANAGEMENT

PRINCIPLES

In recent years the Forest Service has embraced the concept of EM This is an approach to natural resource management that strives to ensure healthy, productive, sustainable ecosystems by blending the needs of people and environmental values in a given area such as the Forest An ecosystem is a complex system of living and nonliving components that interact and change continually Healthy ecosystems are those that are in PFC Ecosystems that are in PFC display resilience to disturbance to the structure, composition and process of their biological and physical components They retain all of their parts and functions for future generations even though vegetation patterns, human uses or other conditions may change Understanding ecological processes (fire and other natural disturbances) and how these processes shaped vegetation patterns over time in a landscape are important steps towards implementing EM

Adaptive Management

An additional principle of EM is the quest for and application of new knowledge regarding ecosystems Our understanding of ecosystems and the effects of various management activities is subject to change as new information becomes available In order to accommodate and react to such change, the Forest Service has adopted an adaptive management approach In adaptive management, monitoring and evalu-

ation are used to assess the effects of management decisions and identify new information Resource management may then be changed to reflect new understandings

Scale

Another important EM principle is that different issues, components or effects may require description at different geographic and time scales For example, economic issues are described at the county level, but fisheries are discussed by hydrologic unit For economic and social issues political boundaries are more meaningful, while ecological units are used for resource discussions In this document, we have addressed issues at many different scales and levels of specificity, depending on which is most relevant to the decisions being made

Subsections

Many resources are described in this chapter using the ecological units known as subsections These units exhibit unique patterns in soils, landform, topography and potential natural vegetation, among other characteristics The Forest encompasses part or all of seven subsections (Figure III-1)

- Lemhi/Medicine Lodge
- Centennial Mountains
- Island Park
- Madison-Pitchstone Plateaus
- Teton Range
- Big Hole Mountains
- Caribou Range Mountains

To get a better understanding of each of the seven subsections that are discussed in this chapter, a brief description of each follows Additional information on the subsections is available throughout this document, and in process papers or planning records

*Lemhi/Medicine Lodge* - This subsection includes the Lemhi and the Medicine Lodge/Beaverhead Mountains A variety of vegetation exists with dominant communities of mostly Douglas-fir and limber pine Sagebrush/bunchgrass and mountain mahogany communities are common on the lower elevation and strong southerly exposures Limber pine communities and alpine meadows exist at the high elevations This subsection is rich in mining history with old mining sites and remnants of town sites Located in the Birch Creek Valley are four preserved brick adobe charcoal kilns Sixteen were originally built to furnish charcoal to the Nicholia Mine This area also has a National Scenic Trail, two recommended wilderness (Italian and Diamond Peaks) and most big game species This section of the Forest is entirely on the Dubois Ranger District

*Centennial Mountains* - This subsection covers the Centennial Mountains between the east fork of Irving Creek and Reas Pass to the east The Centennials, which form part of the Continental Divide, are a scenic mountain range with high mountain meadows scattered through spruce/fir and Douglas-fir forests At lower elevations sagebrush/grasslands grade into Douglas-fir and lodgepole pine forests. Lionhead, in the northeast portion of the subsection, is a recommended wilderness The major travel corridors are Highways 20 and 87, and a portion of Interstate 15 The Yale-Kilgore road is a secondary travel route connecting Island Park to Kilgore and Dubois In the northeast portion of the subsection is Henry's Lake, a world renowned fishery The western part is the Red Conglomerate range, home to at least one endemic sensitive plant species This section of the Forest falls within the Dubois and Island Park Ranger Districts

*Island Park* - This subsection includes the west half of Island Park, Ashton and the northwest portion of Teton Basin Ranger Districts The landscape of this subsection features a large caldera Highway 20 is the only major highway that travels through this subsection and Highway 47, a state Scenic Byway also

# Subsection Overlay on the Targhee National Forest and the Surrounding Area

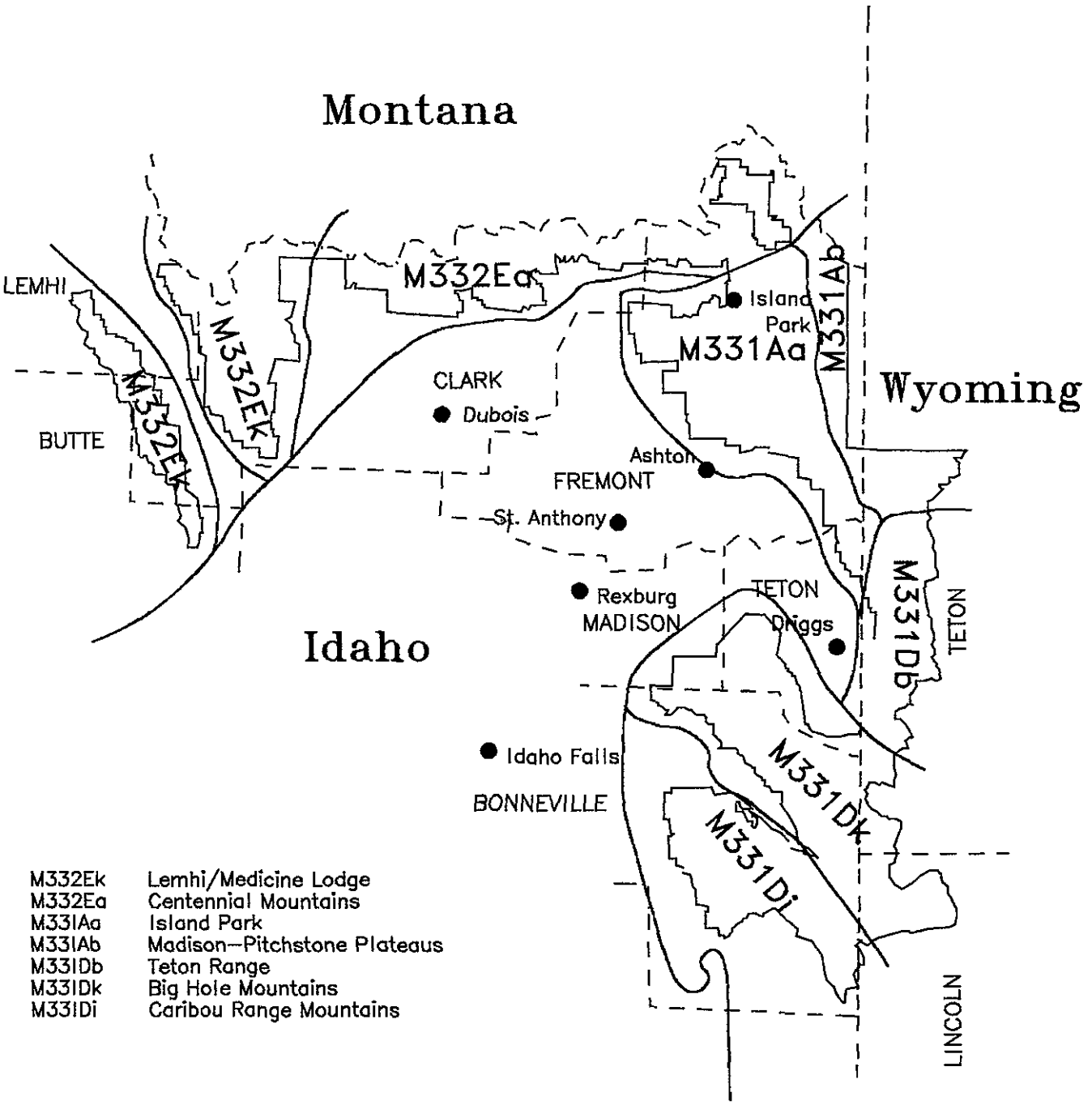



Figure III–1

occurs in this subsection Among the many scenic attractions are Upper and Lower Mesa Falls, the last major undisturbed falls on the Upper Columbia River system The Mesa Falls Scenic Byway, established in 1989, provides motorists with a breathtaking view of the Teton Mountain Range and accesses the two falls The Island Park subsection offers excellent trout fishing at Island Park Reservoir and along the Henry's Fork, Buffalo River, Warm River, Fall River and Bitch Creek The Island Park subsection is also known for its snowmachine trails, cross-country ski trails and summer home concentrations Large scale timber harvest activity is evident due to the mountain pine beetle epidemics in 1960s and 1970s Harriman State Park lies in the heart of the Harriman Wildlife Refuge, with 16,000 acres of forest, meadows, lakes and streams

*Madison-Pitchstone Plateaus* - The largest portion of this subsection is actually in the Park The section on the Forest falls within the Island Park and Ashton Districts next to the Park The Jedediah Smith and Winegar Hole Wildernesses lie within this subsection, as does the recommended Idaho wilderness portion of Winegar Hole The Ashton-Flagg Ranch and Fish Creek roads are the major access routes in this area Grassy Lake is a 320-acre lake created when a dam was built by the Bureau of Reclamation in 1937-1939 Grassy Lake as well as other lakes and streams in the area are popular fishing areas and are accessed by the Flagg Ranch road Several organized youth camps exist throughout this subsection The Cave Falls road is the only motorized access to the southwest portion of the Park.

*Teton Range* - This area encompasses the west slope of the Teton Mountains The Teton Range is a spectacular line of high peaks rising abruptly along the west side of Jackson Hole The vegetation is a diverse mix of forested and nonforested plant communities The Jedediah Smith Wilderness traverses the upper portions of the west slopes of the Teton Mountains The Grand Targhee Ski Resort is a major tourist attraction within the subsection Two organized youth camps are present This area is known for its many backcountry trails which are accessible by horse or foot This section of the Forest falls within the Ashton and Teton Basin Ranger Districts

*Big Hole Mountains* - This subsection takes in all Forest lands between Highway 33 in Idaho and Highway 22 in Wyoming on the north and the South Fork of the Snake River to the south Several major highways provide access Idaho Highways 26, 31 and 33, and Highway 22 in Wyoming Highway 31 is a State Scenic Byway over Pine Creek Pass Vegetation consists of mountain brush, grass/forb openings, aspen and forests of Douglas-fir and lodgepole pine The area has a variety of recreational opportunities including Kelly Canyon Ski Resort and backcountry hiking Palisades Reservoir and the South Fork of the Snake River are used by water sports enthusiasts This section of the Forest falls within the Teton Basin and Palisades Ranger Districts

*Caribou Range Mountains* - This subsection is the portion of the Caribou N F administered by the Forest It lies south of the South Fork of the Snake River Steep mountain slopes and canyons dominate the landscape The Palisades Reservoir is shared by this subsection and the Big Hole Mountains Subsection Vegetation in this subsection forms a patchwork of tall sage/grass openings, aspen and mixed Douglas-fir/lodgepole pine forests Recreation use is very similar to the Big Hole Mountains Subsection with high trail and backcountry use as well as hunting, fishing and water sports both on the reservoir and the Snake River This area has several summer home divisions and two organizational camps This section of the Forest falls entirely in the Palisades Ranger District

PROPER FUNCTIONING CONDITION (PFC)

Ecosystems at any temporal or spatial scale are in a PFC when they are dynamic and resilient to disturbances to structure, composition and processes of their biological or physical components Ecosystems can be assessed as to the sustainability of their biological and physical components and the risks associated with ecosystems which are degraded beyond the point of resiliency and sustainability These assessments evaluate the structure, composition, disturbance regime and patterns of ecosystems When combined with assessments of social and economic conditions, they can provide a basis for making decisions on how to best maintain and restore ecosystem sustainability in ways that achieve social and

economic expectations The USDA Forest Service, Intermountain Region developed a methodology of assessing ecosystems used on the Forest and is described in the draft document titled, Proper Functioning Condition Process - 1996 (Process Paper W) This document incorporates methodologies from Riparian Area Management, Process for Assessing Proper Functioning Condition (Bureau of Land Management, TR 1737-9, 1993, 52 pgs )

Range of Variability (ROV)

One component of PFC is the historical ROV which refers to the range of conditions under which ecosystems evolved and function through time By understanding how ecosystems have functioned in the past and successfully maintained themselves, we gain insight into characteristics of healthy ecosystems The ROV provides information about conditions under which plant and animal species evolved Sustaining healthy plant and aquatic systems is an important part of ensuring that all ecosystem components, from wildlife and fish to microbes and fungi, are maintained

ROV is not a desired condition nor a target state for ecosystems It encompasses the entire historic set of the many conditions that have existed on a given landscape during a given time period Past conditions can provide reference points, like benchmarks, which can be used to predict successional development or the response of ecosystem elements, such as wildlife or plant communities, to management intervention Understanding ROV helps us understand how systems will respond to different management options or no management action at all

Information about ROV prior to 1900 is limited, but we do have some knowledge of how the Forest has changed over recent history The Forest is in the process of analyzing historical maps, photographs and literature to better understand the ROV, both natural and human-caused As part of assessing PFC, ROV of ecosystems will be identified for disturbance regimes, patterns, composition and structure Cooperative projects with the scientific community will continue to be used to promote understanding of historical vegetation patterns and watershed function

## ECOLOGICAL PROCESSES AND PATTERNS

ECOLOGICAL PROCESSES AND DISTURBANCES

Ecosystems constantly change across both time and space Change is brought about by many different processes and disturbances that occur over varying time frames and spatial scales For example, fire is a disturbance process that can burn thousands of acres of forestland within a matter of hours On the other hand, it may take millions of years for a stream to carve a canyon through the process of erosion Some disturbances are relatively predictable, while others happen in utterly unpredictable, random ways Humans can have a great impact on some of these processes, as discussed below Ecosystem processes and disturbances are never independent from one another Any given process will change resource conditions, which then sets the stage for some other agent to act

While there are innumerable processes occurring in an ecosystem, we have focused on only a few that are most likely to be affected by the alternative management schemes being analyzed in this FEIS This section will only examine "natural" disturbances, not those associated with human activities such as grazing, timber harvest and roading

**Succession - Scale: Community Type**

Succession is the process by which plant communities change through time if they are undisturbed This process usually begins with pioneer species invading bare ground These early seral plants change the environment by their presence to the point where other more shade-tolerant plants can take over the site These plants then modify conditions further by their leaf litter and shade, making the site more hospitable

to yet another set of plant species which replaces them The gradual progression from early to late seral communities continues unless interrupted by a disturbance such as wind or fire

Due to the control of fire on the Forest since the early 1900s, succession has become a dominant ecosystem process in the unharvested portions of the Forest Late seral communities are prevalent in herbaceous/shrub ecosystems as well as in most forest types

*Herbaceous/Shrub Communities* - The process of succession in these areas generally begins following fire and is characterized by open grassland interspersed with a few shrub species Mountain big sagebrush and other shrubs begin to dominate after five to ten years As they compete with the grasses for water, the grasses lose vigor and die out Sagebrush provides shade for Douglas-fir seedlings, which may take over the site as a dominant community type until fire sets it back to grassland In the absence of a Douglas-fir seed source, the area may become a sagebrush-dominated community

Fire suppression on the Forest has allowed a significant acreage of the herbaceous and shrub communities to convert to Douglas-fir or dense sagebrush This varies from historical conditions where mosaics of different-aged sagebrush/grassland stands existed, and where stands dominated by herbaceous species were more common Some high mountain meadows are also being reduced in size by conifers encroaching in from the edges

*Forest Communities* - Succession can vary a great deal depending on climate and soils in forested systems, but it generally begins with early seral species such as aspen and lodgepole pine, then progresses to shade-tolerant climax species Aspen is a relatively short-lived tree which may give way to lodgepole pine or Douglas-fir communities after approximately 100 years The mountain pine beetle commonly attacks lodgepole pine after 80 to 120 years, allowing more shade-tolerant species to take over Douglas-fir will likely then dominate on warmer, drier sites, while subalpine fir and Engelmann spruce dominate in colder areas Douglas-fir, subalpine fir or Engelmann spruce generally form long-lived climax communities until a disturbance occurs

Much of the aspen acreage that was present historically on the Forest has been converted to Douglas-fir through the succession process In addition, aspen stands are overwhelmingly in the mature or older age classes These conditions have resulted from fire suppression Succession at higher elevation sites has resulted in subalpine fir and Engelmann spruce becoming intermixed with whitebark pine With continued absence of fire, the whitebark pine will likely give way to the spruce and fir

Eighty percent of the forested land is in the mature age class (the mature age class includes old growth and late seral forests) This is primarily a result of fire suppression Historically fire produced a greater variety of age classes over the landscape Mature age classes include old growth and late seral forests and provide important wildlife habitat for some species They are also more susceptible to stand-replacing fires and mortality from insects than most early-seral communities

**Old Growth and Late Seral Forests - Scale: Vegetation Type, Subsection and Forestwide**

OLD GROWTH

*Old Growth Characteristics* - In 1993, the Intermountain Region completed a report on the characteristics of old growth forests in the Intermountain Region (USDA Forest Service 1993) Table III-1 summarizes the characteristics of old growth forests as described in the 1993 publication These characteristics are the old growth definitions for the Revised Plan More description about old growth characteristics can be obtained from the complete report

*Old Growth Inventory and Analysis* - The Forest does not have a complete old growth inventory However, an analysis of 412 permanent forest inventory plots was completed to assess what percent of the forested acres meet the old growth characteristics and to gain an idea of the potential distribution of old growth

Tabel III-1 Summary of Characteristics of Old Growth Forests in the Intermountain Region (USDA Forest Service 1993)

| | LIVE TREES * | | | | | | | DEAD TREES * | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | TREE DECADENCE | | | STANDING | | | DOWN | | |
| SAF Cover Type | DBH | TPA | Age | 6" DBH Classe | TPA | DBH | Canopy Layers | DBH | Ht | TPA | Dia | #/Acre | Length |
| Spruce/fir warm/moist | 24 | 25 | 220 | 2 | evidence | | 2 | 12 | 15 | 2 | 12 | 1 | 8 |
| Spruce/fir cold/dry | 15 | 15 | 150 | 2 | 2 | 14 | 2 | 10 | 15 | 2 | 8 | 16 | 8 |
| Spruce/fir alpine transition | 12 | 10 | 150 | 2 | evidence | | 2 | NA | NA | Infre-quent | NA | Infrequent | |
| Whitebark Pine | 18 | 15 | 250 | 2 | 2 | 15 | 2 | 15 | 10 | 5 | 20 | 5 | 8 |
| Douglas-fir high prod | 24 | 15 | 200 | 2 | evidence | | 2 | 20 | 20 | 1 | 12 | ? | 0-16 |
| Douglas-fir low prod | 18 | 10 | 200 | 2 | 2 | 15 | 2 | 16 | 10 | 0-3 | 15 | 0-4 | 8 |
| Aspen-mesic | 12 | 20 | 100 | 2 | 2 | NA | ? | 10 | 15 | 2 | 8 | 10 | 10 |
| Aspen-dry | 12 | 10 | 100 | 2 | 2 | NA | ? | 10 | 15 | 2 | 8 | 10 | 10 |
| Lodgepole | 11 | 25 | 140 | 2 | 2 | 11 | 2 | 11 | ? | 5 | 11 | 50 | 8 |
| Limber Pine low timberline | 16 | 10 | 250 | 1 | evidence | | 2 | NA | NA | few | 16 | rare | rare |
| Limber Pine montaine woodln | 16 | 10 | 500 | 1 | evidence | | 1 | NA | NA | few | NA | rare | rare |

* All figures are less than or equal to, unless shown as a range of numbers
DBH = diameter at breast height, in inches
TPA = trees per acre
Age = years
6" DBH Classes = number of recognizable size classes that differ by at least 6 inches in diameter
Tree Decadence = tree decadence, number of trees per acre of a minimum DBH showing signs of disease or injury of some kind
Canopy Layers = number of recognizable canopy layers
Ht = height in feet
Dia = diameter of downed logs in inches
#/Acre = number of downed logs per acre
Length = minimum length (in feet) of downed logs
Evidence = some evidence of tree decadence but no minimum requirement for tpa or dbh
NA = information is not available for this parameter, or this parameter is not applicable for this old growth type
? = the old growth definitions are not clear on what this parameter should be

For this analysis, data from the 412 permanent forest inventory plots contained information on the old growth characteristics for live trees and standing dead trees Data on downed dead trees was not available If some of the plots were deficient in downed dead trees, then our calculation pertaining to the quantity of old growth will be high

The 412 permanent inventory plots were measured in 1990 and 1991 Since the plots were measured in 1990 and 1991, we added five years to all of the tree ages to account for time We also added 1-inch to all of the diameter at breast height (dbh) measurements to allow for growth Adding 1-inch dbh is probably optimistic for old trees, but we did not want to eliminate plots which were close to the minimum required dbh

In this examination, we did not include any plot which had less than 50 live trees per acre that were 1-inch dbh or larger This was done to eliminate those stands which have had some kind of first entry logging, such as a seed tree cut Also, it would be very difficult for any plot to qualify as having two canopy layers or two dbh size classes with less than 50 live trees per acre

Further details of this analysis are described in Process Paper D

Table III-2 displays the 36 plots (8 7 percent of the total 412 plots) which meet all of the old growth characteristics that could be determined from the permanent forest inventory plots These plots were located in the Lemhi Mountains, Medicine Lodge, Centennial Mountains, Madison-Pitchstone Plateaus, Teton Range and Big Hole Mountains Subsections (Figure III-2) No old growth plots were found in the Island Park and Caribou Range Mountains Subsections

LATE SERAL FOREST

*Late Seral Forest Characteristics* - Late seral forests meet some of the old growth characteristics as defined in Table III-1, but do not meet all of the characteristics Late seral forests provide some of the structural and functional attributes of old growth forests We characterized late seral forests in three categories as follows

1) Forests which meet the live tree characteristics for old growth, but do not meet the standing dead tree characteristics for old growth
2) Forests which partially meet the live tree characteristics for old growth, in that there are one or more live trees per acre that meet the minimum dbh and age requirement for old growth, but the number of live trees per acre is less than the old growth characteristic requirements
3) Forests which have live trees which meet the minimum dbh requirements for old growth, but no live trees meet the age requirements for old growth

*Late Seral Forest Inventory and Analysis* - The Forest does not have a complete late seral forest inventory However, an analysis of 412 permanent forest inventory plots was completed to assess what percent of the forested acres meet late seral forest characteristics and to gain an idea on the potential distribution of late seral forests

Further details of this analysis are described in Process Paper D

The number of permanent forest inventory plots meeting the three categories of late seral forest is as follows

1) A total of seven plots (1 7 percent of the total 412 plots) meet the live tree characteristics for old growth, but do not have the required number of snags These plots are located in the Lemhi Mountains, Medicine Lodge, Centennial Mountains and Caribou Range Mountains Subsections
2) A total of 89 plots (21 6 percent of the total 412 plots) partially meet the live tree characteristics for old growth, in that there are one or more live trees per acre that meet minimum dbh and age requirements for old growth, but the number of live trees per acre is less than the old growth characteristic requirements These plots are located in all subsections
3) A total of 186 plots (45 1 percent of the total 412 plots) have live trees which meet the minimum dbh requirement for old growth, but no live trees meet the age requirements for old growth These plots are located in all subsections

In the previous section on Succession, it was stated that 79 6 percent of the forested acres are in the mature class This analysis provides a further refinement of the mature age class as follows

- 10 9 percent of the mature age class meets old growth characteristics for live trees and standing dead trees
- 2 1 percent of the mature age class meets live tree old growth characteristics
- 27 1 percent of the mature age class partially meets the live tree old growth characteristics
- 56 7 percent of the mature age classes have live trees that meet minimum dbh requirements, but do not meet the age requirements
- 3 2 percent of the mature age classes have mature trees with dbh smaller than old growth requirements

Table III-2 Permanent Forest Inventory Plots which meet all Old Growth Characteristics

| Subsection | Plot Number | SAF Cover Type |
|---|---|---|
| Lemhi Mountains | 59 | Douglas-fir, low productivity, also contains old growth limber pine trees |
| | 60 | Spruce/Fir - cold/dry, also contains old growth limber pine trees and Douglas-fir |
| | 61 | Spruce/Fir - cold/dry, also contains old growth limber pine trees and Douglas-fir |
| | 62 | Limber pine - lower timberline, also contains old growth spruce/fir trees |
| | 64 | Douglas-fir, low productivity |
| | 359 | Qualifies as both Douglas-fir - low productivity and Limber pine - lower timberline |
| Medicine Lodge | 357 | Douglas-fir - low productivity |
| | 51 | Douglas-fir - low productivity |
| | 52 | Spruce/Fir - cold/dry, also contains old growth limber pine trees and Douglas-fir |
| | 46 | Qualifies as both Spruce/Fir - cold/dry and Douglas-fir - low productivity |
| Centennials | 39 | Spruce/Fir - cold/dry, also contains old growth Douglas-fir trees |
| | 34 | Douglas-fir - low productivity |
| | 26 | Douglas-fir - low productivity |
| | 28 | Douglas-fir - low productivity |
| | 16 | Douglas-fir - low productivity |
| | 18 | Douglas-fir - low productivity, also contains old growth lodgepole pine and spruce/fir. |
| | 12 | Spruce/Fir - cold/dry |
| | 88 | Douglas-fir - low productivity |
| | 79 | Douglas-fir - low productivity |
| | 221 | Douglas-fir - low productivity |
| | 69 | Douglas-fir - low productivity |
| | 188 | Spruce/Fir - cold/dry |
| | 616 | Qualifies as both Spruce/Fir - cold/dry and Douglas-fir - low productivity |
| Madison Plateau | 190 | Spruce/Fir - cold/dry |
| Teton Range | 343 | Spruce/Fir - cold/dry, also contains old growth limber pine and Douglas-fir trees |
| | 344 | Spruce/Fir - cold/dry, also contains old growth lodgepole pine trees |
| | 391 | Aspen - mesic |
| | 348 | Spruce/Fir - cold/dry, also contains old growth Douglas-fir trees |
| | 143 | Spruce/Fir - cold/dry |
| | 137 | Spruce/Fir - cold/dry |
| Big Hole/Palisades | 122 | Spruce/Fir - cold/dry |
| | 127 | Spruce/Fir - cold/dry |
| | 113 | Spruce/Fir - cold/dry, also contains old growth Douglas-fir trees |
| | 112 | Lodgepole Pine, also contains some old growth Douglas-fir trees |
| | 372 | Spruce/Fir - cold/dry |
| | 115 | Douglas-fir - low productivity |

# Targhee National Forest
# Old Growth and Late Seral Forest Plots

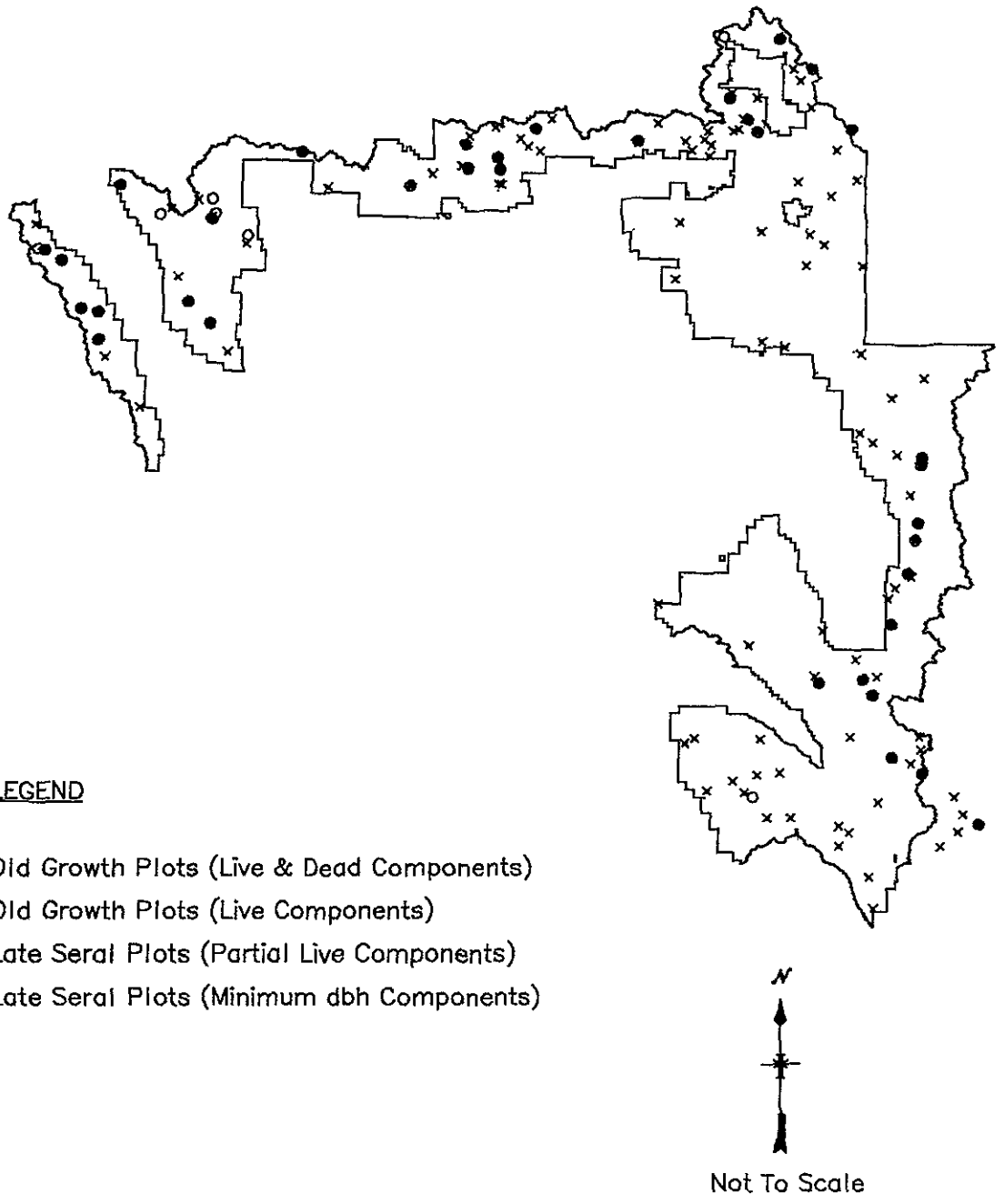



Figure III–2

**Fire - Scale: Vegetation Community and Subsection**

Historically fire has played a significant role in the GYA Some plants have evolved with fire and have adapted to it in various ways Fires occurred naturally at certain average time intervals, which varied by vegetation and climatic conditions Fires were also set by humans on a fairly regular basis, particularly in the sagebrush/grass and aspen communities These fires created mosaic patterns of different seral stages of vegetation across the landscape

In the early 1900s public concern for protecting the forests from fire ushered in a period of aggressive fire suppression which has continued to the present With these suppression strategies and the lack of a prescribed fire program, the fire intervals which occurred historically have been altered Due to the absence of fire, much of the forest vegetation has reached the mature age class (see Table III-3) and herbaceous/shrub types are in the later stages of succession The mosaic patterns in the landscape are not as prevalent as before These conditions increase the potential for fires of higher intensity which may be detrimental to species that evolved with frequent, low intensity burns

There are no approved fire management plans on the Forest All previous fire management plans were suspended as a result of the 1988 Yellowstone fires

Fire frequency intervals and behavior vary widely among the different vegetation communities, so each is described separately in the following discussion

*Douglas-fir Fire Regimes* - It appears that Douglas-fir forests in this area historically had a fire interval of 20-50 years These fires were generally low ground fires which tended to thin the stands, favoring large, older Douglas-fir trees with thick bark Fire suppression has led to conditions on the Forest where most Douglas-fir stands have multiple stories and dense stocking (trees/acre) Trees of various heights provide a "ladder" for fire, allowing it to reach the tree crowns Absence of frequent ground fires can cause dead fuels to build up over time Fires which start under these conditions are much more severe than ground fires and tend to replace the Douglas-fir with earlier seral species such as aspen or lodgepole pine (Bradley et al 1992)

*Lodgepole pine Fire Regimes* - In this area between the years 1200 and 1700, major fires occurred in the lodgepole pine component approximately every 100 years Stand-replacement fires in lodgepole pine are closely tied to epidemics of the mountain pine beetle Tree mortality caused by the beetle creates massive amounts of fuel Fires which start under such conditions are likely to be severe This cycle of beetles, fire and stand replacement is part of lodgepole pine's evolutionary history in the Rocky Mountains We witnessed this cycle on the Forest beginning with beetle epidemics in the 1960s and ending with large fires such as the North Fork Fire in 1988 Conditions for these large fires still exist in much of the Forest's mature lodgepole pine

Most lodgepole pine, with the exception of that on cool moist sites, historically experienced low intensity fires every 40-60 years Fire suppression has interrupted this portion of the lodgepole fire cycle on the Forest The effects of this are likely not too serious, since conditions created by the mountain pine beetle are similar to those created by light ground fires (stands are thinned and regeneration may fill in the understory) (Personal comm , Brown 1993, Bradley et al 1992, USDI National Park Service 1993, Management of Lodgepole Pine Ecosystems 1973)

*Aspen Fire Regimes* - The average fire-free period historically was 40 years or longer for pure aspen stands Fire in aspen has been reduced in size and frequency throughout the West due to fire control and the cessation of intentional burning Fire suppression on the Forest has resulted in many aspen stands that are now mixed, or overtaken by, conifers such as Douglas-fir or lodgepole pine If left undisturbed for long periods of time, conifers can change the soil characteristics so that aspen is less likely to survive (Cryer & Murray 1992) Mixed conifer/aspen stands are conducive to large stand-replacing fires If such fires were allowed to occur, they would likely lead to pure aspen regeneration providing the fires were not

Table III-3 Existing Forested Conditions within Subsections

| Subsection | Community Type | Total Forested Acres | Percent Nonstocked | Percent Seedling | Percent Sapling | Percent Pole | Percent Mature 1/ | Percent Mature Prev Harv 2/ |
|---|---|---|---|---|---|---|---|---|
| **Lemhi/ Medicine Lodge** | Aspen | 335 | 0 0 | 0 0 | 0 0 | 0 0 | 100 0 | 0 0 |
| | Douglas-fir | 93,450 | 0 0 | 0 6 | 0 0 | 0 0 | 99 4 | 0 0 |
| | Lodgepole Pine | 9,759 | 0 0 | 100.0 | 0 0 | 0 0 | 0 0 | 0 0 |
| | Mixed LP/DF | 343 | 0 0 | 0 0 | 0 0 | 0 0 | 100 0 | 0 0 |
| | All Forested Acres | 103,887 | 0 0 | 9.9 | 0 0 | 0 0 | 90 1 | 0 0 |
| **Centennial Mountains** | Aspen | 8,781 | 8 4 | 2 2 | 0 7 | 4 2 | 84 5 | 0 0 |
| | Douglas-fir | 114,154 | 0 9 | 0 9 | 0 0 | 0 0 | 83 4 | 14 8 |
| | Limber Pine | 114 | 0 0 | 0 0 | 0 0 | 0 0 | 100 0 | 0 0 |
| | Lodgepole Pine | 46,873 | 5 7 | 23 7 | 11 4 | 10 7 | 48 5 | 0 0 |
| | Mixed LP/DF | 30,376 | 0 8 | 1 6 | 0 2 | 0 0 | 97 4 | 0 0 |
| | Other Mixed Conifer | 21,626 | 1 2 | 4 2 | 1 0 | 0 6 | 93 0 | 0 0 |
| | Spruce/Subalpine Fir | 2,669 | 0 4 | 0 0 | 2 3 | 1 6 | 95 7 | 0 0 |
| | Whitebark Pine | 419 | 0 0 | 0 0 | 0 0 | 0 0 | 100 0 | 0 0 |
| | All Forested Acres | 225,012 | 2 2 | 6 1 | 2 6 | 2 5 | 79 2 | 7 5 |
| **Island Park** | Aspen | 7,616 | 7 7 | 20 9 | 5 1 | 4 7 | 61 6 | 0 0 |
| | Douglas-fir | 27,143 | 1 4 | 0 1 | 0 3 | 0 0 | 96 8 | 1 4 |
| | Lodgepole Pine | 192,653 | 9 3 | 25 3 | 11 6 | 5 7 | 48 1 | 0 0 |
| | Mixed LP/DF | 42,370 | 0 5 | 4 5 | 3 1 | 0 2 | 91 5 | 0 1 |
| | Other Mixed Conifer | 6,224 | 0 3 | 14 8 | 5 3 | 1 2 | 78 5 | 0 0 |
| | Spruce/Subalpine Fir | 368 | 0 0 | 0 0 | 0 0 | 0 0 | 100 0 | 0 0 |
| | All Forested Acres | 276,374 | 6 9 | 19 3 | 8 9 | 4 1 | 60 7 | 0 2 |
| **Madison-Pitchstone Plateaus** | Aspen | 4,697 | 8 6 | 20 3 | 5 3 | 0 8 | 65 0 | 0 0 |
| | Douglas-fir | 6,824 | 7 9 | 0 5 | 0 4 | 1 2 | 89 9 | 0 0 |
| | Lodgepole Pine | 145,260 | 9 6 | 18 6 | 10 9 | 6 1 | 54 8 | 0 0 |
| | Mixed LP/DF | 26,584 | 3 0 | 1 2 | 0 5 | 0 0 | 95 3 | 0 0 |
| | Other Mixed Conifer | 5,715 | 1 0 | 9 5 | 0 8 | 0 5 | 88 2 | 0 0 |
| | Spruce/Subalpine Fir | 1,035 | 0 0 | 0 1 | 0 0 | 2 9 | 96 9 | 0 0 |
| | All Forested Acres | 190,115 | 8 3 | 15 2 | 8 5 | 4 8 | 63 3 | 0 0 |
| **Teton Range** | Aspen | 9,330 | 0 0 | 0 0 | 5 4 | 1 4 | 93 1 | 0 0 |
| | Douglas-fir | 24,530 | 0 4 | 0 0 | 0 0 | 0 0 | 99 6 | 0 0 |
| | Lodgepole Pine | 19,180 | 1 1 | 0 1 | 0 0 | 10 0 | 88 8 | 0 0 |
| | Mixed LP/DF | 28,311 | 0 0 | 0 0 | 0 0 | 0 0 | 100 0 | 0 0 |
| | Other Mixed Conifer | 8,622 | 0 0 | 1 4 | 0 0 | 1 4 | 97 2 | 0 0 |
| | Spruce/Subalpine Fir | 2,169 | 0 0 | 0 0 | 0 0 | 0 0 | 100 0 | 0 0 |
| | Whitebark Pine | 40 | 0 0 | 0 0 | 0 0 | 0 0 | 100 0 | 0 0 |
| | All Forested Acres | 92,182 | 0 3 | 0 2 | 0 6 | 2 3 | 96 6 | 0 0 |
| **Big Hole Mountains** | Aspen | 37,673 | 0 0 | 1 5 | 0 1 | 0 0 | 98 3 | 0 0 |
| | Douglas-fir | 33,103 | 1 4 | 0 0 | 0 0 | 0 2 | 97 0 | 1 4 |
| | Lodgepole Pine | 34,550 | 13 3 | 4 7 | 3 7 | 2 4 | 75 9 | 0 0 |
| | Mixed LP/DF | 107,086 | 0 4 | 0 0 | 0 1 | 0 0 | 99 3 | 0 2 |
| | Other Mixed Conifer | 13,142 | 3 1 | 3 9 | 0 1 | 0 1 | 92 8 | 0 0 |
| | Spruce/Subalpine Fir | 1,662 | 4 2 | 3 6 | 0 2 | 0 0 | 92 0 | 0 0 |
| | All Forested Acres | 227,216 | 2 6 | 1 2 | 0 6 | 0 4 | 94 8 | 0 3 |
| **Caribou Range Mountains** | Aspen | 37,765 | 0 1 | 0 2 | 0 0 | 1 3 | 98 4 | 0 0 |
| | Douglas-fir | 14,999 | 0 0 | 0 0 | 0 0 | 0 0 | 99 9 | 0 1 |
| | Lodgepole Pine | 4,655 | 5 2 | 3 0 | 0 0 | 0 0 | 91 7 | 0 0 |
| | Mixed LP/DF | 57,151 | 0 8 | 0 0 | 0 0 | 0 0 | 99 2 | 0 0 |
| | Other Mixed Conifer | 7,132 | 0 0 | 0 0 | 0 0 | 0 0 | 100 0 | 0 0 |
| | Spruce/Subalpine Fir | 793 | 0 0 | 17 1 | 26 9 | 0 0 | 56 0 | 0 0 |
| | All Forested Acres | 122,495 | 0 6 | 0 3 | 0 2 | 0 4 | 98 5 | 0 0 |

1/ The mature category incorporates all older age classes, including old growth

2/ Includes acres of mature forest that have had harvest treatments such as commercial thinning or shelterwood seed tree cuts, but the harvest did not result in reclassifying the acres to a different age class

so severe as to destroy the aspen root systems Moderate severity fires result in better aspen sprouting than either high or low severity fires (Bradley et al 1992)

*Subalpine Fir Fire Regimes* - Subalpine fir forests generally occupy cool, moist habitats and are therefore common at higher elevations Because of this, fire is relatively infrequent in this type, occurring every 50-350 years depending on aspect, elevation and other factors Large fires generally occur only during drought conditions and periods of high winds Ladder fuels are common in this type, so fires can spread easily between tree crowns and burn large acreages (Bradley et al 1992)

*Sagebrush/Grassland Fire Regimes* - Historically, fires likely occurred every 10 to 25 years in the Forest's sagebrush communities (Clark and Starkey 1990, Houston 1973, Winward 1987) These fires created a mosaic of vegetation conditions across the landscape In the absence of fire, these communities tend to progress toward stands of Douglas-fir or dense sagebrush Dense sagebrush stands are less diverse than sagebrush/grasslands, and more susceptible to soil erosion because the herbaceous vegetation is lacking Much of the sagebrush/grassland on the Forest and throughout the west is in advanced seral stages due to the absence of fire (Winward 1992)

*Whitebark pine Fire Regimes* - Fires are important to the survival and regeneration of whitebark pine This species can survive surface fires which kill other tree species that compete with it Since whitebark pine reproduces on fire-prepared sites, stand-replacing fires help perpetuate the species Historically, fire occurred in whitebark pine communities every 30-300 years Suppression of fires has favored subalpine fir and Engelmann spruce over whitebark pine Other disturbance agents affecting whitebark pine are white pine blister rust and mountain pine beetle (Morgan et al 1994), which are discussed in the insect and disease section

Fire Risks

The Forest has experienced large fires in five of the past 20 years, three of those were within the last eight years Two fires exceeded 5,000 acres One was a prescribed natural fire that was allowed to burn until it exceeded the prescription parameters of the High Country Fire Plan. That fire was the Gallagher Peak Fire of 1979 The other was the North Fork Fire, one of the Greater Yellowstone Fires of 1988 Approximately 17,691 acres of the 507,580-acre North Fork Fire burned on the Forest The size or scale of historic fires on the Forest is unknown at this time, but it is likely that the North Fork Fire emulated the size of fires that historically occurred in the lodgepole pine types

Development of private lands adjacent to the Forest has made a significant increase in the wildland/urban interface To deal with the threat of a wildland fire within or adjacent to these areas, Emergency Evacuation Plans are being developed such as the one for the North Fire Zone in Island Park All wildland fires, including natural ignitions, receive the appropriate suppression response of contain, confine or control The following briefly summarizes fuels and other conditions which contribute to fire hazard within the subsection

*Lemhi/Medicine Lodge and Centennial Mountains* - These subsections are dominated by sagebrush/grasslands and Douglas-fir communities The Centennial Mountain Subsection has had substantial timber management activities, which have reduced fuels on some areas The wildland/urban interface in the Centennial Mountains has significantly increased due to the development of private lands within the Forest protection boundary This increases the risk of a fire spreading between the Forest and private lands

*Island Park* - The vegetation in this subsection is primarily lodgepole pine This area has heavy recreation use during all seasons, which increases the potential of human-caused fires Timber management activities has reduced much of the natural fuel loadings, but there are some lodgepole pine stands with heavy accumulations of dead material These stands are generally isolated by the surrounding young stands

from timber harvest activities. This subsection has seen an increase in the wildland/urban interface with the development of private land Areas with high summer home densities also present fire risks in this subsection

*Madison-Pitchstone Plateaus* - The dominant vegetation is lodgepole pine Timber activities have been widespread, significantly reducing fuel loadings There are still high concentrations of dead fuels in stands not treated, but these areas are generally adjacent to young stands created by clearcuts This subsection includes the area burned by the North Fork Fire The Winegar Hole Wilderness is located in the southern portion of this subsection Natural and human-ignited fires in this wilderness have been suppressed

*Teton Range* - A large portion of this subsection is grass forb vegetation, with forests of Douglas-fir, lodgepole pine and mixed conifers also being common The Jedediah Smith Wilderness covers a major portion of the subsection Since 1988 natural and human-caused fires have not been allowed to burn in the Wilderness

*Big Hole Mountains* - The primary vegetation types are mixed conifer and mountain brush Most of this subsection is roadless and primarily used for grazing and recreation. The recreation use can increase the potential of human-caused fires

*Caribou Range Mountains* - Mixed conifers and sagebrush/grass communities dominate the subsection Some timber management has occurred in the Engelmann spruce/subalpine fir type, and subsequent fuel treatments have reduced fuel loading and rate of fire spread for the short-term Recreation use here can increase the potential for human-ignited fires

**Insects & Diseases - Scale: Forestwide and Subsection**

Insects and diseases play important roles in ecosystems, even those often considered "destructive " Many of these organisms serve as food sources for a variety of wildlife species, ranging from birds to grizzly bears In addition they are change agents, causing death, decay or damage to vegetation This latter function is closely intertwined with the processes of succession and fire The change from one species community to another on a site is often brought about by insects and diseases, particularly when fire is absent For example, aspen is eventually killed by fungal diseases which may then allow Douglas-fir to dominate Insects can change forest structure by killing all trees of a particular size or species Insect-killed trees contribute to fuel conditions and thereby help determine the severity, size and patterns of fires in the landscape

Most native insects and diseases are opportunistic, taking their toll on weakened or aged individuals However, under some conditions these organisms may build up high populations that also overwhelm healthy, young vegetation Trees and plants are usually adapted to insects and diseases, having evolved with them The exception to this is when damaging agents are introduced from another continent and the plants have not had time to adapt genetically This can often lead to disastrous consequences for a tree species, such as the American chestnut which fell victim to an introduced fungus A concern about whitebark pine exists on the Forest and throughout its range. Whitebark pine is dying off at an alarming rate due to an introduced disease known as white pine blister rust Although there is genetic resistance to this disease, the number of whitebark pine trees is expected to decrease significantly in the short term

Native insects of importance on the Forest include the mountain pine beetle, Douglas-fir beetle, western balsam bark beetle and western spruce budworm Mountain pine beetle populations have remained at low levels since 1983 Between 1981 and 1987 western spruce budworm was active in the Douglas-fir on the Forest This insect stressed the trees to the extent that Douglas-fir beetles were able to kill many Douglas-fir between 1988 and 1992 Additional information on these insects may be found in the Analysis of the Management Situation for the Forest (USDA Forest Service, Targhee N F 1992) Stalactiform rust, gall rust and various root rots are common fungal diseases Dwarf mistletoes (parasitic plants) are

present on lodgepole pine across the Forest and Douglas-fir in more isolated pockets Important existing insect and disease conditions for each subsection are briefly covered in the Vegetation section of forest ecosystems

ECOLOGICAL PATTERNS

The ecosystem processes and disturbances discussed above contribute to patterns of vegetation across the landscape Other factors such as climate, topography and soils also help determine vegetation patterns The patterns themselves are important to other components of the ecosystem such as wildlife species and humans Vegetation patterns have a ROV which the Forest is seeking to more fully understand We have chosen to analyze four measures of ecosystem patterns that we believe are most important on the Forest A brief discussion of each follows

**Forest Structure and Composition - Scale: Subsection**

Natural and human disturbances tend to break up large tracts of similar forest habitat into smaller blocks separated by openings, different vegetation types, or different age classes Patch sizes varied historically based on topography, soils and scale of disturbances Forestwide they are affected by all these factors, including human activities such as roading and clearcutting Patch size is important since some wildlife species are adapted to using extensive forested areas

Conditions on the Forest vary by subsection The Caribou Range Mountains, Big Hole Mountains and Lemhi/Medicine Lodge Subsections have historically exhibited small patch sizes due to their physiographic conditions This continues to be the case Clearcutting over the past decade in the Island Park and Madison-Pitchstone Subsections has created smaller patch sizes than occurred historically The Teton Range and Centennial Mountains Subsections are likely exhibiting larger patch sizes than they did historically due to fire suppression and the current predominance of forests in mature age classes

**Vegetation Types - Scale: Subsection**

The distribution of forested community types and age classes by subsection is displayed in Table III-3 Studies to date show that the Forest's vegetation has changed in some significant ways over the past century Preliminary analysis indicates that some vegetation conditions are different than what occurred historically on the Forest

In some subsections aspen has declined by 80 percent, while in others aspen acreage has increased in the past two decades due to clearcutting (USDA Forest Service, Targhee N F 1994) Aspen decline is most serious in the Lemhi/Medicine Lodge, Centennial Mountains, Big Hole Mountains and Caribou Range Mountains Subsections

The amount of whitebark pine has been reduced over the past 30 years as a result of mountain pine beetle, white pine blister rust and succession The seeds of this tree are an important food source for grizzly bears, some birds and small mammals

Shrublands and grasslands are less prevalent than in the past due to fire suppression This indicates a habitat loss for species dependent on these communities and a habitat gain for species adapted to forested areas The greatest changes have occurred in the Lemhi/Medicine Lodge, Centennial Mountains, Big Hole Mountains and Caribou Range Mountains Subsections

Stand structures, particularly in the Douglas-fir forests, have changed as a result of fire suppression Compared to past structures, these stands are now denser and more multi-storied This has increased the likelihood of severe fires, increased the susceptibility to insects and diseases and altered the type of habitat provided by Douglas-fir forests These conditions are found in all subsections

The Forest has much more area in mature age classes than the historical record indicates Of particular significance are the high percentages of mature or older mountain mahogany, mountain big sagebrush, aspen, cottonwood and Douglas-fir Mosaics of different age classes were more common in the past

**Connectivity - Scale: Forestwide and Subsection**

Connectivity between habitat areas involves the linkage of similar habitat patches such as water courses, natural openings or as most commonly studied, vegetation The maintenance of connectivity is needed to ensure proper levels of nutrient cycling, hydrologic function and species survival If the level of connectivity is maintained over time and space, then processes such as predation, dispersal and gene exchange continue even though habitat areas may be separated from each other Species differ in their need for corridors between blocks of habitat, with some moving freely through the landscape while others tend not to cross openings between habitat areas Specific habitat linkage requirements for various species have not been determined However, species evolved to function within certain limits of connectivity shaped by natural disturbances Maintenance of vegetation patterns with which plant and animal species evolved is an accepted measure of ecosystem health

Connectivity is influenced by access routes and clearcuts, as well as by historic vegetation patterns Connectivity in the Caribou Range Mountains, Big Hole Mountains and Lemhi/Medicine Lodge Subsections is likely similar to what existed historically based solely on the vegetation patterns. However, human access routes may have reduced the ability of species to move between habitat blocks. Clearcutting and roading over the past decade in the Island Park and Madison-Pitchstone Subsections have altered vegetation patterns and connectivity from what existed historically Although leave strips have provided continuity of mature forest habitat, these links are much narrower and more randomly distributed across the landscape Based on vegetation patterns alone, the Teton Range and Centennial Mountains Subsections are likely exhibiting similar or greater connectivity than historically due to fire suppression and the current predominance of forests in mature age classes However, the presence of roads and trails in the subsections may have reduced some species' ability to move between habitat blocks.

Connectivity is important in aquatic, as well as forested ecosystems Natural disturbance forms patterns of habitat patches, which in turn control aquatic ecosystem processes and functions (see "aquatic and riparian ecosystem" section) Natural and human-induced disturbances affect the connectivity of riparian areas and the linkages between aquatic and forested ecosystems Where road crossings and concentrated human activity exist in aquatic ecosystems, it can be assumed that some level of connectivity has been lost compared to what existed historically

**Adjacent Land Use Patterns - Scale: Forestwide**

Lands adjacent to the Forest are part of the ecosystem Uses of these lands affect the Forest, and management of the Forest likewise affects adjacent ownerships This all plays into the larger social and ecological context in which the Forest is managed Lands next to the Forest represent many different owners and management strategies Adjacent entities include private landowners, Harriman State Park, Idaho Department of Lands, the Park and GTNP, John D Rockefeller Memorial Parkway and the U S Sheep Experiment Station In addition, several N F and BLM Districts lie adjacent to the Forest

Dominant land use patterns on adjacent private lands involve farming and ranching These activities have occurred since the 1800s in this area The past decade has brought a trend toward subdivision developments, particularly in Teton Valley, Island Park and Swan Valley On lands administered by the Idaho Department of Lands, other N F and the BLM, management tends to be oriented toward use of resources, with timber harvest, livestock grazing and recreation being common activities National Parks are governed by the principles of preservation and noninterference with natural processes, but have intensive recreation management in some areas

An Adjacency Study (Process Paper P) shows how the Forest fits into the management of neighboring

lands For the most part there is a sense of continuity across the borders of the Forest into adjoining N F , BLM, and National Park Service lands Probably the single most visible discontinuity lies along the Park's western boundary where evidence of the Forest's intensive timber management can be seen in sharp contrast to the Park's unmanaged forest That apparent discontinuity will continue until the young regeneration grows and blends with older surrounding vegetation

There are other land management practices on the Forest which might appear to be incongruent to some people and understandable to others The Grand Targhee Ski Resort, an area of concentrated recreation development, shares much of its boundary with the congressionally-proclaimed Jedediah Smith Wilderness The ski resort and the wilderness uses remain in effect in all the alternatives Likewise, some people view the presence of a road alongside a wilderness as being incongruent Others accept the fact that roads, as an exclusionary feature in a wilderness, will frequently end up being used to define its boundaries

From a Forest point of view, management of adjacent lands seems to have more of an impact on Forest management than vice versa As the human population of the area of influence has grown so has their use of the Forest, particularly recreational use The Forest has had to respond to those changes by hardening recreation sites to prevent damage to the resource and developing reasonable restrictions on some uses

## PHYSICAL ELEMENTS OF THE ENVIRONMENT

### Soils and Geology - Scale: Subsection

*Lemhi/Medicine Lodge* - This subsection consists of fault block mountains, which exhibit a northwest-southeast trend The dominant rock types are limestone and sandstone The landscape is dissected by parallel drainage systems

Soils on these landscapes are greater than 60 inches to bedrock, having gravelly medium textured surface layers and extremely gravelly medium textured subsurface layers These soils have a low to moderate inherent fertility, are droughty, are high in carbonates and have a high erosion hazard

Principal ecological concerns affecting soil quality in the subsection are as follows the expansion of conifers into sagebrush/grass and riparian communities has changed some sites, the area's susceptibility to fires has increased the risk of losses in soil productivity associated with such events and canopy density of sagebrush communities and subsequent loss of understory vegetation has led to declining watershed conditions

The principal management activities affecting soil quality are roads, grazing concerns along incised drainages and OHV use Secondary management activities affecting soil quality include water developments and mining impacts which have not been reclaimed

*Centennial Mountains* - This subsection consists of a fault block mountain range, which exhibits an east-west trend along the Continental Divide The dominant rock types are rhyolite, sandstone and shale The landscape is dissected by dendritic and parallel drainage systems

Soils on these landscapes are greater than 60 inches to bedrock, having nongravelly to gravelly medium to medium-fine textured surface layers and gravelly to extremely stony medium to medium-fine subsurface layers These soils have a moderate to moderately high inherent fertility, are susceptible to compaction and puddling, have a moderate to high erosion hazard, exhibit plant competition concerns and demonstrate slumping hazards on mountain side-slopes and escarpments at higher elevations

Principal ecological concerns affecting soil quality include conifers expanding into aspen, sagebrush/grass, riparian and mountain meadow communities causing site changes, increased risk of losses in soil productivity associated with fire events, canopy density of sagebrush communities and subsequent loss of understory vegetation which is causing declining watershed conditions, and slumping potentials

Principal management activities that are concerns affecting soil quality include roads and OHV use, dispersed recreation impacts, grazing concerns along drainages and water developments Secondary management activities that are affecting soil quality include mining impacts which have not been reclaimed, past timber/firewood harvest which have resulted in roads, compaction, organic matter removal or displacement and loss of woody residue

*Island Park* - The Island Park Caldera was formed by the collapse of a large rhyolite shield volcano After the collapsing of the caldera, volcanic activity continued, resulting in basalt flows covering much of the caldera floor The entire subsection has been overlain by wind blown silts (loess) The dominant rock types are rhyolite and basalt The landscape is dissected by dendritic and parallel drainage systems on the caldera rim and associated tablelands The caldera floor has very little dissection

Soils on these landscapes are greater than 60 inches to bedrock, having nongravelly to gravelly medium textured surface layers and medium fine to extremely cobbly medium textured subsurface layers These soils have a moderately low to moderate inherent fertility Soils on the caldera floor have plant competition concerns on deeper soils, reforestation concerns on more shallow soils, and a moderate susceptibility to compaction Soils on the caldera rim have a moderate susceptibility to compaction, moderate to high erosion hazard, low bearing strength and plant competition concerns

A principal ecological concern affecting soil quality (limited to the caldera rim) is the expansion of conifers into aspen, sagebrush/grass, riparian and mountain meadow communities and resulting site changes and landscape patterns on structure and composition

Principal management activities affecting soil quality (caldera rim) are roads, OHV use, and extensive past timber/firewood harvest which have resulted in roads, compaction, organic matter removal or displacement and loss of woody residue Principal management activities (caldera floor) are the same as for the rim, plus dispersed recreation, which is especially heavy near summer home areas, and grazing along certain riparian areas and meadow complexes

*Madison-Pitchstone Plateaus* - This subsection consists of a large consolidated ash flow that came out of the Park and overtopped the east rim of the Island Park Caldera The landscape is dissected by dendritic and parallel drainage systems

The soils in the northern part are greater than 60 inches to bedrock, having medium textured surface layers and stratified gravelly coarse textured to extremely gravelly coarse textured subsurface layers The soils in the southern part are greater than 60 inches to bedrock, having gravelly medium textured surface layers and very gravelly to extremely cobbly medium textured subsurface layers These soils have a moderately low inherent fertility, are droughty and have windthrow hazards They are highly erodible if the subsoil is exposed, as it is in the northern part of this subsection due to the North Fork Fire

A principal ecological concern affecting soil quality (southern portion) is the susceptibility to fires, increasing the risk of losses in soil productivity associated with such events, including areas on the 1988 North Fork Burn that have not recovered yet

Principal management activities affecting soil quality include roads and OHV use, dispersed recreation, effects associated with timber harvest which have resulted in roads, compaction, organic matter removal or displacement and loss of woody residue

*Teton Range* - North-south trending mountain range The dominant rock types are granite, limestone, sandstone, dolomite, slate, gneiss and quartzite The landscape is dissected by parallel drainage systems

This subsection consists of two primary landscape settings These include foothills on lower to mid elevations and mountain side-slopes at mid to high elevations Soils on these landscapes are 40 to greater than 60 inches to bedrock, having nongravelly to very gravelly medium textured surface layers and gravelly to extremely stony medium textured subsurface layers These soils have low to moderately low inherent fertility, low to moderate compaction hazard, moderate to high erosion hazard, reforestation concerns and low to high mass instability hazards

Principal ecological concerns affecting soil quality in this subsection include conifer expansion into aspen, sagebrush/grass, riparian and mountain meadow communities causing site changes, and the area's susceptibility to fires with increased risk of losses in soil productivity associated with such events

Principal management activities affecting soil quality include roads, grazing along drainages, OHV use and dispersed recreation Secondary management activities affecting soil quality include the effects of timber harvest which have resulted in road construction, compaction, organic matter removal or displacement and loss of woody residue

*Big Hole Mountains* - This subsection consists of a mountain range of multiple, parallel overthrusts (faults) and benches of mixed rocks and eolian material that have been modified by thrust faulting

Soils on these landscapes are greater than 60 inches to bedrock, having gravelly medium textured surface layers and very gravelly moderately coarse to moderately fine textured subsurface layers These soils have a moderate to high inherent fertility, moderate compaction and rutting hazard, moderate to high erosion hazard, moderate to high slumping and earthflow hazard, plant competition concerns and areas of low bearing strength

Principal ecological concerns affecting soil quality include conifer expansion into aspen, sagebrush/grass, riparian and mountain meadow communities causing site changes, increased risk of losses in soil productivity associated with fire events, canopy density of sagebrush communities and subsequent declining watershed conditions and slumping/earth flows

Principal management activities affecting soil quality are roads, OHV use, dispersed recreation and grazing along drainages Secondary management activities affecting soil quality include erosion along sheep driveways, effects resulting from timber harvest and big game feeding areas along Rainey Creek

*Caribou Range Mountains* - The Caribou Range Mountains Subsection is a southeast to northwest trending overthrust (multiple faults) mountain range The northeast side of the range is moderate relief mountains on mixed sediments The southwest side of the range is low relief foothills and basins on fine-textured marine sediments The dominant rock types are a mix of sedimentary materials with a loess influence The landscape is dissected by dendritic drainage systems

Soils on these landscapes are greater than 60 inches to bedrock, having medium textured surface layers and moderately-coarse to fine textured subsurface layers These soils have a moderate to high inherent fertility, moderate compaction and rutting hazard, moderate to high erosion hazard, moderate to high slumping and earthflow hazard, plant competition concerns and areas of low bearing strength

Principal ecological concerns affecting soil quality include conifer expansion into aspen, sagebrush/grass, riparian and mountain meadow communities causing site changes, increased risk of losses in soil productivity associated with fire events, and canopy density of sagebrush communities and subsequent loss of understory vegetation resulting in a decline in watershed conditions and slumping/earthflows

Principal management activities affecting soil quality include roads, OHV use, dispersed recreation and grazing along drainages Secondary management activities affecting soil quality includes erosion along sheep driveways and effects from timber harvest

**Air Quality - Scale: Forestwide**

The United States Environmental Protection Agency (EPA), in conjunction with the states of Idaho and Wyoming, have established National Ambient Air Quality Standards for pollutants to protect the public health and welfare These standards relate to PM10 particles, which are particles with an aerodynamic diameter of 10 microns or less

National Ambient Air Quality Standards require that PM10 remain below 50 micrograms per cubic meter when averaged over a year PM10 must generally remain below 150 micrograms per cubic meter averaged over a 24-hour period, however, this standard can be exceeded up to one time per year

Class I airsheds have the highest air quality standards, and Class II have a moderate level of protection The entire Forest, including the Jedediah Smith and Winegar Hole Wildernesses, is a Class II airshed Yellowstone and GTNPs, adjacent to the Forest's eastern boundary, are Class I airsheds The Forest must ensure that its activities do not reduce air quality in these Class I airsheds

In general, the area's air quality is very good The primary sources of PM10 on the Forest are wildfire, prescribed fire and dust generated from road traffic The major source of PM10 from outside the Forest is dust generated by wind and agriculture Agricultural burning and mechanical disturbance such as plowing, planting and harvesting crops reduce air quality

Currently there are no air quality monitoring stations located on the Forest The closest monitoring station is located in Jackson, Wyoming This station has measured PM10 since 1986 During the analysis period the highest 24-hour average PM10 reading recorded was 124 micrograms per cubic meter in 1992 This is 26 micrograms per cubic meter less than the allowable standard One short term value of 248 micrograms per cubic meter was recorded in 1988 during the Yellowstone wildfire situation Annual averages have ranged from a high of 39 8 micrograms per cubic meter in 1988 (Yellowstone Fire influenced) to a minimum of 25 5 grams per cubic meter in 1993

**Caves - Scale: Subsections**

Caves are present primarily in two subsections on the Forest, as discussed below

*Lemhi/Medicine Lodge* - This area contains numerous small caves in limestone cliffs Many have been identified during heritage resource inventories Large caves in this area contain evidence of American Indian habitation in the form of pictographs and cave fills with stratified cultural deposits Few caves in this area have sufficient depth to provide recreational opportunities

*Teton Range* - The Teton Range has numerous caves but most are small and have little recreational interest to spelunkers The Fossil Mountain Ice Cave and Wind Cave, however, have high recreational interest for exploration Both caves are identified on Forest maps and have access trails and signs from Darby Canyon These caves probably qualify as "significant caves" under the Federal Cave Resources Protection Act of 1988, but they have not been inventoried or nominated Thorough inventory of caves in this area has not been completed, and new significant caves with high public interest may be discovered

**Lands - Scale: Forestwide and Subsections**

The Lands program includes the adjustment of land ownership patterns, land acquisition, granting of rights-of-way, identification and resolution of trespasses and property boundary management

Land Ownership Adjustments

Land ownership within the administrative Forest boundary is displayed in Table III-4 Land ownership adjustments have enabled the Forest to acquire lands that meet specific needs, goals and objectives

Land ownership adjustments are valuable for recreation, wildlife habitat, riparian areas and historical resources, they also enabled us to consolidate land ownership to improve operating efficiency Ownership adjustments reduce the miles of private/Forest Service property lines that need to be surveyed, posted and maintained Adjustments can also reduce special use permit administration and resolve trespass and title claims

Table III-4 Land Ownership within Administrative Forest Boundary

| Ownership | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Hole Mountains | Caribou Range Mountains | Totals* |
|---|---|---|---|---|---|---|---|---|
| NFS Land Acres | 279,655 | 319,248 | 296,482 | 196,424 | 160,806 | 350,222 | 204,949 | 1,808,175 |
| Private Acres | 1,883 | 7,559 | 9,986 | 815 | 963 | 7,661 | 8,364 | 59,840 |
| State Acres | 637 | 5,886 | 15,060 | 637 | 0 | 0 | 0 | |
| BLM Acres | 0 | 0 | 389 | 0 | 0 | 0 | 0 | 389 |
| Total Acres | 282,175 | 332,693 | 321,917 | 197,876 | 161,769 | 357,883 | 213,313 | 1,868,015 |

* Figures in this column are the figures of record Differences in sums of prior columns are due to measurement method

The Congressionally mandated Land and Water Conservation Fund can be used to purchase land interests for the Federal Government Although the Forest has submitted yearly requests for one to fifteen such purchases, the last funded project was in 1962 Land adjustments may also occur through donation of land or partial land interest Proponents in land transactions have been approached and encouraged to donate lands or interests in lands

Land Exchanges have been the most effective tool in completing the objectives for land adjustments Through eight land exchanges important wildlife and wetland habitats, scenic and historical sites, a needed gravel source and six inholdings were acquired Lands disposed of have been, for the most part, those that have lost their Forest characteristics, are difficult to manage or consolidated Forest holdings Table *III-5 displays past land adjustments (1985-1996)*

Table III-5 Land Adjustments, 1985-1995 1/

| | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Hole Mountains | Caribou Range Mountains |
|---|---|---|---|---|---|---|---|
| **Purchased Acres** | | | | | | | |
| Fee | 2 40 | - | 2 76 | 160 59 | - | - | - |
| Partial Land Interest | - | - | - | 160 75 | - | - | - |
| **Donation Acres** | | | | | | | |
| Fee | - | - | - | - | 7 48 | - | - |
| **Land Exchanges Acres** | | | | | | | |
| Acquired | - | 640 | 511 65 | - | - | 319 94 | 6 5 |
| Disposed | - | - | 633 54 | - | - | 64 86 | 45 |
| **Right-of-Way Cases** | | | | | | | |
| Acquired | - | 1 | 1 | - | 1 | 2 | 3 |
| Grants | - | 1 | - | 1 | 1 | 13 | 4 |

1/ These figures are updated yearly Current figures are on file at the Forest office

Land ownership adjustment on the Forest has emphasized the transfer of both surface and subsurface rights This has resulted in very little reserved or outstanding mineral ownership Currently nonfederal minerals consist of only about 5,000 acres out of a total of about 1 8 million Forest acres

Right-of-Way Acquisition

Right-of-way acquisition is driven by the need to provide land managers and the public access to National Forest System lands With private lands changing hands, many roads that have been open to the public are now being closed There is a need to gain legal access through the acquisition of rights-of-way Eight right-of-way cases have been completed (see Table III-5) and 91 rights-of-way been identified for acquisition

**Minerals - Scale: Subsections**

No specific proposals for mineral development have been addressed in this Revision process The role of the Forest Service is to manage the surface resources to minimize adverse environmental impacts and to provide mitigation direction

The issue of oil and gas development on the Forest is being addressed in a separate EIS The following briefly discusses the current status of oil and gas production to give the reader an overall picture of the mineral, oil, gas and hard rock situation on the Forest

*Lemhi/Medicine Lodge* - During the mid and late 1800s, lead and copper and to a lesser extent silver and gold, were mined extensively in this subsection Since then there has been no activity and none is predicted There are no current oil and gas leases, although during the 1980s there were numerous leases generating rental income A recent BLM study rated the area as having a low potential for the discovery of oil and gas resources (USDI 1992)

*Centennial Mountains* - During the late 1950s and early 1960s phosphate was mined near Mt Taylor in the eastern Centennials from two of the three phosphate leases located in the area Since then no mining has occurred, but the leases still remain Should phosphate production resume, 50 percent of all revenues generated from leasing return to the State of origin for use as the legislature may direct

Oil and gas leases blanketed the area in the mid 1980s but none exist today The potential for discovery of oil and gas is rated low in this area An exploration well was drilled in the late 1980s which came up dry

Northeast of Dubois, gold exploration is currently taking place and has been for several years In the event of development and production the local communities would experience a boost in their economies

Northeast of Dubois are several mining claims where the exploration, development and production of opal has been conducted for the past 30 years One particular claim has exhibited most of this activity and has been patented (private ownership) The site is known as the Spencer Opal Mine and has operated commercially as a public digging site since 1968 Activity on surrounding nonpatented claims consists mainly of exploration

*Island Park & Madison-Pitchstone Plateaus* - Oil and gas and geothermal leases blanketed the area in the mid 1980s, but none exist today The area is rated as having no potential for the discovery of oil and gas Congress has effectively prohibited geothermal development and mineral leasing in this area through legislation prohibiting the leasing of lands in the Island Park geothermal area (Geothermal Steam Leasing Amendments Act of 1988) There are no other mineral resources in this area of economic importance

*Teton Range* - Oil and gas leases were scattered through the area in the mid-1980s, but none exist today The area is rated as having no potential for the discovery of oil and gas. There are no other mineral resources of economic importance in this area

*Big Hole Mountains* - Oil and gas leases blanketed the area in the mid-1980s, generating rental income Fifty percent of this money is returned to the State of origin for use as the legislature directs There are no oil and gas leases currently, pending the completion of an oil and gas EIS A couple of exploratory wells were drilled during the 1980s, but were dry holes The potential for discovery of oil and gas is rated as moderate in the north half of the subsection and high in the south

*Caribou Range Mountains* - Oil and gas leases blanketed the area in the mid-1980s, generating rental income Fifty percent of this money is returned to the State of origin There are no oil and gas leases currently, pending the completion of an oil and gas EIS The potential for discovery of oil and gas is rated as moderate in this subsection

There are four phosphate leases located in the northern part of the subsection, which are currently inactive Last reported activity was in the 1960s and consisted primarily of exploration Activity is not expected on these leases for the next three or four decades

Travertine, a marble-like building stone product, is mined in the northern part of the area and is the only active mine of economic importance on the Forest

In the southern portion of the subsection, McCoy Creek has long been the center for recreational placer gold dredging, sluicing and panning Mining claim activity has also occurred with limited success

## BIOLOGICAL ELEMENTS OF THE ENVIRONMENT

This section is divided into various types of ecosystems so that the relationships between biological elements within the same system can be better understood Aquatic, riparian and terrestrial ecosystems (upland forested and upland nonforested) will be considered

AQUATIC AND RIPARIAN ECOSYSTEMS

**Riparian - Scale: Subsection**

Riparian areas lie adjacent to water and are composed of vegetation communities influenced by water Though riparian areas constitute only a fraction of the total land area, they are more productive in terms of both plant and animal species diversity and biomass per unit area than the remainder of the land base Riparian areas are essential breeding, rearing and feeding grounds for many species of wildlife and they affect the quality of the aquatic habitat (fisheries) Often these key areas visibly reflect the quality and success of land management activities in tributary watersheds Riparian areas are extremely important for flood control and hydrologic function These systems are very important to the human environment from ecological, aesthetic, recreational and economic points of view Additional information may be found in the water quality, fisheries and riparian wildlife sections Table III-6 summarizes riparian conditions

Grazing is considered to have shifted the species composition on 8,988 acres (32 percent) of riparian communities across the forest Under current range management, 5,338 acres of these acres are moving toward higher ecological conditions with increasing plant biodiversity Some 3,650 acres are remaining in less stable, lower ecological conditions, with lower plant diversity (Table III-6) Where grazing decreases the species diversity, shallow, fine-rooted species such as Kentucky bluegrass (*Poa pratensis*) become dominant and replace the deeper, thicker-rooted native herbaceous species, decreasing stream stability

Biodiversity and sometimes stream stability are also affected by riparian community succession Riparian areas with closed shrub canopies have little understory vegetation due to shading and may have low overall species diversity This can negatively affect stream stability on some streams Spruce forest riparian communities also have low species diversity due to shading and low vegetative cover to protect streambanks from erosive events unless armored by large rock

| Table III-6 Aquatic and Riparian Conditions by Subsection | | | | | | | |
|---|---|---|---|---|---|---|---|
| Parameter | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Holes | Caribou Range Mountains |
| Miles of Intermittent Streams | 610 | 415 | 455 | 219 | 164 | 383 | 158 |
| Miles of Fish-bearing Streams | 203 | 580 | 254 | 307 | 287 | 664 | 533 |
| Miles of Non Fish-bearing Streams | 10 | 34 | 3 | 15 | 51 | 43 | 19 |
| Acres of Lakes | 24 | 91 | 479 | 972 | 195 | 167 | 32 |
| Reservoirs, Ponds, and Wetlands greater than 1 acre | 37 | 2,345 | 5,867 | 3,264 | 266 | 10,116 | 5,850 |
| Areas less than 1 acre | 0 | 6 | 10 | 10 | 2 | 2 | 0 |
| Aquatic Habitat Condition 1/ | | | | | | | |
| Percent Pristine | 5 | 15 | 50 | 56 | Unkn | 56 | 62 |
| Percent Moderate | 37 | 44 | 46 | 44 | Unkn | 44 | 37 |
| Percent High Human Dist | 58 | 41 | 4 | 0 | Unkn | 0 | 0 |
| Aquatic Habitat Trend 1/ | | | | | | | |
| Percent Up | 13 | 4 | 0 | 0 | Unkn | 11 | 12 |
| Percent Stable | 87 | 93 | 92 | 94 | Unkn | 78 | 88 |
| Percent Down | 0 | 3 | 8 | 6 | Unkn | 11 | 0 |
| Vegetation Seral Stage | | | | | | | |
| Percent PNC | 3 | 4 | 0 | 0 | Unkn | 0 | 0 |
| Percent Late Seral | 61 | 62 | 87 | 83 | Unkn | 11 | 12 |
| Percent Mid Seral | 34 | 35 | 12 | 11 | Unkn | 78 | 76 |
| Percent Early Seral | 3 | 1 | 0 | 6 | Unkn | 11 | 12 |
| Vegetation Trend 2/ | | | | | | | |
| Percent Up | 16 | 18 | 8 | 17 | Unkn | 11 | 12 |
| Percent Stable | 66 | 75 | 83 | 72 | Unkn | 89 | 88 |
| Percent Down | 18 | 7 | 8 | 11 | Unkn | 0 | 0 |
| Riparian vegetation meeting DVC (acres) 3/ | 690 | 13,257 | 1,625 | 200 | 439 | 1,882 | 637 |
| Riparian vegetation moving toward DVC (acres) 3/ | 890 | 3,575 | 131 | 41 | 83 | 363 | 255 |
| Riparian vegetation not meeting DVC (acres) 3/ 4/ | 500 | 381 | 367 | 7 | 903 | 1,304 | 188 |

1/ & 2/ Aquatic Habitat Condition and Trend I Perennial streams at least 14" deep (at low summer flow), with 40-60% pools II Perennial streams between 8" to 14" deep (at low summer flow), with 20-40% pools or 60-80% pools III Intermittent or ephemeral streams less than 8" deep (at low summer flow) with less than 20% pools or more than 80% pools Pristine = 90% of riparian acres near pristine conditions Moderate = 50-89% of riparian acres near pristine conditions High Human Disturbance = less than 50% of riparian acres near pristine conditions

3/ Only includes acres open to grazing (79%) of the Forest Does not include acres closed to grazing prior to 1995 Source FSRAMIS database

4/ Includes acres of undetermined status

*Lemhi/Medicine Lodge* - The principal ecological concern affecting riparian quality in this subsection is that upland vegetation has expanded into riparian zones due to past over-utilization and/or a drop in the water table levels A secondary ecological concern affecting riparian quality in this subsection is that within some riparian areas willows are dying out and are not being regenerated

Principal management influences affecting riparian quality include past overuse by ungulates (domestic and wild), dispersed recreation, OHV use and roads in or adjacent to riparian areas and associated stream crossings

*Centennial Mountains* - Principal ecological concerns affecting riparian quality include the expansion of upland vegetation into riparian zones due to past over-utilization and/or a drop in the water table levels and some areas of fine-textured subsoils which have a moderate to high slumping potential A secondary ecological concern affecting riparian quality is that within some riparian areas, willows are dying out and are not being regenerated

Principal management concerns affecting riparian quality are overuse in some areas by ungulates (domestic and wild), dispersed recreation, OHV use and roads in or adjacent to riparian areas and associated stream crossings Secondary management concerns affecting riparian quality include past mining sites that have not been rehabilitated, past timber harvest that left inadequate buffers and fuel wood gathering.

*Island Park* - The principal ecological concern affecting riparian quality is that there are areas where willows are dying out and not being regenerated

Principal management concerns affecting riparian quality include high use recreation areas (including summer home, dispersed and developed recreation areas), OHV use, roads in or adjacent to riparian areas and associated stream crossings, past timber harvest which left inadequate buffers and fuelwood gathering A secondary management concern affecting riparian quality is overuse in some areas by ungulates (domestic and wild)

*Madison-Pitchstone Plateaus* - The principal ecological concern affecting riparian quality is in the area of the North Fork Burn Principal management concerns affecting riparian quality include dispersed recreation, OHV use, roads in or adjacent to riparian areas and associated stream crossings, past timber harvest which left inadequate buffers and fuelwood gathering A secondary management activity affecting riparian quality is overuse in some areas by ungulates (domestic and wild)

*Teton Range* - The principal ecological concern affecting riparian quality is mass wasting

Principal management activities affecting riparian quality include high levels of dispersed recreation, horse and OHV use, trails in close proximity to or within riparian areas and associated crossings, isolated areas of overuse by ungulates (domestic and wild), roads in or adjacent to riparian areas and associated stream crossings Secondary management activities affecting riparian quality include past timber harvest which left inadequate buffers and fuelwood gathering

*Big Hole Mountains* - The principal ecological concern affecting riparian quality is mass wasting

Principal management activities affecting riparian quality include high levels of dispersed recreation, horse and OHV use, trails in close proximity to or within riparian areas and associated crossings and areas of overuse by ungulates (domestic and wild) Secondary management activities affecting riparian quality include sheep driveways, past timber harvest which left inadequate buffers, fuelwood gathering and IDFG feed grounds in Lower Rainey Creek

*Caribou Range Mountains* - The principal ecological concern affecting riparian quality is mass wasting

Principal management activities affecting riparian quality include high levels of dispersed recreation, OHV use, trails in close proximity to or within riparian areas and associated crossings, areas of overuse by ungulates (domestic and wild), sheep driveways and roads in and adjacent to riparian areas and associated crossings

**Water - Scale: Subsection**

Subsection boundaries are used for analysis and description, although this means that some streams are split between two subsections Channel stability information dates primarily from inventories completed in the mid-1970s to early 1980s More current information does exist on some portions of the Dubois and Teton Basin Ranger Districts (1989-1993) It is important to determine which streams are naturally "unstable" (i e , dynamic) due to landforms, bed and bank materials, etc and which ones have instability induced by management practices An attempt is made in the text to make this determination where possible In discussions of channel stability the "good" and "fair" categories were further split into (+) and (-) to indicate better or poorer stability respectively

Water Yield

Total annual water yield on the Forest is about 1 4 million acre-feet Water is lost or used in many ways, including evaporation, infiltration, use by plants and animals and diversion from stream channels Because of these and many other factors, the amount of water reaching the Forest boundary will be less than what is produced Table III-7 shows water yield by subsection across the Forest

Table III-7 Water Yield

| Subsection | Annual Water Yield for Subsection (ac-ft) | Unit Water Yield (ac-ft per acre) |
|---|---|---|
| Lemhi/Medicine Lodge | 96,400 | 0 34 |
| Centennial Mountains | 134,300 | 0 42 |
| Island Park | 125,600 | 0 42 |
| Madison-Pitchstone Plateaus | 186,400 | 0 95 |
| Teton Range | 405,300 | 2 52 |
| Big Hole Mountains | 299,100 | 0 85 |
| Caribou Range Mountains | 169,600 | 0 83 |

Management activities have the potential to change the timing and amount of water delivered to stream channels As an example, timber harvest, especially in headwater areas, may allow more snow to accumulate in created openings This may result in higher flood peaks and possible impacts to streams Currently there are approximately 22,000 acres in headwaters that have been altered by timber harvest (out of a total of approximately 239,000 headwater acres in those watersheds that have much harvest), which includes stands in seedling, sapling and nonstocked categories While this is approximately 9 percent on a Forestwide basis, the amount of actual headwater harvest varies widely between subwatersheds

Water Quality

The biggest pollutant on the Forest is excess sediment, derived from within-channel erosion and upland erosion reaching stream channels The main source of sediment is roads, specifically those segments within riparian areas, including stream crossings Forest roads generally contribute an estimated 85 to 90 percent of the sediment reaching streams in disturbed Forest land (Burroughs 1990) Currently there are 2,957 stream crossings and 323 miles of road in AIZs The amount of water meeting State water quality goals on the Forest is unknown Idaho Code Section 39-3601 et seq (effective July 1, 1995) approved adoption of new water quality standards Streams targeted for the new regulations are those listed as Water Quality Limited (WQL) under section 303(d) of the Clean Water Act These are to receive priority for monitoring so they may be removed from the list if water quality is good If it isn't, special Best Management Practices (BMPs) and pollutant limits must be established

The Clean Water Act delegates authority for establishment of WQL priorities to the States (Idaho) Senate Bill 1284 (incorporated into Chapter 36, Title 39, Idaho Code) states that the water quality criteria that must be met consist of fully supporting existing beneficial uses (where there is no numeric water quality standard) or, where there is a numeric standard, meeting that standard This applies to all water bodies, both those that are listed and those that are not The bill goes on to describe the priority classifications of the WQL water bodies "Low" priority bodies (all streams on the Forest are in this category) are those where limited data suggest that beneficial uses are not fully supported, but risks to humans and aquatic life are minimal For streams listed in this category " such changes in permitted discharges from point sources on the water body or to the BMPs for nonpoint sources within the watershed deemed necessary to prohibit further impairment of the designated or existing beneficial uses" are to be undertaken

In other words, these streams are to have monitoring of BMPs to ensure their effectiveness and monitoring of designated beneficial uses to ensure they are supported There is no implication, or statement, in the bill that all management activities must cease in these watersheds, we are required to meet water quality standards and make sure BMPs are protecting beneficial uses If our monitoring points out water bodies where are not meeting water quality standards, then we have to find the source for the water quality impairment and correct the problems

WQL streams on the Forest (as of 1996) are listed under each subsection While other streams in the vicinity of the Forest have been listed, the designated reaches are all downstream of the Forest boundary The fact that these streams are listed for reaches downstream of National Forest System lands, suggests that the problems identified for the streams may originate on non-Forest (often private) lands

The Forest is in the process of validating WQL streams to determine where we have water quality concerns, and if they exist, to find the source of the concerns We have been working with the Idaho Department of Environmental Quality (DEQ) to develop suitable monitoring and assessment methods (including the state-approved Beneficial Use Reconnaissance Program protocols, to which we are tailoring our assessment efforts) We have coordinated our monitoring efforts with other state and federal agencies and have shared all our results with DEQ and EPA Many of the water bodies currently listed have very limited data, so there is a great deal of speculation as to whether they should remain listed A case in point is Warm Creek, which is listed for thermal concerns but which has as its source a warm spring having a constant temperature that is far above normal state standards for temperature Changes in management would not correct this natural anomaly Until we can verify the condition of these streams, particularly the condition of fish habitat and fish populations, the Forest is employing especially stringent management requirements in the WQL watersheds We have begun baseline monitoring in at least one WQL watershed where new management activities are planned Impacts to WQL streams are analyzed at the project level, where site-specific BMPs can be tailored to a given situation

*Lemhi/Medicine Lodge* - Major streams in this subsection are Medicine Lodge Creek and its tributaries There are many perennial streams that have their headwaters in the Bitterroot and Beaverhead Ranges, that eventually flow through broad valleys Their flows are mostly the result of snowmelt runoff and baseflow from groundwater sources The rest of the streams in the subsection are mostly intermittent spring or snowmelt-fed streams that eventually lose flow to deep sediments in valleys The streams fed by snowmelt generally flow only for a few months of the year

Channel stability ranges from fair (-) to good (+) This subsection has generally declining trends in channel stability, sometimes even where grazing has been excluded

Idaho DEQ sampled sites on streams in this subsection to assess changes in water quality from management On Irving, Edie and Fritz Creeks, water quality was similar above and below where forest management was occurring All sites showed impacts from grazing at the time of the survey WQL streams here include Edie, Irving, Fritz, Warm and Warm Springs Creeks Monitoring of water quality on these streams was conducted during 1995 In 1996, Divide and Fritz Creeks were monitored for temperature Nutrients were listed as a concern on all these streams There are no standards for nutrients, or any clear direction

as to what forms of nitrogen and phosphorus are to be monitored, so recommendations from researchers were used None of these streams directly enter lakes, so a recommended maximum phosphate level of 0 1 mg/l was used in lieu of a standard All of the streams phosphate concentrations were lower than this value Nitrate/nitrite recommendations vary widely, from 10mg/l for drinking water to 0 3 mg/l for prevention of algal growth Fritz (1995), Warm and Edie Creeks showed an increase in nitrate/nitrite in late July and early August, to a maximum of 0 43 on Fritz and 0 44 on Warm Creek Divide Creek, a tributary to Warm Creek, was also sampled from July to early September, and showed nitrate/nitrite levels ranging from 0 49 to 0 73 mg/l All levels dropped below 0 1 in September, except on Divide Creek Temperature was listed as a concern on Fritz and Warm Creeks Warm Creek is fed by a warm water spring source, so temperature is an erroneous concern here State Water Quality Standards state for cold water biota, temperatures are not to exceed 22°C, with a maximum daily average of no greater than 19°C During 1996, Fritz Creek was continually monitored from July to October and the highest readings were approximately 18°C Divide Creek was consistently cool

*Centennial Mountains* - Streams having headwaters along the front of the Centennial Mountains generally flow south and their water comes from both snowmelt and spring sources The influence of springs increases moving east, providing these streams with more constant streamflow through the year Major streams in the western part of the subsection include Beaver, Camas, Sheridan, Icehouse and Willow Creeks Some streams in the western part of the subsection (e g , Beaver and Camas Creeks) generally subside into deep valley sediments or areas of volcanic rock before they reach Mud Lake The rest of the streams (Sheridan, Icehouse, Willow, etc ) flow through the meadows of Shotgun Valley and eventually add flow to Island Park Reservoir

The eastern part of the subsection includes the headwaters of the Henry's Fork of the Snake River (Henry's Lake and the headwater streams) as well as the upper part of the Henry's Fork itself It also includes Big Springs, a major tributary of the Henry's Fork that has a flow of approximately 180 cubic feet per second at its source year-round Spring-controlled streams are prevalent here, having relatively low variation in flow throughout the year, but also having less ability to flush excess sediments than snowmelt streams

Channel stability ratings generally range from fair (-) to good (+) with stable or declining trends throughout most of the subsection The only standout is a poor rating on part of West Dry Creek, though there is no apparent management-related reason Some portions of the Henry's Fork Headwaters rated as excellent The most frequent management problems are livestock damage and roads Specific locations of road and cow impacts are Disaster, Kay, Corral, Dairy, Long, West Rattlesnake, Sheep, Middle and West Threemile and Jesse Creeks Other streams may also have these impacts, but comments were missing from survey forms Sedimentation below clearcuts on Bear Gulch Creek and in-stream deflectors on Willow Creek are two other management impacts The greatest impact from timber harvest in this area appears to be related to roads Data is not available to assess cumulative effects to streamflows from tree removal

Sampling at Big Springs in 1994 found water quality to be excellent and water temperatures consistently low Monitoring by the State of Idaho in the Henry's Fork headwaters showed limited impacts to beneficial uses Duck Creek has been found to be one of the major contributors of sediment and nutrients to Henry's Lake, however it has not been determined if the source is on private or public land Targhee Creek was also found to be a major source of sediment and nutrients, but a survey of the Forest portion of the watershed could only find natural sources of sediments (old slumps, for example) DEQ has determined that more than 60 percent of the phosphorus going into Henry's Lake is natural, and is from Forest lands Bacterial levels were found to be high on Hope, Duck, Meadow and Lower Jesse Creeks downstream of Forest lands Henry's Lake Outlet meets all water quality criteria, however there have been some instances of temperature exceeding State standards for salmonid (trout) spawning Siltation and dewatering have been described as limiting factors In general, it appears that while there is some degradation of water quality on the Forest, it does not appear to be significant as a result of management activities

*Island Park* - Many streams here show a strong influence from groundwater, having relatively low variation

in flow throughout the year The major stream is the middle section of the Henry's Fork of the Snake River Other drainages in the subsection are Fish, Robinson, Rock, Squirrel, Conant, Bitch, and South Badger Creeks The portions of the Buffalo and Warm River in this subsection are low-gradient, spring-controlled streams that show little variation in flow Fall River shows more snowmelt influence and flows through a narrow canyon, unlike the other streams While the Henry's Fork is a spring-fed system, Island Park Dam controls its flow to a large extent, providing peak flows not just when Island Park Reservoir fills in spring, but also when irrigation and other downstream needs dictate The western side of the subsection is fairly dry, with little surface runoff

Channel stability ratings range from fair (-) to excellent Management impacts stem from roads, livestock and recreation, which vary in significance in different places The greatest impact from timber harvest in this area appears to be related to roads No data are available to assess cumulative effects to streamflows from tree removal Data is very scattered, but Conant Creek (upper and near the Forest boundary), one section of Buffalo River, and portions of Rock Creek were specific areas of concern while the Henry's Fork and most of Buffalo River were in good to excellent condition

Zimmer (1981) reported occasional high levels of fecal coliform in Island Park Reservoir, probably due to inadequately treated sewage at local recreational facilities Phosphorus levels in the reservoir were also reported to be high, especially in areas of groundwater discharge along the reservoir shoreline The source of the phosphorus could not be identified Nuisance levels of algal blooms have been reported in the Henry's Fork upstream of Osborne Bridge, possibly due to nutrient contributions from upstream developments High stream temperatures have also been reported in this reach as this section of the stream is wide, shallow, and unshaded The Buffalo River was sampled in the late 1970s and water quality was found to be good The Henry's Fork, from Buffalo River to Riverside, is listed as a WQL segment

*Madison-Pitchstone Plateaus* - Surface drainage here is not very well-developed, due to the underlying volcanic rocks which allow more water to percolate than to run off These streams originate in or near the Park and exhibit strong groundwater influence Major streams include the upper sections of tributaries to the Henry's Fork that were discussed under the Island Park Subsection Main drainages within this subsection include Thirsty, North Fork, Middle and South Forks of Split Creek and the upper reaches of Moose, Partridge, Snow, Conant and Boone Creeks There are numerous small lakes in this subsection

Channel stability ranges from fair (+) to excellent The North Fork Fire in 1988 caused major changes in channel stability to Moose Creek Road systems were a watershed concern in this area even before the fire After the fire, erosion from uplands accelerated due to loss of vegetation and burning effects on soils, which caused more water to run off slopes The result was a dramatic increase in the amount of sediment moving off slopes and into stream channels Increases of fine material and channel scour were noted in the lower reaches of the stream after the fire Since 1991, however, the cross-sectional area and substrate size distribution have come to more closely resemble pre-fire values Current conditions do not reflect watershed objectives Logging, roads, livestock use and recreation impacts exist in this subsection The greatest impact from timber harvest appears to be associated with roads No data is available to assess cumulative effects to streamflows from tree removal Possible channel impacts in the Falls River subwatershed are due to dewatering by irrigation withdrawals

Five of the streams in the subsection (Rock, Robinson, Fish and Porcupine Creeks and Warm River) had been named by Idaho as Stream Segments of Concern before this designation was eliminated in 1995 Water quality has been generally good on these streams The only variation from State standards has been in temperature on some of the streams which have experienced extremely low flows due to drought (Porcupine and Rock) Water temperatures on Moose Creek are consistently low Turbidity increases, sometimes significantly, during and after rainstorms in the drainage Hidden Lake, Loon Lake and Grassy Lake Reservoir were sampled as part of the Western Lakes Survey in 1985 All had good water quality, though Hidden Lake's total phosphorus was high

*Teton Range* - Streams in this subsection originate along the west slope of the Teton Mountains They are

steep, dynamic and characterized by coarse substrate (up to boulders in size) due to the proximity of this material to the stream channel Glaciation has been an important influence on stream systems here Not only did glaciers shape the major valleys, they also brought the sediment and rock material in which stream channels subsequently developed Present-day forces such as avalanches and various types of mass failure bring not just rock but also trees and other debris to the streams, causing them to adjust to accommodate the load These streams respond to snowmelt, having high spring peak flows which drop to their low flow levels in late summer Major streams here include Badger, Leigh, Teton, Darby, Fox, Game, Trail and Moose Creeks

Channel stability ranges from fair (-) to good (+) Impacts to channels stem mostly from natural causes such as avalanche debris, unstable bank materials and failed beaver dams Localized management effects are related to roads, recreation and livestock

Water quality sampling has been extremely limited in this subsection Most of the available information is from the Alaska Basin Water Study conducted by the Teton Science School in 1989 The two lakes studied (Two Island and Mirror) were found to be slightly acidic There was only one sample for alkalinity in each lake, and both were extremely low This indicates a low ability to buffer changes to pH (e g , changes from acid rain), probably due to the geology of the area The Teton River (headwaters to Trail Creek) is listed as a WQL segment

*Big Hole Mountains* - Streams here contribute to either the Teton River or the South Fork Snake River They are generally confined within steep-sided valleys or canyons, and are high-energy systems, able to move a considerable amount of sediment Snowmelt is important in these streams, so they have high spring peak flows which later drop to their late summer levels Major streams in this subsection include Indian, Big Elk, Palisades, Rainey, Big Burns, Pine, Canyon, Moody, Horseshoe, Mahogany and Pack-saddle Creeks Packsaddle Lake, Upper and Lower Palisades Lakes, and the Palisades Reservoir are also important hydrological features in this subsection

Channel stability ranges from poor to good (+) Impacts exist in most drainages from recreation use, especially trails along the streams and dispersed camping Management impacts associated with cattle and roads are also very common The Teton River subwatershed has impacts from mining (channel alteration) and loss of riparian vegetation due to lowering of water tables and channel incision Problems in Rainey Creek are primarily associated with grazing by wildlife and cattle In 1994, there was a fire in the headwaters of Palisades Creek, but it was generally a light burn and did not adversely affect water resources

In-depth water quality sampling was conducted on Big Elk Creek in the late 1970s Water temperatures were consistently good, and turbidity was consistently low Little Elk Creek was sampled once, and had readings similar to Big Elk Stream temperatures on Rainey and Palisades Creeks were measured on a regular basis in 1994, and all met State standards Upper Palisades Lake was sampled during the Western Lakes Survey in 1985, and was in very good condition Canyon Creek was intensively sampled in the mid-1970s, and once in 1994, all samples met State standards In general, it appears that stream channel stability is a concern in many places, but (based on available data) water quality impacts are not evident Teton River (headwaters to Trail Creek), Packsaddle, and Horseshoe Creeks are listed as WQL segments

*Caribou Range Mountains* - Geology has played an important role in this subsection The underlying geology of folded and faulted sedimentary rocks has produced perpendicular drainages, and the streams follow the weaknesses in the rocks Valleys are bounded by steep slopes, with the width of the valleys varying depending on the distance that streams could laterally migrate Snowmelt is important here, and streams have distinct flow peaks in spring Water generally flows to the South Fork Snake River Major streams include Fall, Pritchard, Bear, Beaver, Brockman, Indian, Corral and McCoy Creeks The western portion of Palisades Lake falls within this subsection

All reaches rated from fair (-) to good (+) in channel stability Grazing, powerline clearing, roads in riparian areas and heavy recreational use are all listed as problems in the Fall Creek drainage Brockman Creek shows impacts from grazing (bank trampling) Antelope Creek is heavily impacted (both on private and on Forest lands) by roads, recreation and bank trampling by cattle Channel stability was lowest on Fall, Bear, Brockman, and Antelope Creeks, with almost all of Fall Creek in the "fair" category, as well as half the reaches on Bear Most streams here have not been surveyed Antelope, McCoy, Tex, Brockman, Corral and Sawmill Creeks are listed as WQL

Idaho DEQ sampled several streams in 1994, Antelope, Sawmill, Lava, Hell, Willow and Brockman Creeks Conclusions have not yet been drawn from their data regarding support of beneficial uses

**Fisheries - Scale: Hydrologic Unit**

Streams delineated as "fish-bearing" are those stream segments that are used by any fish species to satisfy all or a portion of their requirements such as spawning, rearing of young, adult feeding and winter survival Information on the miles of fish-bearing streams and acres of fish-bearing lakes and impoundments is broken out by subsection in Table III-6

Native trout watersheds are those primary watersheds identified as containing contiguous well conducted subwatersheds with high aquatic integrity and population strongholds of native cutthroat trout or have the capability to achieve this condition through recovery efforts They have been determined to be necessary for species recovery Of the 39 primary watersheds on the Forest, 17 have been designated as native trout watersheds, Elk Creek (003), Palisades Creek (004), Rainey Creek (005), Pine Creek (006), Heise (007), Henry's Fork Headwaters (008), Robinson Creek (013), Trail Creek (017), Mahogany Creek (022), Moody Creek (024), Bitch Creek (032), Burns-Pat Canyon (035), McCoy-Jensen Creeks (036), Elk-Bear Creeks (037), Fall Creek (038), Prichard Creek (039) and Brockman Creek (040)

Fisheries resources and habitat conditions are best assessed by hydrologic unit, which is a portion of a watershed with common characteristics

The land area immediately surrounding the various water types is referred to as the AIZ. These zones control the biological diversity and integrity of the aquatic environment It is within these zones that the ecological functions and processes necessary for the maintenance of healthy fisheries habitat take place Aquatic habitat conditions are expressed in terms of water quality, quantity, and timing of flow, conditions within the stream channel (pools, woody material, etc ), and health of associated plant communities Since the hydrologic, geomorphic and ecological processes that shape the various water types differ by hydrologic unit, the sensitivity of fisheries habitat to disturbances also varies by hydrologic unit Human-induced disturbances within the AIZ, including streamflow diversion, livestock grazing, road construction, timber harvesting, and recreation use, can disrupt natural processes and functions Where these are intense or prolonged, fisheries distribution, abundance and productivity may be impaired

Yellowstone cutthroat trout (large-spotted and fine-spotted form) is selected to represent the many species of fish occupying the Forest This species requires high water quality and high habitat diversity for survival Since these conditions are indicative of healthy aquatic ecosystems, with associated healthy riparian plant communities and functioning watersheds, it is assumed that by providing for these habitat needs, the habitat needs of all other aquatic life would be provided as well

A complete list of the fish species by hydrologic unit is shown on Table III-8 Descriptions of the condition and trends of aquatic and riparian habitats are shown on Table III-6

| Table III-8 Fish Species by Hydrologic Unit 1/ | | | | | | | |
|---|---|---|---|---|---|---|---|
| Fish Species | Hydrologic Unit | | | | | | |
| | Birch | Medicine Lodge | Beaver - Camas | Upper Henry's | Lower Henry's | Teton | Palisades |
| Rainbow Trout 2/ | X | X | X | X | X | X | X |
| Brown Trout 2/ | | | X | X | X | X | X |
| Brook Trout 2/ | X | X | X | X | X | X | X |
| Lake Trout 2/ | | | | | | X | X |
| Kokanee (Sockeye Salmon) 2/ | | | | X | | | X |
| Cutthroat Trout | X | X | X | X | X | X | X |
| Mountain Whitefish | | | X | X | X | X | X |
| Arctic Grayling | | | | X | | | |
| Sculpin (all species) | X | X | X | X | X | X | X |
| Longnose Dace | | | X | X | X | X | X |
| Speckled Dace | | | X | X | X | X | X |
| Utah Sucker | | | X | X | X | X | X |
| Utah Chub | | | X | X | X | X | X |
| Redside Shiner | | | | | X | X | X |
| 1/ Includes only fish species known to occur within Forest lands<br>2/ Denotes nonindigenous species known to be introduced by European man | | | | | | | |

*Birch, Medicine Lodge and Beaver-Camas Hydrologic Units* - These hydrologic units are assessed together because of similarities in fisheries resources and conditions All drainages originate along the eastern aspect of the Lemhi Range or the southern aspect of the Beaverhead Mountains As they flow onto the Upper Snake River Plain, these waters "sink" and flow underground Recent studies document that these subterranean flows reach the lower Snake River at Thousand Springs, 150 miles away Fish populations within the Birch, Crooked, Medicine Lodge and Beaver-Camas Creek systems are now physically and genetically isolated from the Snake River system and from each other

Fish-bearing streams on Forest lands are small, steep to moderate-gradient and fed by snowmelt runoff and baseflow from groundwater sources The natural capabilities of this area to produce abundant or diverse fisheries resources is relatively limited

*Upper Henry's Hydrologic Unit* - All drainages flow into Henry's Lake or the Henry's Fork of the Snake River above the confluence of Fall River Spring-fed creeks provide an environment capable of producing abundant aquatic insect and plant biomass Where fisheries life history requirements are met, these streams are among the most productive trout fisheries in the world

The primary natural disturbances shaping and controlling fisheries habitat are high intensity summer rains and fire Natural processes of overland flow, slumping and tree windthrow bring organic matter, soil, rocks and nutrients into streams

Fisheries resources in this hydrologic area are very productive and varied. Duck and Targhee Creeks are important economically and scientifically as they provide key spawning habitats for the Henry's Lake native cutthroat trout fisheries and associated IDFG managed hatchery

*Lower Henry's Hydrologic Unit* - All drainages flow into the Henry's Fork of the Snake River near the confluence of Falls River Many are similar to those of the Upper Henry's Hydrologic Unit but tend to be more strongly influenced by groundwater Falls River is a medium to large, low-gradient system which is predominately spring-controlled

The primary natural disturbances shaping and controlling fisheries habitat are high intensity summer rains and fire Natural processes of overland flow, slumping and tree windthrow bring organic matter, soil, rocks and nutrients into streams.

The fisheries resources of importance within this area are primarily small headwater streams and alpine lakes spread across a small portion of the landscape

*Teton Hydrologic Unit* - This area drains the western aspect of the Tetons and the northern aspect of the Big Hole Mountains Fish-bearing streams originating in the Teton Mountains are steep, dynamic and strewn with large boulders Stream channels developed from the sediment and rock that was delivered through glaciation Within the Big Hole Mountains, fish-bearing streams are relatively small, moderate-gradient and fed by snowmelt runoff and baseflow from groundwater sources

*The primary natural disturbance shaping and controlling fisheries habitat in the Teton Mountains is rapid* snowmelt Natural processes of mass failure and avalanches recruit organic matter, large woody debris, soil, rock and nutrients into streams In the Big Hole Mountains, rapid snowmelt initiates overland flow and slumping which contribute organic matter, soil, rock and nutrients to fish habitats

*Palisades Hydrologic Unit* - All drainages originate along the south aspect of the Big Hole Mountains and the north aspect of the Caribou Mountains and are tributary to the South Fork of the Snake River

The primary natural disturbances shaping and controlling fisheries habitat are high intensity summer rains and fire Natural processes of overland flow, slumping, and tree windthrow move organic matter, soil, rock and nutrients into streams

The fisheries resources found here are very productive and varied Many of the streams flowing into Palisades Reservoir, and Palisades and Rainey Creeks, provide key spawning and rearing habitats for the native cutthroat trout fisheries

Cutthroat Trout

Cutthroat trout is a sensitive species and has been selected as a management indicator Table III-9 illustrates cutthroat trout population status and distribution on the Forest by hydrologic unit

The only indigenous trout within the Forest is the Yellowstone cutthroat (*Oncorhynchus clarki bouvieri*). Scientific information to date indicates that this subspecies consists of two forms the fine-spotted and large-spotted Snake River Yellowstone cutthroat Scientists are continuing research to determine if the fine-spotted Snake River cutthroat trout is a separate subspecies (Behnke 1992)

The Forest Service in Regions 1 and 4 has prepared a draft Habitat Conservation Assessment (HCA) for Yellowstone cutthroat trout, including the large-spotted and the fine-spotted Snake River forms. The HCA is directed at defining habitat conditions necessary for the long term persistence of Yellowstone cutthroat trout In addition, the assessment correlates habitat conditions to population distribution and species management activities within the historic range of the species Yellowstone cutthroat trout currently occupy 41 percent of their historic habitat Within Idaho, approximately 45 percent of the historic habitat *is presently occupied German brown, rainbow, and brook trout have been stocked into many drainages* and compete with cutthroat trout (see Table III-8) Rainbow trout have been introduced into every hydrologic unit on the Forest and are likely to hybridize with cutthroat trout, causing genetic contamination of cutthroat trout populations

| Table III-9 Population Status of Cutthroat Trout by Hydrologic Unit | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Population Status 1/ | Hydrologic Unit | | | | | | | |
| | Birch | Medicine Lodge | Beaver - Camas | Upper Henry's | Lower Henry's | Teton | Palisades | Average |
| Large-spotted Cutthroat Trout | | | | | | | | |
| % strong/healthy | 0 | 9 | 0 | 3 | 0 | 76 | 51 | 19 |
| % depressed at risk | 6 | 18 | 5 | 12 | 21 | 24 | 40 | 18 |
| % extinct | 94 | 64 | 95 | 85 | 68 | 0 | 9 | 59 |
| % status unknown | 0 | 18 | 0 | 0 | 11 | 0 | 0 | 4 |
| Fine-spotted Cutthroat Trout | | | | | | | | |
| % strong/healthy | - | - | - | - | - | 0 | 0 | 0 |
| % depressed at risk | - | - | - | - | - | 46 | 42 | 44 |
| % extinct | - | - | - | - | - | 54 | 58 | 56 |
| % status unknown | - | - | - | - | - | 0 | 0 | 0 |

1/ These values represent the status of that portion of the population occupying Forest Service lands within each of seven Hydrologic Units The population status categories were adapted from assessment protocol developed by the Upper Columbia River Basin Assessment Team
A "-" means the fine-spotted cutthroat trout was never present in the hydrologic unit
"Strong/healthy" denotes populations with the following characteristics 1) all major life-history forms that historically occured are still present, 2) numbers appear to be stable or increasing and the population is at least half of the historic number or density, and 3) the population within the watershed or within the larger metapopulation of which the population is a part, contains at least 5,000 fish or 500 adults
"Depressed/at risk" denotes populations with at least one of the following characteristics 1) a major life-history component has either been eliminated or is remnant, 2) the population within the sixth order watershed has a declining trend in abundance, or the population occurs in less than half of the habitat thought to historically support the species, or numbers are less than half of what the watershed supported historically, and 3) total abundance for the whole metapopulation of which this watershed is a part is lower than 5,000 total fish or 500 adults
"Extinct" denotes the species is not present and there is evidence that the species was historically present or could conceivably have had natural access to a watershed even though landscape/habitat characteristics might be outside the range deemed suitable for supporting populations
"Status unknown" denotes that reliable information was not available by which to make a judgement about current presence or absence

**Wildlife Associated with Aquatic and Riparian Habitats**

Wildlife management indicator species include bald eagles, trumpeter swans, spotted frogs, common loons and harlequin ducks Monitoring and analysis emphasizes habitat conditions to evaluate potential changes in the status or sustainability of these species Table III-10 illustrates the distribution of these species and their habitats by subsection A brief overview of these species and habitats follows Additional information is available in Process Paper D

Bald Eagle Populations - Scale GYA and Forestwide

GYA Overview - Bald eagles on the Forest are part of the GYA bald eagle population A brief overview of the GYA population is presented to provide a proper context for bald eagle populations.

From 1960 to 1995, the bald eagle population in the GYA increased exponentially, from about 10 to 111 known breeding areas In 1982 (the first year of comprehensive data), 49 breeding areas were known with 78 percent occupied by breeding pairs An average of 0 61 young were fledged per occupied breeding area

Table III-10 Distribution of Wildlife Management Indicator Species Associated with Riparian and Aquatic Habitats, Including Endangered, Threatened, Candidate and Sensitive Wildlife Species on the Forest within the Seven Subsections

| | | Subsections 1/ | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Management Indicators, Species and Habitats | Status 2/ | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Hole Mtns | Caribou Range Mtns |
| Riparian and Aquatic Habitats | | | | | | | | |
| Bald Eagle Nesting Habitat | T | N | Y | Y | N | N | Y | Y |
| Trumpeter Swan Nesting Habitat | S | N | N | Y | Y | N | N | S |
| Spotted Frog Habitat | C/S | Y | Y | Y | Y | Y | S | S |
| Common Loon Habitat | S | N | N 3/ | Y | Y | N | Y | Y |
| Harlequin Duck Habitat | S | N | N | N | N | Y | Y | Y |

1/ Letters used for distributions among subsections are as follows
Y = Species presence and/or suitable habitat has been documented in the subsection
N = Species presence has not been documented in the subsection, suitable habitat has not been documented
U = Unverified but reliable sightings exist on the Forest, suitable habitat probably exists
S = Suitable habitat probably exists, but there have been no documented or unverified sightings on the Forest
2/ Letters used for Status are as follows E = endangered, T = threatened, NE = nonessential experimental, C= candidate for possible listing as endangered or threatened wildlife, S = sensitive species, '-' = no formal status
3/ Common loons have been observed on Henry's Lake, but this is not within the Forest
Sources of information for this table include Targhee National Forest AMS, 1992, Personal communication with K Johnson, Feb 8, 1995, B Aber, M Oechsner, B Alford, D Welch, R Newton, USFWS - Federal Register 61(40) 7613 (Feb 28, 1996)

and 23 young were produced The number of known breeding areas had grown to 111 by 1995, with a mean annual occupancy rate of 91 percent, average number of young fledged per occupied breeding area 1 05, and average number of young produced per year of 80 8, over 14 years Productivity has been well over that considered necessary for population maintenance (Greater Yellowstone Bald Eagle Working Group 1996)

Southeast Idaho and Forest Overview - The data we compiled on bald eagle nesting populations in southeast Idaho dates back to 1972 In 1972, there was one recorded bald eagle nest along the South Fork of the Snake River, which was not on the Forest As of 1995, total known nesting territories in southeast Idaho numbered 42 The first recorded bald eagle nest on the Forest occurred in 1975, along the Palisades Reservoir From 1975 to 1995, the bald eagle nesting populations on the Forest increased to 17 nesting pairs

Bald Eagle Habitat - Scale Forestwide

Nesting habitat on the Forest is associated with large rivers (Henry's Fork and South Fork of the Snake River and Buffalo River), large lakes and reservoirs (Palisades and Island Park Reservoirs and Henry's Lake) Nests are commonly found in large trees, mainly conifers and cottonwoods Because eagles need large trees to support their large nests, they are often found in multi-storied, late seral stands with open canopies

During the breeding season, bald eagles eat mainly fish They also eat waterfowl, shorebirds, upland birds and small mammals Eagles are very opportunistic predators, especially during the winter They will eat whatever is available including fish, waterfowl, small mammals and carrion

Wintering bald eagles tend to congregate near bodies of 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

Roost sites are usually located in stands of mature or old growth conifers or cottonwoods For purposes of management, a communal roost is defined as an area usually less than 10 acres in size that contains

greater than or equal to six bald eagles on any given night Critical roost sites are defined as exhibiting traditional use for greater than or equal to five years and contain greater than or equal to 15 eagles per night for greater than or equal to 14 nights per season (USFWS 1983) No critical winter roost sites have been identified in GYA (Greater Yellowstone Bald Eagle Working Group 1996)

Bald Eagle Recovery Plan - The Forest is within the "Greater Yellowstone Bald Eagle Management Zone" as outlined in the Pacific States Bald Eagle Recovery Plan (USFWS 1986) The Recovery Plan established the following habitat and population goals for this management zone

- Habitat management goal - 65 nesting territories, which is considered the minimum number of territories needed to provide secure habitat for the recovered population
- Population management goal - 50 breeding pairs

For the portion of the Greater Yellowstone bald eagle management zone which includes the Forest, habitat management goals have been established for five areas as follows

| | | |
|---|---|---|
| Island Park/Henry's Fork | - | 7 nesting territories |
| Big Springs | - | 2 nesting territories |
| South Fork Snake River | - | 8 nesting territories |
| Palisades | - | 5 nesting territories |
| Henry's Lake | - | 1 nesting territory |
| Total goal | | 23 nesting territories |

All of these Recovery Plan goals have been exceeded with the current bald eagle populations

Prior to 1995, the bald eagle was listed as endangered under the ESA In August 1995, the U S Fish and Wildlife Service downlisted the improved bald eagle status to threatened

Trumpeter Swan Populations - Scale Rocky Mountain Population and Forestwide

Trumpeter swans on the Forest are part of the Rocky Mountain Population (RMP) (Shea 1994 and Maj and Shea 1996) The RMP comprises the nonmigratory resident tri-state (Idaho, Montana and Wyoming) flocks (including the Forest) and the migratory Canadian flocks From less than 200 birds in 1930, the RMP increased to about 2,500 birds by 1996, the highest in over a century (Maj and Shea 1996) About 80 percent of the RMP winters in southeast Idaho along the Henry's Fork of the Snake and southeast Montana along the Madison River The remaining 20 percent winter in western Wyoming and the Park

The following summarizes trumpeter swan population changes which have occurred from about 1932 to the present (from Maj and Shea 1996)

> "From 1932 to the 1970s, the RMP grew from less than 200 birds (100 birds which summered in Canada and 100 birds from the tri-state area) to over 700 birds. Most of this increase was observed within the tri-state flock which had increased to over 500 birds by 1951 While the tri-state flock fluctuated between 450-650 birds (about 72 percent of the RMP) during the next 25 years, the Canadian flock increased to only 200 birds (about 28 percent of the RMP) During the 1970s, the Canadian flock started to grow, reaching 2,200 birds (86 percent of the RMP) by 1994 During the 1970s and 1980s, the tri-state flock continued to fluctuate between 400-600 birds (14 percent of the RMP) Since 1990, in an attempt to expand wintering and breeding distribution of the RMP, over 1,200 swans have been translocated from the tri-state wintering areas to southern Oregon, western Wyoming and other southeast Idaho areas Also, winter feeding at Red Rocks Lakes National Wildlife Refuge was terminated Due to translocation efforts and termination of winter feeding, the nonmigratory tri-state population has declined to less than 300 swans (239 adult birds counted in September 1994) This is the lowest number since 1945 "

Trumpeter Swan Habitat - Scale Forestwide

Nesting habitat occurs on large marshes which may be occupied by numerous breeding pairs, or on smaller lakes and beaver ponds, normally occupied by one pair

Preferred wintering sites in the tri-state area provide ice-free waters with slow current, extensive beds of aquatic plants and low levels of human disturbance In the tri-state area during most winters, icing restricts swans to sites where geothermal waters, springs or outflows from dams maintain open water

During the waterfowl hunting season in November and December, RMP swans concentrate in the less-disturbed habitats provided by the Park, Harriman State Park, Red Rock Lakes NWR, and the broad arms of Hebgen Lake, Montana As these areas freeze and as human activity diminishes elsewhere, swans make greater use of other sites About 80 percent of the RMP winters in southeast Idaho along the Henry's Fork of the Snake River and in southeast Montana along the Madison River The remaining 20 percent winter in western Wyoming and the Park (Maj and Shea 1996)

For the period 1982 to 1994, 31 lakes and ponds on the Forest have been used at least during one or more summers, 17 of these 31 have had at least one nesting attempt, 13 of these 31 have successfully produced young during one or more years

Spotted Frog Populations - Scale Forestwide

We do not know and are not able to provide a spotted frog population estimate for the Forest An amphibian survey conducted on the Forest in 1992 and 1993 provides an overview on the distribution of spotted frogs on the Forest (Clark and Peterson 1994) This amphibian survey documented spotted frogs at 51 sites, distributed within five subsections, as shown in Table III-10 Ranger District records documented three additional sites with spotted frogs

Results of the 1992 and 1993 amphibian survey, plus results of spotted frog research conducted in the Park (Turner 1960), illustrate that population detectability and abundance can vary widely between years Turner (1960) documented that population size fluctuated greatly, depending upon breeding success, and breeding success was tied to the persistence of water at breeding sites, which was regulated by weather conditions Clark and Peterson (1994) considered two factors, temperature and water availability, as the most important components of population detectability They suggest these two factors may contribute to significant yearly variation in reproductive activity and foraging/dispersal patterns

For lands adjacent to the Forest, spotted frogs have been documented in Yellowstone and GTNPs

Spotted Frog Habitat - Scale Forestwide

Spotted frogs are most likely found near permanent water such as marshy edges of ponds or lakes, in algae-grown overflow pools of streams, or in wet areas with emergent vegetation They may move considerable distances from permanent water after breeding, often frequenting mixed conifer and subalpine forests, grasslands, and brushlands of sage and rabbitbrush if puddles, seeps or other water is available Spotted frogs are thought to hibernate in holes near springs or other areas where water remains unfrozen and is constantly renewed. A muddy or soupy substrate in rivers or ponds is preferred by the spotted frog for hibernation (Gomez 1994)

A spotted frog inventory/study has been in progress on the Forest for several years. A recent progress report stated the following

> All frogs were always within two meters of water None left riparian habitats and almost all were associated with ponds until September when they left the ponds for nearby streams Ponds within 50 m of permanent streams were an important combination of habitat characteristics for them (Bartelt and Peterson 1993)

Common Loon Populations - Scale Subsections

Common loon abundance on the Forest is highest during spring and fall migrations Common loons have been documented using four reservoirs, nine lakes and an unnamed pond within five subsections as shown in Table III-10

Nesting and rearing of young have only been documented at three sites Indian Lake, Thompson Hole and Bergman Reservoir Our records indicate only one pair uses each of these sites, and all sites are not used each year Therefore, the total documented breeding population on the Forest ranges from one to three pairs

In the GYA, loons nest on several lakes in the southwestern section of the Park, and on a few lakes throughout the rest of the Park, and in GTNP (Clark et al 1989)

Common Loon Habitat - Scale Subsections

For nesting and brood rearing, common loons need lakes large enough to provide adequate runways for flight (greater than 9 acres in size), deep enough to sustain fish populations and clear enough for them to see their prey (they rely on their sight for foraging) Loons avoid lakes with high levels of human activity, fluctuating water levels, turbid water and unprotected coves

The following lakes and ponds within the Island Park and Madison-Pitchstone Plateaus subsections have been identified as capable of providing suitable breeding habitat for common loons Loon Lake, Moose Lake, Indian Lake, Thompson Hole, Junco Lake, Fish Lake, Begman Reservoir and an unnamed pond Only Indian Lake, Thompson Hole and Bergman Reservoir have documented nesting and rearing of young

Common loon habitat on the Forest and in the adjacent National Parks occurs at the highest elevation of any other loon populations in North America (Atkinson 1991). Therefore, the time period for nesting and rearing of young is probably shorter than other areas in North America (Atkinson 1991 and Clark et al 1989)

Harlequin Duck Populations - Scale Forestwide

Harlequin ducks have been observed along four creeks within three subsections on the Forest Big Elk Creek, Teton Creek, Darby Creek and McCoy Creek Successful reproduction has been documented at Big Elk Creek, Teton Creek and Darby Creek (IDFG 1992 - Idaho Conservation Data Center, Atkinson 1991, Atkinson and Atkinson 1990, Cassirer and Groves 1990 and 1991, Bud Alford, personal communication 1995) One to two pairs have been documented along each creek, therefore we estimate the breeding population on the Forest to be between three and six pairs However, not all streams with potential suitable habitat have been surveyed, so this is considered a minimum estimate of breeding pairs

The harlequin duck population on the Forest is part of the Pacific Northwest population The estimated breeding population in the Pacific Northwest is as follows Washington-274, Oregon-50, Idaho-50, Montana-110, Wyoming-40, Total-514 The documented breeding population on the Forest is part of the Idaho and Wyoming breeding populations Monitoring of populations in Idaho and Wyoming indicate they are stable (Harlequin Duck Working Group 1993)

Harlequin Duck Habitat - Scale Forestwide

Harlequin ducks are only present on the Forest during the nesting and brood-rearing seasons, they migrate to the coasts of Oregon and Washington to winter For nesting and brood rearing, these ducks require relatively undisturbed, low-gradient, meandering mountain streams with dense, shrubby riparian areas, and woody debris for nesting and brood rearing They also need log jams and overhanging vegetation for

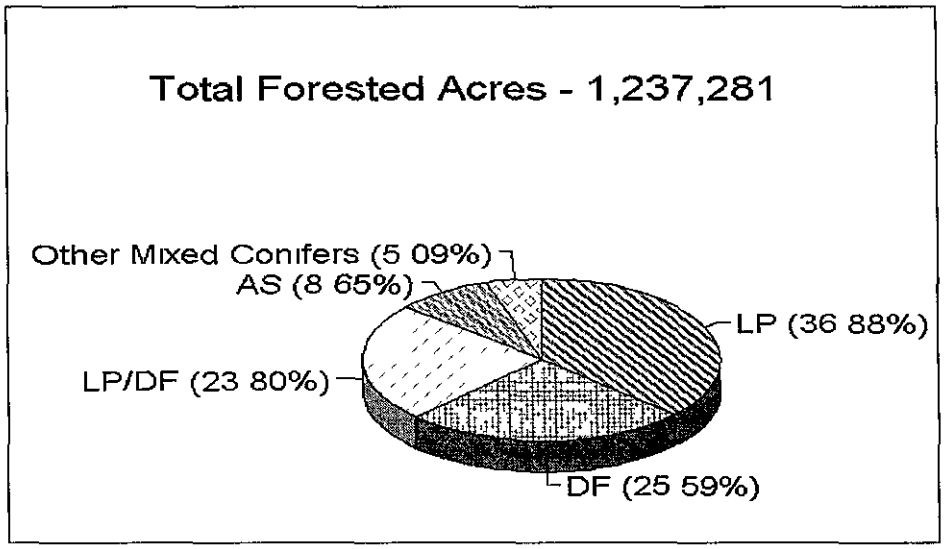
cover and loafing areas Specific habitat requirements include streams with gradients less than three degrees, greater than 50 percent streamside shrub cover, and at least three loafing sites (midstream boulders or log jams) for every 33 feet of stream Successful reproduction has been documented in only three locations Big Elk, Teton and Darby Creeks Sightings have been made at McCoy Creek, but these sightings have not indicated successful reproduction

TERRESTRIAL ECOSYSTEMS

***Upland Forested Ecosystems - Scale: Subsections***

Sixty-eight forest community types currently occur on the Forest The community types and age classes present on the Forest are displayed by subsection in Table III-3 Major forested community types are shown in Figure III-3 Minor forested community types include whitebark pine, limber pine and Engelmann spruce/subalpine fir Two community types of cottonwoods occur on the Forest, primarily on the Snake River and lower elevational portions of the Henry's Fork of the Snake River

Figure III-3
Major Forest Types on the Targhee National Forest




*Lemhi/Medicine Lodge* - Although only 37 percent of this subsection is forested, this is more forest land than occurred historically Information from the early 1900s indicates that Douglas-fir has expanded onto lands that were formerly dominated by grasses and sagebrush Some riparian communities also appear to have more conifers than they did historically

Approximately 90 percent of the forested land is in the mature age class, indicating a lack of age class diversity in the subsection With 90 percent of the forests in Douglas-fir there is also a lack of tree species diversity Many of the Douglas-fir stands are densely stocked The uniformity of tree species and age classes, as well as the dense stocking, make this area's forests more susceptible to ecosystem disturbances such as insects, diseases and large fires An example of the latter was the Gallagher Peak Fire which burned 37,230 acres in 1979 This was the largest fire in the last 20 years on the Forest

Limber pine occurs in the subsection, but is not differentiated as a community type since it occurs as a scattered tree in predominantly Douglas-fir stands The intermingling of forest land with nonforested communities provides most of the vegetative diversity in this subsection

*Centennial Mountains* - The landscape is dominated by forested communities which cover 71 percent of the subsection Approximately 51 percent of the forested acres are Douglas-fir Lodgepole pine (21 percent) is found in pockets on low-productivity soils Mixed lodgepole pine/Douglas-fir (13 percent) and other mixed conifers (10 percent) are also well-represented The presence of mixed stands indicates that species such as Douglas-fir and subalpine fir are becoming established as stands move through succession Aspen comprises four percent of the forested acres, which is less than was historically present Fire suppression has allowed conifers to take over areas that were previously aspen, through the process of succession Some riparian and mountain meadow communities also appear to have more conifers than they did historically

Mature forests cover 79 percent of the forested acres, indicating a lack of diversity in age classes Decreasing diversity however is associated with the loss of aspen over time Potential for severe fires, insects and diseases are concerns in this subsection, mainly because of the large component of mature forests Western balsam bark beetle has been active in this area in recent years Douglas-fir beetle caused losses in Douglas-fir from the late 1980s through 1992 and could again reach destructive levels Pockets of root rot are common in the subsection, associated with partial cutting of Douglas-fir which occurred in the 1950s

Past Douglas-fir shelterwood regeneration methods implemented on dry south and west slopes of the Centennials have failed, requiring planting to reforest the sites Similar treatments on north-facing slopes have tended to regenerate naturally

*Island Park* - The landscape is dominated by forested community types, which blanket 93 percent of the area. Forested areas are primarily lodgepole pine types (70 percent) that contain small pockets of aspen, sagebrush/grass, grass meadows and mountain brush Douglas-fir (10 percent) and mixed lodgepole pine/ Douglas-fir (15 percent) community types provide diversity in the area Lodgepole pine occupies the floor of the Island Park Caldera and Douglas-fir cover types are concentrated on the Caldera rim On the Caldera rim, aspen and sagebrush areas are evolving towards the Douglas-fir type through the process of succession

Salvage harvesting has shifted 46 percent of the lodgepole pine into the nonstocked, seedling and sapling classes Active management of aspen, as well as aspen sprouting in lodgepole pine clearcuts, has moved 34 percent of the aspen into these young classes Other community types are concentrated in the mature age group

Many lodgepole pine clearcuts in this subsection have not regenerated naturally and have required planting to restock the stands The process of planting these sites is expected to continue through the year 2000

Mature Douglas-fir on the caldera rim experienced outbreaks of spruce budworm and Douglas-fir beetle in the past decade These problems have now subsided, but could easily recur given the mature condition of the Douglas-fir and the presence of multiple-storied stands Due to fuel reductions and young age classes associated with harvest, fire is less of a concern here than in most other subsections

*Madison-Pitchstone Plateaus* - The landscape is dominated by forests, which comprise 97 percent of the area Lodgepole pine is the most common forested community type (76 percent), with mixed stands of lodgepole pine and Douglas-fir running a distant second place (14 percent). Relatively minor amounts of aspen and various mixed conifers provide some diversity The southern portion of the subsection is unique in that there are many wet meadows and small lakes intermingled with the forests

The 1988 North Fork Fire burned some 17,700 acres in the northern part of this subsection Past timber harvesting also occurred primarily in the north half of the subsection These two events have shifted 39 percent of the lodgepole pine into the nonstocked, seedling and sapling age classes Active management of aspen has also provided some age class diversity

Most areas of the North Fork Burn regenerated naturally following the fire Approximately 1,360 acres are being planted in portions of the burn that did not reforest

Due to fuel reductions and young age classes associated with past harvest and the North Fork Burn, fire is less of a concern here than in many areas However, conditions in the southern portion of this subsection are presenting some fire risks as mixed aspen and lodgepole pine stands convert to Douglas-fir through succession Mature subalpine fir and Douglas-fir in this southern area experienced outbreaks of western balsam bark beetle and Douglas-fir beetle in the past decade These conditions have subsided, but could easily recur since vegetation conditions have not changed

*Teton Range* - The landscape is a diverse mix of forested (57 percent) and open (43 percent) community types Lodgepole pine occurs on poorer soils at lower to middle elevations Lodgepole is mixed with Douglas-fir in 31 percent of the forested area, indicating that the pine is converting to Douglas-fir through succession Open Douglas-fir forests, mountain brush, aspen, and sagebrush pockets are found predominately on south and west aspects. Aspen is becoming mixed with conifers as succession proceeds, and the amount of aspen has likely declined compared with historic levels due to fire suppression Upper elevations are characterized by dense mixed conifer forests, open grass/forb meadows, and talus slopes Conifers are moving into riparian areas and mountain meadows due to fire suppression over time

Since much of this subsection is designated wilderness, timber harvest and fire suppression has been limited, thus only one percent of the forested acres are in the nonstocked, seedling or sapling age classes The large percentage of mature or older forests make this area ripe for insect infestations, diseases and large-scale fires In recent years western balsam bark beetle has been active in the subalpine fir Douglas-fir beetle has killed pockets of Douglas-fir in the past decade, but beetle populations have declined since 1992

*Big Hole Mountains* - The landscape is a combination of community types, with 65 percent of the landscape forested and 35 percent nonforested The most common forested community type by far is mixed lodgepole pine and Douglas-fir, comprising 47 percent of the forested acres Aspen, pure Douglas-fir and pure lodgepole pine each account for roughly 15 percent of the forests Mountain brush is common, consisting of mountain mahogany on south slopes and hawthorn, chokecherry, serviceberry, antelope bitterbrush and Rocky Mountain maple on various slopes depending on elevation Grass/forb meadows and sagebrush are also present in significant amounts The northwestern boundary of the subsection extends into the cottonwood type along the Snake River

Only 4 percent of the forested stands are in the nonstocked, seedling or sapling age category These are concentrated in the north end of the subsection where timber harvest has occurred The Snake River cottonwood stands and most of the shrublands are also in late age classes This creates hazards for large fires, insect infestations and disease problems In the north end of the subsection Douglas-fir beetle and western balsam bark beetle caused damage in the late 1980s and early 1990s, but tapered off in 1994 Insect information is not available for the southern portion Due to fire suppression and lack of disturbance over the years, conifers have taken over some sites that were historically nonforested. This has likely reduced overall vegetative diversity in the subsection

Natural regeneration has been difficult to obtain in Douglas-fir stands In the Palisades area, harvest in both lodgepole pine and Douglas-fir have failed to reforest naturally This has resulted in the need to plant most of these areas

*Caribou Range Mountains* - The Caribou Range Mountains Subsection is similar to the Big Hole Mountains in its overall vegetation characteristics This subsection is 40 percent nonforested and 60 percent forested The primary forest types are aspen (31 percent) and mixed lodgepole and Douglas-fir (47 percent) The interspersion of forests with sagebrush, grass/forb meadows and mountain brush provides for good diversity of plant species The northeastern boundary area of the subsection includes cottonwood forests along the Snake River

Age class diversity is limited, as in many other areas of the forest Because virtually no vegetation management has taken place in this subsection and fires have been suppressed for many years, only one percent of the forests are in young age classes Most of the shrublands are also in late age classes Risks of large fires, insects and diseases are high due to these vegetative conditions The insect situation in recent years has been similar to that in the Big Hole Mountains Subsection Douglas-fir is becoming more predominant as it mixes with stands of lodgepole pine, aspen or shrubs It is likely that there is more Douglas-fir here now, and less aspen, lodgepole pine and shrubland, than existed historically The Snake River cottonwood stands are also uniformly in the mature age class due to lack of disturbance which they need in order to regenerate

Establishing natural regeneration of both Douglas-fir and lodgepole pine following harvest has been a problem in this subsection, and most sites have required planting

**TES and Biodiversity Indicator Plant Species - Scale: Forestwide**

Fifteen sensitive plant species and one threatened plant species are currently listed on the Forest TES plant species list (Process Paper F) and occur in a broad range of habitats (Table III-11) Twenty-two rare Idaho and Wyoming plant species occur on the Forest and are indicator of biodiversity and unique habitats on the Forest (Process Paper G) Diversity of community types with a range of seral stages is important in maintaining these species on the Forest (Table III-12)

One sensitive plant species, *Astragalus paysonii*, occurs in forest ecosystems of lodgepole pine and mixed Douglas-fir/lodgepole pine communities The plant is found in disturbed or open areas in mature stands or in early seral lodgepole pine stands following fire Fire suppression has been identified as a cause of decline of this species over its range (Fertig et al 1993)

One threatened plant species (Table III-11) is known to exist on the Forest Listed in 1992 and discovered on the Forest 1996, the Ute ladies'-tresses (*Spiranthes diluvialis*) occurs on the Palisades Ranger District

**Upland Nonforested Ecosystems - Scale: Subsections**

Table III-13 illustrates the acres of nonforested community types by subsection throughout the Forest Herbaceous and shrub ecosystems dominate the landscape in the Lemhi/Medicine Lodge Subsection and are significant in the Centennial, Big Hole Mountains and Caribou Range Mountains Subsections

Fire suppression has modified the historical 10-25 year frequency of fire in the low to mid elevation areas Fire suppression coupled with grazing and drought cycles has increased shrub canopy cover and decreased herbaceous species composition within the sagebrush/grass and mountain brush community types These communities are shifting from a low risk of stand-replacing fires to a high risk of stand-replacing fires over broad areas A trend is also occurring whereby the historically high percentage of early and mid seral stages is moving toward a predominance of mid and late seral stages

Livestock grazing has been a use of both forested and nonforested plant communities throughout the forest since before 1900 Effects of grazing, coupled with fire suppression, over time have promoted changes in plant species composition and biodiversity within grazed areas

Typically, because cattle are grazers, upland areas used by cattle tend to become dominated by browse Rangelands overgrazed by cattle typically become dominated by forbs, browse and other plants of low palatability and ecological status Cattle by preference will excessively graze the gentle topography close to water before they move onto the slopes

Sheep are both grazers and browsers Over time, areas used by sheep tend to become dominated by grasses Rangelands overgrazed by sheep typically become dominated by forbs and grasses of low palatability and ecological status Sheep by preference prefer steeper slopes, do not require water as

| Table III-11 Threatened and Sensitive Plants List for the Targhee National Forest | | | | |
|---|---|---|---|---|
| *Species* | Occur-*rence 1/* | Status *R04* | *State* | *Habitat* |
| Agoseris lackschewitzii | D | S | S1 | Perennially wet montane and subalpine meadows |
| Androsace chamaejasme var carinata | S | S | S1 | Rock crevices and rocky soils of limestone and dolomite, 9,500+ft elev |
| Astragalus amnis-amissi | S | S | S3 | Crevices and talus of limestone cliffs |
| *Astragalus aquilonius* | S | S | S3 | Gravely, sandy, clay or shale washes and bars at low elevations in sagebrush/ bunchgrass |
| Astragalus diversifolius | D | S | S1 | Alkaline sedge/grass meadows and swales, in sagebrush valleys |
| Astragalus leptaleus | D | S | S1 | Sedge grass meadows and streamsides |
| Astragalus paysonii | D | S | S1 | Disturbed areas and openings in lodgepole pine and limber pine mixed forest |
| Astragalus vexilliflexus var nubilus | S | S | S1 | Sparsely vegetated open ridges and slopes, 8,000-9,600 ft, subalpine/alpine |
| Chrysothamnus parryi ssp montanus | D | S | S1 | Beaverhead Red Conglomerate rock and soils, Centennial Mountains |
| Cymopterus douglassii | D | S | S2 | Limestone, subalpine and alpine grassy ridges and summits and meadows |
| *Draba apiculata* (D densifolia apiculata) | S | S | S1 | Moist gravelly alpine meadows and talus slopes of 10,400-12,000 ft elevation |
| *Lesquerella paysonii* | D | S | S1 | Rocky, sparsely vegetated slopes, on calcareous substrates |
| Penstemon lemhiensis | S | S | S1 | Sagebrush/grass sites, Birch Creek Valley |
| Primula alcalina | D | S | S1 | Wet, alkakine meadows and streamsides, Birch Creek Valley |
| Saussurea weberi | S | S | S2 | Alpine talus and gravel fields, often limestone 10,000 + ft elevations |
| Spiranthes diluvialis | D | T | | Herbaceous communities in perenially wet zones, between saturated Carex and aquatic habitats, and drier grass/ forb and shrub communities along streams, rivers and wetlands |

1/ D-Documented on Forest, S-Suspected on Forest
2/ R4 FS T-Threatened, S-Sensitive
State S1-Critically imperiled, due to extreme rarity, S2-Imperiled due to rarity, S3-Rare in state

| Table III-12 Biodiversity Indicator Species and Habitat | | |
|---|---|---|
| Riparian Species | Occur-rence 1/ | Habitat |
| Astragalus drummondii | D | Wet meadows |
| Carex aenea | D | Late seral streams |
| Carex buxbaumii | D | Low nutrient bogs and peat Fens |
| Carex livida | D | Peat bogs, swampy forest |
| Cicuta bulbifera | D | Late seral bogs/marshes |
| Epilobium palustre | D | Bogs |
| Epipactis gigantea | S | Warm springs and streams |
| Eriophorum viridicarinatum | D | High elevation bogs and swamps |
| Juncus tweedyi | D | Low nutrient bogs and peat Fens |
| Lomatogonium rotatum | D | Open wet alkaline/saline soils |
| Phlox kelseyi var kelseyi | D | Vernally alkaline meadows/seeps |
| Salix candida | D | Bogs and swamps |
| Salix glauca | D | Montane/alpine streams/wetlands |
| Salix pseudomonticola | | Wet bottomlands/mesic uplands |
| Scheuhzeria palustris | | Bogs |
| Terrestrial Habitat Species | | |
| Astragalus bisulcatus | S | Sagebrush barrens, selenium soils |
| Astragalus gilviflorus | D | Barren knolls and hilltops |
| Castilleja pulchella | D | Subalpine, alpine |
| Corallorhiza wisteriana | D | Late seral Douglas-fir and lodgepole pine mixed forests |
| Corypantha missouriensis | D | Sagebrush foothills |
| Draba inserta | D | Subalpine/alpine ridges/talus |
| Saxifraga cernua | D | Alpine moist rock crevices |
| 1/ D-Documented on Forest, S-Suspected on Forest | | |

often as cattle, like to bed on ridges, and because they often have a herder, they can be herded away from riparian zones more often

Although effects are noticeable in sagebrush, aspen and grazed forest communities, they are especially evident in riparian communities that have had a history of cattle overgrazing

Approximately 79 percent (1,466,475 acres) of Forest acres are identified as range allotments which are open to grazing Approximately 400,640 acres are presently closed to grazing There are 154 allotments (76 cattle and 78 sheep) on the forest

Table III-13 Acres of Nonforested Community Types by Subsection

| Herbaceous/Shrub Communities | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Hole Mtns | Caribou Range Mtns | Forest Total |
|---|---|---|---|---|---|---|---|---|
| Herbaceous | 11,610 | 13,626 | 4,180 | 2,472 | 45,902 | 35,711 | 9,330 | 122,831 |
| Sagebrush/Grass | 139,191 | 71,814 | 8,969 | 521 | 0 | 20,356 | 49,977 | 290,827 |
| Mountain Brush | 7,003 | 3,843 | 3,685 | 1,345 | 7,946 | 53,511 | 15,783 | 93,115 |
| Aquatic | 406 | 2,677 | 2,747 | 1,714 | 680 | 6,073 | 5,285 | 19,582 |
| Rock/Barren/Talus | 17,562 | 2,144 | 350 | 53 | 14,096 | 7,189 | 2,075 | 43,469 |
| Undesignated | 0 | 6 | 335 | 52 | 21 | 13 | 6 | 433 |
| Total Acres | 175,772 | 94,110 | 20,265 | 6,157 | 68,645 | 122,853 | 82,456 | 570,256 |
| % of Subsection | 63 | 29 | 7 | 3 | 43 | 35 | 40 | 32 |

HERBACEOUS- Includes grass, sedge/forb, and grass/forb communities on all landscapes from low elevations to alpine
SAGEBRUSH/GRASS- Low sagebrush, silver sagebrush, black sagebrush, Wyoming big sagebrush and mountain big sagebrush community types
MOUNTAIN BRUSH - Includes chokecherry, mountain clover, mountain big sagebrush, serviceberry, antelope bitterbrush, curl-leaf mountain mahogany, hawthorn, snowberry and snowbrush ceanothus in mixed communities
AQUATIC - Includes lake, river and riparian vegetation
ROCK/BARREN/TALUS - Includes rock outcrops, bare and rocky windswept ridges, talus slopes and boulder fields from lowlands to alpine
UNDESIGNATED - open areas of unknown composition

As documented in the Annual Operating Plan (AOP) and/or the Allotment Management Plan (AMP), all of the allotments have grazing systems in place which implement various grazing strategies (Process Paper K), and include grazing utilization standards As previously mentioned, grazing and browsing of vegetation by wildlife and domestic livestock can have both positive and negative effects on many components of an ecosystem

The nonforested vegetation on the Forest is grouped into two broad plant communities riparian and upland vegetation Forestwide the ecological status of these communities occur in various seral stages that meet, move toward meeting or do not meet DVC (see Table III-6 for riparian conditions and Table III-14 for upland conditions)

The DVC for both riparian areas and nonforested uplands is defined as The specific future condition of rangeland vegetation and other resources such as aquatic habitat and water quality that meet management objectives as identified in the Forest Plan, AMPs, or other documents DVC can be expressed in terms of ecological status of the vegetation, it could also include species composition, diversity of habitats, or age classes of species, desired soil protection, including conditions of soil cover, erosion, compaction and loss of soil productivity In riparian areas it includes, conditions of streambank and channel stability, stream habitat, streamside vegetation, stream sedimentation and water quality DVC are those conditions resulting from meeting the Forest Plan objectives regarding the management of riparian and nonforested upland sites, aquatic habitat and water quality On a forestwide scale, achieving DVC would result in a mix of plant communities that meet management objectives

On a forestwide scale, riparian and nonforested upland areas in PFC will meet DVC

In order to achieve PFC objectives across the forest, it will be necessary to provide a mix of plant communities by moving vegetation from one seral stage to another seral stage and/or maintain some

vegetation communities in less than mid to late seral stages on a site specific basis For example, Some small scale areas, less than 5,000 acres, of dense sagebrush with canopy cover greater than 30 percent, ranging from high mid to late seral stage, may be treated in order to meet landscape level (thousands to hundreds of acres by definition) PFC objectives The result is the treated vegetation (burned, rotobeat, chemically treated, etc ) would move from high seral stage to lower seral stage Another example of where the Forest could make a decision to manage vegetation in less than mid to late seral status is where a substantial quantity of nonnative plants, plants of lower seral status or plants of lower seral status dominate the landscape and reintroduction or management of desirable native plants would not be practical

High density of mountain big sagebrush (> 30 percent canopy cover), undesirable herbaceous plants in the understory and other indicators of downward trend in vegetation are characteristics of unhealthy rangeland in unsatisfactory ecological condition For example, on the Dubois Ranger District, there are approximately 42,310 acres in less than satisfactory condition because of high density of mountain big sagebrush due to fire suppression

Table III-14 Acres of upland vegetation meeting, moving toward or not meeting DVC Existing situation by subsection 1/

| | Subsection | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Plant Community 2/ | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Hole Mtns | Caribou Range Mtns | Forest Total |
| Upland vegetation meeting DVC | 228,284 | 187,027 | 196,721 | 22,939 | 49,499 | 230,399 | 113,520 | 1,028,389 |
| Upland vegetation moving toward DVC | 12,544 | 22,811 | 8,870 | 4,608 | 10,927 | 63,855 | 52,445 | 176,060 |
| Upland vegetation not meeting DVC 2/ | 19,244 | 32,354 | 23,416 | 770 | 46,566 | 23,578 | 7,095 | 153,023 |

1/ Only includes acres open to grazing (79%) of the Forest Does not include acres closed to grazing prior to 1995 Source FSRAMIS database
2/ Includes acres of undetermined status

**Noxious Weeds - Scale: Forestwide**

Noxious weeds are undesirable plants designated by federal or state law These plants in abundance are not part of a properly functioning ecosystem They generally possess one or more of the following characteristics aggressive and difficult to manage, parasitic, carrier or host of serious insects or diseases, nonnative, new to the United States or common in the United States Soil-disturbing activities encourage the establishment and spread of noxious weeds They are spread across the forest by a variety of natural and unnatural activities Introduction (seeding) and invasion of aggressive species such as timothy and smooth brome have further decreased biodiversity by out-competing native species along roadways and in riparian communities Nine different species of noxious weeds occupy approximately 19,000 acres of forest and rangeland on the Forest (see Table III-15) As per the existing approved forestwide direction for the control of noxious weeds, the forest uses an integrated pest management approach (biological, chemical and mechanical treatments) to control the spread of noxious weeds This direction and the Affected Environment, Chapter III, of the 1987 forestwide EA are incorporated by reference into this analysis Presently, the Forest does not apply chemical herbicides by aerial applications and only ground application is approved

| Table III-15 Noxious Weed Inventory | | | | | | | |
|---|---|---|---|---|---|---|---|
| | TOTAL ACRES | | | | | | |
| SPECIES | LEMHI/ MEDICINE LODGE | CENTENNIAL MOUNTAINS | ISLAND PARK | MADISON-PITCHSTONE PLATEAUS | TETON RANGE | BIG HOLE MTNS | CARIBOU RANGE MTNS |
| CANADA THISTLE | 2580 | 5,489 | 567 | 235 | 8 | 33 | 6 |
| DYERS WOAD | 0 | 0 | 1 | 0 | 0 | 6 | 0 |
| HENBANE | 106 | 30 | 0 | 0 | 0 | 5 | 0 |
| LEAFY SPURGE | 40 | 1,694 | 2,405 | 275 | 2 | 51 | 8 |
| MUSK THISTLE | 10 | 105 | 22 | 1 | 2,712 | 1,025 | 38 |
| PLUMELESS THISTLE | 0 | 0 | 8 | 0 | 0 | 4 | 1 |
| SPOTTED KNAPWEED | 200 | 168 | 119 | 3 | 0 | 27 | 17 |
| ST JOHNSWORT | 0 | 0 | 16 | 0 | 0 | 0 | 0 |
| YELLOW TOADFLAX | 150 | 3 | 492 | 295 | 0 | 5 | 0 |
| **Total** | 3,086 | 7,489 | 3,630 | 809 | 2,722 | 1,156 | 70 |

**Wildlife Associated with Terrestrial Habitats**

Distributions of wildlife management indicator species are displayed in Table III-16 Monitoring and analysis emphasizes habitat conditions to evaluate potential changes in the status or sustainability of these species A brief overview of these species and habitats follows Additional information for these species is available in Process Paper D

Elk Populations - Scale Forestwide

We do not know the total population of elk which use the Forest The number of elk changes with seasons Elk populations are lowest during the winter period because they migrate to lower elevation winter ranges Many of the winter ranges occur off Forest lands Elk populations on the Forest are highest during the spring, summer and fall periods, as elk migrate back from winter range areas Some elk migrate through the Forest and summer in the Park

For the Idaho Game Management Units which encompass the Forest (Figure III-4), elk populations have sustained annual harvests which have ranged between 940 to 3,111 animals harvested between 1979 to 1995 Elk harvests have shown a general increasing trend from 1979 to the present The average annual harvest for the period 1979 to 1995 was 1,915 animals

For the Wyoming Elk Hunt Areas which encompass the Forest (Figure III-4), elk populations have sustained annual elk harvests which have ranged between 66 to 205 animals harvested for the years 1979 to 1995 Elk harvests have shown a general increasing trend from 1979 to the present The average annual harvest for the period 1979 to 1995 was 134 animals

Age and sex composition data reported for elk populations on or adjacent to the Forest range from 29 to 53 calves per 100 cows, and the mid to low teens to 22 bulls per 100 cows (USDI Fish and Wildlife Service 1994) Using an average age and sex composition of 40 calves per 100 cows and 20 bulls per 100 cows, the pre-harvest elk population to sustain the average elk harvests from 1979 to 1995 is calculated to be 10,250 animals (the post harvest elk population would be 8,201) This is considered a minimum population

# Targhee National Forest
# IDFG Game Management Units
# WGF Elk Hunt Areas

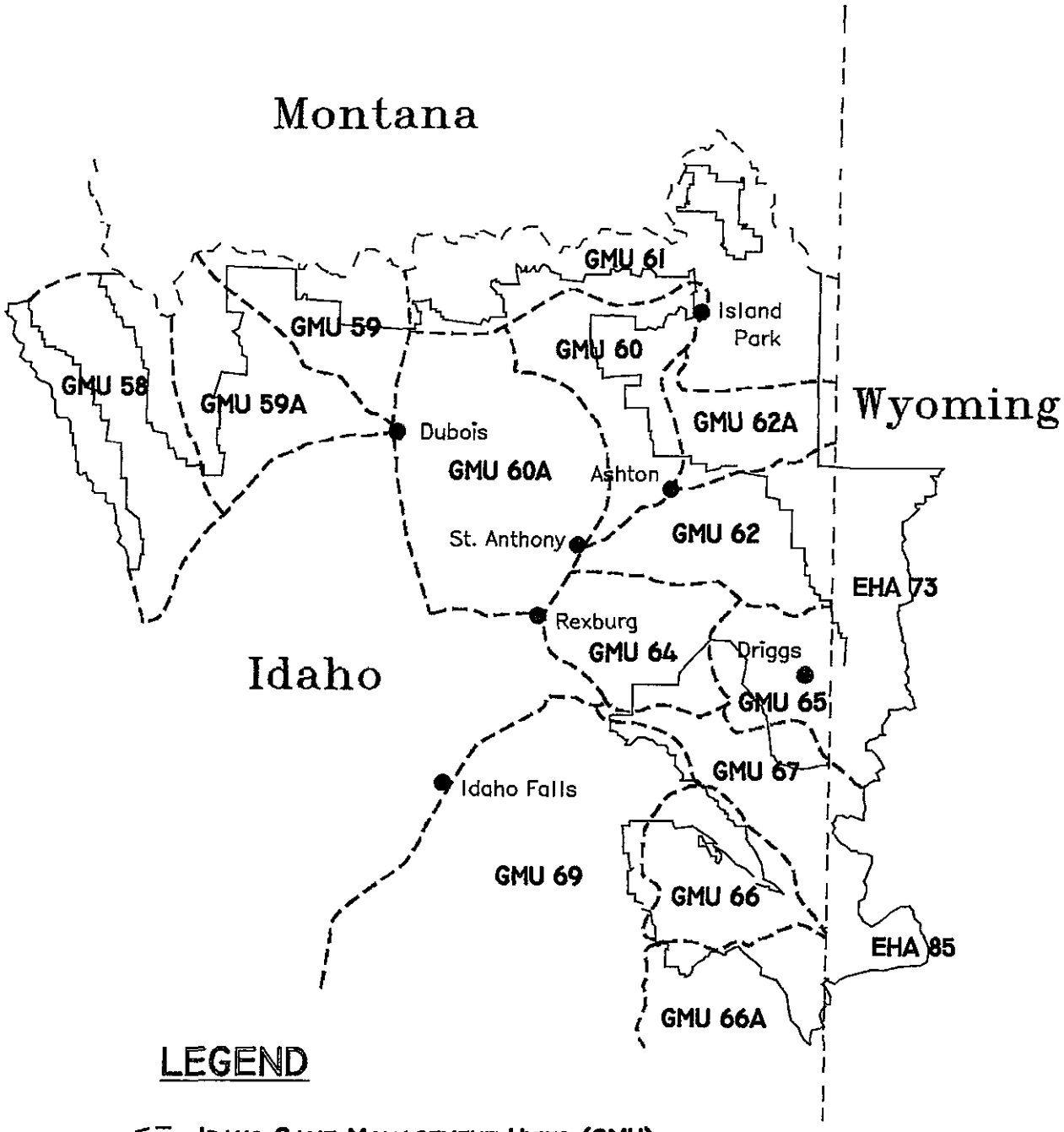



Figure III–4

Not To Scale

estimate because it does not include the need to account for animals dying from natural causes and unreported wounding losses

Elk Vulnerability - Scale Principal Watershed

EV is defined as a measure of elk susceptibility to being killed during the hunting season (Lyon and Christensen 1992, IDFG letter May 12, 1995) EV is an important component of the State Fish and Game Departments' management goals and objectives The following describes the Idaho and Wyoming goals as related to EV

Idaho Department of Fish and Game

Game Management Units 60, 61, 62, 62A, 64, 65, 66, 69 (Figure III-4) These game management units are known as "Ready Access Units " For these units, the IDFG goal for the post hunting season population is > 15 bulls per 100 cows (this equates to a maximum of 60 percent bull elk mortality), with 40 percent of bulls branch-antlered, and maintain the percentage of yearling bulls in the antlered segment of the harvest at or below 50 percent and the percentage of mature bulls (having six points on one antler) at or above 10 percent (IDFG letters May 12, 1995 and Nov 15, 1995)

Game Management Units 58, 59, 59A, 67 (Figure III-4) These game management units are known as "Front Range Units " For these units, the IDFG goal for the post hunting season population is > 20 bulls per 100 cows (this equates to maximum of 50 percent bull elk mortality), with 50 percent of bulls branch-antlered, and maintain the percentage of yearling bulls in the antlered segment of the harvest at or below 35 percent and the percentage of mature bulls (having six points on one antler) at or above 20 percent (IDFG letters May 12, 1995 and Nov 15, 1995)

IDFG stated that these goals were not being met in all Game Management Units when the spike only general hunts were started in 1991 IDFG provided the following information for each Game Management Unit (Elk Task Group Workshop, Sept 15 and 21, 1992)

- Units 58, 62, 64, 65 no data or not enough data to know if goals are being met
- Units 59, 59A, 60, 62A not meeting goals
- Units 61, 66, 67 meeting goals

Wyoming Game and Fish Department (WGF)

Elk Hunt Areas 73 and 85 (Figure III-4) The WGF goal for the post hunting season population is >20 bulls per 100 cows This equates to a maximum of 50 percent bull elk mortality These goals are being met in these elk hunt areas

EV models (Unsworth et al 1993) have been proposed as a predictive tool that managers can use to predict mortality rates and monitor elk vulnerability (IDFG letter May 12, 1995) Research conducted by the IDFG and the University of Idaho provides the basis for this EV analysis (Unsworth et al 1993) For the Forest Plan Revision, two parameters were determined to be most important for EV analysis

1 Hunter-day densities (measured in total hunter-days per square mile on a watershed basis)
2 Motorized road and trail densities and cross-country motorized access (measured in miles per square mile on a watershed basis)

For the Idaho portion of the Forest, EV analysis is used to predict percent mortality of bull elk during the general antlered elk rifle hunting season, which usually occurs in the month of October For the Wyoming portion of the Forest, this EV analysis is used to predict percent mortality of bull elk during the general license any elk-rifle hunting season, which usually occurs during the months of September and October

Table III-16 Distribution of Wildlife Management Indicator Species Associated with Terrestrial Habitats Including Endangered, Threatened, Candidate and Sensitive Wildlife Species on the Forest within the Seven Subsections

| | | Subsections 1/ | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Management Indicators Species and Habitats | Status 2/ | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Hole Mtns | Caribou Range Mtns |
| General Forested & Nonforested Habitats | | | | | | | | |
| Elk Habitat Effectiveness | - | Y | Y | Y | Y | Y | Y | Y |
| Elk Vulnerability | - | Y | Y | Y | Y | Y | Y | Y |
| Elk and Deer Winter Range | - | Y | Y | Y | N | Y | Y | Y |
| Gray Wolf | NE | U | U | U | U | U | U | U |
| Grizzly Bear Habitat | T | S | Y | Y | Y | Y | U | N |
| Forested Habitats | | | | | | | | |
| Primary Cavity Nester Habitat 3/ | - | Y | Y | Y | Y | Y | Y | Y |
| Three-toed Woodpecker | S | Y | Y | Y | Y | Y | Y | Y |
| Lewis's Woodpecker | - | Y | Y | Y | Y | Y | Y | Y |
| Red-napped Sapsucker | - | Y | Y | Y | Y | Y | Y | Y |
| Williamson's Sapsucker | - | Y | Y | Y | Y | Y | Y | Y |
| Downy Woodpecker | - | Y | Y | Y | Y | Y | Y | Y |
| Hairy Woodpecker | - | Y | Y | Y | Y | Y | Y | Y |
| Black-backed Woodpecker | - | Y | Y | Y | Y | Y | Y | Y |
| Northern Flicker | - | Y | Y | Y | Y | Y | Y | Y |
| Forest Owl Habitat | | | | | | | | |
| Flammulated Owl | S | S | S | Y | S | Y | Y | Y |
| Boreal Owl | S | S | Y | Y | Y | Y | Y | Y |
| Great Gray Owl | S | Y | Y | Y | Y | Y | Y | Y |
| Furbearer Habitat | | | | | | | | |
| Wolverine | S | S | Y | Y | Y | Y | U | U |
| North American Lynx | S | S | S | S | S | S | Y | S |
| Fisher | S | N | S | Y | S | Y | Y | N |
| American Marten | - | S | Y | Y | Y | Y | Y | Y |
| Northern Goshawk Habitat | S | Y | Y | Y | Y | Y | Y | Y |
| Red Squirrel Habitat | - | Y | Y | Y | Y | Y | Y | Y |
| Nonforested Habitats | | | | | | | | |
| Big Sagebrush/Grassland Habitat | - | Y | Y | Y | Y | Y | Y | Y |
| Special and Unique Habitats | | | | | | | | |
| Peregrine Falcon | E | N | Y | Y | N | Y | Y | Y |

1/ Letters used for distributions among subsections are as follows
Y = Species presence and/or suitable habitat has been documented on the Forest For the grizzly bear, Y = areas within the recovery line
N = Species presence has not been documented on the Forest, suitable habitat has not been documented
U = Unverified but reliable sightings exist on the Forest, suitable habitat probably exists
S = Suitable habitat probably exists, but there have been no documented or unverified sightings on the Forest
2/ Letters used for Status are as follows E = Endangered, T = Threatened, NE = Nonessential Experimental, S = Sensitive species,
'-' = no formal status
3/ It is generally assumed that since conifer and/or aspen and/or cottonwood habitats exist in every subsection of the Forest, then habitat for most of these cavity nesting species occurs in each subsection
Sources of information for this table include Targhee National Forest AMS, 1992, Personal communication with K Johnson, Feb 8, 1995, B Aber, M Oechsner, B Alford, D Welch, R Newton, USFWS-Federal Register 61(40) 7595-7613 (Feb 28, 1996)

# Targhee National Forest
# Elk & Deer Winter Range

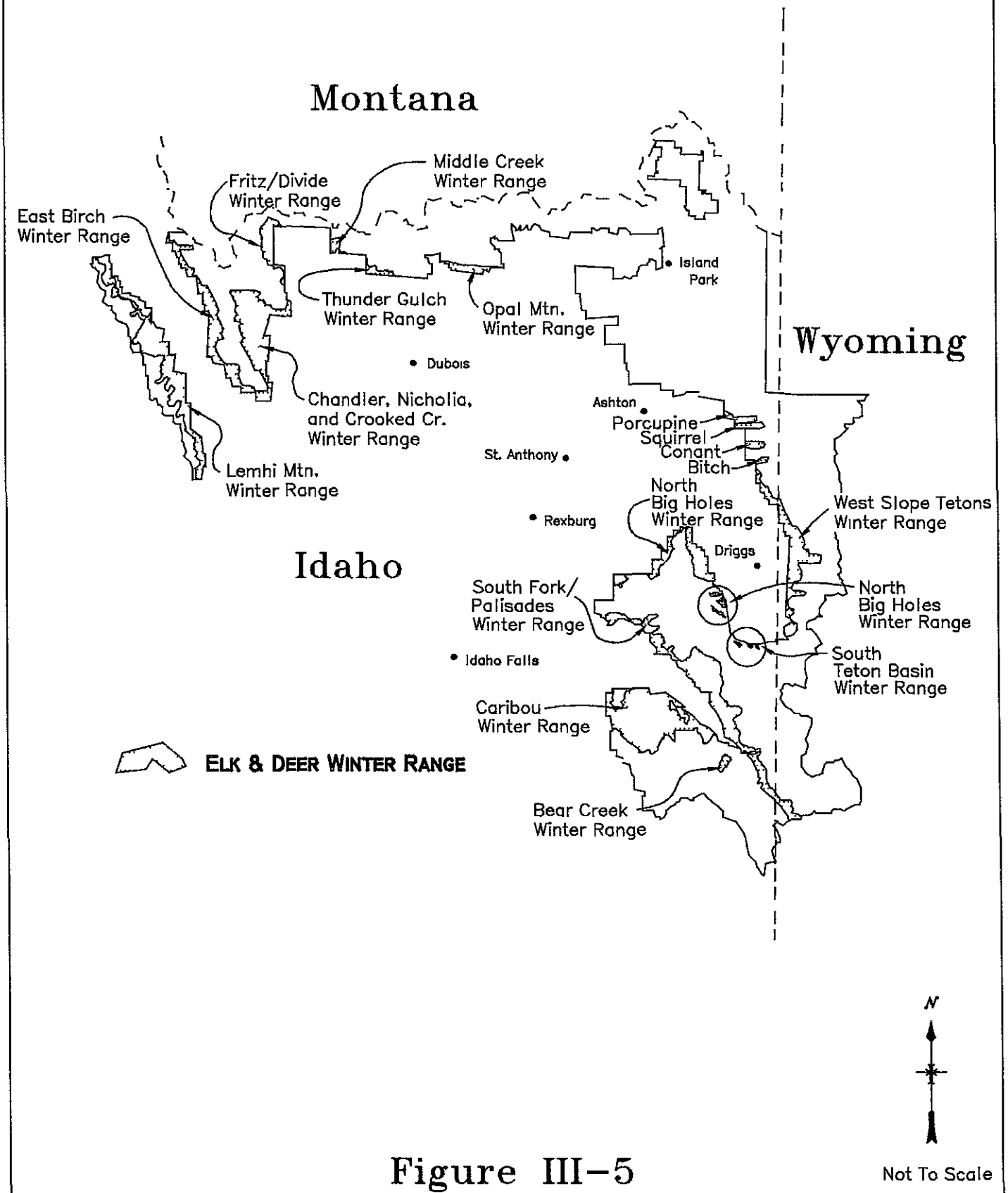



Figure III–5

The bull elk mortality percentages indicate threshold levels, which if exceeded would likely require additional management actions to be initiated by the State Fish and Game Departments (IDFG letter, May 12, 1995) These management actions could include such items as shorter hunting seasons, restrictions on the type and number of animals to be harvested, restrictions on the number of hunters, more controlled hunts and less opportunity for general hunts, etc The estimated current bull elk mortality, as calculated with the EV analysis, varies from a low of 21 percent mortality in Wyoming along the west slope of the Tetons to 97 percent mortality in the Buffalo River watershed At the present time, 48 percent of the Forest meets State Fish and Game thresholds for EV

Elk Habitat Effectiveness (EHE) - Scale Principal Watersheds

EHE is defined as the percentage of available habitat that is usable by elk outside the hunting season EHE is not a measure of elk populations and it is not a measure of habitat carrying capacity (Lyon and Christensen 1992) For this EHE analysis, it is the spring, summer and early fall habitat that is usable by elk outside the general elk-rifle hunting seasons The following two habitat parameters were determined to be most important for EHE analysis

1 Motorized road and trail densities (measured in miles per square mile on a watershed basis) As motorized road and trail densities increase, EHE declines This relationship is based on research by Dr L Jack Lyon (Lyon 1983)

2 Elk hiding cover, measured as a percentage of a watershed in hiding cover Hiding cover is defined as vegetation capable of hiding 90 percent of a standing adult elk from the view of a human at a distance equal to or less than 200 feet (Lyon and Christensen 1992) Optimum habitat exists when 50 to 60 percent of a watershed is in hiding cover, this is based on the judgement of professional biologists involved in elk workshops on the Forest

An EHE of 100 percent (usually displayed as 1 0) would require no motorized roads and trails within a watershed, and 50 to 60 percent of the watershed being in hiding cover The existing values for EHE range from a low of 0 46 in a portion of the Centennial Mountains to a high of 0 74 in the Madison-Pitchstone Plateaus Subsection just south of the Park, an average forestwide EHE value is 0 57

Elk & Deer Winter Range - Scale Forestwide

Generally, elk and deer winter range are those areas at lower elevations with lower snow accumulations, used by elk and deer during the winter months (Lyon and Christensen 1992) Map number 24 in the map packet and Figure III-5 display these winter ranges on the Forest

The winter range areas on the Forest are the upper elevational limits of elk and deer winter ranges, more winter range acres exist at lower elevations on BLM, State, and private lands Some elk and deer which summer on the Forest also winter on ranges in Montana and Wyoming The distribution and number of wintering deer and elk on the Forest depends on winter severity Generally a higher proportion of elk and deer winter at lower elevations on BLM, State and private lands Development on private lands is a concern as it can adversely affect areas historically used by wintering elk and deer

There are 313,825 acres of crucial mid-to-late elk and deer winter range on the Forest These winter range areas have a wide range of vegetation types, with some of the areas mostly in mature forest and some predominantly in tall sagebrush/grass habitats Some winter range shrub communities (such as mountain mahogany) are in overmature or decadent condition due primarily to historical fire suppression

Currently, 12 percent of the winter range acres are closed to livestock grazing On the acres open to livestock grazing, there are 6,352 AUMs of domestic sheep grazing and 26,423 AUMs of cattle grazing

Currently, 78 percent of the winter range acres are meeting DVCs for condition, 13 percent of the winter range acres are improving and moving toward DVCs, and 9 percent of the winter range acres are not improving

About 38 percent of the winter range acres are capable of being used for cross-country snowmachine use, i e slopes less than 50 percent and open vegetation conditions and types Some winter range areas have historically been popular snowmachine use areas In these areas the Forest has implemented restrictions on cross-country snowmachine use Currently 28 percent of the winter range acres are closed to cross-country snowmachine use

There is one feed ground for wintering elk and deer on the Forest, this is in Rainey Creek, within the South Fork/Palisades winter range area The number of animals fed at this site varies each winter, primarily based on the severity of the winter The Table III-17 displays data from the IDFG and illustrates what has occurred from 1978 to 1995

Table III-17 Rainey Creek Feed Ground Data

| Winter Season | Number of Elk Fed | Number of Deer Fed |
|---|---|---|
| 1978-79 | no recorded number | no recorded number |
| 1979-80 | 0 | 0 |
| 1980-81 | 0 | 0 |
| 1981-82 | no recorded number | no recorded number |
| 1982-83 | 0 | 0 |
| 1983-84 | 500 | no recorded number |
| 1984-85 | 200 | 400 |
| 1985-86 | 400 | 400 |
| 1986-87 | 300 | 400 |
| 1987-88 | 300 | 500 |
| 1988-89 | 200 | 300 |
| 1989-90 | 200 | 200 |
| 1990-91 | 400 | 100 |
| 1991-92 | *no recorded number* | *no recorded number* |
| 1992-93 | no recorded number | no recorded number |
| 1993-94 | 0 | 0 |
| 1994-95 | 400 | 250 |

Grizzly Bear Population - Scale Yellowstone Grizzly Bear Ecosystem (YGBE) and BMU

Portions of the Forest are within the YGBE The YGBE has been divided into BMUs Portions of the Forest are within the following BMUs Henry's Lake (Subunits 1 and 2), Plateau (Subunits 1 and 2), and Bechler/Teton (Figure III-6)

The following are recovery goals for the YGBE (U S Fish and Wildlife Service 1993)

> "Fifteen females with cubs over a running 6-year average both inside the recovery zone and within a 10-mile area immediately surrounding the recovery zone, 16 of 18 BMUs occupied by females with young from a running 6-year sum of observations, no two adjacent BMUs shall be unoccupied, and known, human-caused mortality not to exceed 4 percent of the population estimate based on the most recent 3-year sum of females with cubs Furthermore, no more than 30 percent of this 4 percent mortality limit shall be females These mortality limits cannot be exceeded during any two consecutive years for recovery to be achieved "

*Table III-18 presents grizzly bear population data for the YGBE for the years 1987-1996 (from personal* communication with Dr Chris Servheen, USDI Fish and Wildlife Service, 1996) As of 1996, the status of the grizzly bear population in relation to the recovery goals was as follows

- *The running 6-year average for unduplicated females with cubs was 22 8, compared to the recovery* goal of 15

- Average annual human-caused mortality was 7 1 bears, compared to the recovery goal mortality limit which is to be < 8 8 bears (< 4 percent mortality limit of the population estimate)
- Average annual human-caused female mortality was 2 8 bears, compared to the recovery goal mortality limit which is to be < 2 6 bears (< 30 percent of the total known mortalities)
- The distribution of females with young was 18 of 18 BMUs, compared to the recovery goal of 16 of 18 BMU's

Knight, et al (1995) report on appraising the status of the Yellowstone grizzly bear population Using data collected from 1976 to 1993, they report the following estimated rates of annual increase in the population

- 3 9 percent annual increase using the annual totals of distinct family groups
- 4 6 percent annual increase using reproductive and survival data
- 2 2 percent annual increase using a common probability of sighting distinct family groups

Table III-18 Annual Yellowstone Grizzly Bear Population and Known Human Caused-Mortality Data Based on 1993 Grizzly Bear Recovery Plan Criteria Data From Known, Human-Caused Mortalities, Minim Unduplicated Counts of Females With Cubs, and Distribution of Females With Young

| Year | Annual Undup FWC's 2/ | Annual Adult Female Mortality | Annual All Female Mortality | Annual Total Mortality | 4% Total Mortality Limit 1/ | 30% All Female Mortality Limit | Annual Total Mortality 6yr avg | Annual Female Mortality 6yr avg |
|---|---|---|---|---|---|---|---|---|
| 1987 | 13 | 2 | 2 | 3 | | | | |
| 1988 | 19 | 0 | 3 | 5 | | | | |
| 1989 | 16 | 0 | 0 | 1 | | | | |
| 1990 | 24 | 4 | 6 | 9 | | | | |
| 1991 | 24 | 0 | 0 | 0 | | | | |
| 1992 | 23 | 0 | 1 | 4 | 9 4 | 2 8 | 3 7 (22/6) | 2 0 (12/6) |
| 1993 | 20 | 2 | 2 | 3 | 9 2 | 2 8 | 3 7 (22/6) | 2 0 (12/6) |
| 1994 | 20 | 3 | 3 | 10 | 8 2 | 2 5 | 4 5 (27/6) | 2 0 (12/6) |
| 1995 | 17 | 3 | 7 | 17 | 6 9 | 2 1 | 7 1 | 3 2 |
| 1996 | 33 | 3 | 4 | 9 | 8 8 | 2 6 | 7 1 | 2 8 |

1996 Status of the Yellowstone Population in Relation to the Demographic Recovery Targets 3/

| Target | Target Number | 1996 Number |
|---|---|---|
| Unduplicated females with cubs (6 year average) | 15 | 22 8 |
| Known mortality limit as 4% of total population estimate | 8 8 | 7 1 |
| Female mortality limit as 30% o total known mortalities | 2 6 | 2 8 |
| Distribution of female with young | 16 of 18 | 18 of 18 |

1/ Calculated as 4% of the minimum population estimate for the most current year which is based on the minimum number of females with cubs seen over the past three years
2/ Annual Undup FWC's = Annual Unduplicated Females with Cubs
3/ Caculated with updated percentage of adult females in the population as 22 3%

# Targhee National Forest
# Bear Management Units

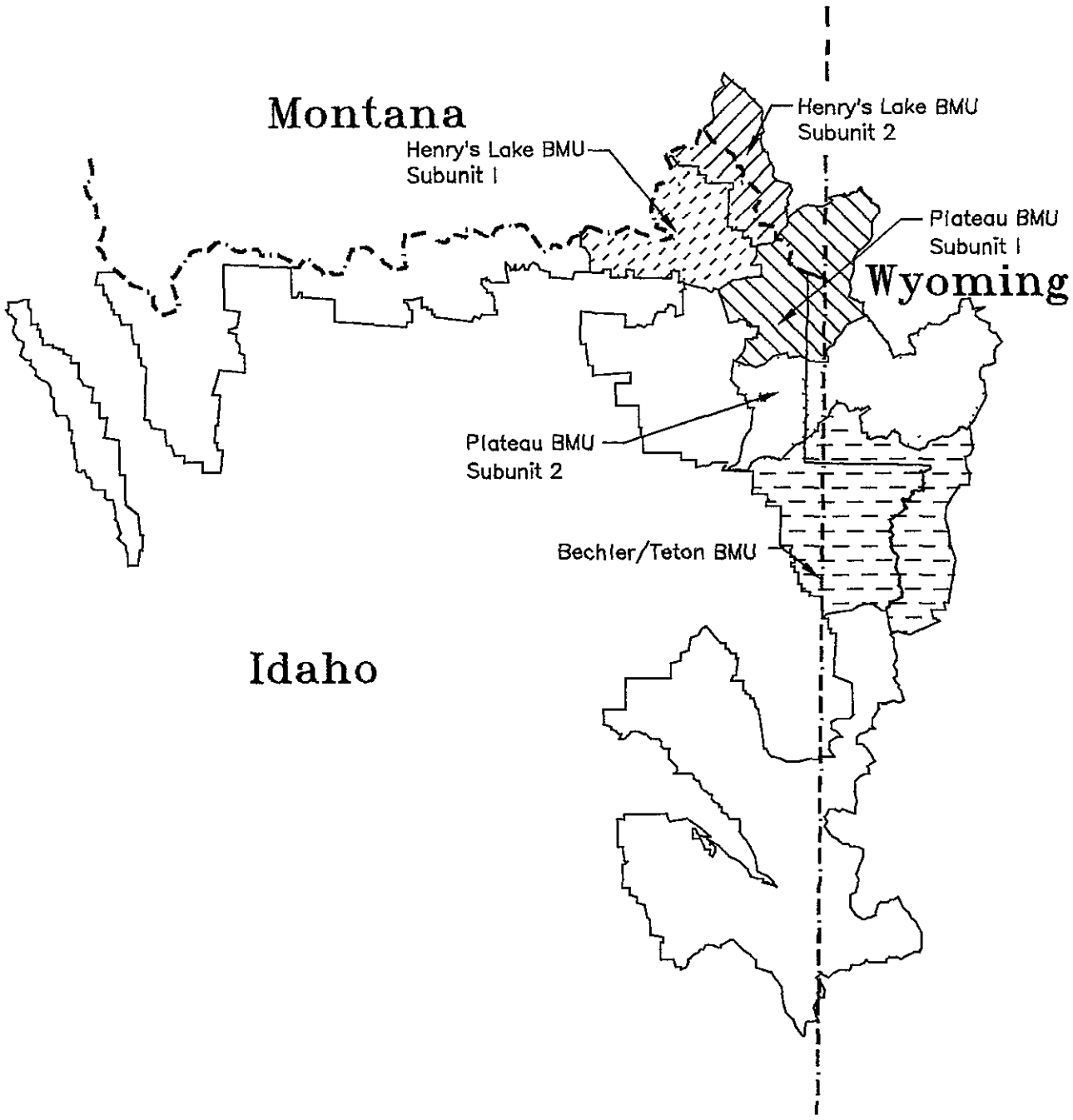



Figure III–6

Following is a brief overview of grizzly bear observations for the Forest portion of each BMU Subunit

*Henry's Lake BMU - Subunit 1* - Compared to the other BMUs and Subunits on the Forest, this area had the fewest grizzly bear sightings from 1959 to 1986 (Orme and Williams 1986)

From 1986 through 1995, we have records of one grizzly bear sighting in MS2 habitat, two grizzly bear sightings in MS3 habitat and two grizzly bear sightings on private lands In addition to these sightings, radio collared bear #139 was trapped on MS3 and private lands in 1987 and 1988 Compared to the other BMUs and Subunits on the Forest, this area also had the fewest grizzly bear sightings from 1986 through 1995

No female sows with cubs have been documented in the MS2 portion of this subunit (from available documentation dating back to 1959)

*Henry's Lake BMU - Subunit 2* - Compared to the other BMUs and Subunits on the Forest, this area had the second highest number of grizzly bear sightings from 1959 to 1986 (Orme and Williams 1986)

From 1986 through 1995, we have records of eight grizzly bear sightings, all on Forest land (three of these sightings are on the border between this subunit and the Plateau BMU) In addition, there are numerous recorded observations of radio-collared bear #258 (an adult female), which was relocated into this BMU subunit in the fall of 1995 Bear #258 left this BMU subunit in the spring of 1996 and returned to her previous home range

Sows with cubs have previously been documented in this subunit A female sow with cubs was documented in this BMU subunit (but not on the Forest) during 1996 (Interagency Grizzly Bear Committee News Release, Oct 28, 1996)

*Plateau BMU - Subunit 1* - Compared to the other BMUs and Subunits on the Forest, this area had one of the lowest number of grizzly bear sightings from 1959 to 1986 (Orme and Williams 1986)

From 1986 through 1995, we have records of five grizzly bear sightings within subunit 1 In addition, there are many recorded observations of radio-collared bear #227 (a male) for portions of each summer from 1994 through 1996

Searching through reports in our files, we can document that two sows with cubs were observed for the period 1965 to 1984 (one of the sows was shot and killed by hunters in the fall of 1984) From 1985 to the present, no sows with cubs have been reported in this subunit

*Plateau BMU - Subunit 2* - Compared to the other BMUs and Subunits on the Forest, this area had one of the lowest number of grizzly bear sightings from 1959 to 1986 (Orme and Williams 1986)

From 1986 through 1995, we have records of six grizzly bear sightings within subunit 2

From 1965 to 1984, there were four sightings of bear groups (two or more bears together) but our records do not confirm that these were sows with cubs From 1985 to 1993, no sows with cubs were observed In 1994, one sow with cubs was observed near the southern boundary of the subunit No sows with cubs have been reported during 1995 and 1996

*Bechler/Teton BMU* - Compared to the other BMUs and Subunits on the Forest, this area had the highest number of grizzly bear sightings from 1959 to 1986 (Orme and Williams 1986)

From 1986 through 1995, we have records of 26 grizzly bear sightings, which is the highest number of sightings compared to the other BMUs and Subunits for this time period

Four of the 26 grizzly bear sightings from 1986 through 1995 were sows with cubs These four sightings are considered reliable, but none were verified Therefore, these sightings have not been included in the official records for sows with cubs in each BMU This BMU is currently occupied by a sow with cubs, based on verified sightings from the GTNP portion of the BMU

Grizzly Bear Habitat - Scale Bear Management Unit and Subunit

Table III-19 outlines the existing habitat and conditions for the Forest portion of BMUs and subunits Process Paper D presents an overview of food habitats, cover requirements, denning habitat, home ranges and motorized access effects The following text represents some additional information for each BMU subunit

Henry's Lake BMU, Subunit 1 -

- Most of the area is open to snowmachine use from December 1 to June 1

- Even though there are nine sheep allotments and three cattle allotments in use, we have no record of grizzly bear/livestock conflicts on N F lands (1959-1997)

- Henry's Lake Flat and MS3 - About 42 percent (53,500 acres) of this subunit includes private lands on Henry's Lake Flat and highly developed Forest land classified as MS3 habitat OROMTRD is 2 48 mi/sq mi on Henry's Lake Flat and 3 6 mi/sq mi on Forest lands The average daily traffic for U S Highway 20 is about 2,400 vehicles per day In 1995, there were 172,646 fishing hours of activity on Henry's Lake from May to October (IDFG Creel Survey Summary Sheet, Henry's Lake, 1995) Snowmachine use occurs whenever there is enough snow Livestock grazing occurs on most of the private lands

Henry's Lake BMU, Subunit 2 -

- In the Lionhead portion of this subunit, snowmachine use is allowed from December 1 to June 1 In the remainder of this subunit, snowmachine use can occur whenever there is enough snow

- There have been no grizzly/livestock conflicts since sheep grazing was eliminated in this area in 1984

Plateau BMU, Subunit 1 -

- Snowmachine use is allowed from December 1 to June 1 in the North Fork Fire area. In the remainder of the subunits, snowmachine use is allowed whenever there is enough snow

Plateau BMU, Subunit 2 -

- Snowmachine use is allowed whenever there is enough snow

Bechler/Teton -

- Outside of the designated wilderness areas, snowmachine use is allowed whenever there is enough snow
- All sheep allotments in MS1 habitat have been closed There are two sheep allotments in use in MS2 habitat and two grizzly/sheep conflicts have been documented There are three cattle allotments in use with no documented conflicts

Table III-19 Existing Habitat Conditions for the Forest Portion of Bear Management Units and Subunits

| Habitat Component | Henry's Lake BMU Subunit 1 | Henry's Lake BMU Subunit 2 | Plateau BMU Subunit 1 | Plateau BMU Subunit 2 | Bechler/Teton BMU |
|---|---|---|---|---|---|
| Targhee National Forest Acres | 91,846 | 35,742 | 83,900 | 74,770 | 190,360 |
| Other Ownership Acres w/in Administrative Boundary | 1,526 | 1,608 | 3,277 | 1,320 | 986 |
| Acres Outside the Administrative Boundary | 35,170 | 60,594 | 96,026 | 199,618 | 150,548 |
| Total Acres in BMU/Subunit | 128,515 | 97,944 | 183,203 | 275,708 | 341,894 |
| Percent of National Forest Acres in Management Situation 1 | 0 | 100 | 0 | 0 | 72 |
| Percent of National Forest Acres in Management Situation 2 | 80 | 0 | 95 | 100 | 28 |
| Percent of National Forest Acres in Management Situation 3 | 20 | 0 | 5 | 0 | 0 |
| Motorized Road and Trail Miles | | | | | |
| Open Road Miles | 92 6 | 36 8 | 115 2 | 71 1 | 187 5 |
| Restricted Road Miles | 48 1 | 4 8 | 117 4 | 135 5 | 152 0 |
| Open Motorized Trail Miles | 3 9 | 7 9 | 8 6 | 15 6 | 38 6 |
| Restricted Motorized Trail Miles | 0 0 | 0 0 | 0 0 | 0 0 | 0 0 |
| Total Motorized Access Route Miles | 144 6 | 49 5 | 241 2 | 222 2 | 378 1 |
| Open Road and Open Motorized Trail Route Miles | 96 5 | 44 7 | 123 8 | 86 7 | 226 1 |
| Motorized Road and Trail Density (mi /sq mi ) | | | | | |
| Open Road Density | 0 79 | 0 63 | 0 85 | 0 60 | 0 63 |
| Restricted Road Density | 0 41 | 0 08 | 0 86 | 1 14 | 0 51 |
| Open Motorized Trail Density | 0 03 | 0 14 | 0 06 | 0 13 | 0 13 |
| Restricted Motorized Trail Density | 0 00 | 0 00 | 0 00 | 0 00 | 0 00 |
| Total Motorized Access Route Density | 1 24 | 0 85 | 1 77 | 1 87 | 1 26 |
| Open Road and Open Motorized Trail Route Density | 0 83 | 0 77 | 0 91 | 0 73 | 0 76 |
| Other Access Information | | | | | |
| Percent of NF Acres within Designated Wilderness | 0 0 | 0 0 | 0 0 | 0 0 | 34 4 |
| Percent of NF Acres Open & Suitable for OHV Use | 6 2 | 7 1 | 75 4 | 68 5 | 8 7 |
| Percent of NF Acres within Designated Core Areas | 23 0 | 38 0 | 0 0 | 0 0 | 34 0 |
| Number of Sheep Allotments in Use | 9 | 0 | 0 | 0 | 2 |
| Number of Cattle Allotments in Use | 3 | 1 | 0 | 0 | 3 |
| Total Number of Point Activities | 1,060 | 23 | 63 | 53 | 324 |
| Administrative Points (work centers, campgrounds, etc ) | 5 | 1 | 5 | 5 | 12 |
| Sheep Grazing Points (camps) | 14 | 0 | 0 | 0 | 15 |
| Outfitter & Guide Camps | 0 | 0 | 0 | 0 | 8 |
| Special Use Points (summer homes, etc ) | 3 | 3 | 8 | 0 | 5 |
| Timber Management Activities (sales, firewood) | 3 | 0 | 26 | 27 | 10 |
| Other Point Activities (dispersed camps, etc ) | 39 | 15 | 23 | 20 | 144 |
| Private Point Sites on non-Forest lands (w/in 1 mi ) | 996 | 4 | 1 | 1 | 130 |
| Total Forested Acres | 60,768 | 28,130 | 86,124 | 75,331 | 168,885 |
| Percent Mature | 90 0 | 87 6 | 40 5 | 62 4 | 81 4 |
| Percent Pole | 0 7 | 2 7 | 14 0 | 2 1 | 1 6 |
| Percent Sapling | 2 1 | 7 0 | 12 3 | 10 1 | 4 3 |
| Percent Seedling | 5 0 | 2 6 | 24 6 | 16 1 | 8 8 |
| Percent Non-stocked | 2 3 | 0 2 | 8 7 | 9 4 | 4 0 |
| Total Nonforested Acres | 14,066 | 9,228 | 1,059 | 757 | 22,490 |
| Number of Verified Bear Mortalities & Cause (1981-1994) | | | | | |
| Hunting/Poaching | 0 | 0 | 1 | 0 | 0 |
| Transporting | 0 | 1 | 0 | 0 | 0 |
| Self-defense | 0 | 0 | 0 | 0 | 1 |
| Unknown | 1 | 0 | 0 | 0 | 0 |

Notes Information for the Henry's Lake BMU/Subunit 1, starting with motorized road and trail miles is for the MS 2 portion of the Subunit Information for the MS 3 portion and Henry's Lake Flat are discussed in the text Also, the last verified grizzly bear mortality on the Targhee occurred in 1984 There have been no verified grizzly bear mortalities on the Targhee from 1985 to present

# Central Idaho Nonessential Experimental Population Area and Yellowstone Nonessential Experimental Population Area for Gray Wolf. (USDI Fish and Wildlife Service 1994 b)

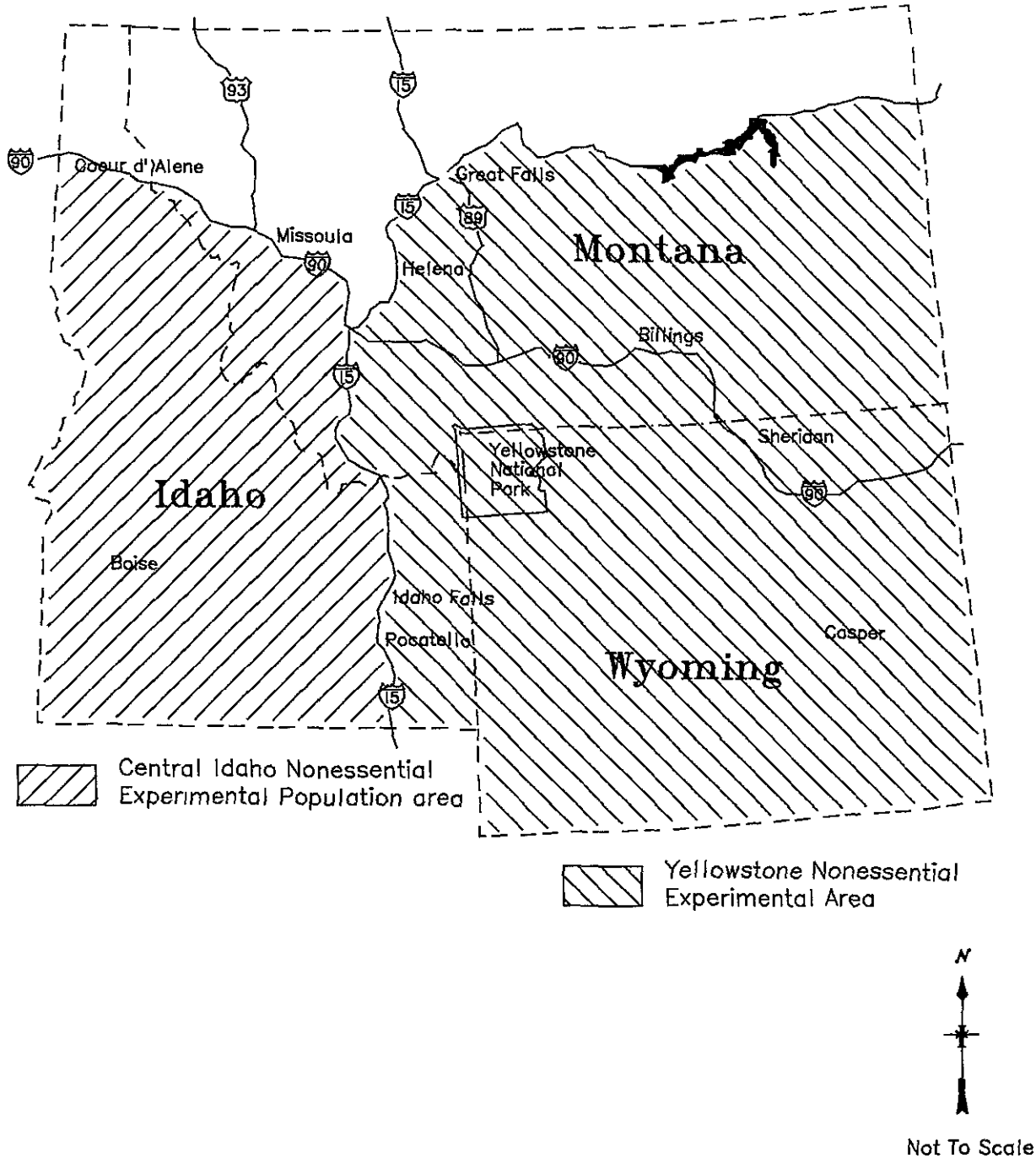



Figure III–7

Gray Wolf Populations and Habitat - Scale Forestwide

Possible sightings of gray wolves have occurred on the Forest and are summarized in the AMS and Process Paper D There have been no reported sightings of packs or evidence of successful breeding. In April, 1994 the USDI Fish and Wildlife Service approved the Final EIS for The Reintroduction of Gray Wolves to the Park and Central Idaho (USDI Fish and Wildlife Service 1994a) In November of that year final rules were issued for the establishment of a nonessential experimental population of gray wolves in the Park, central Idaho, and southwestern Montana (USDI Fish and Wildlife Service 1994b) As a result of these actions, the following conditions exist

The portion of the Forest west of Interstate 15 is within the Central Idaho Nonessential Experimental Population Area The portion of the Forest east of Interstate 15 is within the Yellowstone Nonessential Experimental Area (Figure III-7) All wolves found in the wild within the boundaries of these management areas, after the first wolf releases, will be considered nonessential experimental animals (USDI Fish and Wildlife Service 1994a and b)

Status of Wolf Reintroductions - 1995 and 1996 - In the Yellowstone Nonessential Experimental Population Area

- 14 Canadian wolves were released in 1995,
- 17 Canadian wolves were released in 1996,
- 2 packs produced 9 pups in 1995,
- 3 packs produced 10 pups in 1996,
- as of September 10, 1996, there were 34 free ranging wolves and 15 wolves in captivity pens, 6 wolves have died 3 were illegally shot, 1 was killed by a vehicle on a road, 1 was killed by agents from ADC after twice killing domestic sheep, 1 was killed in an accident (falling into a thermal pool) Note Our records of wolves that died may not be complete,
- 1 male wolf (the mate of the wolf that died by falling into a thermal pool) was located on the Forest for a few days in 1996 This wolf has returned to the Park

In the Central Idaho Nonessential Experimental Population Area

- 15 Canadian wolves were released in 1995,
- 20 Canadian wolves were released in 1996,
- no pups were born in 1995,
- 3 packs produced pups in 1996 we do not know have many pups,
- as of July 1996, there were 26 radio-collared wolves with known locations, there were 5 radio-collared wolves that have not been located for various periods of time,
- there have been 5 wolves that have died 1 was killed by a mountain lion, 1 was shot, 1 died of starvation, 1 accidentally drowned during a control operation and 1 was euthanized during release

This gray wolf reintroduction does not conflict with existing or anticipated Federal agency actions or traditional public uses of park lands, wilderness areas or surrounding lands (USDI Fish and Wildlife Service 1994b) Land use restrictions may be temporarily used by land or resource managers to control intrusive human disturbance, primarily around active den sites between April 1 and June 30, when there are five or fewer breeding pairs of wolves in a recovery area After six or more breeding pairs become established in a recovery area, land-use restrictions would not be needed (USDI Fish and Wildlife Service 1994a)

The ability of individuals holding grazing permits on public land to harass adult wolves in an opportunistic, noninjurious manner will become part of their permit conditions so it is clearly understood exactly what can occur There is a seven day reporting requirement for any such incident (USDI Fish and Wildlife Service 1994a)

The following conditions and criteria will apply in determining the problem status of wolves (USDI Fish and Wildlife Service 1994a) Livestock in this context refers to only cattle, sheep, horses or mules

Wounded livestock or some remains of a livestock carcass must be present with clear evidence that wolves were responsible for the damage Also there must be reason to believe that additional losses would occur if the problem wolf or wolves were not controlled Such evidence is essential since wolves may simply feed on carrion they have found while not being responsible for the kill

Artificial or intentional feeding of wolves must not have occurred Livestock carcasses not properly disposed of in an area where depredations have occurred will be considered attractants On federal lands, removal or resolution of such attractants must accompany any control action Livestock carrion or carcasses on federal land, not being used as bait in an authorized control action (by agencies), must be removed, buried, burned, or otherwise disposed of such that the carcass(es) will not attract wolves.

On federal lands, animal husbandry practices identified in existing approved AMPs and AOPs for allotments must have been followed

If additional livestock depredations were likely, proper animal husbandry practices were employed (proper disposal of livestock carcasses, etc ), artificial feeding did not take place, and federal grazing allotment plans were followed, agencies would harass, capture, move, or kill wolves that attacked livestock (defined as cattle, sheep, horses, or mules only) on public or private land Prior to the establishment of six breeding pairs, depredating females and their pups will be captured and released at or near the site of capture, one time prior to October 1 If depredations continue, or if six packs are present, females and their pups will be removed

Wolf recovery will not result in wolf travel corridors or linkage zones being established The size and proximity of the areas where wolves will be managed for recovery are large enough, close enough and have enough public land between them that additional areas (travel corridors) are not required in the foreseeable future to maintain a viable wolf population after the three subpopulations become established *(USDI Fish and Wildlife Service 1994a)*

Primary Cavity Nester Populations - Scale Forestwide

Eight primary cavity nesting species potentially occur on the Forest We do not know and are not able to provide population estimates for these species Hejl et al , (1995) provided relative abundance ratings for these species for general mature to older forest habitats in the Rocky Mountains These abundance ratings are shown in Table III-20

Table III-20 Relative Abundance of Primary Cavity Nesting Species in the Breeding Season (from Hejl et al 1995)

| | Relative Abundance by General Forest Habitat 1/ | | | |
|---|---|---|---|---|
| Species | Mixed Conifer 2/ | 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 |
| Black-backed Woodpecker | R | R | R | R |
| Northern Flicker | C | C | C | C |

1/ A=abundant, C=common, U=uncommon, R=rare, - = no information
2/ Mixed conifer is primarily dominated by Douglas-fir

Three bird studies on the Forest (one completed and two in progress) have documented the presence of seven of the eight primary cavity nesting species, the Lewis' woodpecker that has not been documented in the studies (Douglas and Ratti 1984, Patla 1995 and Kliene 1996 progress reports, Hoffman and Rotella 1996 progress report) These studies indicate that red-naped sapsuckers and northern flickers are the most common primary cavity nesting species

Primary Cavity Nester Habitat - Scale Forestwide and Watersheds

Primary cavity nesting species excavate nest cavities in snags (dead standing trees) Live trees may also provide nest sites depending on the presence of infection or injury which would allow the birds to excavate a nesting cavity Table III-21 provides an overview of the habitat requirements for these species Because of the need to have large enough snags or live trees for excavating nest cavities, these species are most often associated with mature to old growth forests However, these species have been documented using areas following stand replacing fire and timber harvesting when snags are present

Table III-21 Cavity Nesting Species Habitat Requirements (from review of western North American literature, see References-Cavity Nesting Species)

| Species | Snag DBH (inches) | Snag Height (feet) | No of Cavities per year | Territory Size (acres) 1/ | No Snags per acre for 100% Biological Potential 1/ |
|---|---|---|---|---|---|
| Lewis's 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) |
| Black-backer Woodpecker | 8-17 | 6+ | 3 | 75-100 (75) | 12- 6 ( 59) |
| Northern Flicker | 10-51 | 6+ | 1 | 8-500 (40) | 38- 48 ( 38) |

1/ Numbers in parentheses indicate territory sizes and number of snags used for analysis purposes on the Forest

Four of these primary cavity nesting species (hairy woodpecker, northern flicker, yellow-bellied sapsucker, Williamson's sapsucker) require larger size snags and provide larger nesting cavities which are important for several other species of animals

We analyzed overall biological potential for the primary cavity nesting species as a group, and a biological potential analysis was done for the four species which require larger size snags These biological potential analyses are based on existing snag densities Currently, the biological potential for the primary cavity nesting species as a group is 0 61, and the biological potential for the larger cavity nesting species is 0 47 This biological potential is considered a minimum potential because it only considered snag densities Additional biological potential exists with live trees

Forest Owl Populations - Scale Forestwide and Subsections

Forest owls include the flammulated, boreal and great gray We do not know and are not able to provide population estimates for these species The following documents what we know about their relative abundance and distribution on the Forest, also refer to Table III-16 (USDA Forest Service 1994, AMS 1992)

*Flammulated Owl* We expect the flammulated owl to be present on the Forest only during the breeding season We consider this owl to be rare on the Forest, as we have only documented it in four locations

For lands adjacent to the Forest, flammulated owls have been documented on only three areas the Madison Ranger District of the Beaverhead N F , the Sand Creek Wildlife Management Area north of St Anthony, Idaho, and BLM land near Moose Creek (Keepout Draw) in Teton Valley

*Boreal Owl* The boreal owl is considered to be a year-round resident on the Forest When the AMS was completed in 1992, only three boreal owl observations had been recorded Sawtell Peak in 1987, Targhee Creek in 1988 and McGarry Canyon in 1990 All of these observations were in the Centennial Mountains Subsection Since completion of the AMS, more boreal owl surveys have been done on the Forest and boreal owls have been documented in five subsections Centennial Mountains, Island Park, Madison-Pitchstone Plateaus, Teton Range and Big Hole Mountains In relation to other owls on the Forest, we consider this owl to be uncommon in terms of abundance

For lands adjacent to the Forest, boreal owls have been documented in these areas the Leadore Ranger District on the Salmon/Challis N F , the Dillon and Madison Ranger Districts on the Beaverhead N F , the Hebgen Lake Ranger District on the Gallatin N F , Yellowstone and GTNP, the Greys River Ranger District on the Bridger-Teton N F

*Great Gray Owl* The great gray owl is a year-round resident on the Forest The great gray owl has been documented in every subsection on the Forest In relation to other owls on the Forest, we consider this owl to be common in terms of abundance

For lands adjacent to the Forest, great gray owls have been documented in these areas BLM lands and State of Idaho lands, the Madison Ranger District on the Beaverhead N F , Red Rocks Lake National Wildlife Refuge, the Hebgen Lake Ranger District on the Gallatin N F , Yellowstone and GTNP, the Greys River Ranger District on the Bridger-Teton N F

Forest Owl Habitat - Scale Subsection

*Flammulated & Boreal Owls* - The habitat components considered most important for the flammulated and boreal owls are a) the amount of mature and older Douglas-fir, mixed conifer and aspen; b) primary cavity nesting habitat for the larger woodpeckers (hairy woodpecker, northern flicker, yellow-bellied sapsucker and Williamson's sapsucker) Thirty acres encompasses the entire home range of a flammulated owl pair during the breeding/nesting period Thirty acres encompasses the largest size nest stands recorded in the literature for boreal owls Approximately 3,600 acres encompasses the winter home range of a boreal owl Summer home ranges are slightly smaller

*Great Gray Owl* - The habitat components considered most important for this species are a) mature or older forest habitat to provide suitable nesting sites, and b) suitable foraging habitat which includes nonstocked and seedling forests and nonforested habitats Great gray owl nest sites average 143 meters from nearest opening, a 143 meter radius circle is about 16 acres The largest home ranges recorded for great gray owls is 6 5 sq km , which is 1,622 4 acres (USDA Forest Service 1994a)

Furbearer Populations - Scale Forestwide and Subsection

We do not know and are not able to provide population estimates for wolverine, lynx, fischer and marten The following documents what we know about their relative abundance and distribution on the Forest

*Wolverine* - In 1985 a wolverine survey was done in Idaho to determine the location and status of populations (Groves 1987) Results of the survey indicated that three areas of the State had wolverine populations The Forest was not within one of these areas However, documented observations of wolverine on the Forest have occurred in the Centennial, Island Park, Madison-Pitchstone Plateaus, Teton Range and Caribou Range Mountains Subsections Respectively, there have been 18, one, three, seven and one observations between 1961 and 1995 Because of large home ranges, wolverine populations always exist at low densities

For lands adjacent to the Forest, wolverine have been documented in the following general areas Leadore Ranger District on the Salmon/Challis N F , Dillon and Madison Ranger Districts on the Beaverhead N F s, Dillon District of the BLM, Hebgen Lake Ranger District on the Gallatin N F , and Yellowstone and GTNP

*North American Lynx* - Historically, lynx populations were minimal in the contiguous United States due to a lack of suitable habitat (U S Fish and Wildlife Service 1994c) Favorable habitat conditions for the lynx dissipate with decreasing latitude Thus, the lynx is restricted to higher elevations the more southern the latitude (U S Fish and Wildlife Service 1994c)

The only documented reports of lynx on the Forest occur in the Wyoming portion of the Big Hole Mountains Subsection (USDA Forest Service 1994b) For lands adjacent to the Targhee N F , lynx have been documented in the Park, and the Greys River Ranger District Based on current knowledge, it is unlikely that the Forest historically or currently provides habitat for a viable resident lynx population

*Fisher* - Historically, fisher were never known to occur in the Idaho portion of the GYA (Clark et al 1989) However, one fisher was trapped in the Island Park Subsection at Warm River Butte in 1978 Also, fisher tracks were observed in the Teton Range Subsection near North and South Leigh Creeks during the winter of 1995 by a research team studying furbearers on the Forest At this time, there is uncertainty about both the historical and current status of fisher populations on the Forest

We are aware of one documented fisher sighting on lands adjacent to the Forest, this sighting was in 1990 near Drake Canyon (T3N, R45E, Sec 7) in Teton Basin Also, during 1995, Yellowstone Ecosystem Studies (a private group from Bozeman, Montana) used a remote camera to photograph a fisher in Republic Creek on the Shoshone N F (K Barber, Shoshone N F , personal communication)

*American Marten* - Marten sightings have been documented within all subsections except Lemhi/Medicine Lodge Marten are considered abundant on the Forest, and the state Fish and Game Departments provide a trapping season for marten

We are not sure about the presence of American marten in the Lemhi/Medicine Lodge subsection Suitable habitat exists for marten, however, conifer forests only make up 37 percent of this subsection, and the forests are not connected to other forested habitats with known marten populations Therefore, there is uncertainty about marten populations and habitat in this part of the Forest

Furbearer Habitat - Scale Forestwide and Subsections

The following documents what we know about these species on the Forest, also refer to Table III-16 (USDA Forest Service 1994b)

*Wolverine* Home ranges of adult wolverine in North America range from less than 100 sq km to over 900 sq km (38 6 sq mi to 347 5 sq mi ) Yearly home ranges for females with young range from 47 sq km to 105 sq km (18 2 sq mi to 40 5 sq mi ) Wolverines occupy treeless alpine areas to dense forested areas Wolverine food habits are generally described as opportunistic omnivores in summer and primarily scavengers in winter Natal den sites have consisted of snow tunnels, talus and boulder fields, holes dug under fallen trees, within hollow trees, beaver lodges, old bear dens, under roots of trees, etc

It has been suggested that wolverine habitat should consist of large refugia, representative of the vegetation zones that wolverine occupy Details for these large refugia have not been established It has been suggested that wolverine will benefit from conservation strategies for grizzly bears, wolves and cougars

*North American Lynx* Lynx habitat in the western mountains consists primarily of two structurally different forest types occurring at opposite ends of the stand age gradient Lynx require early seral forests that contain high numbers of prey (especially snowshoe hares) for foraging and late-seral forests that contain

cover for kittens (especially deadfalls) and for denning Intermediate seral stages may serve as travel cover for lynx but function primarily to provide connectivity within a forest landscape Although such habitats are not required by lynx, they fill in the gaps between foraging and denning habitat within a landscape mosaic of forest seral stages

*Fisher* In the western mountains, fishers prefer late-seral forests (especially for resting and denning) and occur most frequently where these forests include the fewest large nonforested openings Avoidance of open areas may restrict the movements of fishers between patches of habitat and reduce colonization of unoccupied but suitable habitat Large physical structures (live trees, snags and logs) are the most frequent fisher rest sites, and these structures occur most commonly in late-seral forests

Until it is understood how these structures are used and can be managed outside their natural ecological context, the maintenance of late-seral forests will be important for the conservation of fishers

*American Marten* Although American martens at times use other habitats, populations depend on coniferous forests Martens associate closely with mesic, late-seral coniferous forests, but occur in other vegetation types They use treeless areas less than predicted from their spatial availability, especially in winter Clearcutting reduces marten densities for several decades In some areas, under conditions that are not well understood, martens may use regenerating clearcuts after a decade or two if sufficient structures useful to martens persist from the clearcutting The effect of other cutting regimes, including small patch cutting, seed tree cutting or salvage harvest of dead or damaged timber have not been widely studied

Coarse woody debris, especially in the form of large diameter boles, is an important feature of marten habitat Logs are most useful to martens for gaining access to subnivean areas and for resting Removal of coarse woody debris from forests or interfering with processes that make it available in suitable sizes and stages of decay may reduce habitat quality for martens

Knowledge of landscape-scale habitat use is almost completely lacking regarding behavioral or population responses of martens to such landscape attributes as stand size, stand shape, area of stand interiors, amount of edge, stand insularity, use of corridors and connectivity Marten use of residual forest stands surrounded by clearcuts on Newfoundland Island was a function of stand size; stands < 15 ha (37 acres) in area had lower capture success rates than larger stands However, the dearth of knowledge in this area makes managing forested landscapes for marten highly conjectural

Northern Goshawk Populations - Scale Forestwide

We do not know and cannot provide a population estimate for northern goshawks on the Forest Goshawk monitoring on the Forest has identified 50 goshawk territories, 13 of these territories are historic (meaning we have no record of activity since 1989) and 37 of these territories have been active one or more years from 1989 to the present (Process Paper D, Patla 1990, 1991, 1992, 1995 and personal communication) Not all of the Forest has been inventoried or monitored for goshawks, therefore we expect additional goshawk territories exist

For lands adjacent to the Forest, goshawks have been documented in the following areas Idaho National Engineering and Environmental Laboratory (INEEL), Dillon and Madison Ranger Districts on the Beaverhead N F , Red Rocks Lake National Wildlife Refuge, Yellowstone and GTNP, Sand Creek Wildlife Management Area, Greys River Ranger District on the Bridger-Teton N F , Grays Lake National Wildlife Refuge, and BLM lands

Northern Goshawk Habitat - Scale Forestwide

The goshawk is a forest habitat generalist that uses a variety of forest types, forest ages, structural conditions and seral stages (Reynolds et al 1992) It preys on small to medium sized birds and mammals

(robins and chipmunks to grouse and hares), 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 - young to old forests - to increase the diversity of habitat for goshawks and their many prey species Northern goshawks have been documented in all seven subsections

*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 and a high density of large trees Studies suggest that the dense vegetation in these stands provide relatively mild and stable microenvironments, as well as protection from predators of goshawks Nest areas are usually classified as mature and older forest stands

*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 to 600 acres (mean = 415 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's should contain overstories and habitat attributes critical in the life-histories of goshawk prey species

*Foraging Area* - Goshawks prey on birds and mammals in the larger body-size classes 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 Goshawk foraging areas are about 5,000 to 6,000 acres

Limited radiotelemetry evidence suggests 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 by goshawks is predicted, at least in part, on habitats where prey are abundant and accessible

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 stages (forest seral stages)

*Winter Habitat* Winter movements and winter habitat for goshawks are poorly understood We know of only one published study in the Rocky Mountains (Squires and Ruggiero 1995) Documented migrations of four adult birds from nesting areas to winter areas ranged from 65 to 185 kilometers (40 to 115 miles) However, two of the adult birds could not be found for most of the winter period, so these distances may be minimums Winter habitats included aspen with mixed conifer stands, spruce-fir and lodgepole pine stands, and small groves of cottonwood surrounded by open sagebrush-wheatgrass prairies (Squires and Ruggiero 1995)

One adult goshawk has been monitored during the winter period on the Forest During the winter period, this bird made several migrations between its nesting territory in the Big Hole Mountains to the Henry's Fork of the Snake River near St Anthony, Idaho (S Patla, personal communication)

Red Squirrel Populations and Habitat - Scale Forestwide and Subsections

Red squirrels are so strongly associated with the conifer forests (Table III-16) that their population densities fluctuate with cone crops (Smith 1968, Gurnell 1983, Halvorson and Engeman 1983) Since red squirrels are so strongly dependent upon conifer seeds as a food supply, conifer forests must be of seed-producing age before red squirrels will make significant use of them Habitat quality is also related to nesting cover and food-caching sites Natural cavities are preferred by red squirrels as nest sites (Hamilton 1939, Layne 1954) However, underground nests and external tree nests are more commonly used where cavities are not available (Fancy 1980) Large diameter trees, large standing snags, and fallen trees are important sites for cone storage (Vahle and Patton 1983)

Suitable habitat for red squirrels exists in all subsections At the present time, about 80 percent of the forested acres are of cone-bearing age (about 928,000 acres)

Red squirrels are known to defend territories of 0 5 to 7 5 acres in size (USDA Forest Service 1991) This would provide a range of 85 to 1,280 red squirrels per square mile of suitable habitat There is about 1,450 square miles (928,000 acres) of suitable habitat on the Forest, so a population range for the Forest could be 123,000 to 1,856,000 squirrels As stated above, red squirrel populations will fluctuate depending on fluctuations in cone crops The red squirrel is considered abundant on the Forest

Peregrine Falcon Populations - Scale Rocky Mountains and Forestwide

The Forest is within the American Peregrine Falcon Recovery Plan - Rocky Mountain/Southwest Population (USDI Fish and Wildlife Service 1977/revised 1984) The objectives for the Recovery Plan are a minimum of 183 breeding pairs with the following distribution Arizona-46, Colorado-31, Idaho-17, Montana-20, Nebraska-1, New Mexico-23, North Dakota-1, South Dakota-1, Texas-8, Utah-21 and Wyoming-14

In 1991, there were 363 known peregrine falcon pairs within the area covered by the Recovery Plan, in 1993, there were an estimated 450 pairs, and based on 1994 surveys, the current Rocky Mountain/Southwest population consists of 559 breeding pairs, surpassing the recovery objective by 376 pairs (USDI Fish and Wildlife Service 1994 and 1995)

In 1995, 13 pairs occupied territories within Idaho (six of these pairs were on the Forest), six pairs were successful in producing 16 young for an average of 1 2 young per pair and 2 7 young per successful pair (three of the successful pairs and eight of the young produced were on the Forest) (Levine et al 1995) Peregrine falcon eyries are currently distributed within five subsections on the Forest

The current reproductive level has been sufficient to support considerable population growth At this time, the U S Fish and Wildlife Service has published an advanced notice of a proposal to remove the American peregrine falcon from the list of endangered and threatened wildlife (USDI Fish and Wildlife Service 1995)

For lands adjacent to the Forest, peregrine falcons have been documented in the following general areas Big Butte and Medicine Lodge Resource Areas of the BLM, INEEL, Dillon Ranger District (Beaverhead N F ), Dillon District (BLM, Montana), Hebgen Lake Ranger District (Gallatin N F ), Yellowstone and GTNP, Market Lake and Mud Lake Wildlife Management Areas, Camas National Wildlife Refuge, Gray's Lake National Wildlife Refuge, and Gray's River Ranger District (Bridger-Teton N F )

Peregrine Falcon Habitat - Scale Forestwide

Peregrine falcons occupy a wide range of habitats (Table III-16), 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 (also known as eyries), although reintroduced birds now regularly nest on man-made structures such as towers and high-rise buildings Peregrines may travel more then 18 miles from the nest site to hunt for food, however a 10 mile radius around the nest is an average hunting area, with 80 percent of foraging occurring within a mile of the nest

Peregrine falcons generally migrate south for the winter to the Gulf of Mexico, and into Mexico and Central America, or to large rivers and wildlife refuges in the United States (USDA Forest Service 1991)

Significance of environmental contaminants and other potential threats Peregrine falcons declined precipitously in North America following World War II Research implicated organochlorine pesticides, particularly the pesticides DDT, DDE (a metabolite of DDT), and dieldrin, applied in the United States and Canada during this same period as causing the decline (USDI Fish and Wildlife Service 1994 and 1995) Use of these chemicals peaked in the 1950s and early 1960s and continued through the early 1970s (USDI Fish and Wildlife Service 1995)

The most significant event in the recovery of the peregrine falcon was the restriction placed on the use of organochlorine pesticides Use of DDT was restricted in Canada in 1970 and in the United States in 1972 Restriction that controlled the use of aldrin and dieldrin were imposed in the United States in 1974 Since implementation of these restrictions, residues of the pesticides have significantly decreased in many regions where they were formerly used Consequently, reproductive rates in most surviving peregrine falcon populations in North America improved and numbers began to increase (USDI Fish and Wildlife Service 1995)

There is no evidence, thus far, that any environmental contaminant other then DDT/DDE have been recently causing significant, widespread mortality or reproductive failure in the American peregrine falcon in the western United States (USDI Fish and Wildlife Service 1994)

Other known negative factors, such as illegal shooting and collisions with wires, fences, cars, and buildings, are much less significant to the western American peregrine falcon 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 For example, in some areas, rock-climbing is a growing sport and has resulted in nest failure Breeding-season closure of rock-climbing cliff areas in close proximity to nesting American peregrine falcons has recently prevented adverse effects Power lines, especially distribution lines, cause peregrine falcon mortality, but the rate must be low, because many peregrine falcons nest successfully each year near power lines, especially in urban areas Land-use practices adjacent to American peregrine falcon eyries 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 American peregrine falcons in the West provides evidence that significant adverse factors affecting the western subspecies at the population level are being alleviated or have been reduced (USDI Fish and Wildlife Service 1994)

Bighorn Sheep Populations and Habitat - Scale Forestwide and Subsections

Bighorn sheep are present in four areas of the Forest, with an estimated total population of 225 animals (AMS 1992)

*Lemhi Mountains* - These bighorn sheep are part of a population that includes the adjacent Challis N F Forty-one bighorn sheep were transplanted on the Challis N F side in two transplants occurring in 1983 and 1984 A helicopter survey conducted in 1988 by IDFG found 31 bighorns (14 ewes, 8 lambs, 9 rams) No hunt has been authorized on these sheep

*South Beaverhead Range* - (also referred to as the southern Bitterroot Mountains or the Medicine Lodge area) Forty-one bighorn sheep were introduced into the south Beaverhead Range in four transplants between 1976 and 1982

This herd has not grown as expected We do know that the transplanted bighorn sheep had lung worms at the time they were transplanted A helicopter survey conducted in 1988 by IDFG found only 17 bighorns (13 ewes, 3 lambs, 1 ram)

The ear tags or remains of several of the released sheep have been found since the releases, but mortality causes are unknown No hunt has been authorized on these sheep Monitoring of bighorn sheep through recording of ground observations has been done by the Dubois Ranger District and IDFG The highest number recorded from ground observations was 37 animals (5 rams and 32 ewes and lambs) in October 1995 (Process Paper D)

The Dubois Ranger District has implemented several habitat projects for bighorns in the south Beaverhead Range Seven water developments, three of these in cooperation with the Foundation for North American Wild Sheep, have been installed for bighorns Other water developments for upland game, deer, and elk on Forest Service and BLM lands are used by bighorns on transition range Prescribed burns have been done to reduce sagebrush density and improve forage quality for bighorns

All of the winter observations we know about have been on the Birch Creek side of the mountain range (we are not aware of observations in the Nicholia, Chandler, Kelly and Snakey drainages during the winter)

*Lionhead Area* - These bighorn sheep are part of a population that includes the Gallatin N F in Montana During the summer and fall months, 12 to 15 sheep can frequently be seen in Idaho Idaho has never authorized a hunt on this herd Montana has authorized hunts on this population

This sheep population winters on high elevation windswept ridges There is historical low elevation winter range available, but the sheep do not use it In the early 1990s, the Montana Department of Fish, Wildlife and Parks introduced bighorn sheep into the low elevation winter range, hoping they would associate with the bighorns at the higher elevations during the summer, and re-establish the migration to the low winter ranges This has not happened, the introduced bighorns have remained at the low elevations year-around

*Westslope of the Tetons* - These bighorn sheep are part of a population that includes GTNP WGF authorizes a hunt for bighorns on the Forest, no bighorn sheep hunting is allowed in GTNP A total of 11 rams were harvested from 1977 to 1986, no bighorns have been harvested during the hunt from 1987 to 1991 Table III-22 is a summary of herd composition counts which have been done by WGF

Interviews with old timers who were familiar with the Teton Range suggest that the bighorn population may have declined to a low point in the 1930s and 1940s, with some recovery in numbers during subsequent years Minimum counts of bighorn sheep (not necessarily based on full coverage of suitable habitat) have ranged from 39 to 97 since 1976 Whitfield (1983) believed that the total population approached 125 in

1981 and was static or declining Annual winter counts and high winter mortality during the last two years indicate that the population may have declined substantially

| Table III-22 Herd Composition Counts, Westslope of the Tetons Bighorn Sheep | | | | | |
|---|---|---|---|---|---|
| **Date** | **Total** | Rams | Ewes | Lambs | Unclass |
| November 1991 | 66 | 21 | 28 | 17 | |
| February 1991 | 90 | 27 | 40 | 23 | |
| November 1989 | 54 | 19 | 27 | 8 | |
| December 1988 | 89 | 25 | 35 | 29 | |
| March 1981 | 46 | 10 | 25 | 11 | |
| January 1979 | 60 | 13 | 28 | 10 | 9 |
| Dec/Jan 1977-78 | 39 | 12 | 18 | 9 | |
| Jan/March 1976 | 53 | 17 | 23 | 13 | (+18 tracks) |
| Nov/Dec 1975 | 26 | 9 | 11 | 6 | |
| April 1974 | 42 | 14 | 15 | 7 | 6 |
| March 1957 | 60 | 8 | 12 | 10 | 30 |

Winter range is one limiting factor for this bighorn sheep population All of the bighorns are wintering at elevations above 9,000 ft on windswept ridges For the past 8-9 years, no bighorn sheep have been documented wintering on the Forest, all have been found wintering in GTNP

Since 1994, GTNP has been doing a bighorn sheep study which involved radio-collaring and tracking Movements during the winter were minimal, commonly with sheep located only a few hundred meters away from the previous location Movements increased substantially in May when sheep commonly moved to lower elevations at the mouth of the canyons where snowmelt had occurred on south and east exposures. Summer ranges consisted of upper-elevation grassy benches and ledges near cliff areas for escape

Neotropical Migratory Bird Populations and Habitat - Scale Rocky Mountain and Forestwide

We do not know and cannot provide population estimates for neotropical migratory birds Hejl et al (1995) conducted an extensive review of literature on forest birds in the Rocky Mountains, and provided a relative abundance rating for species during the breeding season for general forest habitats, emphasizing mature or older stands Information from Hejl et al , (1995) for the four general forest types which encompass the Forest and bird species documented to occur on or adjacent to the Forest (AMS 1992) are listed in Process Paper D Of the 143 species listed there, 52 (36 percent) are long distance migrants, 48 (34 percent) are short distance migrants, and, 43 (30 percent) are permanent residents

Predator Control

Predator control activities have been conducted on the Forest since it was first established The 1996 APHIS-ADC Decision Notice and EA for Predator Damage Management in Southern Idaho provides direction for USDA Animal and Plant Health Inspection Service-Animal Damage Control (APHIS-ADC) in con-

ducting predator control activities on the Forest The APHIS-ADC Decision Notice selected the alternative, "Current Program plus Livestock Protection Collar " The Affected Environment, Chapter III, of the 1990 Targhee Forestwide Predator Control EA is incorporated by reference into this analysis The applicable sections of the Affected Environment, Chapter 2, of the 1996 ADC EA are also incorporated by reference into this analysis

**Unique Ecosystems**

Research Natural Areas (RNAs) - Scale Forestwide

RNAs are part of a national network of ecological areas designed in perpetuity for research and education and/or to maintain biological diversity on National Forest System lands (Table III-23) RNAs are for non-manipulative research, observation and study They also assist in implementing provisions of the NFMA

The forest currently has nine established RNAs, each having unique features representing some of the Forest's diversity In addition, there are three proposed RNAs No other areas are being evaluated for RNA status Site-specific information for existing and proposed RNAs on the Forest can be found in the 4063 files, which contain Environmental Analysis Reports, and/ or the Establishment Records and project files

Table III-23 Research Natural Area Descriptions

| Area Name | Year Established | Ranger District | Size in Acres | Area Features |
|---|---|---|---|---|
| Meadow Canyon * | 1981 | Dubois | 3880 | alpine tundra, rare plants |
| Copper Mountain | 1987 | Dubois | 550 | alpine grassland |
| Thurman Creek | 1991 | Island Park | 330 | spring fed streams |
| Moose Cr Plateau | 1991 | Island Park | 440 | obsidian sands, lodgepole pine |
| *Willow Creek* | *1987* | *Ashton* | *1100* | *aspen, limber pine, mtn maple* |
| Webber Creek | 1988 | Dubois | 2245 | high mtn grassland |
| Burns Canyon | 1996 | Palisades | 490 | sub alpine fir/ninebark habitat |
| Targhee Creek | 1996 | Island Park | 2640 | wet meadows, lakes, alpine & sub alpine |
| Sheep Mountain ** | 1996 | Dubois | 1542 | alpine vegetation |
| Wyoming Creek | proposed | Ashton | 401 1/ | willow, meadow |
| Sheep Falls | proposed | Ashton | 300 1/ | waterfall, lodgepole pine |
| Rock Lake (WY) | proposed | Ashton | 300 1/ | lake lilly pads, meadow |

* Targhee National Forest = 3,595 acres, Challis National Forest = 285 acres
** Targhee N F = 6 acres, Salmon N F = 822 acres, Challis N F = 714 acres
1/ approximate acres

# Targhee National Forest

## Average Daily Traffic (ADT) at Selected Locations

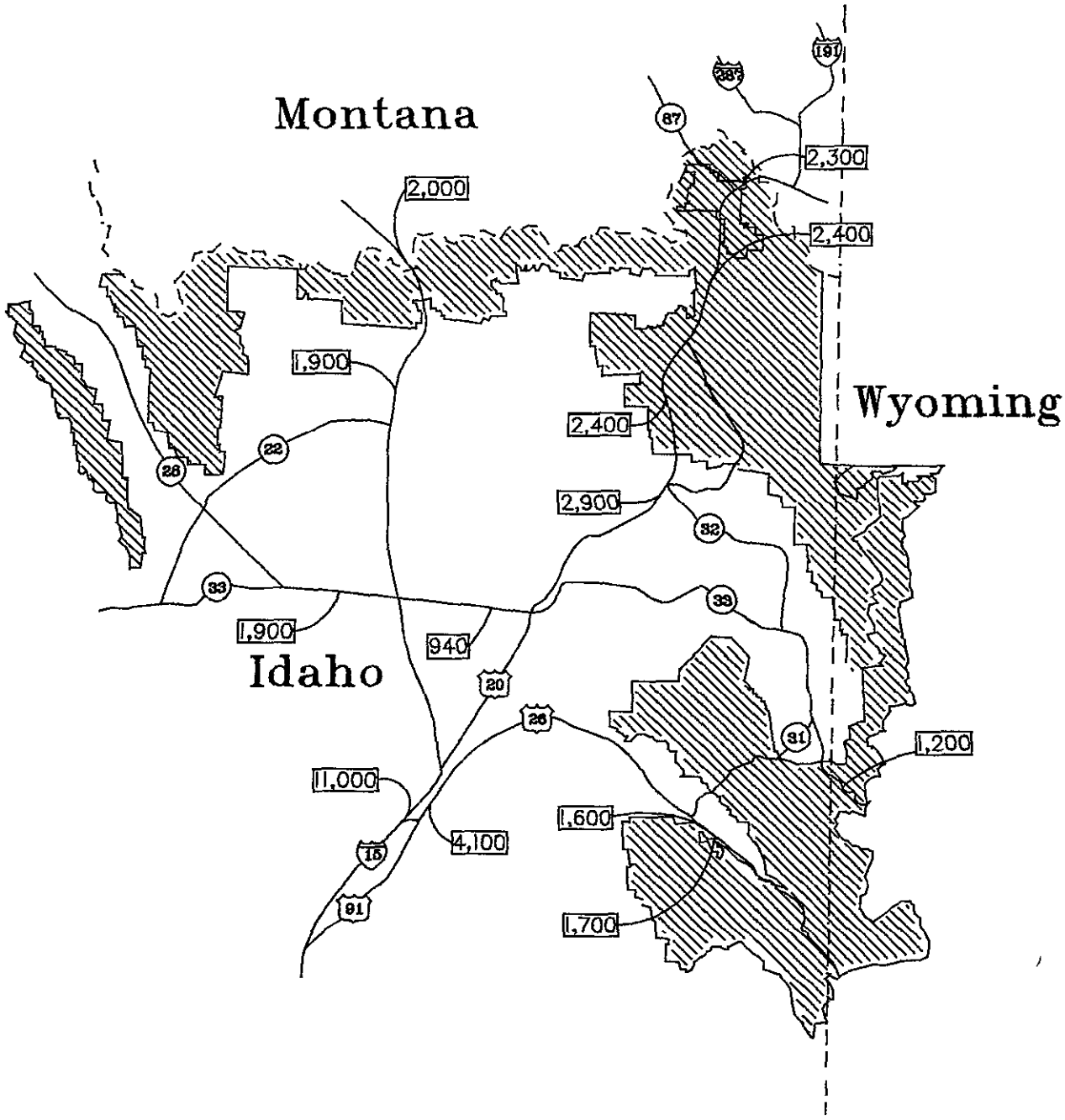



Figure III–8

Not To Scale

## FOREST USE AND OCCUPATION

ACCESS MANAGEMENT

**Road System - Scale: Forestwide**

The Forest road system provides access for recreation, industry and administration Land transportation by motorized vehicles is the principle means of travel on the Forest Seven major highways run through the Forest and all primary access begins from one of these highways Average daily traffic counts collected by the Idaho State Highways Department (Gillespie 1994) suggest the heaviest traffic occurs on the highways between Idaho Falls and the northeast part of the Forest (Figure III-8) Many of the Forest's roads were constructed in the mid-1970's as part of the timber salvage program and provided access to recreationists, firewood gatherers and hunters The roads have also proved useful for fire suppression activities Forestwide there are 1,985 miles of open roads In addition, motorized use is restricted on some roads as follows 73 miles of roads have seasonal restrictions, 733 miles of roads have yearlong restrictions Table III-24 displays the status of roads

Table III-24 Status of Roads

| Functional Class | Open All Vehicles | Seasonal Restrictions (miles) | Yearlong Restrictions (miles) |
|---|---|---|---|
| Arterial | 196 | 0 | 0 |
| Collector | 504 | 0 | 0 |
| Local | 1285 | 73 | 733 |
| Total | 1,985 | 73 * | 733 * |

* Open to snowmobile travel if designated

The Forest road system is essentially in good shape, with annual maintenance on arterial and collector roads and some local roads depending on resources needs Further information on the Forest Development Road System can be found in the Transportation section of the AMS

The current road system has created resource conflicts with wildlife, fish and watersheds Road restrictions or reclamations have been requested by agencies and individuals to reduce resource conflicts Law enforcement problems have also increased over the years due to the need to enforce restrictions

The Forest has begun restricting and/or reclaiming roads to reduce resource conflicts Many of the spur roads built during the salvage program are now restricted Motorized use was restricted on 377 miles of road from 1981-1991 and on an additional 1,245 miles in 1992-1993.

There are approximately 2,791 miles of existing roads (Table III-25) Of these, 10 percent are classified as arterials They are often two-lane and paved or have a good gravel surface and can handle unrestricted traffic at moderate speeds Branching from the arterial roads are the collectors Collector roads are medium standard roads that constitute about 25 percent of the mileage in the transportation system Collector roads are stable enough for most traffic during normal season of use Small single-lane roads, known as local roads, are found throughout the Forest and make up 65 percent of the road system These minimum standard roads provide access for specific purposes, such as harvesting timber, maintaining electronic communication sites or reaching a trailhead They allow limited passing, but the road conditions require that vehicles move slowly Many of the local roads are currently restricted to vehicular traffic much of the time

Two-track roads exist that are referred to as low standard roads (sometimes called "ghost roads") These isolated roads were not designed or maintained for public use, they are created by repeated use by the

public Some vehicles cannot travel on these roads Road surfaces are generally rough and irregular with no drainage Some of these roads do not allow motorized use

Table III-25 Existing Road and Trail Access

| | Existing | | | Existing |
|---|---|---|---|---|
| **Roads** | | | **Trails** | |
| Miles - Open 1/ | 1,985 | | Miles - Open 1/ | 773 |
| Miles - Seasonal Restrictions 2/ | 73 | | Miles - Restricted 4/ | 628 |
| Miles - Yearlong Restrictions 3/ | 733 | | Miles - Nonfunctional | NA* |
| Miles - Reclaimed/Obliterated | NA* | | | |
| Total Miles | 2,791 | | Total Miles | 1,401 |

1/ Miles - Open means road and trail miles without restrictions on motorized use
2/ Miles - Seasonal Restriction means road miles on which motorized use is restricted for only a portion of the spring/summer/fall seasons
3/ Miles - Yearlong Restriction means road miles on which motorized use is restricted for the entire spring/summer/fall seasons
4/ Miles - Restricted means trail miles on which motorized use is restricted either for a portion of the spring/summer/fall seasons or yearlong (as in designated *wilderness areas)
* This table refers to present time It does not take into account the 1,622 miles of road that were reclaimed or obliterated between 1981 and 1993

The National Forest Scenic Byways Program was developed to increase public awareness and understanding of the National Forest and State activities and recreation opportunities Presently there are two Scenic Byways that pass through the Forest, the Mesa Falls and Teton Scenic Byways The Mesa Falls Scenic Byway follows old State Highway 47 from Ashton to where it ties back to US Highway 20 About 20 of the total 29 miles are located on the Forest The Teton Scenic Byway Route travels east from Idaho Falls to Swan Valley along Highway 26, then north to Victor on Highway 31, from Victor to Tetonia on Highway 33 to the intersection of Highway 32, and then to Ashton on Highway 32

The Forest has been working with the Federal Highway Administration on improving Forest Highways Funding provided by the Federal highways Administration allows the Forest to make improvements on roads which normally could not be made Roads that are identified for improvements are required to accommodate current conditions and impending future growth and road uses Without improvements, the highways cannot satisfy current and future traffic demands, safety requirements, Forest Service land and resource management objectives and maintenance capabilities of the various agencies

The roads that have been slated for improvement and the expected year for reconstruction are Forest Highway number 62, Mesa Falls (1997-1998), Forest Highway number 76, Fred's Mountain or Grand Targhee road (1999-2000), and part of the Kilgore-Yale road (est 2000)

There are 235 existing and 109 potential/needed material sources for gravel, rock riprap, and earth borrow sites This should serve the Forest's needs for the planning period The 1993 Compendium of Material Sources is available for further information

**Summer Access for Off-Highway Vehicles (OHV) - Scale: Forestwide**

Approximately 61 percent of the Forest (1,126,000 acres) is currently open for summer cross-country motorized and mechanized vehicle access There are 1,985 miles of open road and 773 miles of open trail (Table III-25) The Forest conducted an analysis of motorized access and road/trail density in the spring of 1995 to accurately inventory these opportunities The analysis is documented in Appendix C

There are very few trails designed specifically for motorized OHVs or mountain bikes, although some are suitable in their present condition The Forest is currently reconstructing four to six miles of trail each year for motorized use There is a significant increase in demand for such opportunities Both types of use are increasing at a rate of five to ten percent per year on the Forest and adjacent lands The highest concentration of these activities is in the Big Hole and Caribou Range Mountains Subsections, where there is significant use by motorcycles and mountain bikes. As noted in the Soil and Riparian section, there are areas of concern for OHV effects on soil and vegetation There are no serious adverse consequences as a result of this use However, it is possible that motorized use is affecting some big game wildlife habitat potential or vulnerability to hunting pressure

**Winter Access - Scale: Forestwide**

There are approximately 450 miles of winter trails that are groomed on the Forest and 1,511,000 acres open to cross-country snowmobiling, see Table III-26 Groomed snowmachine and cross-country ski trails and their use are most numerous in the Island Park and Big Hole Mountains Subsections The Centennial Mountains, Madison-Pitchstone Plateaus and Caribou Range Mountains Subsections surrounding these two hub areas also provide many winter opportunities In contrast, the most undeveloped backcountry opportunities and the least used by both skiers and snowmachiners are found in the Lemhi/Medicine Lodge and Teton Range Subsections Within the Teton Range Subsection, the Jedediah Smith Wilderness is closed to snowmobiling

Snowmachine use and the associated commercial business has increased dramatically since 1985 Retail snowmachine sales, repair and related business growth in motel and restaurant services has increased noticeably in the Ashton, Island Park and West Yellowstone areas Because of the intensity of snowmachine use in some areas, there is a need to develop guidelines for management of winter recreation on the Forest and in the GYA An interagency assessment is currently underway to determine how to manage winter visitor use to avoid impacts to wildlife or user conflicts Management guidelines are expected to be prepared through this assessment by late 1997

Special use permits for outfitter-guide operations for snowmobiling, dog sledding and skiing are scattered across the Forest, but are most numerous in the Madison-Pitchstone Plateaus subsection where there are six commercial snowmachine operations This is due to attractions such as the Two-Top National Snowmachine Trail near West Yellowstone, the Mesa Falls Scenic Area and an excellent grooming program by Fremont County, Idaho Growth in snowmobiling has been increasing at five to ten percent per year annually across the Forest As a result, the Forest constructed one new parking area and day lodge for winter users at Big Springs, in Island Park

This winter activity has resulted in some concerns regarding conflicts with wintering wildlife, and several travel access closures have been implemented to reduce conflicts A wildlife winter range and recreation analysis began several years ago for the Teton Basin Ranger District The analysis from that study has been incorporated into the Revised Plan process as the goals, objectives, prescriptions and management direction were developed (Appendix C)

WILDERNESS AND RECREATION RESOURCES

Recreation, tourism and N F use are important to the area economy The Idaho Department of Commerce estimates that tourism in Idaho is a two billion dollar industry, with 23 million visitors each year The visitors to the Forest may account for over 10 percent of this industry Table III-26 displays current recreation and wilderness information by ecological subsection

### Wilderness and Recommended Wilderness - Scale. Subsection

There are currently two designated wilderness areas on the Forest These are the Jedediah Smith Wilderness (123,451 acres) and the Winegar Hole Wilderness (10,715 acres). The Jedediah Smith is mostly in the Teton Range Subsection with the balance in the Madison-Pitchstone Plateaus Subsection Winegar Hole is totally within the Madison-Pitchstone Plateaus Subsection. Winegar Hole is largely primitive with very little recreational use This is mostly due to access difficulty, since there are only four miles of trail in the area Use of this area is mostly for hunting big game

Table III-26 Recreation and Wilderness Data by Subsection (M=1,000s)

| Activity | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone* Plateau | Teton Range | Big Hole Mtns | Caribou Range Mtns | Forest Total 1/ |
|---|---|---|---|---|---|---|---|---|
| # Outfitters permitted (summer and winter use) | 5 | 11 | 11 | 5 | 30 | 18 | 3 | 83 |
| Average outfitted use-days | 338 | 240 | 2299 | 3739 | 5814 | 5858 | 594 | 18,882 |
| Outfitter fees paid | $0 8M | $1 0M | $7 2M | $13 7M | $9 9M | $17 0M | $5M | 53 0M |
| Groomed snowmobile trails (miles) | 0 | 73 | 103 | 96 | 0 | 112 | 66 | 450 |
| Groomed x-country ski trails (miles) | 0 | 10 | 29 | 11 | 0 | 5 | 1 | 56 |
| Backcountry snowmobile area (acres) | 65M | 91M | 49M | 55M | 30M | 72M | 50M | 412M |
| Backcountry ski tour area (acres) | 5M | 15M | 0 | 0 | 45M | 0 | 0 | 65M |
| Special use permits (non-outfitter/guide) | 0 | 40 | 89 | 13 | 14 | 39 | 84 | 267 |
| Undeveloped campsites (dispersed sites) | 45 | 62 | 25 | 18 | 19 | 36 | 88 | 293 |
| Heavy-use dispersed sites | 4 | 24 | 6 | 4 | 19 | 29 | 20 | 106 |
| Miles summer trails * | 93 | 237 | 83 | 56 | 233 | 524 | 175 | 1,401 |
| Wilderness acres | 0 | 0 | 0 | 41 6M | 92 6M | 0 | 0 | 134 2M |
| Roadless area acres (includes wilderness study) | 241 8M | 127 7M | 0 991M | 11 4M | 40 1M | 307 9M | 148 8M | 878 6M |
| Acres open to OHVs | 183M | 192M | 269M | 158M | 51M | 163M | 116M | 1,132M |
| Miles road open | 292 | 534 | 562 | 158 | 53 | 219 | 168 | 1,985 |
| Miles trail open to OHV use | 65 | 95 | 33 | 32 | 38 | 350 | 160 | 773 |
| # of Developed sites | 3 | 3 | 20 | 8 | 5 | 15 | 7 | 61 |
| Miles W, S, & R Rivers | 0 | 18 | 87 | 25 | 30 | 54 | 31 5 | 245 5 |

1/ Forest Totals may differ slightly from sum of individual numbers due to rounding
* Includes Nonfunctional trails

The Jedediah Smith is intensively used in the summer with approximately 60,000 visits for hiking, back-packing and horseback riding This is a spectacular mountainous area on the west slope of the famous Teton Mountain Range These wilderness areas are two of twelve designated in the GYA which total 3 8 million acres, and provide significant areas of biodiversity important to the GYE

The Wyoming portion of the Palisades Roadless Area was designated by Congress as a Wilderness Study Area in 1984 The Study Area contains approximately 129,100 acres Of these acres, over 79,800 are administered by the Bridger-Teton N F and 49,300 acres are administered by the Forest In addition, there are 110,520 acres of this roadless area in Idaho which have had no action or recommendation taken on them The studies on the Wyoming portion have not been conducted Much of the Palisades Roadless area is under special use permit for heli-skiing operations which have been in existence for over 15 years This heli-skiing operation is a recreational business operating out of Jackson, Wyoming The Palisades area is also used by a large number of snowmobilers, except in the steep, avalanche prone areas

Portions of Italian Peak, Lionhead, and Winegar Hole Roadless Areas (65,000 acres) were recommended wilderness in the 1985 Forest Plan, but no legislative action has been taken to-date

**Roadless Areas - Scale: Forestwide**

There are 16 areas on the Forest which qualify as roadless or roadless adjacent to designated wilderness These areas are described in the Process Paper Q and Forest Plan map number 25 These areas total about 841,000 acres This acreage is approximately 30,000 acres less than the 1993 inventory This is due to improved calculation from computer digitizing the area boundaries The new roadless area acreages are shown in the Rating of Wilderness Characteristics Factors Table in Process Paper Q Within these roadless areas, some 243,000 acres are closed to summer OHV use The majority of the roadless acres are contained in the Lemhi/Medicine Lodge, Centennial Mountains, Big Hole Mountains and Caribou Range Mountains Subsections The 1993 roadless inventory showed a net increase in qualifying acres over the inventory in the 1985 Forest Plan This is because several of the roading and timber harvest projects proposed in that Plan were never completed These areas were added to the previously inventoried areas In contrast, the Signal Peak, Warm River South and East and Moody Creek areas incurred enough development to require them to be removed from the inventory In 1990, the Centennial Mountains Wilderness Suitability Study EIS (Mt Jefferson) was completed and none of the Forest portion was recommended wilderness The Mt Jefferson area was thereby released for management according to the 1985 Forest Plan direction

There is an existing appeal settlement agreement with the Caribou N F concerning Bear Creek and Caribou City roadless areas on that Forest The agreement states that no timber entry is scheduled before the year 2000 and that none will be made

**Wild, Scenic and Recreational Rivers - Scale: Forestwide**

In November, 1994, an eligibility inventory was completed for the entire Forest, and approximately 245 5 miles of rivers and streams were determined eligible (Table III-26) These stream segments are described in detail in Process Paper R The largest mileage of eligible stream segments is in the Island Park Subsection and the Big Hole Mountains Subsection has the second highest The remaining subsections (excluding the Lemhi/Medicine Lodge) all have lesser mileages ranging from 17 to 31 5 miles

The largest potential classification mileage is for Wild, followed by Recreational and Scenic which are almost equal Suitability studies have not been completed for any of these streams

**Visual Resources - Scale: Subsection**

The Forest has some very unique and outstanding scenery It encompasses peaks over 10,000 feet, arid lands, timbered highlands, lakes and waterfalls During the past decade, the greatest change in visual resources occurred among the vast expanses of mature lodgepole pine found in the Madison-Pitchstone Plateaus and Island Park Subsections Large portions of this mature timber were clearcut Some of this timber harvest occurred near major travel routes and use areas such as campgrounds, resorts, summer home areas and private lands This changed many of the solid timbered areas to open meadow-like mosaics of scattered timber stands Even though this was a drastic change from the past, it also provided variety in terms of scenic views and vistas In some instances, this type of harvest enhanced areas from a visual standpoint

The following displays the Forest acres currently in each visual quality objective

| *Visual Quality Objective* | *Acres* |
|---|---|
| Preservation | 137,761 |
| Retention | 226,882 |
| Partial Retention | 804,784 |
| Modification | 519,184 |
| Maximum Modification | 148,189 |

Most of the Preservation acreage falls within the Jedediah Smith and Winegar Hole Wildernesses, which are in the Teton Range and Madison-Pitchstone Plateaus Subsections Most of the Modification and Maximum Modification acres are in the Island Park and Madison-Pitchstone Plateaus Subsections The other classifications are scattered throughout the subsections

**Developed Recreation Sites - Scale: Forestwide**

Demand for new types of specialized facilities such as trailheads, mountain biking trails, boat ramps, fishing access and snowmachine facilities is increasing at five to ten percent annually A strong increase in demand for group camping sites is an example of this type of specialized recreation facility need

As shown in Table III-26, there are 61 developed recreation sites with facility investments over $50,000 on the Forest This figure includes both existing and planned sites These sites, which include facilities such as campgrounds and boat ramps, have a total capacity of 8,890 persons at one time (PAOT) These sites receive approximately 608,000 visits and result in 703,000 12-hour recreation visitor days (RVDs) annually Use is increasing approximately two percent per year The Big Hole Mountains Subsection has the most sites (19), and the Island Park Subsection has the next largest number (18) The remaining subsections each have seven sites Utilization rates for these sites range from low (<20 percent) to high (60 percent) across the Forest, the highest rates in the Warm River/Island Park and Palisades areas

Developed recreation facilities are in fair to good condition across the Forest, but there is a significant backlog in heavy maintenance and reconstruction needs The Forest has been able to reconstruct a few of the major sites Approximately two-thirds of the developed campgrounds are operated and maintained by private concessions under special use permit from the Forest Because many of our campgrounds and other developed facilities are adjacent to or along travel routes to Yellowstone and GTNP, use patterns on the Forest are affected by management actions and physical attractions of these parks

**Dispersed Recreation - Scale: Forestwide**

The largest number of dispersed activity and camping sites are in the Caribou Range and western Centennial Mountains Subsections as shown in Table III-26 The next largest numbers of sites are in the Lemhi/ Medicine Lodge and Big Hole Mountains Subsections These sites receive approximately 1,147,000 visits

and result in 992,000 RVDs annually Dispersed sites have few or no structural facilities for recreation They are used for general camping and to provide access to fishing, hunting, OHV areas and trails Some of these sites have received increased use and number of camping spots, such as at Horseshoe Lake which has increased from three to seven sites in the last decade Many dispersed activity uses are increasing at a rate of approximately four percent

The capacity in PAOT of these sites is greater than the developed sites on the Forest There are 106 heavy use dispersed sites on the Forest, and some of these dispersed campsites are showing damage to vegetation and soils Field reviews during the summer of 1996 indicate a few of these sites are in need of management actions to stabilize or minimize such impacts

There are approximately 773 miles of open and 628 miles of restricted trails for use on the Forest Summer use trails are most abundant in Big Hole Mountains , Caribou Range Mountains, Teton Range and Centennial Mountains Subsections (Table III-25)

**Outfitters and Guides - Scale: Forestwide**

There are 83 permitted outfitter/guide operations on the Forest at the present time (Table III-26) Outfitted activities are most numerous in the Teton Range and Big Hole Mountains Subsections The Centennial Mountains and Island Park Subsections also have a moderate number of permitted operations

Forestwide, the largest number of these permits is for summer activities These permits are for guided activities such as hunting, horseback riding, river trips, fishing, wagon rides, backpacking, horsepacking, etc These activities represent a commercial industry with an annual income estimated at over 1 8 million dollars, and fees to the government of over $53,000 There is continuing interest in new permits, however capacity determinations and commercial allocations have only been made for a few parts of the Forest. Therefore, a moratorium was recently initiated on the Forest to deny any new applications for permits, except in areas where capacity had been determined to be available through environmental analysis and documentation

**Special Uses - Scale: Forestwide**

Excluding outfitter-guide permits, there are 267 other recreation special use permits on the Forest (Table III-26) These are issued for summer homes, organization camps, special events, ski areas, etc The highest number of these are located in the Island Park and Caribou Range Mountains Subsections where there are large numbers of summer homes There are moderate numbers of permitted activities in the Centennial Mountains and Big Hole Mountains Subsections The Forest administers permits for 203 summer homes, 32 recreation special events, 14 organization camps and two regional-sized ski resorts Development of the Grand Targhee Ski Resort is occurring, and all activities are guided by the 1995 Master Development Plan for the Resort These permits are the major portion of the activity and result in returns to the treasury in the hundreds of thousands of dollars annually

There are over 200 nonrecreation uses authorized by special use permit on the Forest Uses authorized include roads, water transportation systems such as ditches, canals and pipelines, hydropower, communication sites, municipal watersheds, telephone, telegraph and power transmission lines, uses related to agriculture and industry, and uses related to research, training, cultural and historic resources
ECONOMIC AND SOCIAL ENVIRONMENT

Figure III-1 shows how area population centers and county lines rest relative to the subsection boundaries outlined for the Forest The area primarily affected by the Forest in terms of economic and social concerns comprises Bonneville, Clark, Fremont, Jefferson, Madison and Teton counties in Idaho Together these counties make up the great majority of the Forest's total administrative area and account for the largest part of Forest-related employment, personal income and payments to local governments These counties are recognized as being the Area of Primary Forest Economic Influence (APFEI) (Table III-27). Information for the Shoshone-Bannock reservation at Fort Hall is also provided

Table III-27 Overview of Demographic Data (1990 unless otherwise indicated)

| County/CDP 1/ | Population | % high school graduates | % college graduates | Unemployment % (yr ) | Infant deaths per 1,000 live births (yr) | Occupied housing units wood heated | Social Security Recipients / % for 1993 | Housing units owner-occupied % | Median household income $ in 1989 |
|---|---|---|---|---|---|---|---|---|---|
| Bonneville 2/ | 65,980 | 84 | 23 | 4 4 (1994) | 5 1 (1993) | 9 6/ | 10,030 / 15 | 72 | $30,462 8/ |
| Clark 2/ | 762 | 75 | 14 | 5 7 (1994) | 0 0 (1993) | 32 6/ | 160 / 21 | 63 | 24,583 8/ |
| Fort Hall CDP 3/ | 2,681 | 38 | 4 | 50 0 4/ (1985) | 9 8 5/ (1984 - 85) | 20 | 186 / 7 7/ | 74 | 23,533 8/ |
| Fremont 2/ | 10,937 | 76 | 11 | 8 0 (1994) | 0 0 (1993) | 40 6/ | 1,865 / 17 | 80 | 23,498 8/ |
| Jefferson 2/ | 16,543 | 78 | 12 | 5 6 (1994) | 5 6 (1993) | 28 6/ | 2,350 / 14 | 81 | 24,421 8/ |
| Madison 2/ | 23,674 | 88 | 19 | 4 1 (1994) | 4 5 (1993) | 18 6/ | 1,875 / 8 | 60 | 23,000 8/ |
| Teton 2/ | 3,439 | 80 | 17 | 3 6 (1994) | 37 (1993) | 51 6/ | 560 / 16 | 74 | 22,799 8/ |

1/ CDP Census designated place
2/ U S Counties 1996 on CD-ROM [machine-readable data files]/prepared by the Bureau of the Census --Washington The Bureau [producer and distributor], 1996 Website http //govinfo kerr orst edu/document/usaco/abstract html
3/ U S Census Bureau The Official Statistics 1990 U S Census Data URL http //bigsur /b/ gov/cdrom/lookup
4/ Shoshone-Bannock Tribes 1985 The Fort Hall Indian Reservation Comprehensive Land Use Plan (DRAFT) Fort Hall, Idaho As reported in U S Department of the Interior - Bureau of Land Management, 1996 Challis Resource Area Draft Resource Management Plan and Environmental Impact Statement Salmon, Idaho
5/ Colter, Belma, Joanne Jensen, and Marlene Lindroth August 1, 1995 Community Assessment of Fort Hall Service Unit Delivery Area (DRAFT) Public Health Nursing and Shoshone-Bannock Tribes Fort Hall, Idaho
6/ Machlis, Gary E , Jo Ellen Force, and Jean E McKendry An Atlas of Social Idicators for the Upper Columbia River Basin, 1995, Contribution Number 759, Idaho Forest, Wildlife and Range Experiment Station, University of Idaho, Moscow, Idaho
7/ Population figure of 2,735 used in calculating the percentage figure, consistent with rate calculation procedures used in 3/
8/ U S Bureau of the Census County and City Data Book 1994 Washington, DC U S Government Printing Office, 1994

Some observations can be readily made Bonneville county has the highest median household income and the highest incidence of college graduates Clark county has the highest incidence of Social Security recipients Fort Hall's median household income is somehow comparable to the counties listed and yet its unemployment rate seems inconsistently high This may be the result of having more wage-earners per household and/or some distortion in the estimate of unemployment Fremont county's high rate of unemployment was possibly associated with timber harvests which were declining from peak levels Jefferson county had the highest incidence of owner-occupied housing units and high school graduates Because most of these counties have very small populations, statistics must be thought through Teton county's infant death rate for instance, actually reflects the death of only a single infant Teton county has the highest rate of heating with wood and the lowest unemployment rate

The Forest is of lesser economic importance to other area counties including Teton and Lincoln counties in Wyoming and the Idaho counties of Bannock, Bingham, Butte and Lemhi Bannock and Bingham counties have no lands administered by the Forest The Forest does manage significant amounts of land in Butte, Lemhi, Lincoln, and Teton (Wyoming) counties However, management of the Forest as depicted in the various alternatives under consideration is not expected to have significant effects on these coun-

ties Even though these counties are not included in the APFEI they still have important links to the Forest The Grand Targhee Ski Resort, for instance, is located in Teton County, Wyoming It is an important source of income and employment Services and supplies for the facility must come through Teton County, Idaho, however

People from outside this area also have strong ties to the Forest Besides Idaho, Wyoming and Montana the Forest receives many visitors from Utah, California, and the rest of the nation The designation of an area of influence does not diminish the interests others have in the area or the attention paid to their input

Most of the area's population lives in cities like Idaho Falls, Blackfoot and Rexburg The area's population is relatively small and concentrated in Bonneville County which contains Idaho Falls, the area's largest city with a population in excess of 42,000 It regularly ranks as Idaho's second- or third-largest city

Perhaps the most striking characteristic of the area's population is the growth that has occurred in Bonneville and Madison counties during recent decades, and Teton county in recent years. Since 1950 the population within the APFEI has more than doubled, from 63,334 in 1950 to 137,991 in 1994 (REIS 1996) Bonneville and Madison counties have increased over 2 5 times during that same period Teton county's population has increased by more than six percent annually from 1990 to 1995 Available information indicates this population growth is traditional (based on employment growth), rather than being the cause of employment growth (Taylor and Fletcher 1995)

Table III-28 displays the relatively low population density of the six counties making up the APFEI, about 19 people per square mile Clark county is one of the least populated counties in the United States That characteristic poses many problems for its county commissioners who must address an abundance of needs with limited resources Based largely on their low populations, Clark, Fremont and Teton counties have all been identified as areas of low socioeconomic resiliency (USDA 1996)

As shown in Table III-28, dividends, interest and rent make up about 13 percent of APFEI personal income, transfer payments 14 percent Clark county has low figures in both of these categories (eight and ten percent respectively) Teton county has the high figure for dividends, interest and rent at 19 percent, while Fremont county has the high figure of 21 percent for transfer payments

**Employment and Income**

Although information is presented herein by county, economic sector or other grouping it is important that the associations among the various components not be overshadowed Area barley farmers support the Anheuser-Busch barley malting facility in Idaho Falls Idaho's largest potato farm is located in the area and potato growers support a wide-ranging potato industry including fertilizer, irrigation equipment, storage and packing facilities, equipment manufacture and repair and other agricultural support activities Some 9,000 workers at the INEEL live throughout the area and thus contribute to the well-being of a number of local communities

The entire area benefits from its proximity to Yellowstone and GTNPs Recreationists travelling through the area use the lodging and retail sectors of the economy Perhaps more importantly, many of those recreationists have bought summer homes in the area With improvements in roads and vehicles, more and more people are locating in areas which were previously considered inaccessible during the winter months

The presence of large numbers of recreationists drawn to the world-class attraction of the Park has made the area attractive for other types of spin-off recreation Examples are the grizzly bear theme park in West Yellowstone, Montana, just outside the APFEI and fishing on the Henry's Fork and South Fork of the Snake River

The Grand Targhee Ski Resort has emerged as a destination resort Although it is located in Wyoming, all traffic into it flows through the APFEI The resort has been successful in establishing itself as a year-round facility with attendant increases in the numbers of people employed and the seasons during which they are employed Grand Targhee employs 166 people on a full-time equivalency basis on the site Another 23 people are employed off-site (USDA Forest Service, Grand Targhee DEIS 1992)

Unusual associations have developed as the area's economy has grown and evolved in different ways The sand dunes in Fremont County draw large crowds of recreationists, but much of the economic activity associated with the dunes is associated with Madison County which offers a greater variety of retail services and the nearest hospital

Major employment in the APFEI comes from the services, wholesale and retail trade, and government sectors (Table III-29) The Service sector includes a wide range of activities such as automobile repair, funeral services, lodging, health care, legal services, engineering services, amusement and miscellaneous repair shops

The respective counties' economies differ greatly Clark, Fremont, Jefferson and Teton Counties rely heavily on agriculture and related activities for their economic bases (Cook and Mirer 1989) Bonneville and Madison Counties both rely heavily on the services sector (most notably the INEEL and Ricks College) for their economic bases The entire APFEI is within the 14 county Idaho Falls economic subregion as defined by the Bureau of Economic Analysis (BEA) The percentage of jobs in that subregion supported by recreation is estimated at 30 percent (Quigley et al 1996)

The economy of Bonneville county is much larger than those of the other counties in the APFEI and thus tends to overwhelm the statistics The primary economic driver of Bonneville county is the INEEL which accounts for the large showing of service sector employment

Changes continue to occur in the local area's economy Coors Brewing, long a purchaser of locally grown barley, pulled out of the local market Canola is being grown on larger acreages of area farms Idaho Forest Industries, long a major employer in Fremont County, closed its sawmill in St Anthony in 1992 Louisiana-Pacific closed its Rexburg mill in 1995 The INEEL has eliminated thousands of jobs Snowmachine activity has blossomed to the point that anticipated restrictions on their use in the Park seem likely to spur increased use on the Forest and other lands surrounding the Park Jet ski use on area waterways is another recent development in area recreation

Many people in the local area rely on Forest commodity production for their livelihoods to some extent Loggers, mill workers, ranchers and truckers fall into this category Area mills relying in part on timber from the Forest include numerous smaller mills producing posts, poles, house logs and dimension lumber Before its closure in 1992, the large stud mill in St Anthony (Fremont County) received about 80 percent of its raw material from the Forest About half of the material processed at the Rexburg mill before its closure in 1995 likewise came from the Forest The Forest is a significant supplier to the remaining facilities in the APFEI Dead timber serves as an important fuel supply for home heating in the local area thereby providing a source of income for some and a source of heat for others

Some area residents rely on Forest rangeland as a source of seasonal forage for their livestock Normally this forage is an integral part of the ranch's overall operations Alternative sources of supply suitable for the permittees' needs are difficult to come by

Recreation is an important part of the local economy and one with significant growth potential It includes readily-identifiable recreation resources like the Grand Targhee Ski Resort, Kelly Canyon Ski Resort, outfitters and guides, and snowmachine rental Other related activities include sales at area restaurants, motels and retail establishments Harriman State Park and private facilities located off-Forest also rely on the Forest for an expanded range of activities for their visitors

Table III-29 Annual Employment, Area of Primary Forest Economic Influence (APFEI) & Fort Hall CDP 1/ Wage, Salary, Proprietor

| County/ CDP | Agricul-ture, Forestry, Fisheries | Min-ing | Con-struc-tion | Manu-fac-turing | Trans Com Util | Whole-sale Trade | Retail Trade | Finance Insur , Real Estate | Service | Govern-ment | Farm | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bonneville | | | | | | | | | | | | |
| 1990 | 518 | 27 | 3,264 | 1,943 | 1,137 | 2,674 | 8,262 | 2,385 | 12,554 | 4,822 | 1,355 | 38,941 |
| 1994 | 736 | 34 | 3,491 | 2,277 | 1,355 | 3,440 | 9,442 | 2,540 | 14,696 | 5,563 | 1,312 | 44,886 |
| Clark | | | | | | | | | | | | |
| 1990 | 67 | NA | 11 | 0 | 18 | NA | 73 | NA | NA | 125 | 288 | 682 |
| 1994 | 46 | NA | NA | NA | 12 | NA | 70 | 12 | 28 | 160 | 285 | 788 |
| Fort Hall CDP | | | | | | | | | | | | |
| 1990 | 43 | 30 | 81 | 102 | 118 | 20 | 147 | 36 | 289 2/ | 267 3/ | NA 4/ | 866 |
| 1994 | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| Fremont | | | | | | | | | | | | |
| 1990 | 136 | NA | 138 | 381 | 159 | 219 | 604 | 108 | 607 | 997 | 851 | 4,202 |
| 1994 | 222 | NA | 271 | 194 | 184 | 198 | 656 | 117 | 739 | 1,040 | 826 | 4,451 |
| Jefferson | | | | | | | | | | | | |
| 1990 | 566 | 15 | 444 | 563 | 183 | 387 | 705 | 171 | 644 | 1,067 | 1,235 | 5,986 |
| 1994 | 647 | 17 | 688 | 765 | 213 | 394 | 856 | 236 | 696 | 1,134 | 1,195 | 6,841 |
| Madison | | | | | | | | | | | | |
| 1990 | 292 | NA | 365 | 1,217 | 262 | 729 | 1,703 | 363 | 3,369 | 1,355 | 804 | 10,462 |
| 1994 | NA | NA | 427 | 1,235 | 251 | 828 | 2,123 | 516 | 3,766 | 1,484 | 784 | 11,794 |
| Teton | | | | | | | | | | | | |
| 1990 | 65 | 0 | 94 | 63 | 21 | 23 | 211 | 60 | 223 | 291 | 433 | 1,484 |
| 1994 | 76 | 0 | 151 | 77 | 52 | 20 | 349 | 69 | 355 | 372 | 420 | 1,941 |

CDP Census designated place, outside APFEI
NA Not available
1/ 1990 Census figures as reported in The Official Statistics at URL http //bigsur /b/ gov/cdrom/lookup for Ft Hall 1990 figures and 1994 figures in U S counties 1996 on CD-ROM [machine = readable data file]/prepared by the Bureau of Census --Washington The Bureau [producer and distributor], 1996 Website http //govinfo kerr orst edv/document/usaco/abstract html for the counties
2/ Includes all government employees
3/ Broken out from the Service sector in which it is included
4/ Farm Households 53 , Self-Employed workers 25

Another recreation-related economic spin-off has been the proliferation of summer home residences in the area This has increased the local tax base without increasing demands on area schools

Some area residents have noticed an increasing level of recreation use which they attribute to overcrowding in the adjacent Yellowstone and GTNPs which are attracting record numbers of visitors

The Forest Service employs some 140 workers to manage the Forest The Forest Service is a major employer in the area and the great bulk of its annual budget (Table III-30) goes to salaries of Forest employees living in the local area Additional background information on the local area is available in the Forest's AMS

**Payments to Local Governments - Scale: Regional**

The Forest also plays a role in the area economy by generating revenues, a portion of which are returned to local governments These funds result from the Payment In Lieu of Taxes (PILT) program administered by the U S Department of the Interior and from the 25% Fund (payments made under the National Forest Revenue Act of 1908 as amended)

| Table III-30 Targhee National Forest Expenditures (Million Nominal $) | |
|---|---|
| 1993 | 15 4 |
| 1994 | 15 7 |
| 1995 | 15 3 |
| 1996 | 13 8 |

Payments resulting from the 25% Fund are to be used as directed by the respective state legislatures for the benefit of roads and schools in the local government area where they were generated Payments from the 25% Fund are calculated based on Forest receipts, both in cash and in kind, accruing from management activities in the local government area

PILT payments are calculated for each local government (Table III-31) based on the amount of acreage administered by certain federal agencies, population, a schedule of payments, the Consumer Price Index, other federal payments (like the 25% Fund payment received in the prior year), and the level of funding. PILT payments may be spent by the local government for any governmental purpose

**Amenity Interests - Scale: Regional**

Many people in the area, and outside the area, enjoy the Forest for the recreational opportunities it provides, for the scenic vistas it offers, for its aesthetic values, for its importance to wildlife and fish and for the contributions it makes to the greater ecosystem Interests include those associated with the effects of clearcutting on the visual landscape and on area plants, fish, and wildlife, spiritual concerns, land ethics, and environmental concerns in general

Many people value the Forest even though they have never been here They recognize its place and importance in the larger ecosystem The large clearcuts of lodgepole pine that began in the 1960s have been photographed extensively from the air and have been widely published People have commented,

favorably and unfavorably, about this activity The photographs have heightened the level of public consciousness of clearcutting on the Forest

Understandably, most of the recreation that occurs on the Forest is associated with people who live in close proximity to it Out-of-area recreationists, with the exception of hunters and anglers, are more likely to focus their recreational activities on the big-name attractions like Yellowstone and GTNPs Local people have often grown up in the area, experiencing the Forest from the time of their youth, and enjoy the greater sense of freedom associated with the less-restrictive recreational experience available on the Forest compared to the Parks Big game hunting, particularly elk hunting, is a fall experience of extreme importance to those who enjoy it

Within the Forest boundaries are wildernesses, big-game herds, two ski resorts, waterfalls, a world-class fishery and the kind of scenery associated with the adjacent the Park and GTNPs These features give rise to a great deal of recreational use by those from outside the immediate area Big-game hunting, camping, hiking, skiing, and recreational driving are major attractions for this group Most of the big-game hunters are from other parts of Idaho. Residents of the adjoining states and California are the most common out-of-area users of the Forest

Table III-31 25% Fund Payments and Payments in Lieu of Taxes (PILT) 1/

| COUNTY | Nominal Dollar Terms | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1992 | 1993 | 1994 | 1995 | 1996 | Average '92-'96 | Average '94-'96 |
| BONNEVILLE | | | | | | | |
| Total PILT | $ 383,279 | $ 390,416 | $ 380,758 | $ 390,666 | $ 442,650 | $ 397,554 | $ 404,691 |
| PILT Not Targhee-Related | 145,646 | 148,358 | 144,688 | 148,453 | 168,207 | 151,070 | 153,783 |
| Targhee-Related PILT (62 0%) 2/ | 237,633 | 242,058 | 236,070 | 242,213 | 274,443 | 246,483 | 250,909 |
| Targhee-Related 25% Fund | 56,915 | 45,129 | 36,292 | 38,225 | 24,457 | 40,204 | 32,991 |
| Total Targhee-Related | 294,548 | 287,187 | 272,362 | 280,438 | 298,900 | 286,687 | 283,900 |
| Total PILT and Targhee 25% Fund | 440,194 | 435,545 | 417,050 | 428,891 | 467,107 | 437,757 | 437,683 |
| CLARK | | | | | | | |
| Total PILT | 38,100 | 38,100 | 39,900 | 38,281 | 42,166 | 39,309 | 40,116 |
| PILT Not Targhee-Related | 18,593 | 18,593 | 19,471 | 18,681 | 20,577 | 19,183 | 19,576 |
| Targhee-Related PILT (51 2%) 2/ | 19,507 | 19,507 | 20,429 | 19,600 | 21,589 | 20,126 | 20,539 |
| Targhee-Related 25% Fund | 115,570 | 91,639 | 73,697 | 77,622 | 49,647 | 81,635 | 66,989 |
| Total Targhee-Related | 135,077 | 111,146 | 94,126 | 97,222 | 71,236 | 101,761 | 87,528 |
| Total PILT and Targhee 25% Fund | 153,670 | 129,739 | 113,597 | 115,903 | 91,813 | 120,944 | 107,104 |
| FREMONT | | | | | | | |
| Total PILT | 209,630 | 226,134 | 254,597 | 284,206 | 344,608 | 263,835 | 294,470 |
| PILT Not Targhee-Related | 54,294 | 58,569 | 65,941 | 73,609 | 89,253 | 68,333 | 76,268 |
| Targhee-Related PILT (74 1%) 2/ | 155,336 | 167,565 | 188,656 | 210,597 | 255,355 | 195,502 | 218,203 |
| Targhee-Related 25% Fund | 170,578 | 135,255 | 108,774 | 114,567 | 73,278 | 120,490 | 98,873 |
| Total Targhee-Related | 325,914 | 302,820 | 297,430 | 325,164 | 328,633 | 315,992 | 317,076 |
| Total PILT and Targhee 25% Fund | 380,208 | 361,389 | 363,371 | 398,773 | 417,886 | 384,325 | 393,343 |
| JEFFERSON | | | | | | | |
| Total PILT | 141,608 | 141,606 | 141,585 | 135,840 | 148,716 | 141,871 | 142,047 |
| PILT Not Targhee-Related | 141,608 | 141,606 | 141,585 | 135,840 | 148,716 | 141,871 | 142,047 |
| Targhee-Related PILT (0 0%) 2/ | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Targhee-Related 25% Fund | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total Targhee-Related | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total PILT and Targhee 25% Fund | 141,608 | 141,606 | 141,585 | 135,840 | 148,716 | 141,871 | 142,047 |
| MADISON | | | | | | | |
| Total PILT | 32,640 | 34,009 | 36,450 | 38,225 | 44,391 | 37,143 | 39,689 |
| PILT Not Targhee-Related | 10,412 | 10,849 | 11,628 | 12,194 | 14,161 | 11,849 | 12,661 |
| Targhee-Related PILT (68 1%) 2/ | 22,228 | 23,160 | 24,822 | 26,031 | 30,230 | 25,294 | 27,028 |
| Targhee-Related 25% Fund | 13,440 | 10,657 | 8,571 | 9,027 | 5,774 | 9,494 | 7,791 |
| Total Targhee-Related | 35,668 | 33,817 | 33,393 | 35,058 | 36,004 | 34,788 | 34,819 |
| Total PILT and Targhee 25% Fund | 46,080 | 44,666 | 45,021 | 47,252 | 50,165 | 46,637 | 47,479 |
| TETON | | | | | | | |
| Total PILT | 43,411 | 46,615 | 51,376 | 56,200 | 66,700 | 52,860 | 58,092 |
| PILT Not Targhee-Related | 3,126 | 3,356 | 3,699 | 4,046 | 4,802 | 3,806 | 4,183 |
| Targhee-Related PILT (98 2%) 2/ | 40,285 | 43,259 | 47,677 | 52,154 | 61,898 | 49,054 | 53,909 |
| Targhee-Related 25% Fund | 28,532 | 22,623 | 18,194 | 19,163 | 12,257 | 20,154 | 16,538 |
| Total Targhee-Related | 68,817 | 65,882 | 65,871 | 71,317 | 74,155 | 69,208 | 70,447 |
| Total PILT and Targhee 25% Fund | 71,943 | 69,238 | 69,570 | 75,363 | 78,957 | 73,014 | 74,630 |
| TOTAL APFEI | | | | | | | |
| Total PILT | 848,668 | 876,880 | 904,666 | 943,418 | 1,089,231 | 932,573 | 979,105 |
| PILT Not Targhee-Related | 373,679 | 381,331 | 387,011 | 392,824 | 445,717 | 396,112 | 408,517 |
| Targhee-Related PILT (56 0%) 2/ | 474,989 | 495,549 | 517,655 | 550,594 | 643,514 | 536,460 | 570,588 |
| Targhee-Related 25% Fund | 385,035 | 305,303 | 245,528 | 258,604 | 165,413 | 271,977 | 223,182 |
| Total Targhee-Related | 860,024 | 800,852 | 763,183 | 809,198 | 808,927 | 808,437 | 793,769 |
| Total PILT and Targhee 25% Fund | 1,233,703 | 1,182,183 | 1,150,194 | 1,202,022 | 1,254,644 | 1,204,549 | 1,202,287 |

1/ Source for 25% Fund figures are the annual 25 Percent Reports maintained in Forest File designation 6550-6 Source for PILT payments are the annual press releases from the U S Department of the Interior, Bureau of Land Management Columns may not sum due to rounding

2/ This information is based on the percentage of total PILT entitlement lands which the Targhee National Forest comprises It is meant to show how important the Targhee National Forest component is in terms of total PILT payments The parenthetic percentage is the Targhee's percentage of total PILT entitlement acres

Products such as timber, firewood, and grazing that the Forest provides are obviously important to the local communities Less obvious are the plant products that individuals collect (commercially or for personal use) for food and medicinal purposes Mushrooms, dried flowers and plants, trees and shrubs for landscaping, huckleberries and chokecherries (plus other berries) are yearly utilized by people both locally and from other areas These products also have cultural significance to local American Indian tribes who utilize a wide variety of plants from the many habitat types on the Forest as shown in Table III-32

Table III-32
Habitats for Plants Historically Used By American Indians

| Habitat | # of Species |
|---|---|
| Douglas-fir | 50 |
| Lodgepole Pine | 42 |
| Spruce/Fir | 34 |
| Limber Pine | 9 |
| Whitebark Pine | 8 |
| Mixed Conifer | 54 |
| Aspen | 34 |
| Sagebrush/Grass | 70 |
| Grass/Forbs | 57 |
| Mountain Brush | 99 |
| Alpine | 21 |
| Riparian/Aquatic | 102 |
| Rock/Barren/Talus | 17 |

**Tribal Interests - Scale: Regional**

The Forest lies within the aboriginal territory of the Shoshone-Bannock Tribes The Tribes collectively comprise a single, federally recognized Indian tribe with a governing body, the Fort Hall Business Council, which is duly recognized by the Secretary of the Interior Tribal members are successors-in-interest of Indian signatories to the Fort Bridger Treaty In part, that treaty led to the creation of the Fort Hall Indian Reservation in the Idaho Territory as a permanent tribal homeland The 544,000-acre reservation lies generally between Blackfoot and American Falls, Idaho

Article 4 of said treaty secured for the Tribes in perpetuity the continuation of a wide variety of "use rights" to off-Reservation lands More specifically, by virtue of Article 4 of the treaty, the Tribes expressly reserved the right to hunt " on the unoccupied lands of the United States so long as game may be found thereon" including such lands owned by the federal government outside the boundaries of the Reservation The courts decided in the Tinno decision (State v Tinno 1972) that the right to hunt also included a right to fish (Shoshone-Bannock Tribes 1992b) Hanes (1995) observed, "The court agreed that the Indian peoples expected rights to harvest food on the unsettled lands as a means of subsistence and an integral part of their way of life "

The Tribes have historically used the Forest for hunting, fishing and gathering American Indians historically used at least 838 species of plants on the Forest, covering virtually every type of plant community These activities are important economically as well as socially and culturally Part of the economic importance to the Tribes lies in their use of hunted meat to provide food for the elderly and the disabled "The philosophy and management direction from the Tribes has always been for subsistence hunting and this is reflected in the Tribes Big Game Regulations," (Shoshone-Bannock Tribes 1992a)

Rights to believe, express, and exercise traditional religions are protected by various federal laws, including the American Indian Religious Freedom Act of 1978 This includes, but is not limited to, access to sites, the use and possession of sacred objects and the freedom to worship through ceremonial and traditional rites Additionally, rights reserved under treaty may possess an inherent measure of resource protection (U S v Washington (759 F 2d 1353, 1985) in Shoshone-Bannock Tribes 1992b )

The Forest has worked with representatives of the Tribes to coordinate the Revision with them Representatives of the Tribes have stressed the following points

- Treaties are the supreme law of the land (U S Constitution, Article 6, Clause 2) Treaty rights cannot be negotiated at the Department level of the United States government Consultations with the Tribes are on a government-to-government basis

- The multiple jurisdictions they have to work with make any attempts at working with the Forest an extremely frustrating exercise Their territory lies within the boundaries of many National Forests, on lands administered by the Bureau of Land Management, on state lands and on lands privately held This complicates even relatively simple matters like interpretive signs.

- The processes the Forest uses to handle archaeological sites and cultural values do not fully address the Tribes' concerns It is important to protect sites, to keep them unpublished and to recognize that providing access to sites invites vandalism It is important for the Forest to consult with the Tribes on a case-by-case basis when providing protection to sites It is important that vandalism of sites be vigorously prosecuted to serve as a deterrent

- The Revision must recognize the sacredness of the land, need for protection, obligation to consult with the Tribes as outlined in the American Indian Religious Freedom Act, the NEPA and NFMA, and many aspects of reserved rights including, but not limited to, the priority nature of rights reserved under the treaty, as well as an inherent measure of resource protection to satisfy these rights

- The Forest must be recognized for its religious and spiritual significance to the Tribes That significance is not limited to vision quest sites or traditional camp sites The Forest and even the lands beyond its borders are important in their entirety As with many other religions, tribal members are not free to share all the dimensions of their faith

The Tribes also have a significant economic interest in the Forest These include subsistence activities like hunting, fishing and gathering They also include important aspects of Tribal life like sharing the fruits of the land Riverine ecosystems are important to the Tribes not only for their resources but also for the role they play in the Tribes' religion The Forest will continue to work and coordinate with the Tribes

**Heritage Resources - Scale: Subsection**

*Lemhi/Medicine Lodge* - This area contains over 200 heritage resources of predominately American Indian sites including habitation sites and rock art The aboriginal settlement pattern for the area is related to scarce perennial water sources in generally high altitude settings. Archaeological excavations in the area indicate that high altitude hunting camps were used primarily for hunting mountain sheep

European-American settlement in this area was focused on homesteading and lead mining in the late 19th century The Birch Creek Charcoal Kilns is the most significant site relating to this period of settlement and is a major tourist attraction The remains of ancillary sites associated with the lead mining industry are found in several canyons The Worthing Cabins also have interpretive potential for late 19th century homesteading

Impacts to heritage resources, such as prehistoric American Indian lithic scatters associated with hunting camps, are occurring from livestock grazing and antelope hunting blind construction. Construction of

hunting blinds involves digging a hole up to two feet deep, which can disturb cultural deposits Since permanent water sources in this area are scarce, most springs have evidence of prehistoric American Indian occupations Livestock tend to congregate at these springs, trampling surface cultural deposits Soil erosion from lack of vegetation in these areas exposes buried cultural deposits

*Centennial Mountains* - The Centennial Mountains contain the highest frequency of heritage resource sites on the Forest Over 400 heritage resources of predominately American Indian sites have been identified The aboriginal settlement pattern for the area is seasonal occupations for the extraction of obsidian and collecting camas plants for medicinal use Site types include base camps, obsidian workshops, quarry sites and hunting camps The most significant archaeological site in this area is the Big Table Mountain Obsidian Source Monida Pass and Targhee Pass provided natural travel routes across the Continental Divide into the buffalo hunting grounds of Montana The Nez Perce travelled through this area extensively As a result, the Nez Perce National Historic trail has been designated through the area These passes were also utilized extensively during the 19th century by fur trade companies and later as stagecoach routes

European-American settlement of the area is in the form of late 19th and early 20th century homesteads along the Forest fringe bordering the upper Snake River Plain

Some prehistoric American Indian sites, such as lithic scatters associated with hunting camps and lithic workshops, have been affected by logging Monitoring following timber harvest in this subsection showed that all heritage resource sites located in cutting units were damaged by logging Site avoidance recommendations discussed in Heritage Resource Survey Reports were not followed during timber sale administration State authorities are aware of these, and the situation has been corrected

*Island Park* - Heritage resources in the Island Park area are primarily related to the Tie Hack Period (cutting trees for railroad ties) and early Forest Service history The 140 sites identified are composed primarily of tie hack camps associated with the Yellowstone Railroad, Forest Service administrative sites such as guard stations, ranger stations, fire lookouts and recreational cabins dating to the early 1900s Social patterns in this area are closely related to the logging industry, Forest Service management and tourism Few American Indian sites have been identified

The most significant heritage resources in this area are Mesa Falls Lodge, Bishop Mountain Lookout, Squirrel Meadows Guard Station and Warm River Fish Hatchery These sites receive high public visitation and have economic values associated with tourism

Heritage resources in this area have been impacted by logging, road construction, historic building removals and the North Fork Fire

*Madison-Pitchstone Plateaus* - The Madison-Pitchstone Plateaus contains one of the lowest frequencies of heritage resource sites on the Forest Relatively extensive inventory has identified only 25 sites The majority of these are tie hack sites associated with the Yellowstone Railroad American Indian sites are few and seem to be related to transitory movements through the area The only site identified as suitable for enhancement and interpretation is the Big Springs Fire Lookout

*Teton Range* - The Teton Range has high frequencies of American Indian sites in the upper reaches of the drainages Over 79 heritage resource sites have been identified The vast majority are associated with high altitude adaptations by American Indians This area may also contain spiritual sites important to local tribes Historic Euro-American sites are generally related to early 1900s ranching

This area has high economic values for heritage resource tourism with an emphasis on high altitude adaptations

*Big Hole Mountains* - This area contains over 100 heritage resource sites with most sites located along the northwestern edge of the Big Hole Mountains The majority of these sites are American Indian hunting camps and lithic workshops Historic Euro-American sites are associated with early 20th century mining and ranching The Palisades Mountains area is one of the least inventoried areas of the Forest Site types and frequencies are relatively unknown

There is potential to enhance and interpret early 20th century lime kiln and mining sites Interpretation of a National Register-eligible American Indian site at Table Rock Campground also has potential

*Caribou Range Mountains* - The Caribou Range is one of the least inventoried areas of the Forest, however, 50 heritage resources have been identified All but two sites are American Indian hunting camps, lithic workshops and volcanic glass quarry sites This area also contains the Currant Creek and Brockman Guard Stations, Forest Service administrative sites eligible for the National Register of Historic Sites Potential exists for interpretation of the guard stations as early 20th century Forest Service sites

**Quality of Life - Scale: Regional**

The Center for Business Research and Science (CBRS) and the Center for Rural Economic Development (CRED) of Idaho State University have conducted recent surveys of Quality of Life perceptions among area residents in Fremont County and the City of Idaho Falls These two areas are vastly different in terms of population, income structure, employment opportunities and other demographic characteristics In both surveys, many of the questions relate to concerns people have with regard to their everyday lives—things like shopping and local government services The amount of information presented which relates to the Forest is limited The surveys do provide some insight into how area residents perceive their living environments (CBRS, CRED a and b)

Fremont County

Air Quality and "Open Spaces and Green Spaces" were the quality of life attributes respondents were most satisfied with Employment opportunities and the Availability of Retail Shopping were the attributes with the least amount of satisfaction Among respondents, 43 percent felt that Tourism was the type of ideal business they would like to see locate in Fremont county Some 34 percent felt the same way about General Manufacturing Employment Opportunities, Level of Individual Well-Being and Public Education were identified as being the most important in determining quality of life (CBRS, CRED a and b)

City of Idaho Falls

Favorable characteristics of life in Idaho Falls included a Low Local Tax Rate, Medical Services and Salary and Wage Levels In making choices among conflicting alternatives, respondents found these selections to be the most acceptable Limit Economic and Population Growth (32 percent) and Increase Taxes and the Local Cost of Living (31 percent). The least acceptable choices were to Permit Degrading of the Environment (30 percent) and Increase Taxes and the Local Cost of Living (27 percent) (CBRS)

University of Idaho - Clark County

A separate survey was recently conducted of Clark county residents by the University of Idaho (McGuire and Harp) The strongest points of agreement in that study follow

1 Livestock grazing is compatible with other natural resource uses Agreement, 88 5 percent
2 We have enough area legally designated as wilderness in Idaho Agreement, 83 9 percent
3 Large old trees that are cut and harvested will eventually be replaced by vigorous young trees that will be just as valuable Agreement, 81 8 percent

It is noteworthy that while Clark county respondents feel they have enough legally designated Idaho

wilderness, that fewer than 20 percent agree with a "need to build roads and other accommodations that will provide greater access to undeveloped natural areas " Many people have advanced the view that they would like to enjoy these "undeveloped natural areas" without the extra restrictions associated with wilderness designation

The three most serious concerns respondents identified for their community to deal with over the next five years are listed below

1 Availability of good jobs for young people (32 7 percent)
2 Availability of money needed to develop economically (16 1 percent)
3 Individual and family income levels (11 3 percent)

University of Idaho - Interior Columbia River Basin

Still another survey of public views was conducted by the University of Idaho of Interior Columbia River Basin residents (Rudzitis et al 1995) Some of its findings were highly predictable For instance, respondents overwhelmingly identified Employment Opportunity and Access to Family and Friends as their most important reasons for moving to or staying in the area (58 percent) Most people have to make a living and word-of-mouth (from family and friends) is a traditional means for gaining employment Family and friends normally comprise one's support system as well

Respondents did not see ". commodity-based strategies as the dominant management strategies to be pursued on public lands," but they did " in particular, feel some degree of timber harvesting and grazing on public lands should continue."

The most important public land uses were identified as
1 Protect water and watersheds (20 2 percent)
2 Protect ecosystems (18 3 percent)
3 Recreational uses (16.9 percent)
4 Timber harvesting (16 3 percent)
5 Preserve wilderness values (9 6 percent)
Interestingly, "protect endangered species" polled less than two percent of respondents

Utah State University and Washington State University Surveys in the Columbia River Basin (Brunson et al 1994, Tennert et al 1994)

Survey work conducted for the Interior Columbia Basin Ecosystem Management Project provided the following relevant attitude information (Trent 1995).

- Strong support exists for protection of fish and wildlife on public lands The public generally supports a multiple benefits mode of management which emphasizes a long-term balance between human and ecological concerns

- The public feels environmental and economic concerns can go hand in hand and should be given equal weight, if possible If this is not possible, the environment is considered more important

- The entities which the public trusts and feels should influence management decisions are local rural communities, western U S public opinion, university research scientists and the USDI Fish and Wildlife Service Entities the public feels should have influence but in whom they do not have a great deal of trust include the Forest Service and the BLM The public also feels it should play an active role in public land management

Expect Conflicting Views

In any event, land managers need to know that the wide range of views they hear from the public are predictable The case study conducted in the Teton county (Idaho) community of Driggs by the University of Idaho concluded that, "Driggs had yet to agree on what the future of the community should be," (Harris et al 1996) Likewise, tabular data presented in Trent, 1995, shows that in response to every survey question, Eastside Assessment public involvement participants were less neutral than those randomly polled Perhaps it borders on tautology to observe that people who get involved are less likely to be dispassionate in their views

**Minorities and Women - Scale: Regional**

Various programs have been implemented on the Forest to focus the resources of these group members on Forest activities to the benefit of both the Forest and the individuals This effort is reflected in Forest Service hiring, supervising and contracting procedures Under authority of a number of civil rights and equal employment opportunity acts and executive orders the Forest intends to continue

- Eradication of all forms of illegal discrimination from facilities, programs, activities, contracting and hiring practices

- Positive action in helping to provide developmental opportunities for the disabled, minorities, women and all other employees

- Providing coordinators for the Equal Employment Opportunity, Federal Women's and Hispanic programs

- Civil Rights Action Team activities and civil rights training for all employees.

**Coordination with Other Agencies - Scale: Regional**

The importance of coordinating management within the GYE has been recognized by the public land management agencies To that end, the Greater Yellowstone Coordinating Committee was established in the early 1960s This group consists of National Park and National Forest managers who meet twice yearly to discuss issues and improve coordination between the two agencies

There are many examples of how the various National Forests and Parks of the GYE have coordinated management across jurisdictional boundaries The agencies have an ecosystem-wide Grizzly Bear Recovery Plan Changes in these uniform guidelines for grizzly bear management are coordinated among the Forests and Parks Uniform regulations for recreation use in the area were initiated for the 1995 summer season Federal and state agencies in the GYE are implementing coordinated guidelines for management of noxious weeds and exotic plants Fire management is another area where resources and policies are shared across Forest and Park boundaries Currently the Forest is participating in the integrated winter sports planning taking place throughout the ecosystem As the Revision for the Forest is implemented, coordination with fellow managers in the ecosystem will continue

## PRODUCTION OF COMMODITY RESOURCES

TIMBER

### Timber - Scale: Forestwide and Subsection

The amount of forested land by species group, age class and subsection on the Forest was displayed earlier in Table III-3

Table III-33 displays the average mature volume of saw timber growing on the Forest by species and subsection

Table III-33 Merchantable Volume in Thousands of Board Feet (MBF) by Species 1/

| | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Hole Mtns | Caribou Range Mtns | Total |
|---|---|---|---|---|---|---|---|---|
| LPP Bd Ft Volume | 33,932 | 162,977 | 669,854 | 505,069 | 66,689 | 120,130 | 16,185 | 1,574,836 |
| DF Bd Ft Volume | 479,399 | 585,610 | 139,244 | 35,007 | 125,839 | 169,818 | 76,945 | 1,611,862 |
| MX Bd Ft Volume | 1,545 | 136,783 | 190,792 | 119,708 | 127,484 | 482,708 | 257,351 | 1,316,371 |
| MX3 Bd Ft Volume | 0 | 156,620 | 43,991 | 40,394 | 60,940 | 92,888 | 50,409 | 445,242 |
| S/F Bd Ft Volume | 0 | 21,147 | 2,916 | 8,200 | 17,185 | 13,168 | 6,283 | 68,899 |
| AS Bd. Ft Volume | 611 | 16,017 | 13,892 | 8,567 | 17,018 | 68,716 | 68,083 | 192,904 |
| Total Merchantable Volume MBF | 515,487 | 1,079,154 | 1,060,689 | 716,945 | 415,155 | 947,428 | 475,256 | 5,210,114 |

1/ MBF per acre (LP=6 1, DF=9 0, Mixed LP/DF=7 9, Other Mixed Conifer = 12 4, Spruce/Subalpine Fir=13 9, Aspen=3 2) x 57 (About 57% of the forested land is tentatively suitable)
LPP = Lodgepole pine, DF = Douglas-fir, MX = Douglas-fir/Lodgepole pine, MX3 = three or more conifer species mixed, S/F = Englemann Spruce/Subalpine fir, AS = Aspen

Tentatively Suitable Forest Land

While the volumes shown in Table III-33 exist on the Forest, not all acres are available for timber harvest In order to determine which land can be managed for timber production, a Tentatively Suitable Forest Land Classification process was used

Tentatively suitable forest land is defined as land that is producing or is capable of producing crops of industrial wood and meets the following criteria

- Has not been withdrawn by Congress, the Secretary of Agriculture, or the Chief of the Forest Service
- Existing technology and knowledge is available to ensure timber production without irreversible damage to soils productivity, or watershed conditions
- Existing technology and knowledge provides reasonable assurance that it is possible to restock adequately within 5 years after final harvest
- Adequate information is available to project responses to timber management activities

Tentatively suitable acres for the Forest have been determined and the process is displayed in Process Paper C. This amounts to 703,100 acres or approximately 57 percent of the total forested land on the forest Table III-34 displays Tentatively Suitable Acres by Ranger District and Ecological Subsection

| Table III-34 Tentatively Suitable Timber Acres by Ranger District and Subsection | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Hole Mtns | Caribou Range Mtns | Total |
| Dubois | 13,040 | 79,700 | 0 | 0 | 0 | 0 | 0 | 92,740 |
| Island Park | 0 | 91,100 | 64,000 | 47,640 | 0 | 0 | 0 | 202,740 |
| Ashton | 0 | 0 | 151,070 | 107,230 | 3,330 | 0 | 0 | 261,630 |
| Palisades | 0 | 0 | 0 | 0 | 0 | 33,580 | 30,730 | 64,310 |
| Teton Basin | 0 | 0 | 31,090 | 0 | 17,710 | 32,880 | 0 | 81,680 |
| Total | 13,040 | 171,800 | 246,160 | 154,870 | 21,040 | 66,460 | 30,730 | 703,100 |

The 703,100 acres shown above is 249,300 less than the 952,400 acres identified in the 1985 Plan The primary difference between the two is associated with the amount of nonforest acres The 1985 analysis identified 390,300 acres of nonforest lands and the current analysis identifies 681,079 acres, a difference of 290,779 acres

The current analysis utilizes more up-to-date data than in 1985 The Forest has more stand exam information than previous and land-sat data was used in areas where stand exam data did not exist A comparison of the two analyses is found in Process Paper C

Similarly, Table III-35 displays tentatively suitable acres by species and age class

| Table III-35 Timber Information by Subsections | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Basin | Big Hole Mtns | Caribou Range Mtns | Total | |
| Total Acres | 282,600 | 332,100 | 316,140 | 197,980 | 161,690 | 358,680 | 231,110 | % | 1,862,300 |
| TOTAL FORESTED AC | 103,887 | 225,013 | 276,375 | 190,115 | 92,183 | 227,215 | 122,495 | | 1,237,283 |
| % of Total Ac | 37 | 71 | 93 | 97 | 57 | 65 | 60 | | 66 |
| TENT SUIT ACRES | 13,040 | 170,800 | 246,160 | 154,870 | 21,040 | 66,460 | 30,730 | | 703,100 |
| % of Forested Ac | 13 | 76 | 89 | 82 | 23 | 29 | 25 | | 57 |
| % of Total Ac | 5 | 52 | 78 | 78 | 13 | 19 | 14 | | 38 |
| Tentatively Suitable Acres by Species and Age Group | | | | | | | | | |
| Lodgepole Pine (LPP) | | | | | | | | | |
| Nonstocked | 0 | 2,500 | 17,420 | 13,480 | 170 | 4,270 | 250 | 10 | 38,090 |
| Seedlings | 1,970 | 10,980 | 48,340 | 27,250 | 0 | 770 | 60 | 23 | 89,370 |
| Saplings | 0 | 4,730 | 19,580 | 14,900 | 0 | 1,160 | 0 | 11 | 40,370 |
| Pole | 0 | 4,810 | 9,810 | 8,470 | 1,510 | 690 | 0 | 7 | 25,290 |
| Mature | 0 | 22,560 | 81,920 | 62,250 | 4,440 | 13,920 | 1,590 | 49 | 186,680 |
| *Douglas-fir (DF)* | | | | | | | | | |
| Nonstocked | 0 | 580 | 300 | 610 | 90 | 510 | 0 | 1 | 2,090 |
| Seedlings | 180 | 1,610 | 0 | 60 | 0 | 180 | 0 | 1 | 2,030 |
| Saplings | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| Pole | 0 | 290 | 320 | 0 | 100 | 60 | 0 | 1 | 770 |
| Mature | 10,890 | 79,930 | 23,780 | 5,290 | 980 | 3,310 | 3,910 | 94 | 128,090 |
| Mature-prior harvest | 0 | 3,430 | 0 | 0 | 0 | 120 | 0 | 3 | 3,550 |
| Mixed LPP and DF | | | | | | | | | |
| Nonstocked | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Seedlings | 0 | 200 | 210 | 680 | 0 | 330 | 0 | 1 | 1,420 |
| Saplings | 0 | 360 | 1,800 | 330 | 0 | 0 | 0 | 3 | 2,490 |
| Pole | 0 | 190 | 1,920 | 200 | 0 | 70 | 70 | 2 | 2,450 |
| Mature | 0 | 14,020 | 30,410 | 13,170 | 4,240 | 23,920 | 10,460 | 94 | 96,220 |
| Other Mixed Conifers | | | | | | | | | |
| Nonstocked | 0 | 180 | 860 | 40 | 20 | 360 | 0 | 3 | 1,460 |
| Seedlings | 0 | 900 | 0 | 480 | 0 | 150 | 0 | 4 | 1,530 |
| Saplings | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| Pole | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| Mature | 0 | 16,810 | 3,440 | 3,960 | 5,220 | 7,570 | 1,830 | 92 | 38,830 |
| Spruce/Subalpine Fir | | | | | | | | | |
| Nonstocked | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| Seedlings | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| Saplings | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| Pole | 0 | 0 | 0 | 0 | 0 | 0 | 0 | | 0 |
| Mature | 0 | 1,920 | 160 | 740 | 670 | 200 | 180 | 100 | 3,870 |
| Aspen | | | | | | | | | |
| Nonstocked | 0 | 480 | 700 | 330 | 0 | 0 | 0 | 4 | 1,510 |
| Seedlings | 0 | 10 | 1,180 | 760 | 0 | 430 | 80 | 6 | 2,460 |
| Saplings | 0 | 30 | 390 | 310 | 210 | 0 | 0 | 3 | 940 |
| Pole | 0 | 190 | 320 | 0 | 200 | 0 | 400 | 3 | 1,110 |
| Mature | 0 | 4,090 | 3,300 | 1,560 | 3,190 | 8,440 | 11,900 | 84 | 32,480 |
| Total | | | | | | | | | |
| Nonstocked | 0 | 3,740 | 19,280 | 14,460 | 280 | 5,140 | 250 | | 43,150 |
| Seedlings | 2,150 | 13,700 | 49,730 | 29,230 | 0 | 1,860 | 140 | | 96,810 |
| Saplings | 0 | 5,120 | 21,770 | 15,540 | 210 | 1,160 | 0 | | 43,800 |
| Pole | 0 | 5,480 | 12,370 | 8,670 | 1,810 | 820 | 470 | | 29,620 |
| Mature | 10,890 | 139,330 | 143,010 | 86,970 | 18,740 | 57,360 | 29,870 | | 486,170 |
| Mature-prior harvest | 0 | 3,430 | 0 | 0 | 0 | 120 | 0 | | 3,550 |
| TOTAL | 13,040 | 170,800 | 246,160 | 154,870 | 21,040 | 66,460 | 30,730 | | 703,100 |

Based on the number of tentatively suitable forested acres identified in Process Paper C and shown in Table III-34 and a gross volume per acre derived from local forest yield-tables, Table III-36 displays the total gross volume (MCF and MBF) by species by ecological subsection that is currently growing on the tentatively suitable forest acres

Table III-36 Merchantable Volume (MCF and MBF) for TentativelySuitable Forest Land

| | Lemhi/ Medicine Lodge | Centennial Mountains | Island Park | Madison-Pitchstone Plateaus | Teton Range | Big Hole Mtns | Caribou Range Mtns | Total |
|---|---|---|---|---|---|---|---|---|
| MERCHANTABLE VOLUME IN THOUSANDS OF CUBIC FEET (MCF) BY SPECIES 1/ | | | | | | | | |
| LPP MCF Volume | 0 | 33,727 | 122,470 | 93,064 | 6,638 | 20,810 | 2,377 | 279,086 |
| DF MCF Volume | 19,983 | 146,672 | 43,636 | 9,707 | 1,798 | 6,074 | 7,175 | 235,045 |
| LP/DF MCF Volume | 0 | 24,184 | 52,457 | 22,718 | 7,314 | 41,262 | 18,044 | 165,979 |
| Other mixed MCF Volume | 0 | 43,874 | 8,978 | 10,336 | 13,624 | 19,758 | 4,776 | 101,346 |
| Spruce/Fir MCF Volume | 0 | 4,710 | 392 | 1,815 | 1,644 | 491 | 442 | 9,494 |
| Aspen MCF Volume | 0 | 3,096 | 2,498 | 1,181 | 2,415 | 6,389 | 9,008 | 24,587 |
| TOTAL MERCHANTABLE VOLUME MCF | 19,983 | 256,263 | 230,431 | 138,821 | 33,433 | 94,784 | 41,822 | 815,537 |
| MERCHANTABLE VOLUME IN THOUSANDS OF BOARD FEET (MBF) BY SPECIES 2/ | | | | | | | | |
| LPP Bd Ft Volume | 0 | 138,406 | 502,579 | 381,904 | 27,239 | 85,399 | 9,755 | 1,145,282 |
| DF Bd Ft Volume | 97,738 | 717,372 | 213,426 | 47,478 | 8,795 | 29,707 | 35,092 | 1,149,608 |
| MX BD Ft Volume | 0 | 110,926 | 240,604 | 104,201 | 33,547 | 189,255 | 82,760 | 761,293 |
| MX3 Bd Ft Volume | 0 | 208,629 | 42,694 | 49,148 | 64,785 | 93,951 | 22,712 | 481,919 |
| S/F Bd Ft Volume | 0 | 26,655 | 2,221 | 10,273 | 9,302 | 2,777 | 2,499 | 53,727 |
| AS BD Ft Volume | 0 | 12,953 | 10,451 | 4,941 | 10,103 | 26,729 | 37,688 | 102,865 |
| TOTAL MERCHANTABLE VOLUME MBF | 97,738 | 1,214,941 | 1,011,97 | 597,945 | 153,771 | 427,818 | 190,506 | 3,694,694 |

1/ MCF per acre LP=1 5, DF=1 8, Mixed LP/DF=1 7, Other Mixed Conifer=2 6, Spruce/Subalpine Fir=2 5, Aspen=0 8
2/ MBF per acre LP=6 1, DF=9 0, Mixed LP/DF=7 9, Other Mixed Conifer=12 4, Spruce/Subalpine Fir=13 9, Aspen=3 2

Table III-37 displays the estimated potential growth on tentatively suitable lands The majority of this growth occurs between ages 20-119

Table III-37 Potential Growth on Tentatively Suitable Lands

| Potential Growth (cubic feet/acre/year) | Tentatively Suitable Lands (acres) | Unsuitable Lands 1/ (acres) |
|---|---|---|
| less than 20 | 0 | 60,345 |
| 20-49 | 168,744 | 112,178 |
| 50-84 | 499,202 | 324,265 |
| 85-119 | 35,154 | 26,709 |
| 120-164 | 0 | 5,342 |
| 165-224 | 0 | 5,342 |
| 225 | 0 | 0 |

1/ Timber productivity classification for unsuitable lands is estimated

**Future Supply and Demand**

The projected demand-supply situation in the United States implies rising prices for timber In the U S economy, demand and supply market commodities are equated through price adjustments and other workings of the market When demand increases faster than supply, price brings the two together by reducing demand and/or by inducing supply increase (USDA Forest Service, 1990 RPA Assessment)

In general, it is expected that the price of softwood roundwood will follow the historic trend and continue to increase faster than the rate of inflation for at least the next 50 years, an indicator that demand from an increasing population will rise faster than supply can respond

Supply

The local demand-supply situation generally reflects the national and regional trend The following is a brief analysis of supply and demand for our area

Table III-38 displays sources of timber that have been available in the past The volumes shown, (except for private land which is an estimate) are averages from fiscal years 1992-95 sell program from the agencies listed While the actual amounts available in the future are unknown, all sources (except for the Forest) are assumed to be constant for at least the next three to five years Of the total, 15 1 MMBF or 51 percent historically came from the Forest This includes sawtimber, roundwood, commercial and personal use firewood

Table III-38 Average Volume per year Available in Local Demand Area

| Source | Total Annual Quantity (MMBF) | Sawtimber | Products |
|---|---|---|---|
| Targhee N F | 15 1 | 8 8 | 6 3 |
| Caribou N F | 1 6 | 1 2 | 0 4 |
| Bridger-Teton N F | 0 2 | 0 0 | 0 2 |
| Bureau of Land Mgmt | 3 2 | 3 0 | 0 2 |
| State of Idaho | 4 3 | 4 1 | 0 2 |
| Private Land | 5 0 | 5 0 | 0 0 |
| Total | 29 4 | 22 1 | 7 3 |

Demand

Table III-39 below displays the expected demand for wood products in our area from all users It does not include previous demand from Louisiana-Pacific as they have closed their Rexburg mill It also assumes the present number and mix of large and small timber operators will remain fairly constant

Table III-39 Total Demand for all Mills and Users (MMBF)

| Present Level | Survival Level | Maximum Efficiency Level |
|---|---|---|
| 35 7 | 31 | 36 |

The current demand for wood products in our area, all operators, large and small (including personal use firewood), is about 35 7 MMBF annually The minimum level of timber demand, from all operators, necessary to meet the survival needs of timber industry and personal use is 31 0 MMBF This level of harvest

will just barely provide for the existence of the current number of operators at their minimum operating level, plus meet the current demand for "walk-in-the door" products and personal use firewood To provide for maximum efficiency of mill operation and meet all demands for wood products that small operators receive and meet the current demand for personal use firewood and walk-in traffic, the level of timber offer should be approximately 36 0 MMBF

**Reforestation/Timber Stand Improvement**

Table III-40 indicates past levels of reforestation (artificial and natural) and timber stand improvement (thinning) Activities that have occurred on the Forest

Table III-40 Levels of Past Reforestation and Timber Stand Improvement Activities

| | Reforestation Acres | TSI Acres |
|---|---|---|
| 1981-90 | 104,562 | 11,563 |
| 1991 | 3,152 | 1,210 |
| 1992 | 2,874 | 397 |
| 1993 | 3,163 | 759 |
| 1994 | 4,361 | 493 |
| 1995 | 2,753 | 111 |
| 1996 | 3,515 | 172 |
| 1997 | 766 | 850 |

LIVESTOCK GRAZING

**Livestock Grazing - Scale: Forestwide and Subsection**

Approximately 79 percent (1,466,475) of the 1 87 million acres under Forest grazing administration are identified as being in grazing allotments, which are open to grazing These acres, about 782,005 (53 percent) acres are capable for livestock grazing Approximately 400,640 acres (21 percent) are presently closed to grazing. There are 154 allotments (76 cattle and 78 sheep) on the Forest where livestock grazing occurs, of which 109 have AMPs A portion of one of these allotments, Moose Creek S&G, is located on the Bridger-Teton N F All allotments on the Forest are managed under various strategies (Process Paper K) A summary of grazing activity by subsection is displayed on Table III-41

Table III-41 Livestock Grazing Data by Subsection

| Indicator | Subsection | | | | | | |
|---|---|---|---|---|---|---|---|
| | LEMHI/ MEDICINE LODGE | CENTENNIAL MOUNTAINS | ISLAND PARK | MADISON-PITCHSTONE PLATEAUS | TETON RANGE | BIG HOLE MTNS | CARIBOU RANGE MTNS |
| AUMS Sheep | 3,111 | 16,464 | 2,016 | 2,830 | 3,162 | 14,899 | 13,267 |
| Cattle | 14,161 | 30,067 | 21,273 | 3,765 | 2,182 | 11,092 | 9,776 |
| No of Sheep | 8,930 | 17,770 | 2,072 | 0 | 3,700 | 18,500 | 21,013 |
| No of Cattle | 3,633 | 7,697 | 4,833 | 1,241 | 522 | 2,293 | 2,343 |
| NO OF PERMITS | 42 | 75 | 43 | 10 | 17 | 46 | 44 |

The current permitted livestock use reported on the Forest is 148,775 AUMs Permitted livestock consists of 22,066 cattle and 71,985 sheep Currently 182 permittees hold 277 grazing permits which authorize grazing on the Forest Presently, based on 1993 data, the numbers of livestock actually using the forest are 20,362 cattle for 84,212 AUMs and 54,478 sheep for 44,006 AUMs

As Table III-42 demonstrates, of these 154 allotments, 15 sheep allotments and one permit are vacant where little or no grazing presently occurs, unless authorized There are no vacant cattle allotments or permits on the Forest

Table III-42 Vacant Allotments/Permits on the Forest

| District | Allotment Name, Number | Permitted AUMs | Status |
|---|---|---|---|
| Dubois | Huntley Canyon, 158 | 585 | 1 |
| Dubois | Little Creek Cottonwood, 146 | 600 | 2 |
| Dubois | Rattlesnake, 153 | 571 | 2 |
| Dubois | West Indian Creek, 161 | 1220 | 2 |
| Dubois | Willow Creek, 162 | 540 | 3 |
| Island Park | Reas Pass, 226 | 633 | 1 and 4 |
| Island Park | Dry Creek, 220 | 383 | 1 and 4 |
| Island Park | Jesse Creek, 224 | 467 | 1 and 4 |
| Island Park | Blue Creek, 217 | 775 | 2 and 5 |
| Island Park | Hotel Creek, 222 | 374 | 2 and 5 |
| Ashton | Fish Creek, 311 | 830 | 1 and 5 |
| Ashton | Partridge Creek, 309 | 600 | 1 and 5 |
| Ashton | Trail Canyon, 310 | 800 | 1 and 5 |
| Ashton | Black Mountain, 308 | 600 | 1 and 5 |
| Ashton | Driveway Wells, 306 | 666 | 2 |
| Palisades | Garden Prichard, 40206 | 750 | 1 |

1 = No grazing is authorized on these allotments
2 = Vacant allotment open to grazing
3 = Two permits (1 sheep and goat and 1 cattle and horse) occupy the same allotment The sheep and goat permit is vacant, and the cattle and horse permit is not vacant
4 = *Management Situation 1 Grizzly Bear Habitat*
5 = Management Situation 2 Grizzly Bear Habitat

A vacant allotment is an allotment where a livestock grazing permit has not been issued The allotment may or may not be available for use by domestic livestock District Rangers have the authority to authorize or deny grazing of vacant allotments If grazing is authorized, it can be either permanent or temporary On the Forest, when vacant allotments are temporarily grazed, they are referred to as swing allotments A swing allotment is temporarily grazed by an existing permittee whose authorized allotment is not available

swing allotment is temporarily grazed by an existing permittee whose authorized allotment is not available (whole or in part) The idea of using a vacant allotment on a temporary basis rather than a permanent basis is to provide flexibility for existing Forest permittees and their allotments At this time, cattle are not allowed to graze vacant sheep allotments Also, permittees who do not presently have an existing grazing permit on the Forest are not allowed to use swing allotments

The Forest coordinates grazing activities on six allotments with the Bridger-Teton N F Five are located on Forest lands (along the Snake River, above Alpine Junction, along highway 26/89) where the Bridger-Teton N F administers all resources, except grazing For these five allotments, the management direction (grazing utilization standards and guidelines, permit/allotment administration, AMP development, etc ) in the Targhee Forest Plan applies The sixth allotment is that portion of the Moose Creek S&G allotment within the Bridger-Teton N F where the Forest also administers grazing activities and the Bridger-Teton N F administers everything else

To better manage livestock, many structural improvements have been constructed using equal (50 percent Forest Service and 50 percent permittee) contributions from the Forest Service and the grazing permittees These improvements include 563 miles of fence, 670 water developments, 72 5 miles of pipeline, 8 wells, 16 corrals, 7 stock bridges, 2 herder cabins, 74 cattleguards, and 25 miles of stock trail The Forest portion of these improvements is generated from grazing receipts (RBRB funds) and usually is in the form of materials and supplies Range improvement structures are maintained by the grazing permittees

A capability analysis has been completed for all allotments with range analysis surveys Areas capable and not capable of grazing livestock have been determined by field inspections using specific criteria (Process Papers H and I) identified in Forest Service Handbook FSH 2209 21 As shown on Map 29, of the 154 allotments (1,466,475 acres) where grazing is permitted, eight on the Island Park District, totalling 853 acres, do not have a range surveys and one on the Teton Basin District, totaling 1,446 acres, does not have a range survey

Not all areas on the Forest that are capable of grazing livestock are suitable for grazing For example, approximately 21 percent (400,640 acres) of the Forest is presently closed to grazing (Map 29) Even though these acres are now closed, at one time they were designated as being in allotments with about 53 percent of the lands capable of grazing domestic livestock Other areas on the Forest where grazing is not suitable are fenced developed recreation sites, some special use sites, administrative sites, RNAs, developed spring and seeps and some critical wildlife habitat such as bighorn sheep range in the Teton Range subsection A suitability analysis has not been conducted for all allotments on the Forest The suitability for livestock grazing is determined through a site-specific analysis, from which AMPs are developed As per direction found in the Rescission Act of 1995 (Section 504 of Public Law 104-19), the Forest has a schedule in place to complete this analysis for allotments that need it and intends to comply with this law as funding from Congress will allow

# CHAPTER IV
# ENVIRONMENTAL CONSEQUENCES

## READER'S GUIDE - In this chapter you will find:

A description of the consequences of implementing the alternatives with respect to the following components and key issues

- Ecological Processes and Patterns
  - Ecological Processes and Disturbances
  - Ecological Patterns
- Physical Elements of the Environment
- Biological Elements of the Environment
  - Aquatic and Riparian Ecosystems
  - Terrestrial Ecosystems
- Forest Use and Occupation
  - *Access Management*
  - Wilderness and Recreation Resource
  - Economic and Social Environment
- Production of Commodity Resources
  - Timber
  - Livestock Grazing
- Irreversible and Irretrievable Commitment of Resources

The consequences are described in some or all of the following terms - Consequences Common to All Alternatives, Consequences Which Vary by Alternative and Cumulative Effects

## ECOLOGICAL PROCESSES AND PATTERNS

This component describes the potential effects to forest structure, composition, disturbance regime and pattern It is assumed that all future site-specific management activities will result from ecological assessments conducted in a manner similar to that described in the draft document entitled Proper Functioning Condition (Process Paper W)

Two issue indicators were developed for this component The first issue indicator of "health of forest structure and composition" was derived by totaling the number of acres, under each alternative, where forest structure and composition may be maintained or improved through timber management activities The second issue indicator is the "use of fire " It was derived by totaling the number of acres, under each alternative, where prescribed fire (both management-ignited and natural) may be used to maintain or improve ecological sustainability Table IV-1 displays these indicators by alternative

| Table IV-1 Ecological Process and Pattern Indicators by Alternative | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Alternatives | | | | | | |
| Indicator | 1 | 2 | 3 | 3-M | 4 | 5 | 6 |
| **Prescribed Fire** | | | | | | | |
| Prescribed Fire Allowed with Few Restrictions 1/ (MM Acres) | 1 63 | 1 75 | 1 75 | 1 75 | 1 75 | 1 75 | 1 75 |
| Open Roads Miles 2/ | 1,882 | 1,863 | 1,589 | 1,577 | 1,372 | 1,237 | 1,228 |
| Open Trail Miles 2/ | 572 | 470 | 435 | 540 | 427 | 232 | 81 |
| **Sustainability of Forest Structure and Composition 3/** | | | | | | | |
| Health of Forest Structure and Composition (M acres) 4/ | 48 5 | 58 6 | 52 9 | 45 2 | 39 8 | 29 8 | 20 7 |
| **Connectivity** | | | | | | | |
| Acres of Aquatic Zones Connectivity Maintained (M acres) | 342 | 325 | 448 | 512 | 533 | 590 | 793 |
| Forested Acres In Mature-or-Older Age Classes(M acres) 5/ | 959 1 76% | 956 3 76% | 959 7 76% | 967 0 77% | 972 0 77% | 978 5 78% | 987 5 78% |

1/ All Prescriptions Except 1 1 1, 1 1 2, 1 1 3, 1 1 4, 1 1 5, 2 2, 2 3, 2 4, 2 9 1, 2 9 2, 4 1, 4 1, 4 3, 8 2
2/ The word "open" means the roads and trails do not have any restrictions on motorized use
3/ Estimated M acres of silvicultural treatments for the first decade (ASQ, unscheduled, TSI and reforestation)
4/ Maintained or improved
5/ Assumes all harvest leads to reduction of mature component Also assumes no ingrowth into the mature category in the first decade Percents are percentages of total forested acres

ECOLOGICAL PROCESSES AND DISTURBANCES

**Old Growth, Late Seral and Mature Forests**

In Chapter III, it was noted that about 79 6 percent of the forested acres were classified as mature, which included old growth and late seral forests Additional analysis using permanent forest inventory plots indicated that 8 7 percent of the forested acres meet old growth characteristics for live trees and standing dead trees, 68 4 percent of the forested acres could be classified as late seral and 2 5 percent of the forested acres are younger and smaller mature trees

*Consequences Which Vary by Alternative* - We modelled the effects of all standards and guidelines and management prescriptions to estimate the amount of timber harvesting that may occur Table IV-2 displays how proposed timber harvesting (scheduled and unscheduled) in each alternative will change the amount of old growth, late seral and mature forest at the end of the first decade On a forestwide basis, Alternative 2 has the highest proposed timber harvest, which reduces these acres about three percent at the end of the first decade Alternative 6 has the lowest proposed timber harvest, which reduces these acres about one percent at the end of the first decade

On a watershed basis, the following changes in mature, late seral and old growth forest acres are estimated

- Four watersheds (010, 011, 012, 013) do not have any proposed timber harvesting that would create additional openings for the first decade in all alternatives These are the watersheds where most of the lodgepole pine salvage timber harvesting occurred during the last two decades
- 30 watersheds will have < five percent of the mature, late seral and old growth forest acres harvested
- Six watersheds will have from 6 to 10 percent of the mature, late seral and old growth forest acres harvested
- Four watersheds will have from 10 to 17 percent of the mature, late seral and old growth acres harvested

At the end of the first decade, we estimate conditions for the principal watersheds for all alternatives

- 23 watersheds will have > 90 percent of the forested acres in mature, late seral and old growth stages
- 5 watersheds will have 80 to 89 percent of the forested acres in mature, late seral and old growth stages
- 5 watersheds will have 70 to 79 percent of the forested acres in mature, late seral and old growth stages
- 7 watersheds will have 60 to 69 percent of the forested acres in mature, late seral and old growth stages
- 3 watersheds will have 50 to 59 percent of the forested acres in mature, late seral and old growth stages
- 1 watershed will have 33 percent of the forested acres in mature, late seral and old growth stages

Studies on the historical amount of old growth, late seral and mature forests have been completed for two watersheds, the Camas Creek watershed (025) and the upper Henry's Fork watershed (008) Both of these watersheds are in the Centennial Mountains Subsection The following summarizes these studies

Camas Creek Watershed (Report of the Camas Creek Landscape Team)

| | |
|---|---|
| 1850 | 54 percent in an early seral stage |
| | 39 percent in a mid seral stage |
| | 6 percent in a late seral |
| 1900 | 27 percent in an early seral stage |
| | 64 percent in a mid seral stage |
| | 8 percent in a late seral |
| 1950: | 7 percent in an early seral stage |
| | 35 percent in a mid seral stage |
| | 57 percent in a late seral |
| 1995 | 7 percent in an early seral stage |
| | 36 percent in a mid seral stage |
| | 56 percent in a late seral |

Upper Henry's Fork watershed (Patten and Hansen, 1995)

| | |
|---|---|
| 1790-1870 | < 20 percent open (nonforested) |
| | 80+ percent in mature forest |
| 1870-1910 | major natural disturbance about 1870 |
| | 70-80 percent in open, seedling, sapling |
| | 20 percent in mature forest |
| 1910-1950 | < 20 percent open |
| | 50-60 percent in pole size forest |
| | 20-30 percent in mature forest |
| 1950-1988 | < 20 percent open |
| | 5-10 percent seedling, sapling (logging) |
| | 0-5 percent in pole size forest |
| | 60 percent in mature forest |

| Table IV-2 Percent Mature/Late Successional/Old Growth Forest at the End of the First Decade for each Alternative | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| WSH NO | Ac Forested | Existing | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| 002I | 6 727 | 100 | 99 | 99 | 99 | 100 | 100 | 100 | 100 |
| 002W | 15 810 | 100 | 98 | 98 | 99 | 99 | 99 | 99 | 100 |
| 003I | 12 820 | 100 | 99 | 99 | 99 | 99 | 100 | 100 | 100 |
| 003W | 15 427 | 98 | 97 | 96 | 97 | 97 | 97 | 97 | 97 |
| 4 | 28 305 | 100 | 99 | 99 | 99 | 99 | 99 | 99 | 100 |
| 5 | 18,856 | 96 | 92 | 92 | 92 | 92 | 94 | 94 | 96 |
| 6 | 26 493 | 99 | 95 | 95 | 95 | 95 | 96 | 98 | 98 |
| 007/033 | 24 209 | 92 | 89 | 88 | 88 | 89 | 89 | 91 | 92 |
| 8 | 102 475 | 68 | 68 | 68 | 68 | 68 | 68 | 68 | 68 |
| 009A | 50,925 | 87 | 81 | 80 | 81 | 83 | 84 | 85 | 87 |
| 009B | 33,727 | 63 | 58 | 57 | 58 | 59 | 60 | 61 | 63 |
| 10 | 43,329 | 33 | 33 | 33 | 33 | 33 | 33 | 33 | 33 |
| 11 | 108 590 | 53 | 53 | 53 | 53 | 53 | 53 | 53 | 53 |
| 12 | 82 970 | 57 | 57 | 57 | 57 | 57 | 57 | 57 | 57 |
| 13 | 45 913 | 64 | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| 014/034 | 30 120 | 87 | 77 | 75 | 77 | 80 | 80 | 87 | 87 |
| 015I | 15 342 | 73 | 67 | 72 | 67 | 67 | 71 | 71 | 71 |
| 015W | 18 457 | 78 | 73 | 77 | 73 | 73 | 76 | 76 | 76 |
| 016I | 16 046 | 78 | 67 | 65 | 67 | 70 | 76 | 76 | 76 |
| 016W | 37 464 | 98 | 95 | 94 | 95 | 95 | 97 | 97 | 97 |
| 017I | 5916 | 100 | 98 | 96 | 97 | 97 | 97 | 97 | 98 |
| 017W | 20,284 | 100 | 99 | 99 | 99 | 99 | 99 | 99 | 99 |
| 18 | 10 747 | 100 | 98 | 98 | 98 | 98 | 98 | 98 | 98 |
| 19 | 14 160 | 100 | 97 | 96 | 97 | 97 | 98 | 97 | 98 |
| 20 | 15,663 | 87 | 85 | 83 | 84 | 84 | 84 | 84 | 85 |
| 021I | 16 031 | 61 | 57 | 56 | 56 | 57 | 57 | 59 | 59 |
| 021W | 46 652 | 83 | 82 | 81 | 82 | 82 | 82 | 82 | 82 |
| 22 | 30,924 | 95 | 91 | 92 | 91 | 92 | 92 | 92 | 94 |
| 023/024 | 35 815 | 81 | 78 | 77 | 77 | 78 | 78 | 79 | 79 |
| 25 | 56 670 | 77 | 67 | 66 | 67 | 70 | 70 | 70 | 74 |
| 026A | 20 170 | 83 | 76 | 75 | 77 | 78 | 78 | 80 | 82 |
| 026B | 22 640 | 79 | 64 | 62 | 65 | 68 | 68 | 71 | 75 |
| 027/028 | 25 554 | 93 | 90 | 90 | 90 | 90 | 91 | 91 | 93 |
| 29 | 18 005 | 85 | 82 | 81 | 82 | 82 | 83 | 83 | 85 |
| 030A | 17 647 | 97 | 95 | 94 | 95 | 96 | 95 | 95 | 96 |
| 030B | 23 035 | 77 | 75 | 74 | 75 | 76 | 75 | 75 | 76 |
| 031A | 18,214 | 100 | 98 | 98 | 98 | 99 | 98 | 98 | 99 |
| 031B | 5 810 | 99 | 94 | 93 | 94 | 95 | 95 | 95 | 96 |
| 35 | 4 749 | 100 | 94 | 96 | 96 | 97 | 97 | 97 | 97 |
| 36 | 12 833 | 98 | 94 | 97 | 97 | 96 | 96 | 96 | 96 |
| 37 | 43 055 | 100 | 98 | 97 | 97 | 97 | 98 | 98 | 99 |
| 38 | 41 313 | 98 | 94 | 94 | 94 | 95 | 96 | 96 | 98 |
| 39 | 9 815 | 95 | 91 | 91 | 91 | 92 | 92 | 92 | 92 |
| 40 | 9 346 | 95 | 92 | 92 | 92 | 92 | 93 | 93 | 93 |
| Forestwide | 1 259,053 | 79 | 76 | 76 | 76 | 77 | 77 | 78 | 78 |

Currently, the Camas Creek watershed (025) has 77 percent of the forested acres in old growth, late seral and mature seral stages This is a higher percentage than existed from 50 to 150 years ago The highest amount of timber harvesting (Alternative 2) still maintains 66 percent of the forested acres in old growth, late seral and mature seral stages

Currently, the Upper Henry's Fork watershed (008) has 68 percent of the forested acres in old growth, late seral and mature seral stages This is a higher percentage than existed from 50 to 150 years ago All alternatives still maintain 68 percent of the forested acres in old growth, late seral and mature seral stages

*Cumulative Effects* - It is not possible to identify and display how much timber harvesting will occur just in old growth or just in late seral forests because we do not have a completed, mapped inventory and the exact locations of future timber harvesting are not known The inventory, mapping and locations of future timber harvesting will occur as site-specific analysis is done for specific projects

**Fire**

The role of fire as an ecosystem disturbance agent has been greatly diminished by fire suppression since the early 1900s To sustain healthy ecosystems on the Forest it is important to reestablish fire as a disturbance agent This can be done by allowing lightning-caused fires to burn (prescribed natural fires) or by intentionally setting fires (prescribed management-ignited fires) to achieve specific management goals Using prescribed fire in concert with silvicultural treatments to reestablish historic fire intervals should reduce the suppression costs and resource losses caused by severe wildfires The following indicators measure how likely the Forest is to use prescribed fire as a tool in the next decade, given the risks and costs involved

1 Acres where use of prescribed fire is allowed, with few restrictions
2 Acres where timber harvest is allowed with few restrictions This tends to reduce the risks associated with using prescribed fire
3 Miles of motorized road and trail access Access can reduce the risks and costs associated with prescribed fire

*Consequences Common to All Alternatives* - Fire management plans are required for portions of the Forest that will receive prescribed burning To date, only one such plan has been written, the Jedediah Smith Wilderness Fire Plan (this fire plan has not yet been approved) This fire plan applies to all alternatives This plan will result in increased natural fire ecology within the Wilderness, with the most potential for stand-replacing fires in the northern portion Stand-replacing fires would only occur under drought conditions In the southern part of the wilderness, fires would be expected to remain small and burn in isolated groups of trees

Forestwide it is estimated that some 11,000 to 21,000 acres of the sagebrush/grass type will be burned in the first decade in all alternatives, which amounts to about 4 to 8 percent of this type on the Forest The effect of this will be to move acres with dense sagebrush canopies to earlier seral stages where sagebrush is less dominant This will create more of a mosaic of age classes than currently exists, thereby improving diversity by reestablishing grasses and forbs on these sites However, the magnitude of this program is not sufficient to significantly alter the seral class distribution of sagebrush/grassland overall Although the existing seral class distribution of this type is unknown, preliminary studies indicate the Forest supports a higher percentage of mid- and late-seral stages than existed historically For example, on the Dubois Ranger District, there are approximately 42,310 acres in less than satisfactory condition because of a high density of mountain big sagebrush

All alternatives allow the use of prescribed fire to some extent Acreages of other vegetation communities to be treated with fire are unknown in any alternative, but the likelihood that management will use this tool varies by alternative

*Consequences Which Vary by Alternative* - Table IV-1 shows, by alternative, the number of acres where prescribed fire is allowed without significant restrictions on its use All alternatives except Alternative 2 allow 1,750,000 acres of prescribed fire with few restrictions This equates to approximately 97 percent of the Forest Alternative 2 allows 1,630,000 acres, which equates to approximately 90 percent of the Forest acres Table IV-1 also displays that Alternative 2, followed by 1, 3, 3M, 4, 5 and 6 allow varied amounts of timber harvest

Motorized road and trail access to prescribed burn areas can be important for reducing risks and costs associated with prescribed fire Roads and trails can serve as containment lines and provide escape routes Motorized access route mileage is summarized by alternative in Table IV-1 Motorized roads and trails generally decrease from Alternative 1 through 6

Based on the three indicators, Alternatives 1 and 2 would allow for the highest use of prescribed fires, Alternatives 3 and 3M significantly lower amounts and Alternatives 4, 5 and 6 the least

*Cumulative Effects* - Overall, the low number of acres scheduled for timber harvest and the restricted motorized access across the Forest will limit the use of prescribed fire for all alternatives, especially in the forested types Alternative 2, with the highest number of acres scheduled for harvest, only harvests 2 3 percent of the existing mature-or-older forested acres over the next 10 years Additional vegetation manipulation will occur via nonscheduled harvest (including unsuited lands) such as firewood removal, but this small amount of fuel manipulation is not enough to allow managers to restore fire over large acreages with acceptable risks For community types where fire intervals are outside their historic range, all alternatives are expected to delay a return to more natural fire regimes for at least the next decade A discussion of these effects by community type follows

Sagebrush/Grass Ecosystem - With the removal of several fire cycles from these ecosystems, the preponderance of big sagebrush stands fall within the dense canopy coverage class (greater than 15 percent canopy coverage) Under all alternatives, only approximately 4 to 8 percent of the Forest sagebrush/grass acres are projected to be manipulated during the first decade As a result, the majority of the big sagebrush acres will continue to decline in overall watershed conditions (loss of understory vegetation resulting in increased susceptibility to erosion, reduced water infiltration and decreased organic matter recruitment)

As these ecosystems simplify, becoming a homogeneous dense canopy of dense sagebrush, they become increasingly susceptible to fires of higher severity and intensity than what historically occurred Implications of such fires include the following

1 Potential for loss of species not adapted to these "altered" fire regimes (e g , Idaho fescue),

2 Loss of nutrients and a lowering of site productivity potential (more nutrients being stored within the dense overstory versus within the soil profile as historically was the case, thus being more susceptible to loss through ignition),

3 Higher potential for having more acres severely burned with subsequent chances for altering the soil's physical and chemical properties,

4 Alteration of the natural resistance and resiliency of the soils

Lack of management within the sagebrush/grass ecosystem will also result in more acres which historically supported sagebrush/grass being converted to conifers and subsequent decrease in overall inherent site productivity

Aspen Ecosystem - Aspen is mainly found on soils that have a high inherent productivity due to the nutrient cycling (leaf fall) that occurs within healthy stands Over time as conifers invade these sites the

soils begin to acidify and nutrients are leached out of the productive surface layers to lower depths within the soil profile If left unchecked, these soils will mature and develop into soils more suitable for conifers and less likely to support healthy vibrant aspen communities This will reduce future options or make future options more at risk for success

Currently 93 percent of the aspen on the Forest is mature or at pathological rotation age Inability to regenerate significant amounts of aspen by fire will maintain most of this type in the mature class and will result in aspen's being replaced by conifers in many cases Where this occurs, the ability of the soils to support aspen may be lost due to changes in soil chemistry or due to loss of clone root vitality Severe fires are more likely to occur where conifers have become mixed with aspen, which would tend to regenerate aspen as long as fires are not so hot that they destroy the aspen root systems (most root nodes for sprouting are 3-6 mm below the surface)

Dry and Moist Douglas-fir, and Mid and Lower Elevation Subalpine Forest Fire Groups - These fire groups occur within all subsections Mean fire intervals within these fire groups indicate that one or more fire cycles may have been removed from these areas mainly through fire suppression Results of altering the fire regimes in these fire groups include the following

1 Thickening of the forest or potential loss of certain habitats (e g , aspen stands, wet/dry meadows, riparian areas etc ) due to encroachment

2 Accumulation of more large organic materials on the forest floor As organic matter accumulates, decomposition rates decline and nutrient cycles stagnate Nitrogen mineralization rates decline

3 Decrease in stream flow and on-site water balance Increase in interception, evaporation and transpiration Available water is less

4 Development of ladder fuels

Implications if fires of higher intensity and severity were to occur are as follows

1 The potential increases for the loss of species not adapted to these "altered" fire regimes (e g , old, past fire-resistant Douglas-Fir)

2 Loss of nutrients and a lowering of site productivity potential Storing more nutrients above ground in the denser (more stems per acre) forest canopy instead of the soil profile as was historically the case makes them more susceptible to loss through fire

3 There is a higher potential for having more acres severely burned with subsequent chances for altering the soils' physical and chemical properties or of developing water-repellant layers with subsequent sensitivity to increased overland flows and erosion

4 The natural resistance and resiliency potential for the soils would be altered, requiring longer recovery time and thus a longer risk period for resource damage

Historic forest structures of large, widely spaced Douglas-fir trees would not be restored during the first decade Susceptibility to Douglas-fir beetle and western spruce budworm are expected to remain high due to dense stocking and multiple-storied structure

Due to the long fire intervals (50-350 years) in the subalpine fir type, the historic fire patterns most likely have not been significantly changed due to fire suppression Failure to reintroduce fire in subalpine fir within the next decade is not expected to cause important impacts to this community type

Lodgepole Pine - Historic fire regimes in the lodgepole pine community type have not been seriously

disrupted on the Forest Significant lodgepole pine acreages have been returned to early age classes by past timber management and within the Greater Yellowstone Ecosystem a large proportion of this type was affected by the fires of 1988 Although the possibility of severe stand-replacing fires still exists within this type, such fires are in line with what historically occurred The consequences of not reintroducing fire to this type are expected to be insignificant over the first decade

High Elevation Whitebark Pine - Lack of fire reintroduction at high elevations where whitebark pine is found may contribute to the decline of this species Newly burned areas which provide seedbeds will continue to be lacking Since much of the whitebark pine is mixed with subalpine fir, fires would likely be of high intensity leading to loss of mature whitebark pine trees Both these conditions would reduce opportunities in this species for improved genetic resistance to white pine blister rust via gene recombination

**Insects and Disease**

The environmental consequences discussed here focus primarily on pest management through forest vegetation manipulation Forest management on timberlands provides the best opportunity to prevent or reduce the amount and impact of pest-related damage, although direct actions against pests may be necessary in specific (small scale) situations, as it relates to forest vegetation With greater opportunity to manage forest vegetation, less damage would be anticipated Areas managed intensively for timber would present the greatest opportunity to reduce or prevent timber losses, while areas managed non-intensively for timber production would have anticipated higher timber losses Another method in treating insects and disease is the use of baiting or trap trees Prescribed fire may be an appropriate tool in managing insects and disease, under some conditions

Reducing competing vegetation in plantations increases available soil moisture and available light and is essential for acceptable seedling survival and growth Controlling tree densities in timber stands improves tree health and vigor and greatly increases their resistance to insect attack Replacing existing stands which contain a component of overmature, decadent trees with young trees reduces mortality caused by insects and disease

Indicators - Amount of treated acres of mature and older age classes

*Consequences Common to All Alternatives* - All alternatives allow some treatment of insects and disease, including vegetation manipulation However, the intensity of application and opportunities for managing pests will vary according to the kinds and intensities of resource management planned for each alternative Plantations of seedling, sapling and pole-size stands existing from previous vegetation manipulations will be treated during this planning period in order to enhance vigor and growth The amount of treatment in these stands will be about the same for all alternatives

All alternatives allow insects and disease to play their natural role in ecological succession in one or more management prescription areas Endemic levels of insects and disease are natural and should be expected

Vegetation management in developed recreation areas should result in improved health of the vegetation, decreased tree mortality and fewer hazardous trees Vegetation management in developed recreation areas should remain about the same as the current situation assuming the same level of funding as in the past

*Consequences Which Vary by Alternative* - The amount of forested vegetation manipulation varies in each alternative The alternatives with the most acres in the 5-series prescriptions allow for the most vegetation management Alternative 2 allows the most forest management and Alternative 6 the least (see Table II-1 and Table IV-1) While the level of insects and disease activities expected from each alternative is difficult to measure, the amount of vegetation manipulation in each alternative is not significantly different

*Cumulative Effects* - All alternatives provide a low level of vegetation management and will not affect levels of insect and disease activity significantly from past forest plan activities While the levels of vegetation management are lower than the previous planning period, treatment of mature stands at any level is beneficial in reducing insect and disease conditions

*Under all the alternatives pest-caused mortality would be expected to increase as mature timber stands* continue to become overmature This could result in both an increased level of annual losses and the increased possibility of large periodic losses from insect and disease epidemics Pest-caused mortality would likely increase as vegetation management decreased, though the differences between alternatives are not likely to be significant

ECOLOGICAL PATTERNS

**Forest Structure, Composition and Natural Disturbance**

Indicators - Health of forest structure and composition

*Consequences Common to All Alternatives* - The primary consequence common to all alternatives is that the existing conditions of the forest structure and composition will remain unchanged on at least 96 percent of the forested landscape over the coming decade Areas with sustainable conditions of structure and composition will generally remain healthy Areas such as the heavily harvested lodgepole pine forest within the Island Park Ecological Subsection are expected to improve in both structure and composition Most areas that do not have healthy conditions of structure and composition due to fire exclusion are expected to remain unhealthy There is an increased risk that some of these areas could be burned by wildfire or their condition could be further reduced by outbreaks of insects or pathogens

*Silvicultural activities such as timber harvest and fire (management-ignited and natural) directly affect* forest structure and composition by changing plant species composition, ages, density and canopy characteristics When properly designed and executed, silvicultural activities can maintain and improve forest structure and composition However, silvicultural treatments are proposed on less than four percent of the *forested landscape*

*Consequences Which Vary by Alternative* - The amount of forested landscape where timber harvest could take place varies by only about two percentage points between alternatives Table IV-1 shows that between 20,700 and 58,600 acres could be treated The proposed alternative could treat up to 45,200 acres Management-ignited and natural fire could occur on 1 63 to 1 75 million acres per decade.

*Cumulative Effects* - Past management practices have inadvertently reduced the health of forests by altering their structure and composition Past fire management practices reduced the spread of naturally ignited fires over much of the Forest This allowed many stands to become overstocked and increased their susceptibility to damage by wildfire and to outbreaks of insects and pathogens Past silvicultural practices did not always strive to achieve desirable conditions of forest structure and composition Some timber harvest areas, although small in proportion to the entire forested area, left some landscapes out of balance in regard to structure and composition

The present level of silvicultural treatments is very small as is the proposed level of treatment

Cumulatively fire exclusion and to a much lesser extent timber harvest, has reduced the health of the forested landscape by altering the structure and composition The proposed alternatives do little to change this trend

**Connectivity**

Indicators

1 Acres where aquatic connectivity is improved or maintained
2 Open motorized road & trail miles, which decrease connectivity
3 Percent of forested acres in mature or older age classes
4 Patterns of mature forests

*Consequences Which Vary by Alternative*

Aquatic Influence Zone - Buffers intended to protect the entire AIZ and retain abundant riparian vegetation are utilized in Alternatives 4, 5 and 6 It is anticipated that these alternatives will restore near natural levels of connectivity at a relatively rapid rate (10-30 years) Alternative 3M which protects the entire AIZ but retains less riparian vegetation, will eventually restore near natural levels of connectivity Alternatives 2 and 3 employ narrower buffers and less protective standards and guides It is expected that these alternatives will not restore natural levels of connectivity Alternative 1 provides the narrowest buffers and the least protective standards and guides This alternative is expected to be the least effective in restoring natural levels of connectivity Alternatives 1, 2 and 3 would not fully restore many stream reaches Further information on aquatic ecosystems is shown in Table II-1 and under Aquatic and Riparian Resources in the Biological Elements section of this chapter

Terrestrial Zone - Since open motorized roads and trails can interrupt wildlife movement and plant dispersal, the miles of such roads can be used as an inverse measure of connectivity This is displayed for each alternative in Table IV-1 All alternatives show a gradually decreasing number of open motorized access miles All alternatives are expected to reduce open road mileages from the existing conditions, thereby providing benefits to connectivity

The amount and pattern of mature or older age classes across the Forest can also indicate levels of connectivity for species requiring this type of habitat Higher amounts of mature age classes would likely provide greater connectivity The percentage of forested acres in mature or older age classes is shown by alternative in Table IV-1. Across all alternatives the mature forested acres exhibit very little variation, ranging from 76 percent to 78 percent Alternative 2, with the highest potential timber harvest acreage, would harvest 33,080 acres in the first decade, which translates to 2 7 percent of the forested land This is not expected to create adverse effects on connectivity Patterns of mature forest distribution do not vary by alternative There is nothing in any alternative that would prevent managers from providing for connectivity by spatially arranging site-specific projects to approximate historic vegetation patterns

*Cumulative Effects* - Clearcutting over the past decade in the Island Park and Madison Pitchstone Plateaus Subsections has altered vegetation patterns and connectivity from what existed historically in some watersheds Since no created openings are planned in any of these watersheds in any alternative within the next decade, there is little likelihood that these areas will move further from their historic patterns, nor will they be restored to historic patterns Connectivity based solely on vegetation patterns has not been significantly changed by past timber harvest in other subsections

Current levels of motorized road and trail density have reduced connectivity from historic levels forest-wide Reductions in motorized roads and trails proposed under all alternatives will eliminate some of these past effects Road restrictions which occur near adjacent ownerships are expected to increase habitat connectivity over the current situation between Forest lands and those of its neighbors

Along the western border of the Park, connectivity is significantly increased by road reclamation and restrictions in Alternatives 4, 5 and 6 More moderate gains are realized in Alternatives 1, 2, 3 and 3M

Changes in connectivity from what existed historically may have already affected individual species or

ecosystem sustainability, however, the nature and magnitude of such effects on the Forest and whether they exist, are not known at this time

**Adjacent Land Use Patterns**

Land uses occurring adjacent to the Forest may or may not be consistent with management being proposed for the Forest How the Forest fits within the context of its neighbors is an important factor in understanding the broad ecosystem patterns that result when the various alternatives are implemented The Process Paper P contains information on current management of lands adjacent to the Forest

*Consequences Common to All Alternatives* - For the most part, management of the Forest is expected to be compatible with adjacent land uses occurring on both public and private lands However, there are some cases where conflicts may arise

In all alternatives, the existence and effectiveness of winter ranges for elk, deer and antelope may be affected by activities on private land Subdivision of agricultural lands for homes and businesses is expected to reduce winter range on private lands, thereby increasing pressure on the Forest's winter range This is a concern especially in the Teton Range and Big Hole Mountains Subsections, where housing developments are increasing rapidly in key winter range in the Teton Basin and Swan Valley areas

Other inconsistencies between Forest management and adjacent jurisdictions exist where there is a strong commodity emphasis next to designated or recommended wilderness Intensive management activities can detract from the wilderness character and experience by creating noise or visual impacts that are not consistent with wilderness The most obvious example of this lies along the western boundary of the Park where the Forest's past intensive timber management ends in a sharp, straight line against the wilderness emphasis of the Park In all alternatives this will remain visible for several decades Another situation that creates inconsistency is managing for nonmotorized recreation or wilderness adjacent to developed private lands Private development and associated activities can detract from the intended nonmotorized experience by creating noise or visual impacts that do not appear natural.

In addition, keeping motorized vehicles off Forest lands is extremely difficult when individual homes have direct access to the Forest This inconsistency exists in every alternative to some extent

*Consequences Which Vary by Alternative* - Conflicts between grizzly bears and humans may become a problem where bear habitat exists next to private ranches or housing developments Any conflicts that may arise would likely be tied to higher grizzly bear occupation of Forest habitat than currently exists Although BMUs on the Forest do not change between alternatives, the likelihood of conflicts may be greater in alternatives which provide for better habitat effectiveness if there is a resultant increase in grizzly bear occupancy on Forest lands adjacent to other public and private lands (see the Biological Elements section of this chapter) Such problems would also be more prevalent in years when grizzly bear food sources are scarce Adjacent lands most likely to experience conflicts between bears and ranching operations are in the Henry's Lake area, where grizzly bear habitat lies directly adjacent to active ranches Private developments in Island Park, Henry's Lake Flat, Shotgun Valley and Robinson Creek/ Fall River are those most likely to experience conflicts with grizzly bears

There is an area of discontinuity between the Forest and the Gallatin N F in Alternative 2 The Lionhead area has been proposed as wilderness on both the Forest and Gallatin N F s in all alternatives except Alternative 2 The Forest portion in Alternative 2 would have a commodity emphasis which would not match well with the Gallatin N F proposal for wilderness In addition, current management on the Gallatin is for intensive range management adjacent to a portion of Forest proposed for the Lionhead wilderness area This creates a management inconsistency in Alternatives 1, 3, 3M, 4, 5 and 6

Except for Alternative 2, all the alternatives recommend the Lionhead Roadless Area for wilderness The

Lionhead recommended wilderness lies next to private lands which are rapidly being developed in Henry's Lake Flat

Private developments in the Swan Valley area abut small portions of the Forest proposed for nonmotorized recreation or wilderness in Alternatives 1, 2, 3, 3M and 4. Major portions of the Big Hole Mountains Subsection will have this problem in Alternative 6 where proposed wilderness adjoins developments in Swan Valley and southwest of Driggs The Big Bend Ridge area near Ashton is proposed for nonmotorized management in Alternatives 5 and 6 This is inconsistent with development that is beginning to occur on private lands in this area

*Cumulative Effects* - The distribution and number of wintering deer and elk on the Forest depends on winter severity The elk and deer winter range areas on the Forest are the upper elevation limits for these ranges Generally, more winter range acres exist at lower elevations on BLM, State and private lands and a higher proportion of deer and elk winter at these lower elevations during most winters

As a result, subdivision and loss of agricultural lands adjacent to the Forest and increasing pressure on winter range may trigger reductions in herd size over the long term National Forest winter ranges cannot compensate for the loss of winter range acres at lower elevations on adjacent lands If big game populations outstrip winter range capacity, winter range on the Forest could become degraded The greatest impacts to the Forest from adjacent land uses are expected to result from conversion of agricultural lands to housing and businesses. Agricultural lands provide some habitat for a variety of species and much of this habitat could be lost as development continues Development may also create significant impacts on the Forest by increasing recreation pressures

## PHYSICAL ELEMENTS

### Soils and Geology

Indicators

1 Scheduled Timber Harvest (ASQ) - acres disturbed
2 Roads and Trails - acres removed from productive land base
3 Miles of roads transecting soiltypes having mass stability concerns
4 Area of Forest open for cross-country motorized summer use
5 Acres placed back into productive land base
6 Soil Disturbance - range management
7 Soil Disturbance - dispersed recreation

*Consequences Common to All Alternatives* - Soil disturbances related to developed recreation sites, unmanaged dispersed (including OHV) recreation, concentrated developed areas (e g electronic sites, administrative sites, etc ), potential acres severely burned through prescribed fires within the sagebrush/grass and forested ecosystem and fuelwood harvest would be similar under all alternatives

Soil disturbance would continue to occur across approximately 350 acres within developed recreation sites and special use recreation sites Soil disturbance would mainly be the result of maintenance or reconstruction activities, vehicles and foot traffic in and between facilities Such activities would have an effect on the soil hydrologic function (e g through compaction and/or puddling) and site productivity (e g erosion)

Soil disturbance from unmanaged dispersed recreation and OHV use will be one of the main challenges to soil quality management Demand for these uses will continue to escalate with corresponding concerns It is difficult to project which of the alternatives would present more concerns to soil quality

Soil disturbance would continue to occur across approximately 110 acres of concentrated developed areas Soil disturbance would be the result of construction/reconstruction/maintenance activities and vehicular/foot traffic Areas of disturbance would be susceptible to being eroded, with a subsequent loss in site productivity

Severely burned conditions have the potential of occurring across 560 acres (five percent of the area), where prescribed fire is used within the mountain big sagebrush/grass ecosystem If areas of severely burned conditions occur in larger patches (acre or more), these areas would be more susceptible to erosion and would require a longer recovery period, thus presenting a longer risk period

Nonscheduled timber harvest could occur on unsuitable lands Under all alternatives, approximately 10,000 acres (approximately 20 MMBF) could be harvested in the first decade Timber removal on non-ASQ lands would be in response to other resource needs, for instance, to remove hazard trees from developed recreation areas, to improve visibility along roadways, wildlife needs, EM or PFC objectives, etc Concerns to the soil resource would be similar to those expressed later on ASQ lands with the added concerns of a large number of these acres occurring on steep slopes (greater than 40 percent) and/or not being readily accessible Additional mitigation measures and management requirements will be required on these acres to assure adherence to Regional soil quality objectives (project level)

Approximately 38 million board feet of personal use fuelwood would be removed during the first decade Areas designated for personal use and commercial fuelwood gathering would be susceptible to reductions in soil quality through such detrimental disturbances as displacement, compaction, puddling and removal of large woody debris necessary for maintenance of long term site productivity (harder to enforce down woody debris requirements) The development of random skidding and access roads is also a concern within fuelwood areas since there is a tendency to drive up to each log or snag harvested

*Consequences Which Vary by Alternative* (Refer to Table II-1)

Scheduled Timber Harvest (ASQ Lands) - Land surface disturbed by a variety of logging systems (tractor/cable) and cutting prescriptions (primarily shelterwood harvests) was evaluated Under Alternative 6 no scheduled timber harvest would occur, thus no surface disturbance Of the remaining alternatives, Alternative 5 would result in the least acres disturbed (approximately 1339) over the coming decade Using Alternative 5 as a base, the remaining alternatives (in ascending order) would expose twice as much (Alternatives 3M and 4), three times as much (Alternatives 1 and 3), and four times as much (Alternative 2) the amount of bare soil as Alternative 5 Areas of bare soil could be either compacted, displaced or puddled or a combination of these detrimental conditions These areas would be susceptible to erosion and subsequent loss in site productivity Disturbed areas would be the result of timber harvesting practices such as skidding, skid trail networks, landings, etc Ground-based harvesting techniques may approach or exceed the 15 percent soil disturbance threshold, but should be held to acceptable levels by adhering to the Soil Quality Standards and Guidelines (Forest and Regional) Large woody debris for long-term site productivity should be maintained by following the forestwide large woody debris requirements, which are habitat type specific

Roads and Trails- Land removed from the productive land base due to existing and proposed roads would be least under Alternative 6 (5,478 acres) Using Alternative 6 as a basis for comparing the remaining alternatives, Alternative 5 would remove 2 percent more acres from the productive land base, Alternative 4 would remove 14 percent more, Alternative 3 would remove 37 percent more, Alternative 3M would remove 31 percent more, Alternative 2 would remove 57 percent more and Alternative 1 would remove 79 percent more than Alternative 6 Presently, there are 10,049 acres removed from the productive land base from roads and trails, which is higher than any of the proposed alternatives These lands would be effectively removed from the Forest's total productive land base for the life of the road and trail and would be susceptible to erosion and subsequent sedimentation A high percentage of these acres occur within the AIZ, thus having a short delivery distance to a stream channel One objective under the watershed activity schedule is to inventory roads, trails, culverts, fords and stream crossings within the AIZ by the

year 2007 This inventory will identify problem areas and suggest remedial actions

Miles of roads transecting soil types having mass instability concerns is least under Alternatives 6 (356 miles, of which 42 miles occur on slopes over 40 percent) The highest number of miles crossing sensitive soil types occurs within Alternative 2 (three times the miles within Alternative 6, 13 percent of which occur on slopes over 40 percent) The remaining alternatives (1, 3, 3M, 4 and 5) have twice the miles of Alternative 6 and 14 percent of their miles occur on slopes greater than 40 percent These road segments would be susceptible to mass erosion (especially those slopes greater than 40 percent) and to being major sediment producers—depending on their drainage systems

Although Alternatives 1 and 2 allow the most access (open roads) and acres available to cross-country motorized summer use (53 percent and 42 percent of the Forest available), it is difficult to predict if dispersal of increasing numbers of recreationists would result in more or less damage to the soil resource Similarly, Alternatives 5 and 6 allow the least access (open roads) and acres available to cross-county motorized summer use (3 percent and 2 percent of the Forest available) It is difficult to predict whether concentrating recreationists into less area would result in more or less damage to the soil resource Administration, monitoring and enforcement would be key in limiting damage to the soil resource Alternatives 3, 3M and 4 are intermediary (in descending order) to the above alternatives with respect to access and area open to summer cross-country travel

Acres placed back into productivity (stabilized and revegetated) through road reclamation/obliteration would be highest under Alternative 6 (4,571 acres) and least under Alternative 1 (861 acres) Alternatives 2, 3, 3M, 4 and 5 would be intermediary, in ascending order, as to the number of acres placed back into production Obliterated roads would have a lower inherent site productivity than adjacent undisturbed sites but overall benefits from obliteration is beneficial to soil and watershed conditions.

Range - Soil disturbance (areas with inadequate ground cover having exposed soil or areas where soil conditions are in a downward trend, e g eroding) would be least under Alternatives 4, 5 and 6 Alternatives 2, 3 and 3M would be intermediary Soil disturbance would be highest under Alternative 1 These areas would be susceptible to erosion and decreasing site productivity

Dispersed Recreation - Land surface disturbance within areas managed for dispersed recreation would be potentially greatest under Alternatives 1, 5 and 6 because they have the fewest acres on which dispersed recreation sites would be more strictly managed Alternatives 2, 3, 3M and 4 would place more dispersed sites under management and potentially result in less soil damage. Foot traffic and vehicles would be the main source of soil disturbance resulting in compaction, displacement or puddling These areas would be susceptible to erosion and have lower productivity potentials than adjacent undisturbed areas Game retrieval during the hunting seasons has been dropped from consideration, except from Alternative 2 This will help in reducing damage to the soil resources when soils may be moist/wet and susceptible to damage, except in Alternative 2

*Cumulative Effects* - Based on the level of activities being projected within the various ecosystems, some cumulative impacts will be similar across all the alternatives The ecological cumulative impacts to soils are described in the Ecological Processes and Patterns section

Because all of the alternatives call for management that may not return certain ecosystems into their PFC, it is very important to mitigate, protect or intensively manage these ecosystems to achieve and maintain the DFC These ecosystems are susceptible to fires of higher intensity/severity

It is anticipated that some ground disturbing dispersed recreation activities may increase over the current situation by 40 percent over the next decade thus having the greatest potential increase in relation to other Forest uses Demands and potential conflicts by this group of users (e g motorized versus nonmotorized users) will continue to escalate in the future Potential cumulative impacts from this use could be very similar under all alternatives (e g , compaction/displacement, loss of vegetation ground cover, increased erosion potential, rutting, rill/gully formation, etc )

Management-Induced - Open roads and trails also have the potential to produce continued cumulative impacts on soil quality (erosion and sedimentation) and overall watershed values As mentioned previously, of particular concern is the potential for mass erosion occurring along roads that pass through soils having mass instability concerns (especially on those where side slopes are greater than 40 percent) Greatest potential for cumulative impacts (negative) from roads and trails is under Alternative 1, continuing in descending order of impacts—2, 3, 3M, 4, 5 and 6

During the next decade, Camas Creek (Watershed 025) is the only watershed scheduled to have timber harvesting (ASQ and non-ASQ) in all alternatives, except Alternative 6, that has 20 percent or more of the area in a hydrologically disturbed condition Note non-ASQ timber harvesting could occur in Alternative 6 within watershed 025 (Camas Creek)

Overall, soil quality on the Forest should improve over the existing situation under all alternatives Soil quality standards and guidelines have been established to help direct soil quality improvement, maintenance and/or enhancement within managed portions of the Forest These standards and guidelines have been incorporated in the Revision

Management-induced cumulative impacts (acres disturbed compared to total acres/alternative open for multiple use management) to the soil resource would be greatest under Alternatives 1 and 3M (6 percent), Alternatives 2, 3, 6 (5 percent) and Alternatives 4 and 5 (4 percent)

Scheduled activities within the Camas Creek watershed (watershed 025) will need to be well planned, administered and monitored to assure that channel stability is maintained

Ecological cumulative impacts to the soil resource are very similar under all alternatives, especially within the sagebrush/grass and aspen ecosystems and within the Dry and Moist Douglas-fir, and Mid and Lower Elevation Subalpine Forest Fire Groups

There is a risk to soil quality within unmanaged portions of the Forest as mentioned under the previous section entitled "Ecological Processes " Because all the alternatives manage these ecosystems outside of their historic mean fire intervals, plans need to be formulated to mitigate, protect or intensively manage these ecosystems/fire groups to maintain the DFCs Because this has not yet been done, there is a risk within these ecosystems/fire groups of having adverse effects take place to the soil resource through the occurrence of fires of higher severity and intensity than what historically happened

**Air Quality**

Indicator - Potential to exceed Idaho or Wyoming Ambient Air Quality Standards

*Consequences Common to All Alternatives* - Forest lands in all alternatives are Class II areas

*Consequences Which Vary by Alternative* - Alternative 1 allows the most activities on forest lands, this would subject air quality to more degradation from management activities than the other alternatives Alternative 6 allows the least activities on forest lands, thus would be less likely to cause air quality degradation from management activities An exception to these consequences would be the effects on air quality caused by catastrophic wildfire

*Cumulative Effects* - Severe wildfire would be the primary event that would cause air quality degradation Although there is risk of severe wildfire with all the alternatives, the risks would be higher with alternatives which limit the use of management activities the most Activities such as prescribed fire (natural and management-ignited), timber harvest, or other vegetation manipulation methods used to reduce fuel loadings and modify stand structure, could decrease the risks of deteriorating air quality caused by wildfires on the Forest Short-duration smoke events that meets state smoke management guidelines during early or late seasons could reduce the visual and health impacts caused by high severity wildfire during high visitor use season

**Caves**

*Consequences Common to All Alternatives* - Impacts on cave resources would be the same for all alternatives These would result from normal recreational use of the caves Obtaining management funding for cave inventories, nominations, etc may be more limited under Alternatives 4-6 than in higher activity alternatives (1, 2, 3 and 3M)

**Lands**

*Cumulative Effects* - There would be no impacts on lands from any alternative The following plans are incorporated in the Revision by reference They are located in the lands section office on the Forest and are subject to yearly updating by the lands section

- Land Adjustment Plan
- Right-of-Way Acquisition Plan

**Minerals**

Indicators

1 Area Open to Locatable and Mineral Material Entry

*Consequences Common to All Alternatives* - Under all alternatives mineral resources will be available for extraction The Forest Oil and Gas Leasing EIS will make the availability decision (acres available for oil and gas leasing) and will be coordinated with the Revision

*Consequences Which Vary by Alternative* - Access and availability of lands for exploration and development will vary by alternative as indicated by Table IV-3 Alternatives reflecting more developed recreation sites and facilities, more roadless areas which are to remain undeveloped and more acres recommended for wilderness designation than in Alternative 1 will reduce the availability of lands for mineral exploration and development Alternatives 1 and 2, in which no additional lands are recommended for wilderness classification than currently exist, provides the most land available for mineral exploration and development Alternative 6, which has the most acres recommended for wilderness, provides the least amount of land available for mineral exploration and development

*Cumulative Effects* - Alternatives which limit development activities on the Forest will have a tendency to also limit the utilization of mineral resources by restricting access and availability of lands for mineral extraction Conversely, alternatives which provide opportunities for development activities will also provide opportunities for the utilization of mineral resources Thus, cumulative effects of development activities in the long-run is beneficial to the utilization of mineral resources

Table IV-3 Comparison of Minerals Effects (Acreages are in thousands)

| | Alternative | | | | | | |
|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 3-M | 4 | 5 | 6 |
| Acres Open to Locatable and Mineral Material Entry | 1,384 | 1,415 | 1,326 | 1,295 | 1,348 | 1,200 | 965 |

Historically, discovery of valuable minerals in economic quantities to warrant development and production have been relatively infrequent on the Forest when compared to other forests in the Intermountain Region

The probability of mineral resource development is marginal given the current geologic knowledge of the Forest The only current mineral activity of consequence is the extraction of travertine on the Palisades Ranger District Before that, in the mid-to-late 1800s, the mining of lead in the western portion of the Forest was significant

## BIOLOGICAL ELEMENTS

Two parts make up the description of the Biological Component They are Aquatic and Riparian, and Terrestrial Ecosystems (upland forested and upland nonforested) Key indicators are discussed first, with other indicators described subsequently

AQUATIC AND RIPARIAN ECOSYSTEMS

**Riparian**

Key Indicator - Riparian acres not meeting DVC

Plant communities comprise individual species that reach maturity at different times during the growing season Season of grazing use and timing of defoliation can both have an effect on favoring the growth and maintenance of certain species over others

*Consequences Common to All Alternatives* - The utilization standards for herbaceous and woody vegetation, for all alternatives, represent maximum allowable use levels, regardless of what animal species uses the vegetation

*Consequences Which Vary by Alternative* - Riparian utilization in Alternative 1 (no action) is expressed as a percentage of forage utilized and ranges between 30 and 65 percent for herbaceous vegetation (including nonriparian species) and 20 to 40 percent for browse, depending on the type of grazing system and range condition Alternatives 2-6 express riparian forage utilization in terms of stubble height of herbaceous key riparian species on and away from the hydric greenline (HGL), express upland herbaceous forage utilization in terms of percent utilization of key plants and implement browse utilization standards in terms of percent utilization of current year's growth, of key species

Alternatives 2, 3 and 3M implement a 4-inch stubble height for key herbaceous riparian plant species at the HGL and in the riparian area away from the HGL, either at the end of the grazing period or for all pastures grazed after September 1 Alternatives 2 and 3 have buffer widths ranging from 100 to 200 feet on each side of all fish-bearing streams, depending on the subsection Alternative 3M has wider buffer widths which range from 150 to 300 feet on each side of all fish-bearing streams, depending on the subsection For Alternatives 2, 3 and 3M, riparian browse utilization ranges from 25 to 35 percent for season-long grazing systems (depending on range condition) and 35 percent for rotation grazing systems (regardless of condition) Literature supports the prediction that Alternatives 2, 3 and 3M will provide for a moderate rate of recovery of degraded riparian and aquatic systems together with a moderately high level of fisheries habitat quality (Clary and Webster 1989) Alternatives 2 through 6 express upland herbaceous forage utilization in terms of percent utilization of key plants, and implement browse utilization standards in terms of percent utilization of current years growth of key species Alternative 3M also implements additional guidelines for occupied native cutthroat trout streams Briefly those guidelines improve a variety of habitat features (pool frequency, large woody debris, bank stability, width/depth ratio, etc ), based on the best available information, including INFISH

Alternatives 4, 5 and 6 implement a 6-inch stubble height for key herbaceous riparian plant species at the HGL and in the riparian area away from the HGL, either at the end of the grazing period or for all pastures grazed after September 1 and have buffer widths ranging from 150 to 300 feet on each side of all fish

bearing streams, depending on the subsection Also, for Alternatives 4, 5 and 6, riparian browse utilization ranges from 25 to 35 percent for season-long grazing systems (depending on range condition) and is 35 percent for rotation grazing systems (regardless of condition) The additional guidelines identified in Alternative 3M designed to improve cutthroat trout habitat only apply to that alternative and not to Alternatives 4, 5 or 6

Riparian utilization and/or stubble height is measured for key species, which are defined as "forage species of sufficient abundance and palatability to justify its use as an indicator to the degree of use of associated species " The basic assumption is that when the key species are properly grazed, associated plant species will also be utilized properly Utilization standards are designed based on proper use of plant species Proper use is defined as "a degree of utilization of current year's growth which, if continued, will achieve management objectives (DVC, PFC, wildlife and fish objectives, etc ) and maintain or improve the long-term productivity of the site Information by Blaisdell (Blaisdell, Murry, McArthur and Durant, 1982) indicates that stocking rates, season of use, range condition, kind of livestock and grazing intensity are important factors in determining proper utilization levels and that applying utilization or stubble height standards across the board may not achieve desired management objectives Information from Rasmussen (1996) indicates that the "plants ability to recover from grazing will depend on the availability of meristematic tissue If the grazing does not remove current meristematic tissue the plant will recover from the herbivory event and the long term productivity and competitiveness of the plant will not be affected" Regarding Rasmussen's approach, the degree of utilization and/or stubble height is not as important as perhaps the season of use on meristematic tissue and water availability after the grazing event For example, 25 percent utilization on a key herbaceous plant can be detrimental if that use is continual and occurs at the wrong time (stem elongation, etc ), but 55 percent use on the same plant is not detrimental if the use occurs at a different time of the year (prior to stem elongation or after seed set, etc ) or if adequate water is available

Under Alternative 1, riparian vegetation trends will show slow improvements in species composition from fine-rooted species like Kentucky bluegrass, to coarse-rooted species like beaked sedge, on allotments with rotation grazing systems Approximately 18,810 acres (68 percent) of the riparian vegetation will meet DVC, while 4,945 acres (18 percent) are predicted to move slowly toward DVC Allotments with season-long grazing will tend to remain in their current condition (static), or as stream systems and water tables are lowered, the riparian communities will change to dryer upland species, lower seral riparian species or introduced and weedy species Loss of habitat for riparian sensitive plant species is greatest in this alternative Acres moving toward DVC will decrease from 5,338 acres (19 percent) to 4,945 acres (18 percent), while acres not meeting DVC will increase from 3,650 acres (13 percent) to 3,963 acres (14 percent) during the first decade (Table II-1, Process Paper J) Fish habitat conditions and bank stability would improve slowly to a moderate level, due to improved riparian vegetation conditions (definitions and measurement protocol from Quigley et al , 1989)

Alternatives 2, 3 and 3M increase the riparian acres meeting DVC from 68 to 72 percent, while 19 percent will move toward DVC with the 4-inch HGL stubble height grazing requirement Streamside *Carex* species will increase along streamsides to better retain yearly sediments, increasing the habitat diversity, water-holding capabilities and hydrological conditions of the system Sensitive plant habitats and biodiversity will increase moderately with these alternatives Riparian acres not meeting DVC will decrease from 3,650 to 2,476 acres (9 percent) during the first decade (Table II-1) This would result in a moderate rate of recovery and moderately high level of fisheries habitat quality due to improved riparian vegetation and streambank conditions (Process Paper J)

Alternatives 4, 5 and 6 increase the riparian acres meeting DVC from 68 to 76 percent, while 18 percent will move toward DVC, with the 6-inch HGL stubble height grazing requirements Increased vegetation cover will hold greater amounts of sediment, accelerating changes over those in Alternatives 2, 3 and 3M These alternatives also have the greatest potential to improve riparian sensitive plant habitats and improve biodiversity by increasing habitat diversity Riparian acres not meeting DVC will decrease from 3,650 to 1,744 acres (6 percent) during the first decade (Table II-1) This would result in a rapid rate of

recovery of degraded habitats and a high level of fisheries habitat quality due to improved riparian vegetation and streambank conditions (Process Paper J)

Alternative 1 will have 3,963 acres (14 percent), Alternatives 2, 3 and 3M will have 2,476 acres (9 percent) and Alternatives 4, 5 and 6 will have 1,744 acres (6 percent) of the riparian vegetation in undesirable, shallow rooted species Plant communities with a high percentage of shallow rooted species increase the risk of flood events lowering stream channels, increasing bank-cutting, changing stream gradients and changing riparian communities to upland communities with lowering of water tables

Alternatives 2, 3, 3M, 4, 5 and 6 will all show an increase in *Carex* complexes along stream edges that have a greater chance of trapping and improving the vegetation diversity of the riparian areas

**Water**

Indicators

1 Acres impacted by developed recreational sites in the AIZ as defined by the buffers described in prescription 2 8 3
2 Number of stream crossings
3 Acres roaded in the AIZ
4 Acres of timber harvest in headwaters
5 Miles of native cutthroat trout stream with at least 6-inch HGL (Hydric Greenline) stubble height remaining at the end of the grazing period (Table II-1)
6 Miles of fish-bearing stream habitat with at least 4-inch HGL stubble height remaining at the end of the grazing period (Table II-1)

*Consequences Common to All Alternatives* - Land disturbance and impacts to riparian areas will take place under all alternatives, the magnitude of these effects will vary by alternative Closure of roads and trails within the AIZ would create new sediment sources due to ground disturbance under all alternatives This would be a short-term impact to riparian areas and water bodies, lasting approximately three years (until the disturbed sites were stabilized) These closures would, however, provide a long-term benefit to aquatic and riparian resources once they became effective (i e , when the vegetation was established) If road prisms are not removed where they exist in floodplains, even with road closure, floodplain and stream functions could be adversely affected by the confinement presented by these features

There is no difference between alternatives in the amount of water diverted from streams on Forest lands by private parties, for use under special use permits There will also be no difference in the amount of water (consumptive uses) claimed for Forest purposes through the Snake River Basin Adjudication no new uses after 1987 are claimed There may be a difference between alternatives in the amount of water under application and license for consumptive use (e g , for livestock watering), but the differences should be small Compliance with legal requirements, such as meeting State water quality standards, will not differ between alternatives

Acres affected by developed recreational sites and special use permit recreation sites within the AIZ would vary little by alternative All alternatives would have approximately 1,100 acres of disturbance associated with these sites within the AIZ Impacts from dispersed recreation are discussed in the recreation section

*Consequences Which Vary by Alternative*

Direct Impact - See Table II-1 Direct impacts to streams and riparian areas on Forest lands are of three general types
1 Change in riparian soil, vegetation and streambank characteristics,
2 Direct in-channel alteration,

3 Change in the amount of sediment delivered to streams and therefore the load that the stream must transport

Change in Riparian Soils, Vegetation and Streambanks - Damage of riparian soils by compaction, displacement, rutting or puddling can reduce riparian soil productivity through changes in infiltration characteristics and a reduction in the ability of soils to support desirable riparian vegetation Changes in the composition of riparian vegetation communities and loss of plant vigor result from such adverse impacts to soils, as well as from direct impacts from overuse by wildlife, livestock or people Refer to the key indicator discussion under Aquatic and Riparian Ecosystems

Direct In-Channel Alteration - These actions include putting a structure into a stream and changing channel hydraulics or changing some aspect of the stream's geometry (e g , increasing its gradient) by mechanical alteration

Potential for direct impacts associated with road crossings would vary by alternative The greatest potential would exist under Alternative 1, followed by 2, 3M, 3, 4, 5 and 6 in decreasing order Alternative 6 has approximately 1,000 fewer crossings than Alternative 3M This could be a tangible difference forestwide, even between consecutive alternatives (e g Alternative 2 has about 300 fewer crossings than Alternative 1)

Change in Sediment Delivery and Load - Natural events, such as high spring runoff, may lead to both increased sediment delivery to streams and increased erosive energy to move the sediment Roads are major sources of sediment, especially when they are near streams or cross them Since forest roads contribute an estimated 85-90 percent of the sediment reaching streams in disturbed forest land (Burroughs 1990), the amount of roads within the AIZ and number of stream crossings are used as indicators of sediment delivered to streams

Many roads and trails located within the AIZ would be closed in all alternatives Acres of roads within the AIZ steadily decreases from a high of 954 acres under Alternative 1 to a low of 474 acres under Alternative 6 Alternative 3M has 787 acres Such a decrease in roads within the AIZ means a proportional decrease in the potential for sediment delivery to streams, for delivery of other pollutants and for detrimental impacts to riparian areas (note that AIZ widths vary between some alternatives) The influence of road prisms would still exist if they were not removed Differences in impacts from road crossings would be the same as discussed under section 2, above (direct in-channel alteration) An inventory of roads will determine where there are problems and provide recommendations to reduce impacts to acceptable levels

*Cumulative Effects*

Hydrologic Effects - Manipulation of vegetation has the potential to alter streamflow regimes Researchers have shown that creation of large openings, especially in small (i e , headwater) watersheds allows for increased snow accumulation and more exposure to the sun This results in higher peak flows that occur earlier than under preexisting conditions, having the potential to deliver more sediment to streams and destabilize channels (Cheng 1989, Alexander and Watkins 1977) The increase in sediment delivery due to changes in peak flows cannot be calculated nor estimated

The highest potential for cumulative impacts from vegetation manipulation in headwater areas would exist under Alternative 2 Alternatives 1 and 3 have the next highest potential 3M, 4 and 5 have the lowest, for alternatives having vegetation manipulation There would be no significant impact under Alternative 6 From a watershed perspective, watersheds 10 (Buffalo River) and 12 (Warm River) appear to have potential for adverse cumulative impacts under all alternatives due to past activities No created openings are planned in these watersheds These watersheds have approximately 30 percent of their headwaters in a hydrologically disturbed state for the decade, having stands that have already been manipulated and which would still be unrecovered by the end of the planning decade

Although it is unlikely that any of the proposed alternatives would threaten the population viability of native cutthroat trout over the planning period, differences in rate of recovery of degraded habitats and overall habitat quality would result from implementation of various alternatives Alternatives 1, 2 and 3 would protect the fewest acres within AIZs and would allow the greatest amount of potentially harmful activities associated with livestock grazing, timber harvest, riparian recreational use and roads and trails as displayed in Table II-1 Fisheries habitat quality, including that for native cutthroat trout, would be the lowest under Alternative 1 Alternatives 1, 2 and 3 would result in a slow rate of recovery of degraded habitats, reduced water quality and less habitat quality Refer to Table II-1 for a quantitative view of riparian habitat change Since Alternatives 4, 5 and 6 would emphasize more protection of AIZs, they would result in a rapid rate of recovery of degraded habitats and the highest levels of water quality and fish habitat quality Alternative 3M would result in a moderate rate of recovery of degraded habitats and intermediate levels of water quality and fish habitat quality All alternatives would meet State water quality standards

Nearly all of the environmental consequences described for each alternative are cumulative in the sense that they reflect the environmental and management impacts of an accumulation of management actions that would occur under each alternative and that have occurred in the past Many of these impacts have occurred over the last 100 years, some would cease with implementation of certain alternatives while others would continue over the planning period (10 to 15 years)

**Wildlife Associated with Aquatic and Riparian Ecosystems**

The effects of implementing the alternatives are displayed in terms of consequences for bald eagle, trumpeter swan nesting, spotted frog, common loon, and harlequin duck habitats

Bald Eagle Nesting Habitat

*Consequences Common to All Alternatives* - At this time, we do not have much information about wintering habitat and migration habitat This lack of information has not been detrimental to the growth of the bald eagle population as previously explained in Chapter III However, the Revised Forest Plan establishes an objective to identify bald eagle wintering and migration habitat and to identify appropriate management needs for this habitat when it is identified Table IV-4 displays an overview of the consequences of each alternative for this management indicator specie

Table IV-4 Consequences of Each Alternative for Aquatic Ecosystem - Wildlife Management Indicator

| Management Indicator | Existing | 1 | 2 | 3 | 3M | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| Bald Eagle Habitat 1/<br># of Nest Sites on Forest<br># of Territories on Forest | <br>17<br>26 | <br>17<br>26 | <br>17<br>26 | <br>17<br>26 | <br>17<br>26 | <br>17<br>26 | <br>17<br>26 | <br>17<br>26 |
| Trumpeter Swan Habitat | Forestwide Goals, Standards and Guidelines protect all nesting areas in all alternatives | | | | | | | |
| Spotted Frog Habitat (disturbance) | Most | Most | Mod | Mod | Mod | Least | Least | Least |
| Common Loon Habitat | Monitoring and Habitat Evaluation to be done in all alternatives | | | | | | | |
| Harlequin Duck Habitat | Forestwide Goals, Standards and Guidelines protect all nesting areas in all alternatives | | | | | | | |
| 1/ Forestwide Goals, Standards and Guidelines protect all territories in all alternatives | | | | | | | | |

*Cumulative Effects* - Bald eagle nest zones and primary use areas occur on adjacent National Forest, BLM, state and private lands Along the South Fork of the Snake River, the "Snake River Activities/

Operations Plan" was approved by BLM and the Forest Service in 1991 Bald eagle habitat management was a key component of that Plan

Management actions of other agencies, such as management of fishing and fish populations by State agencies, management of river flows by the Bureau of Reclamation and southeast Idaho irrigators, may have positive or negative effects on the bald eagle population

As previously presented in Chapter III, the bald eagle population on the Forest, as well as throughout the GYA has increased to levels above the objectives in the Pacific States Bald Eagle Recovery Plan (USDI Fish and Wildlife Service 1986)

Human presence and activities have occurred and will continue to occur within and adjacent to bald eagle territories on the Forest As long as humans are present, there will be probable occurrences of short-term displacement However, every bald eagle territory which has become established on the Forest since the first recorded bald eagle nest in 1975 has been maintained Proposed management direction will maintain suitable habitat on Forest lands for all existing bald eagle nesting territories and any new territories which may become established In areas without territories, management prescriptions will maintain suitable habitat conditions for perching, foraging and potential future nest sites

Trumpeter Swan Nesting Habitat

*Consequences Common to All Alternatives* - Refer to Table IV-4

*Cumulative Effects* - Many of the lakes and ponds historically used by trumpeter swans are naturally filling in with sediment and are becoming too shallow for swan use Active management will be needed to help maintain suitable water depths for swans or the lakes and ponds will not be usable

Spotted Frog Habitat

*Consequences Which Vary by Alternative* - Five AIZ management prescriptions have been developed for the seven alternatives We evaluated how each alternative may affect spotted frog habitat as follows Also, Table IV-4 displays an overview of the consequences of each alternative for this and the other four management indicator species

Influence of Buffer Widths - Bartelt and Peterson (1993) noted that spotted frogs were always within 2 meters of water, none left riparian habitats, almost all were associated with ponds until September when they left the ponds for nearby streams, and ponds within 50 meters of permanent streams were an important combination of habitat characteristics Based on this, the different buffer widths in each of the management prescriptions all appear to be adequate

Some literature indicates that spotted frogs may move considerable distances after breeding, in these cases, the movements would be farther than any of the buffer widths in the management prescriptions In these cases, we doubt there is much of a measurable difference in effect due to different buffer widths

Timber Harvesting/Management - There is no data in the literature to suggest that spotted frogs are dependent upon a particular forested vegetation condition Therefore, there is no difference between the alternatives in terms of effects from changes in forest vegetation due to timber harvesting Concern has been expressed about timber harvesting changing humidity and temperature conditions However, spotted frogs are found in nonforested riparian and wetland habitats, which have different humidity and temperature conditions than forested habitats Therefore, we are not able to state that changes in humidity and temperature caused by timber harvesting would be detrimental However, there may be a disturbance effect from the presence of human activity associated with timber harvesting Therefore, Alternatives 1 and 2 which allow scheduled timber harvesting in the AIZs may have site-specific, short-term impacts on spotted frog populations and habitat

Livestock Grazing - A recent conservation assessment for spotted frogs (Gomez 1994) listed concerns about possible threats to spotted frogs and habitat from livestock or grazing (Concerns included such things as reduced vegetation in riparian areas, potential increases in water temperature, trampling, etc ) However, no documented studies were cited in support for these concerns

In studies done on the Forest, Clark et al (1993 and 1994 plus errata page) reported there appeared to be no significant relationship between spotted frog occurrence and evidence of grazing They stressed however, that no controlled study was performed investigating the effects of grazing on spotted frogs and therefore appropriate caution should be exercised when evaluating the importance of the results

Using an assumption that less grazing activity may result in potentially less effect on spotted frog habitat, Alternatives 4, 5 and 6 will have the least amount of potential disturbance, Alternatives 2, 3 and 3M will have moderate amounts of potential disturbance, and Alternative 1 the most amount of potential disturbance

Recreation and Other Activities - Using an assumption that less recreation activity and other human activities in spotted frog habitat may result in less potential effects on their habitat, Alternatives 4, 5 and 6 will have the least amount of potential disturbance, Alternatives 2, 3 and 3M will have moderate amounts of potential disturbance, and Alternative 1 the most amount of potential disturbance

Riparian Habitat Condition and Trend - In Alternative 1, 86 percent of the riparian acres are meeting DVC or will be improving toward DVC In Alternatives 2, 3 and 3M, 90 percent of the riparian acres are meeting DVC or will be improving toward DVC In Alternatives 4, 5 and 6, 93 percent of the riparian acres are meeting DVC or will be improving toward DVC

*Cumulative Effects* - All alternatives are expected to maintain the current spotted frog distribution on the Forest General habitat conditions are expected to improve with all alternatives, with the most improvement occurring in Alternatives 4, 5 and 6

Common Loon Habitat

*Consequences Common to All Alternatives* - The Forest has an objective to evaluate the potential to provide and maintain suitable breeding habitat for common loons at the sites mentioned in Chapter III If this evaluation proves that these sites are suitable breeding habitat for common loons, the Forest is to develop common loon management plans for these sites Current habitat conditions will be perpetuated at these sites in all alternatives.

*Consequences Which Vary by Alternative* - Table IV-4 displays an overview of the consequences of each alternative for this and the other four management indicator species

Harlequin Duck Habitat

*Consequences Common to All Alternatives* - There is a forestwide guideline to avoid establishing new trails, new roads or new recreation facilities within 300 feet of any stream reach with documented harlequin duck breeding activity There is no scheduled timber harvesting adjacent to any of the streams with documented breeding activity Livestock grazing, existing recreation activity (existing trails, recreation facilities, dispersed use, etc ) and other human activities are not measurably different among the alternatives for the sites with documented reproduction Existing habitat conditions will be maintained in all alternatives Table IV-4 displays an overview of the consequences of each alternative for this specie

**Upland Forested Ecosystems**

Indicators - Acres and percent change in age classes of forested community types

*Consequences Which Vary by Alternative* - Table IV-5 shows the percent change mature forest with timber harvest for each subsection, by alternative Changes in the mature forest acres do not necessarily reflect a change to a lower age class The range of management methods, from clearcutting to thinning,

Table IV-5 Change in Percent of Mature Age Class Forest Due to Scheduled Timber Harvest Over the Coming Decade

| | Lemhi/ Medicine Lodge | Centen-nials | Island Park/ Madison-Pitchstone | Teton Range | Big Hole Mtns | Caribou Range Mtns | Forest Total |
|---|---|---|---|---|---|---|---|
| Current | | | | | | | |
| % Mature | 90 | 79 | 62 | 97 | 95 | 99 | 79 6 |
| Total Forested Acres | 103,887 | 225,012 | 466,489 | 92,182 | 227,216 | 122,495 | 1,237,281 |
| Alternative 1 | | | | | | | |
| Harvest Acres | 0 | 12,880 | 11,160 | 1,440 | 1,810 | 1,090 | 28,380 |
| % Harvest 1/ | 0 | 6 | 2 | <2 | <1 | <1 | 2 3 |
| % Mature | 90 | 73 | 60 | 95 | 94 | 98 | 77 3 |
| Alternative 2 | | | | | | | |
| Harvest Acres | 210 | 14,905 | 12,815 | 1,670 | 2,230 | 1,250 | 33,080 |
| % Harvest 1/ | <1 | <7 | 2 | <1 | <1 | 1 | 2 7 |
| % Mature | 90 | 72 | 60 | 95 | 94 | 98 | 76 9 |
| Alternative 3 | | | | | | | |
| Harvest Acres | 180 | 12,520 | 10,820 | 1,400 | 1,790 | 1,070 | 27,780 |
| % Harvest 1/ | <1 | 6 | 2 | <1 | <1 | 1 | 2 2 |
| % Mature | 90 | 73 | 60 | 97 | 94 | 98 | 77 4 |
| Alternative 3-M | | | | | | | |
| Harvest Acres | 0 | 9,230 | 8,130 | 1,030 | 1,270 | 860 | 20,520 |
| % Harvest 1/ | 0 | 4 | <2 | <1 | <1 | <1 | 1 7 |
| % Mature | 90 | 75 | 61 | 97 | 95 | 98 | 77 6 |
| Alternative 4 | | | | | | | |
| Harvest Acres | 0 | 8,790 | 4,180 | 960 | 1,120 | 420 | 15,470 |
| % Harvest 1/ | 0 | 4 | <1 | <1 | <1 | <1 | 1 2 |
| % Mature | 90 | 75 | 61 | 97 | 95 | 98 | 78 4 |
| Alternative 5 | | | | | | | |
| Harvest Acres | 0 | 6,865 | 685 | 440 | 1,010 | 0 | 9,000 |
| % Harvest 1/ | 0 | 3 | <1 | <1 | <1 | 0 | <0 1 |
| % Mature | 90 | 76 | 62 | 96 | 95 | 99 | 78 9 |
| Alternative 6 | | | | | | | |
| Harvest Acres | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Harvest 1/ | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| % Mature | 90 | 79 | 62 | 97 | 95 | 99 | 79 6 |

1/ The percent change from a mature age class, undisturbed forest, to an early age class or mature forest with previous harvest

use of prescribed fire, will create a variety of changes in the vegetation composition in the mature forest Changes will range from conversion to grass/forb communities with seedlings, to open stands of mature trees with different understory species, resulting from different light and moisture conditions

Alternatives 1 through 5 have various harvest rates in each of the subsections Changes in the mature stands range from 0 percent to a maximum of 6 6 percent in these alternatives which is not a significant change of mature forests in any of the subsections Forests in the mature age class will continue to dominate the landscapes in all alternatives

Management for white bark pine is possible in all alternatives but timber harvest is limited in BMUs, Alternatives 5 and 6 and in wilderness Fire as a tool is available in all alternatives Aspen volume was removed from the ASQ, therefore, management levels for all alternatives are insignificant in changing the age classes in aspen Stands will continue to change to coniferous forest types, as

Douglas-fir and subalpine fir trees increase and dominate the aspen stands Disease and insects common within mature age classes of aspen will accelerate the change to coniferous forest types

Forestwide mature forest community types will continue to dominate the landscapes Aspen stands for all alternatives will continue to be converted to coniferous forests as Douglas-fir and subalpine fir increase within the aspen stands Aspen across the forest will decrease as a component of the landscape, which decreases the total biodiversity of the landscape Aspen stands provide natural wildfire buffers that change the fire rates and intensities across the landscape Loss of aspen stands to conifers creates larger continuous stands that can have high fire intensities that increases the severity of wildfire on the landscape

Coniferous forests will continue to mature, increasing biomass, canopy cover and fuel loading within the stands The understory will change to shade-tolerant species and also decrease in the number of species as the forest habitat becomes more uniform As mature conifer forests continue along current trends, insects and disease will increase, creating areas of dead trees and greater fuel loads, increasing the risk of large and intense wildfire Open areas created by dead trees will provide sites for early seral species to establish and will increase the habitat and species diversity within large stands Absence of periodic low impact fires will put most of the mature forest in jeopardy of stand-replacing fires over large areas due to fuel loading

Coniferous forest species, especially Douglas-fir will continue to encroach into sagebrush/grass, mahogany, grass/forb meadows, riparian and mountain brush communities throughout the forest Conversion of herbaceous and shrub communities decreases the biodiversity and habitat diversity of the mid-elevation and high elevation areas of the Forest As forests mature, water requirements also increase which decrease water availability to wet meadows and riparian areas

Whitebark pine stands will continue to decline across the Forest Regeneration in most stands is low due to encroachment of other coniferous species and lack of fire

**TES and Biodiversity**

Indicator - Plant species

*Consequences Common to All Alternatives* - Potential for loss of individuals or populations and suitable habitat for Ute ladies'-tresses *Spiranthes diluvialis* (threatened species) and Payson's milkvetch *Astragalus paysonii* (sensitive species) are the same for all Alternatives Fire is thought to be an important part of Payson's milkvetch life cycle, as it inhabits lodgepole pine and lodgepole pine/Douglas-fir mixed forests in the seedling to pole age classes, and in disturbed areas and openings in mature age classes (Fertig et al 1993)

Potential for loss of individual TES plants, populations or habitat is dependent on site-specific projects and land uses, and is equal for all alternatives As per direction and policy, no loss of TES populations will be allowed

**Upland Nonforested Ecosystems**

Indicators - Acres (and percent) meeting DVC

*Consequences Common to All Alternatives* - From 11,000 to 21,000 acres of sagebrush/grass community type are planned to be burned, sprayed (500 acres ) or rotobeat (1,300 acres ) to meet management objectives over the coming decade Management objectives will be tied to meeting DVC, documented in site specific analysis As a result of treating these sites, sagebrush canopy cover will be reduced and desirable herbaceous vegetation will be increased resulting in a change in ecological status from high mid/late seral stages to early/mid seral stages To achieve the 11,000 acre burning goal, an additional 10,000 acres (21,000 acres total) may be partially burned The 11,000 acres scheduled for burning would be predominately in late-seral stage sagebrush with canopy cover greater than 30 percent Some acres of mid-seral stage sagebrush, within the 11,000 acres, with canopy cover of 15-30 percent could be burned depending on project design The 10,000 acres of partially burned areas are assumed to be converted from mid/late-seral to early/mid seral stage Partially burned areas are those areas that are, 1) outside the main portion of the project where the fire is of low intensity or 2) outside the main portion of the project where the fire pattern creates a mosaic resulting in unburned areas Treatment of the 11,000 to 21,000 acres of sagebrush/grass community type represents 4 to 8 percent of the acres that will move towards meeting DVCs over the next decade

*Consequences Which Vary by Alternative* - For Alternatives 2, 3 and 3M upland forage utilization ranges from 35 percent for ranges in unsatisfactory condition, to 45 percent for ranges in satisfactory condition in season-long grazing For rotation grazing systems, the utilization ranges from 45 percent for ranges in unsatisfactory condition to 55 percent for ranges in satisfactory condition Browse utilization for Alternatives 2, 3 and 3M ranges from 25 to 35 percent for season-long grazing systems, depending on range condition, and is 35 percent for rotation grazing systems regardless of condition

For Alternatives 4, 5 and 6 upland forage utilization ranges from 35 percent for ranges in unsatisfactory condition, to 45 percent for ranges in satisfactory condition in season-long grazing For rotation grazing systems the utilization ranges from 45 percent for ranges in unsatisfactory condition to 55 percent for ranges in satisfactory condition Browse utilization for Alternatives 4, 5 and 6 ranges from 25 to 35 percent for season long grazing systems depending on range condition, and is 35 percent for rotation grazing systems regardless of condition

Compared to the existing situation, all alternatives close an additional 95,409 acres to grazing Alternatives 3M and 4 phase-out grazing on another 125,853 acres and Alternatives 5 and 6 immediately close the same acres identified in Alternatives 3M and 4 (Process Paper L). These acres that will be closed will show improvements in vegetation composition in the upland communities faster than those with grazing

Under Alternative 1, upland vegetation trends will show slow improvements in species composition from species of lower seral status to species of higher seral status Approximately 1,065,748 (78 percent) acres will meet DVC, 162,193 (12 percent) acres will move toward DVC, and 129,531 (10 percent) acres will not meet DVC by the end of the first decade

Compared to the existing situation, Alternatives 2, 3 and 3M increase the upland acres meeting DVC from 76 to 80 percent Approximately 1,083,263 acres (80 percent) will meet DVC, 160,615 acres (12 percent) will move toward DVC, and 113,594 acres (8 percent) will not meet DVC by the end of the first decade

Compared to the existing situation, Alternatives 4, 5 and 6 increase the upland acres meeting DVC from 76 to 82 percent Approximately 1,105,894 acres (82 percent) will meet DVC, 156,105 acres (11 percent) will move toward DVC, and 95,473 acres (7 percent) will not meet DVC by the end of the first decade

*Cumulative Effects* - A predominance of acres in high-seral and mid-seral stages will continue to dominate the landscapes under all alternatives As shrub cover increases, productivity and biodiversity will decrease and potential for wildfires will increase Lack of fire has decreased habitat potential for plant species that prefer early seral stage habitats such as *Penstemon lemhiensis* a sensitive species

Canopy cover over 15 percent in sagebrush significantly impacts herbaceous species productivity and ability to reestablish over time. About 65 percent of the Forest's range land is currently in late-seral stage due primarily to lack of fire in these communities Resting or eliminating grazing will not show significant improvements over time in understory herbaceous species when high canopies of sagebrush occur (Winward 1991) These communities increase the risk of large wildfires that are of higher intensity and severity than was historically present under 12-40 year fire cycles These unnaturally hot fires could alter subsequent plant diversity by destroying existing soil seed banks, burning deeper into crowns of bunchgrasses and perennial forbs (and subsequently killing these plants) and changing the physiology of the soils by changing soil conditions and productivity

Upland and riparian communities will continue to decrease with encroachment of coniferous forest species Mahogany stands are all in the high-seral stage and are becoming decadent due to lack of fire and an increase in Douglas-fir establishment Increases of spruce and subalpine fir along mid- and high-elevation riparian areas has decreased willow and other shade-intolerant riparian species within the riparian zone and increased the susceptibility of these sites to erosion

Noxious Weeds

*Consequences Common to All Alternatives* - The effects of noxious weed control are disclosed in the 1987 Targhee National Forest Noxious Weed EA and Decision Notice The effects of Alternative 2 - Integrated Pest Management (Selected Alternative) disclosed in Chapter IV, Environmental Consequences, of the 1987 EA, are also incorporated by reference into this analysis Regardless of which alternative is selected for the Revised Plan, the amount of noxious weed infested acres treated yearly does not change The Forest has an active annual program to control the spread of noxious weeds

**Wildlife Associated with Terrestrial Ecosystems**

Indicator - Elk Vulnerability (EV)

*Consequences Which Vary by Alternative* - Table IV-7 displays the percent of the Forest which meets the EV threshold levels of the State Fish and Game Departments

The primary effect over which the Forest Service has control in this EV analysis is the density of open motorized roads (OMR) and trails and the amount of area open to cross-country OHV travel Since Alternative 1 has the highest density of OMR and the most area open to cross-country OHV travel, this alternative has the highest EV and the potential for a higher proportion of the bulls to be harvested, thus the lowest percentage of the Forest meeting State EV thresholds Since Alternatives 5 and 6 have the lowest density of OMR and trails and the least area open to cross-country OHV travel, these alternatives have the lowest EV and the potential for the lowest proportion of the bulls to be harvested, thus the highest percentage of the Forest meeting State EV thresholds

In Alternative 2, within certain management prescriptions which comprise 58 5 percent of the Forest, use of all-terrain vehicles (ATVs) is permitted cross-country and on restricted roads and trails during the big game hunting season for retrieval of legally harvested big game animals Before hunters can use ATVs to

Table IV-7 Consequences of Alternatives for Terrestrial Ecosystems-Wildlife Management Indicators Species and Habitats

| Management Indicator | Existing | 1 | 2 | 3 | 3M | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| Elk Vulnerability % of Forest meeting State Fish and Game thresholds 2/ | 48 | 62 | 76 | 83 | 89 | 89 | 95 | 95 |
| Elk Habitat Effectiveness 1/ | 0 57 | 0 60 | 0 61 | 0 63 | 0 64 | 0 66 | 0 69 | 0 70 |
| Elk and Deer Winter Range | | | | | | | | |
| Total Acres | 313,825 | 313,825 | 313,825 | 313,825 | 313,825 | 313,825 | 313,825 | 313,825 |
| % of acres meeting DVC | 78 | 81 | 82 | 82 | 82 | 84 | 84 | 84 |
| % of acres moving toward DVC | 13 | 11 | 11 | 11 | 11 | 10 | 10 | 10 |
| % of acres not improving | 9 | 8 | 7 | 7 | 7 | 6 | 6 | 6 |
| % of acres capable of being used for cross-country snowmachine use | 38 | 38 | 38 | 38 | 38 | 38 | 38 | 38 |
| % of acres closed to cross-country snowmachine use | 20 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Gray Wolf | Protected as a nonessential experimental population in all alternatives | | | | | | | |
| Primary Cavity Nesting Habitat 3/ | | | | | | | | |
| All Primary Cavity Nesters | 0 61 | 0 61 | 0 61 | 0 61 | 0 61 | 0 61 | 0 61 | 0 61 |
| Four Large Species | 0 47 | 0 47 | 0 47 | 0 47 | 0 47 | 0 47 | 0 47 | 0 47 |
| Forest Owl Habitat (Acres) 4/ | 997,500 | 959,100 | 956,300 | 959,700 | 967,000 | 972,000 | 978,500 | 987,500 |
| Percent of All Forested Acres | 79 | 76 | 76 | 76 | 77 | 77 | 78 | 78 |
| Furbearer Habitat (Acres) 4/ | 997,500 | 959,100 | 956,300 | 959,700 | 967,000 | 972,000 | 978,500 | 987,500 |
| Percent of All Forested Acres | 79 | 76 | 76 | 76 | 77 | 77 | 78 | 78 |
| Goshawk Habitat | Forestwide S&Gs provide the same protection in all alternatives | | | | | | | |
| Red Squirrel Habitat (Acres) 5/ | 927,700 | 914,600 | 911,800 | 915,200 | 922,400 | 927,500 | 933,900 | 942,900 |
| Percent of All Forested Acres | 80 | 79 | 79 | 79 | 80 | 80 | 81 | 82 |
| Peregrine Falcon Habitat | Forestwide S&Gs provide the same protection in all alternatives | | | | | | | |

1/ Elk habitat effectiveness is based on open motorized road and trail densities during the spring, summer and fall season, and hiding cover A perfect rating would be 1 0, which would require no motorized access and 50 to 60 percent hiding cover The numbers in the table are a weighted average for the entire Forest based on watershed analysis
2/ Elk vulnerability is based on motorized access density during the general elk hunting season and hunter-day densities The numbers in the table are the percent of the Forest meeting elk vulnerability threshold levels set by the State Fish and Game Departments
3/ The numbers in the table are an index of biological potential for primary cavity nesting species An index of 1 0 would mean that enough snags of the right sizes exist on every forested acre of the Forest to meet 100 percent of the habitat requirements for all primary cavity nesting species The four large species are Williamson's sapsucker, northern flicker, hairy woodpecker, and rednapped sapsucker
4/ These are acres of mature and older forested habitat
5/ These are conifer acres with trees old enough to bear cones Cone-bearing ages were defined as pole, mature and older size classes and age classes

do this, certain conditions must be complied with, such as obtaining a permit from a Ranger District office There has been no research or monitoring on how this provision might effect EV There is concern from some agencies and individuals that this provision might result in higher EV

*Cumulative Effects* - All roads and trails receiving motorized use and cross-country motorized use, are incorporated into the EV analysis Hunter-day densities were provided by the State Fish and Game Departments If hunter-day densities change in the future, due to changes in hunting seasons, motorized access restrictions or human populations, then this analysis will need to be updated

Elk Habitat Effectiveness (EHE)

*Consequences Which Vary by Alternative* - Table IV-7 displays how EHE changes on a forestwide basis for each of the alternatives

The primary factor in EHE analysis is the density of OMR and trails Since Alternative 1 has the highest density of OMR and trails, it has the lowest EHE value Since Alternative 6 has the lowest density of OMR and trails, it has the highest EHE value

A lesser factor in EHE analysis is the amount of hiding cover In all alternatives, the amount of hiding cover improves slightly as new seedlings grow into sapling stands in previously logged areas of the Forest The amount of timber harvesting proposed in all alternatives is less than the number of acres growing into better hiding cover

The overall effect from improving EHE (which ranges from 60 in Alternative 1 to 70 in Alternative 6) is a probable wider distribution of elk into areas previously underutilized because these areas had high motorized access densities and densities are now reduced Improving EHE does not mean elk populations will increase

*Cumulative Effects* - All roads and trails receiving motorized use are incorporated into EHE analysis All previous timber harvesting, plus all future proposed timber harvesting are incorporated in EHE analysis

Effects of Motorized Use on Trails

In the analysis of EV and EHE, we treated the effects of motorized use on trails as being equal to the effects of motorized use on roads In public comments to the DEIS and while working on the FEIS, some questioned the scientific basis for treating motorized use on trails as equal to motorized use on roads The following provides a brief overview documenting the work done to obtain information about the effects of motorized use on trails

The Forest had a series of elk workshops with the state Fish and Game agencies to work on analysis steps for EHE and EV for the final Revised Plan According to Dr L Jack Lyon from the Intermountain Forest and Range Experiment Station, there is no research on the effects of motorized use on trails, but intuitively elk should respond to motorized use on trails the same as motorized use on roads Based on that statement, motorized use on trails has been equated to motorized use on roads for the elk habitat effectiveness and elk vulnerability analysis

At the public access meeting of January 5, 1994, Dr Lyon provided a written response to questions from the public about motorized access He stated that there has been no reported research on the effects of trails At this public access meeting, alternative views were presented from the public Marty Morache presented the most extensive alternative view that motorized trails do not have as much effect on elk as roads

Idaho Department of Parks and Recreation cited the 1987-1988 Idaho Rifle Elk Hunting Study which documented that only one percent of hunters use trail bikes to hunt (during 1987-88) The implied question is, should we equate motorized trails which provide access for one percent of the hunters equal to motorized trails which provide access for 99 percent of the hunters in EV analysis? We do not know of any study conducted since 1987-88 which documents if a higher percentage of hunters are using trail bikes to hunt in 1996

At the request of the Interagency Grizzly Bear Committee, a task force was created to establish standardized definitions for roads and trails and standardized methods to measure densities for roads and trails In the final report (titled the "Interagency Grizzly Bear Committee Task Force Report - July 1994"), trails and roads are treated equally in determining motorized access density

Recent work is in progress on the development of "Draft Interagency Guidelines for Managing Elk Habitats and Populations on USFS Lands in Central Idaho " In these guidelines, trails are given one-tenth the effect of roads Personnel on the Nez Perce N F have stated several qualifiers the guidelines are still draft, there is no research supporting that trails be given one-tenth the effect of roads, and, that biologists working on the draft guidelines agreed on the one-tenth criteria based on fewer number of vehicles on trails and lower sound levels (Steve Blair, personal communication, July 9, 1996)

At this time, there is no scientifically controlled research study on the effects of motorized use on trails To obtain an understanding of how much EV and EHE analysis would change if trails were not treated equally with roads, we analyzed EV and EHE for the existing condition and alternative 3M by giving motorized use on trails one-tenth the effect of motorized use on roads The results of this analysis are as follows

EV - existing condition, 55 percent of the Forest meets State Fish and Game thresholds
EV - alternative 3M, 91 percent of the Forest meets State Fish and Game thresholds
EHE - existing condition, 0 62
EHE - alternative 3M, 0 67

Comparing these results with those in Table IV-7 show that EV changes seven percent for the existing condition and two percentage points for Alternative 3M EHE changes five percentage points for the existing condition and three percentage points for Alternative 3M

These changes are small because

1) Motorized trails only account for 23 percent of the total motorized road and trail miles on the Forest When cross-country motorized use is also figured in for the EV analysis, then motorized trail miles only account for about ten percent of the total motorized access
2) The trail system is not equally distributed across the Forest and in those drainages where most of the motorized trails occur, the trail densities are generally low, which means they have less effect in the EV and EHE analysis
3) Motorized access on trails is only one factor in the EV and EHE analysis, the other factors such as hunter densities for EV and cover for EHE also contribute to the analysis

Elk and Deer Winter Range

*Consequences Common to All Alternatives* - The feed ground in Rainey Creek will remain in all alternatives

All elk and deer winter range areas mapped on Map 24 will be closed to cross-country snowmachine use in all alternatives (Table IV-7)

*Consequences Which Vary by Alternative* - The amount of winter range acres meeting DVC increases from existing levels as follows three percentage points in Alternative 1, four percentage points in Alternatives 2, 3 and 3M, six percentage points in Alternatives 4, 5 and 6 (Table IV-7)

The majority of the deer and elk that summer on the Forest do not winter on the Forest The number of deer and elk wintering on Forest winter ranges depends on the severity of the winter As far as we know, no alternative would decrease the suitability of winter ranges on the Forest for deer and elk from existing habitat conditions Improvements in the number of acres meeting DVCs and increased restrictions on cross-country snowmachine use will result in improved winter range conditions for deer and elk, but populations may not increase over existing levels

*Cumulative Effects* - Development on private lands is a concern as it can adversely affect areas historically used by wintering deer and elk

Grizzly Bear Habitat

*Consequences Common to All Alternatives* (within the BMUs) -

1 Acres within designated wilderness remains the same in all alternatives
2 The number of cattle allotments remains the same in all alternatives

*Consequences Which Vary by Alternative* (within BMUs) -

Key Indicator - Open Road and Open Motorized Trail Route Density (OROMTRD)

Tables IV-8 - IV-12 present an overview of future OROMTRD and other habitat conditions for the Forest portion of each of the BMUs for each of the alternatives Other indicators shown in Tables IV-8 - IV-12 include

1 Winter Cross-Country Snowmachine Use
2 Total Motorized Access Route Density (TMARD)
3 Cross-country OHV
4 Forest Acres in Core Areas
5 Livestock Grazing
6 Timber Harvest

Winter Cross-Country Snowmachine Use - Snowmachine use is primarily a concern because of the potential to displace bears before they hibernate or after they emerge from their dens in the spring We are not aware of specific problems or incidents occurring on the Forest, but the alternatives do prescribe different cross-country snowmachine use dates as follows in an effort to be sensitive to potential future effects

Henry's Lake BMU, Subunit 1 - There are no cross-country snowmachine use restrictions in Alternatives 1, 2 and 3. In Alternative 3M, cross-country snowmachine use is permitted beginning on the Thanksgiving Day holiday and will be allowed until June 1, site-specific restrictions on winter recreation activity (such as area closures, timing restrictions, etc ) will be imposed to resolve human-grizzly bear conflicts About 85 percent of the BMU has cross-country snowmachine use dates of December 15 to April 1 in Alternatives 4, 5 and 6

Henry's Lake BMU, Subunit 2 - About 46 percent of the BMU has cross-country snowmachine use dates of December 15 to April 1 in Alternative 1 There are no cross-country snowmachine use restrictions in Alternative 2 In Alternative 3M, cross-country snowmachine use is permitted beginning on the Thanksgiving Day holiday and will be allowed until June 1, site-specific restrictions on winter recreation activity (such as area closures, timing restrictions, etc ) will be imposed to resolve human-grizzly bear conflicts In Alternatives 3, 4, 5 and 6, an additional 50 percent of the BMU has cross-country snowmachine use dates of December 15 to April 1

Plateau BMU, Subunits 1 and 2 - About 8 percent of the BMU has cross-country snowmachine use dates of December 1 to June 1 in Alternative 1 There are no cross-country snowmachine restrictions in Alternative 2 About 20 percent of the BMU has cross-country snowmachine use dates of December 15 to April 1 in Alternative 3 In Alternative 3M, cross-country snowmachine use is permitted beginning on the Thanksgiving Day holiday and will be allowed until June 1, site-specific restrictions on winter recreation activity (such as area closures, timing restrictions, etc ) will be imposed to resolve human-grizzly bear conflicts In Alternatives 4, 5 and 6, all of the BMU has cross-country snowmachine use dates of December 15 to April 1

Bechler/Teton BMU - About 34 percent of the BMU is closed to all snowmachine use in all alternatives in the Winegar Hole and Jedediah Smith Wilderness Areas Outside of the wilderness, the alternatives vary as follows In Alternatives 1 and 2, there are no cross-country snowmachine use restrictions In Alterna-

tive 3 an additional three percent of the BMU has cross-country snowmachine use dates of December 15 to April 1 In Alternative 3M, cross-country snowmachine use is permitted beginning on the Thanksgiving Day holiday and will be allowed until June 1, site-specific restrictions on winter recreation activity (such as area closures, timing restrictions, etc ) will be imposed to resolve human-grizzly bear conflicts In Alternatives 4, 5 and 6, an additional 56 percent of the BMU has cross-country snowmachine use dates of December 15 to April 1

*Cumulative Effects* - The only available tool that evaluates the cumulative effects of changing levels of human activities and changing habitat conditions is the grizzly bear cumulative effects model (CEM) The CEM was used to provide insight on the relative changes in habitat quality between the alternatives Table IV-8 through IV-12 show CEM outputs for the alternatives The CEM is still being validated and at this time, no conclusions can be made concerning grizzly bear populations or distributions based on CEM outputs

At this time, no definitive statement can be made for a "threshold" number for TMARD, OROMTRD, amount of core area, timber harvesting, livestock grazing, snowmachine use or CEM outputs, in order to achieve a certain number of grizzly bears using a specific area Analysis on female home ranges is currently being done by the Interagency Grizzly Bear Study Team, which may help define threshold levels in the future Generally, the lower the TMARD and OROMTRD, the higher amount of core area, the lower the recreation use and the higher HE/HV CEM output, the better the habitat conditions are for grizzly bears

Predicting future grizzly bear distribution and abundance by alternative is difficult Based on data we have compiled from 1959 to the present, we offer the following general assessment for each BMU, subunit

Henry's Lake BMU, Subunit 1 - This area has had the lowest documented grizzly beer sightings of any subunit on the Forest but it has the highest habitat value of any subunit There has not been a verified sighting of a sow with cubs from 1959 to present Even with nine active domestic sheep allotments, there have not been grizzly bear/livestock incidents. This subunit is positioned farther west than any other subunit in the GYA and contains the highest recreation use associated with Henry's Lake Flat Even though there is a general trend of improving habitat conditions on the Forest from Alternative 1 to Alternative 6, we expect grizzly bear use to remain at low levels, similar to what has occurred in the past, in all alternatives

Henry's Lake BMU, Subunit 2 - Compared to other subunits on the Forest, this subunit has had the second highest number of grizzly bear sightings and it has the second highest habitat value of any subunit This subunit has been and currently is, occupied by a sow with cubs This subunit is immediately adjacent to other occupied BMUs in the GYA Even though there is a general trend of improving habitat conditions on the Forest from Alternative 1 through Alternative 6, we expect grizzly bear use to be similar to what has occurred in the past in all alternatives We do not expect a measurable difference in grizzly bear use among the alternatives

Plateau BMU, Subunit 1 - Compared to other subunits on the Forest, this subunit has had the second lowest number of grizzly bear sightings and it has the lowest habitat value of any subunit Two sows with cubs have been documented from 1959 to the present In the last two decades, the Forest portion has had what is considered high open road densities and high human activity, especially timber management activity But the Yellowstone National Park portion has had very little human activity and still grizzly bear use has been low in that portion of the subunit Generally, there is a trend of improving habitat condition on the Forest from Alternative 1 to Alternative 6 Because this subunit is adjacent to other occupied BMUs in the GYA, we expect that as habitat conditions improve, there is potential for increased grizzly bear use We use the term potential because of historic low use of this subunit, even in the Yellowstone National Park portion where little human activity has occurred

Plateau BMU, Subunit 2 - Compared to other subunits on the Forest, this subunit has had the third lowest number of grizzly bear sightings and it has the second lowest habitat value of any subunit Until 1994, we had no records that confirm sightings of sows with cubs in this subunit In 1994, one sow with cubs was observed one time near the southern boundary of the subunit, since 1994, no sows with cubs have been documented In the last two decades, the Forest portion has had what is considered high open road densities and high human activity, especially timber management activity But the Yellowstone National Park portion has had very little human activity and still grizzly bear use has been low in that portion of the subunit Generally, there is a trend of improving habitat condition on the Forest from Alternative 1 to Alternative 6 Because this subunit is adjacent to other occupied BMUs in the GYA, we expect that as habitat conditions improve, there is potential for increased grizzly bear use We use the term potential because of historic low use of this subunit, even in the Yellowstone National Park portion where little human activity has occurred

Bechler/Teton BMU - Compared to other subunits on the Forest, this subunit has had the highest number of grizzly bear sightings and it has the third highest habitat value of any subunit This subunit has been and currently is occupied by a sow with cubs This subunit is immediately adjacent to other occupied BMUs in the GYA There is a general trend of improving habitat condition on the Forest from Alternative 1 to Alternative 6 Because this subunit is adjacent to other occupied BMUs in the GYA, we expect that as habitat conditions improve, there is potential for increased grizzly bear use We use the term potential because of historic high use of this subunit and we may not be able to measure more use when compared to the historic high use

Since 1984, there have been no grizzly bear mortalities on the Forest We do not expect any inherent differences among the alternatives in relation to grizzly bear mortalities If grizzly bear use increases in the future due to improved habitat conditions, there may be potential for increased human/grizzly bear conflicts

Linkage Zone Assessments - The Grizzly Bear Recovery Plan identified the need to assess the potential for linkage zones between the various grizzly bear ecosystems The Yellowstone Grizzly Bear Ecosystem is about 240 air miles from the Selway-Bitteroot Grizzly Bear Ecosystem (USDI Fish and Wildlife Service 1993) Currently, very little is known about the potential for linkage zones In order to adequately assess the capacity for linkage, the USFWS initiated a five year process to assess the linkage potential between the various ecosystems This process will be led by the USFWS in cooperation with the States, provinces and various land management agencies At the completion of the five year evaluation effort, a report will be available to the IGBC on the potential for linkage between existing ecosystems This report will be the basis for future actions regarding the linkage zone question Linkage zones are desirable for recovery, but are not essential for delisting at this time The studies are in progress and no results are available

The Grizzly Bear Recovery Plan states that future land management activities within potential linkage zones may be critical to maintaining their utility as linkage zones It is essential that existing options for carnivore movement between existing ecosystems be maintained while the evaluation of linkage zones is underway Management strategies that limit human-induced mortality and address the access management will facilitate the maintenance of the potential of these zones during the evaluation period On public lands, management prescriptions similar to big game summer range prescriptions that address access management would likely conserve any existing potential of these areas for linkage until completion of the evaluation process (USDI Fish and Wildlife Service 1993) Access management was a key issue addressed in all alternatives considered in the Forest Plan Revision

For the Yellowstone Grizzly Bear Ecosystem, the Recovery Plan states the following

> The Yellowstone grizzly bear population is the only one of five grizzly bear populations that is completely isolated from populations in other U S ecosystems and Canada The population has approximately 300 bears The population's small size and isolation make it vulnerable to the

detrimental effects of the loss of genetic diversity and to environmental and demographic stochasticity Connectivity between the Yellowstone Grizzly Bear Ecosystem and other grizzly ecosystems is not likely to be realized in the near future because of the distance to other ecosystems and the intervening human development and alteration of landscape Therefore, the recovery plan recommends that one grizzly be placed into the ecosystem from an outside population every ten years as an effort to maintain the genetic health of the population (USDI Fish and Wildlife Service 1993)

Gray Wolf

*Consequences Common to All Alternatives* - Application of the forestwide standards and guidelines is expected to allow wolf pairs to establish dens on the Forest if they choose to do so and to receive the protection of the nonessential experimental population rule (USDI Fish and Wildlife Service 1994b)

*Primary Cavity Nesting Habitat*

An overall biological potential for the primary cavity nesting species as a group was analyzed for each alternative In addition, a biological potential analysis was done for four of the species which require larger size snags (red-naped sapsucker, Williamson's sapsucker, hairy woodpecker and northern flicker) These biological potential analyses are based on existing snag densities and projected changes in snag densities due to management activities as specified in the management prescriptions

*Consequences Common to All Alternatives* - All of the management prescriptions which allow scheduled timber and fuelwood harvesting (with the exception of management prescription 5 2 2) require the retention of snags and green replacement trees The snag and green replacement tree requirements vary in these management prescriptions, ranging from > 40 percent of biological potential to 100 percent of biological potential for primary cavity nesters

In addition to the management prescriptions which allow scheduled timber harvesting, snag and green replacement trees requirements are also contained in other motorized management prescriptions where fuelwood harvesting could be permitted based on the presence of roads for access and management prescription direction which allows fuelwood harvesting The snag and green replacement tree requirements vary in these management prescriptions, ranging from > 40 percent of biological potential to 100 percent of biological potential

There are no snag and green replacement tree requirements in the management prescriptions which are nonmotorized, wilderness, wilderness study areas, proposed wilderness, research natural areas, wild/scenic/recreational rivers or special management areas In these management prescriptions, timber harvesting is not scheduled and primary cavity nesting habitat will evolve with natural processes

There are no snag and green replacement tree requirements in the recreation and concentrated development management prescriptions In these management prescriptions, public safety and protection of facilities is the paramount importance, therefore snags and other hazard trees are generally removed from these sites The total acres in these sites is less than one-half of one percent of the total acres on the Forest

Table IV-7 displays the biological potential for the primary cavity nesting species for each alternative on a Forestwide basis (Process Paper D displays the biological potential on a watershed basis for each alternative ) In all alternatives, the biological potential for all primary cavity nesting species is 0 61 and the biological potential for the larger cavity nesting species is 0 47 As a result of the snag and green replacement tree requirements in the management prescriptions, there is no measurable difference in biological potential for primary cavity nesting species between the alternatives due to scheduled timber harvest activities

*Cumulative Effects* - The analysis for future biological potential does not include possible future effects of natural disturbances Future natural disturbances may have a greater effect on the biological potential for primary cavity nesting species habitat than vegetation management activities proposed for each alternative Generally, natural disturbances such as fire, insects and disease create additional snags in the short term

Forest Owl Habitat

*Consequences Common to All Alternatives* - Proposed management activities are not expected to change habitat conditions for these species regardless of the alternative

Flammulated Owl - All known nest sites and any new nest sites found in the future, whether or not they are active, will be protected in all alternatives

Boreal Owl and Great Gray Owl - All known nest sites and any new nest sites found in the future, whether or not they are active, will be protected in all alternatives Within home ranges around all nest sites, > 40 percent of the forested acres will be maintained in late seral stages

Furbearer Habitat

Furbearers include the American marten, fisher, lynx and wolverine These species require mature, late seral and old growth forest habitats for some or all of their habitat requirements Snags and down woody debris are also important components of their habitat

*Consequences Common to All Alternatives* - There is a Forestwide objective to identify potential wolverine natal den sites and to survey these potential sites to document wolverine presence

*Consequences Which Vary by Alternative* - Table IV-7 displays how the quantity of late seral forest habitat is expected to change due to scheduled timber management activities in each alternative The amount of late seral forest habitat changes by alternative according to the amount of timber harvesting proposed in that alternative Alternative 1, 2 and 3 have the largest potential change in habitat (-3 percent) and Alternatives 5 and 6 the least potential change (-1 percent) The previous section on old growth and late seral forest provides additional information which is not repeated here If furbearer populations are currently at habitat carrying capacity, then Alternatives 1, 2 and 3 would result in a three percentage point population decline, Alternatives 3M and 4 a two percentage point population decline, and Alternatives 5 and 6 a one percentage point population decline All alternatives will contain suitable habitat in all principal watersheds on the Forest, thus maintaining well distributed populations

Goshawk Habitat

*Consequences Common to All Alternatives* -
Nest Areas - A nest area of at least 200 acres in size is to be provided for all goshawk territories These suitable nest areas are to be mature and older stands of trees, with numerous snags (80 to 100 percent biological potential for cavity nesting species) Any vegetation management within nest areas is to occur during the months of October to February There are to be no new system roads

Post-Fledging Family Area - This area is > 400 acres in size A variety of forest seral stages can be present, but > 40 percent of the forested acres must be in mature and older size/age classes Any created opening must be < 40 acres in size Numerous snags are to be present (80 to 100 percent biological potential for cavity nesting species) Any vegetation management within this area is to occur during the months of October to February. There are to be no new system roads

Foraging Area - This area is > 5,400 acres in size A variety of forest seral stages can be present, but > 40 percent of the forested acres must be in mature and older size/age classes Any created opening must

be < 40 acres in size Numerous snags are to be present ( > 60 percent biological potential for cavity nesting species) Vegetation management within this area can occur anytime during the year Road densities are to be < the density required by the management prescription

This management direction applies to all known territories and any new territories found in the future, whether or not they are active The proposed management direction would maintain effective habitat and viable populations are expected to be sustained

Red Squirrel Habitat

*Consequences Which Vary by Alternative* - Table IV-7 displays the acres of conifer cone-bearing habitat in each alternative Alternatives 1, 2 and 3 result in a one percentage point decline of conifer cone bearing habitat, Alternatives 3M and 4 result in a less than one percentage point change, Alternatives 5 and 6 result in a one to two percentage point increase The small changes in cone bearing habitat among the alternatives occurs as the result of some previously harvested acres approaching cone-bearing age during the decade The number of acres coming of cone-bearing age is almost as large as the number of acres proposed for timber harvesting in any of the alternatives

Peregrine Falcon Habitat

*Consequences Common to All Alternatives* - Forestwide Standards and Guidelines for peregrine falcon habitat apply in all alternatives Suitable habitat will be maintained for all existing nesting pairs plus any new nesting pairs which may become established

Bighorn Sheep

*Consequences Common to All Alternatives* - The following discussion is divided into four topics 1) low elevational winter range, 2) disease, 3) genetic isolation, and 4) recreation

Low Elevation Winter Ranges - Former low elevation winter ranges are not being used for a variety of factors, including permanent developments (highways, farms, towns, etc ), introductions of mountain goats and vegetation succession

There has been no analysis about the feasibility of restoring use to these former low elevation winter ranges Some of the winter ranges may be permanently lost due to permanent developments It is our understanding that mountain goats use the same habitats, are more aggressive and will compete with bighorn sheep

Many of the factors associated with this issue are not within the authority of the Forest Service to directly deal with (such as permanent developments on private lands and mountain goat populations) For these factors, the Revised Plan contains management direction to coordinate with other agencies in the management of bighorn sheep

The Revised Plan contains management direction to develop a fire management plan for the entire westslope of the Tetons and to incorporate into the plan opportunities to improve bighorn sheep habitat

Disease - In both fenced studies and free ranging herds, most contact between bighorn sheep and domestic sheep has resulted in pneumonia in bighorns and the deaths of all or most bighorns while domestic sheep remained healthy Published research has shown that *Pasteurella haemolytica* (usually biotype A, serotype 2) is the major pathogen responsible for the death of bighorn sheep after contact with domestic sheep DNA fingerprinting has proven the transfer of *Pasteurella* spp between bighorn and domestic sheep under both controlled "experimental" and range conditions The *Pasteurella* must be a "virulent" strain Sometimes there have been contact between bighorns and domestic sheep without die-offs, reason - the domestic sheep did not have a virulent strain No vaccine currently exists that will prevent

bighorn sheep from developing pneumonia after contact with virulent strains of Pasteurella There is no way to test for virulent strains at the present time

There are two times of year when contact between bighorns and domestic sheep are more likely to occur 1) During the fall breeding season (November and December) when the younger rams are displaced by the older rams The younger rams will often get involved with domestic ewes while looking for a mate 2) During the spring when bighorn sheep and domestic sheep are using spring green up areas

On the Westslope of the Tetons, 45,700 acres have previously been closed to domestic sheep grazing through annual plans of use and allotment management planning These are the areas currently occupied by bighorn sheep A bighorn sheep study is currently being conducted by GTNP Several dead bighorn sheep have been sent to Dr Beth Williams for necropsy No Pasteurella from domestic sheep was found. Dr Williams said the bighorns were very healthy (Discussions with Dr Beth Williams, Sept 1996)

Domestic sheep are not grazed on the Westslope during the seasons when 'nose-to-nose' contact with bighorns is most likely to occur (the fall breeding season or the early spring)

Because of the acres currently closed to domestic sheep grazing and the fact that domestic sheep are not grazed during the seasons when contact is most likely to occur, we believe the probability for disease transfer is very low To eventually reduce the probability for disease transfer to zero, the Revised Plan directs that all sheep grazing on the Westslope of the Tetons will be phased out on an opportunity basis While the phase out is in progress, additional opportunities will be studied to adjust domestic sheep allotments to further reduce the probability of disease transfer

In the South Beaverhead (Medicine Lodge) area, there are two vacant domestic sheep allotments adjacent to the currently occupied bighorn sheep areas These two allotments will remain vacant until the necessary authorizations have been completed to convert them to cattle allotments

There are three winter domestic sheep allotments adjacent to the currently occupied bighorn sheep areas The Revised Plan directs that these winter allotments will be phased out on an opportunity basis

Genetic Isolation - The Teton Range bighorn sheep population is among a small number of bighorn sheep populations that are endemic and have not been augmented with animals from other bighorn sheep populations (Teton Bighorn Sheep Working Group Report 1996) It has been suggested that these bighorn sheep have increased scientific value because of this fact (Teton Bighorn Sheep Working Group Report 1996)

Management of animal populations is the primary responsibility of State Fish and Game Agencies The Revised Plan provides direction to coordinate with the State Fish and Game Agencies and the National Park Service on the management of bighorn sheep

Recreation - Some publics have suggested that bighorn sheep may be avoiding some portions of suitable habitat because of recreation use Also, Wyoming has maintained a small hunt on the Forest (no hunting of bighorns occurs in GTNP)

The Revised Plan directs the Forest to work with the Intermountain Forest and Range Experiment Station to develop and conduct a research study to assess the effects of recreational activity on bighorn sheep on the Westslope of the Tetons

Recreational activities must be evaluated and coordinated between all of the agencies This includes the permitting of hunting by the Wyoming Game and Fish Department The Revised Plan directs the Forest to coordinate with other agencies on the management of bighorn sheep habitat and populations

Neotropical Migratory Species

*Consequences Common to All Alternatives* - Hejl et al (1995) reviewed studies documenting differences in birds among natural stands of different ages No common results for any one species nor obvious trends for any particular migrant group were found in the studies comparing natural stands of different ages

Differences in Birds between Cut and Uncut Aspen Forests - In a review of aspen studies, the combined results are equivocal, therefore, no assessments can be made as to the effects of cutting aspen on any particular migrant group (Hejl et al 1995) Based on this information, natural disturbances and aspen treatments are not expected to result in measurable changes in bird species abundance among the alternatives

*Consequences Which Vary by Alternative* - Hejl et al (1995) reviewed studies documenting the effects of silvicultural treatments (timber harvesting) on birds in conifer forests and old second growth forests and presented the following summaries

Effects of Silvicultural Treatments on Birds in Conifer Forests - From community-wide studies, 26 species were less abundant in treated areas as compared to unlogged areas in general In contrast, 15 species were generally more abundant in treated areas than in unlogged ones

Old-growth and Old Second-growth - In a review of four studies which compared old-growth with old second-growth, 15 species were more abundant in old growth in at least one study, however, no species was consistently more abundant in old growth in all four studies that compared old-growth with old second-growth stands

Since the forested acres proposed for silvicultural treatments during the first decade range between three percent in Alternatives 1, 2 and 3, two percent in Alternatives 3M and 4, and one percent in Alternative 5 and 6, the change in bird species abundance is expected to be very small among the alternatives There is potential for 26 species to be less abundant on the one to three percent of the forested acres proposed *for silvicultural treatments, and 15 species to be more abundant Late seral forests will be distributed in all* principal watersheds in all alternatives as displayed previously in Table IV-1

We cannot offer managers as complete a synthesis as we would like Too few studies have been conducted on the effects of silvicultural practices on birds in forests in the Rocky Mountains to make robust conclusions (Hejl et al 1995) Our results are limited in that they focus on short-term distributional changes as the result of two broad categories of timber harvesting (clearcutting and partial logging) lumped across conifer forests The data indicate that many forest birds were less abundant in clearcuts than in uncut forests and species that frequent open forests or open habitats were more abundant in clearcuts than in uncut forests Most permanent residents were less abundant after either kind of harvesting treatment, whereas about half of the migrant species were less abundant and half more abundant in harvested areas The effects of partial cutting were less dramatic than those of clearcutting, these results may be partly due to the fact that partial cutting included many different kinds of harvesting treatments (Hejl et al 1995)

Additional information and discussion on neotropical migratory bird species is presented in Process Paper D

**Predator Control**

*Consequences Common to All Alternatives* - The effects of predator control are disclosed in the 1996 APHIS-ADC Environmental Assessment for Predator Control in Southern Idaho, which incorporated the analysis of effects from the 1990 Targhee N F Predator Control EA and Decision Notice The effects of Alternative 5 (selected alternative) disclosed in Chapter IV, Environmental Consequences, of the 1990 EA are also incorporated by reference into this analysis

**Unique Ecosystems**

Research Natural Areas

*Consequences Common to All Alternatives* - Forestwide standards and guidelines apply in all alternatives plus site-specific direction identified in the Establishment Records for existing RNAs apply To become established as an RNA, site-specific analysis at a later date will be conducted for proposed RNAs Regardless of which alternative is selected, the number of proposed and existing RNAs does not change by alternative (Table III-21)

## FOREST USE AND OCCUPATION

This component is described in four parts Access Management, Wilderness, Recreation and Social and Economic Under the first two parts, key indicators are discussed first, with subsequent discussion of other indicators No key indicators are associated with the third and fourth parts

ACCESS MANAGEMENT

**Road and Trail System and Motorized Access**

Consequences are presented in the winter and summer access sections which follow In summary, winter motorized access will be maintained in most alternatives and summer motorized transportation system and access will be reduced in all alternatives

Summer Access

Key Indicators

1 Miles of road open to summer motorized
2 Miles of trail open to summer motorized
3 Acres open to summer cross-country OHV

*Consequences Common to All Alternatives* - There will be some reduction from current levels in miles of road and trail open to motorized use in all alternatives This would result in increased needs and costs for law enforcement and signing to manage the system of restricted roads and trails Another consequence common to all alternatives is the routine reconstruction of roads and structures

The forestwide guidelines concerning trail design, condition surveys and restricting OHV use on slopes 25-40 percent and greater should help meet the Revision goals of sustaining OHV opportunities and sustaining trails in good condition while minimizing effects to other resources

*Consequences Which Vary by Alternative* - Table IV-13 shows a comparison of roads and trails by alternative that will be open to motorized use, restricted or reclaimed Compared to existing conditions, changes in open roads and trails in the alternatives are as follows

- open roads range from a decrease of 103 miles (5 percent) in Alternative 1 to a reduction of 757 miles (38 percent) in Alternative 6

- open trails range from a decrease of 201 miles (26 percent) in Alternative 1 to a reduction of 692 miles (90 percent) in Alternative 6

In the Selected Alternative (3M), most of the system roads proposed for reclaiming/obliteration, are located within the BMUs

In most all cases, the system roads that have been identified to be reclaimed/obliterated are roads that are currently restricted and were originally constructed in conjunction with timber sales

Roads closed for resource management purposes limit opportunities for dispersed camping, berry-picking, sight-seeing and other activities that conventionally depend on road access The amount of opportunities available with the various alternatives is varied, according to the programmed amount of new or existing road development and resource management activities, particularly timber harvesting

Table IV-13 Road and Trail Access

| | Existing | 1 | 2 | 3 | 3-M | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| **Roads** | | | | | | | | |
| Miles - Open 1/ | 1,985 | 1,882 | 1,863 | 1,589 | 1,577 | 1,372 | 1,237 | 1,228 |
| Miles - Seasonal Restrictions 2/ | 73 | 209 | 131 | 115 | 25 | 108 | 63 | 80 |
| Miles - Yearlong Restrictions 3/ | 733 | 454 | 242 | 320 | 336 | 198 | 201 | 177 |
| Miles - Reclaimed/Obliterated | NA* | 246 | 555 | 767 | 853 | 1,113 | 1,290 | 1,306 |
| Total Miles | 2,791 | 2,791 | 2,791 | 2,791 | 2,791 | 2,791 | 2,791 | 2,791 |
| Change in open miles from existing | - | -103 | -122 | -396 | -408 | -613 | -748 | -757 |
| % change in open miles from existing | - | -5 | -6 | -20 | -21 | -31 | -38 | -38 |
| **Trails** | | | | | | | | |
| Miles - Open 1/ | 773 | 572 | 470 | 435 | 540 | 421 | 232 | 81 |
| Miles - Restricted 4/ | 628 | 752 | 854 | 889 | 817 | 903 | 1,092 | 1242 |
| Miles - Nonfunctional trails | NA | 77 | 77 | 77 | 44 | 77 | 77 | 78 |
| Total Miles | 1,401 | 1,401 | 1,401 | 1,401 | 1,401 | 1,401 | 1,401 | 1,401 |
| Change in open miles from existing | - | -201 | -303 | -338 | -233 | -352 | -541 | -692 |
| % change in open miles from existing | - | -26 | -39 | -44 | -30 | -46 | -70 | -90 |

1/ Road and trail miles without restrictions on motorized use
2/ Road miles on which motorized use is restricted for only a portion of the spring/summer/fall seasons
3/ Road miles on which motorized use is restricted for the entire spring/summer/fall seasons
4/ Trail miles on which motorized use is restricted either for a portion of the spring/summer/fall seasons or yearlong (as in designated wilderness areas)
* This table refers to present time It does not take into account the 1,622 miles of roads that were reclaimed/obliterated between 1981 and 1993

Acres open to cross-country OHV travel decrease significantly from present levels in all alternatives (Table II-1) The decrease from present levels ranges from approximately 166,000 acres (15 percent) in Alternative 1 to over 1 million acres (97 percent) in Alternative 6 However, it should be recognized that many of these acres are in terrain and vegetative cover which do not actually permit cross-country travel. So, the decrease in acreage may not be as significant as it appears

Costs for signing designated routes, rehabilitation of old alignments, and providing law enforcement will increase significantly, especially for Alternatives 3 - 6 Alternative 3M would cost $150-200 thousand each year to reconstruct 10-20 miles of existing motorized use trails Trail reconstruction and maintenance costs will also be much higher to meet soil and water standards and guides and to accommodate the higher use levels with motorized and mechanized equipment

Most foot and horse trails would not be affected by any of the alternatives However, under the alternatives with more motorized restrictions there would be some benefit to the nonmotorized user in terms of relief from interaction with motorized users Some of the impacts to trails, such as rutting or displacement of soils, being caused by OHV use would also be reduced

*Cumulative Effects* - As acres and roads/trails open to motorized access decrease from Alternatives 1 through 6, the density of OHV users on designated routes will generally increase on the remaining open routes In addition, some loop trails will be eliminated, along with current access to some of the more spectacular scenic vistas The increased interaction may result in increased user or resource conflicts and additional resource impacts This could have an overall effect of loss of enjoyment of the recreation activity for some people in some of the areas In other areas, it may be possible to develop "play areas" that become favorites of those who like a "social experience" or who enjoy the spectator opportunity

A secondary effect of decreasing motorized access areas would be reduction of hunting and fishing opportunities for those requiring motorized access This might not be too significant except in Alternatives 5 and 6

An additional effect of decreasing motorized access would be decreased trail maintenance A good portion of our trail maintenance work is performed by motorized users and the state of Idaho's Trail Ranger program which uses trail bikes for its maintenance crew Motorized users and trail maintenance funding from the State would naturally decline as restrictions on motorized access increase, unless some type of reconstruction program can be initiated to improve trails for motorized use

Overall, it is questionable whether there will be enough designated routes and cross-country areas open to travel to meet the needs of increasing motorized access demand in any alternative, but especially in Alternatives 5 and 6 Much of the cross-country use that is presently occurring would be eliminated by Alternatives 3-6 Therefore, the actual and apparent loss of OHV access and recreation opportunities may be of concern to some OHV users.

Winter Access

Indicators

1 Acres open to winter cross-country snowmachines
2 Miles of groomed trails for snowmachines

*Consequences Common to All Alternatives* - Management direction such as establishing linear capacities for snowmachine trails, providing networks of groomed trails, providing winter users with educational information and signing about wildlife needs, and prohibiting snowmachines and other equipment from groomed cross-country ski trails, should minimize adverse consequences on users and wildlife

*Consequences Which Vary by Alternative* - Acreage open to cross-country snowmachine use (Table II-1) is maintained or increased for Alternatives 1-3, decreases (119,000 acres) in Alternative 5 and significantly decreases (404,000 acres) in Alternative 6 These decreases are due to increases in winter range and recommended wilderness prescription allocations In Alternative 3M, a large portion of the decrease is due to the new forestwide standard which closes all inventoried winter range to cross-country snowmachine travel.

Miles of planned, groomed or marked snowmachine trails could increase approximately 93 miles over current levels in Alternative 3M This planned increase is based on analysis contained in the Greater Yellowstone Winter Visitor Use Management (GYWVUM) Assessment as summarized in the Winter Access Analysis (Appendix C) Alternative 3M would also provide direction to establish a few nonmotorized winter recreation activity areas with easy access for uses such as telemark skiers, snowshoers or snowboarders by the year 2000 in conformation with results anticipated from the GYWVUM Assessment This would result in reduced user conflicts as such activities increase Alternative 5 maintains existing levels of trails Alternative 6 would result in a significant decrease in designated snowmachine routes from current levels This decrease is due to increased wildlife winter range and recommended wilderness allocations

*Cumulative Effects* - Winter recreation use opportunities would in large part be maintained in all alternatives However, Alternatives 5 and 6 would have more restrictions on winter motorized use and therefore, some reduction in those opportunities and use would be possible Potential effects on wintering wildlife would be minimal in all alternatives The selected alternative 3M would increase the potential for snowmachining on marked and groomed trails if the counties could afford to provide the marking and grooming

WILDERNESS AND RECREATION RESOURCES

The following topics present the effects and consequences of the alternatives on the various wilderness and recreation resources Key alternative comparison indicators for these resources are displayed in Table II-1 Overall, total recreation use would not change much between alternatives, but the types of use probably would The trend from Alternative 1 to 6 would be away from semi-primitive motorized (SPM) and roaded natural appearing (RNA) recreation opportunities to an increase in primitive (P) and semi-primitive nonmotorized (SPNM), although some semi-primitive motorized (SPM) opportunities would remain This overall trend would be due to the reduction in motorized access and increase in recommended wilderness from Alternatives 4 - 6 Such a trend would also support a shift from currently evolving tourism/rural development to a slower developing, eco-tourism pattern

**Wilderness and Recommended Wilderness**

Indicator - Acres of recommended wilderness

Other Indicator - Acres of management opportunity classes for the Jedediah Smith Wilderness

*Consequences Common to All Alternatives* - Designated wilderness and wilderness study acres remain the same in all alternatives Quality and character of designated wilderness would not be degraded by any alternative All action alternatives include a monitoring plan based on the Limits of Acceptable Change (LAC) process for the Jedediah Smith Wilderness The Winegar Hole Wilderness will be managed according to the prescription direction The Revision prescriptions and monitoring plan will become the wilderness management plan for each wilderness These plans provide direction for management and monitoring of resource and social conditions to address any changes which may result These plans would maintain wilderness resources and recreation opportunities at approximately current levels and conditions

*Consequences Which Vary by Alternative* - Recommended Wilderness - The 1985 Forest Plan analysis of recommended wilderness and roadless areas was re-evaluated in response to public comments and documented in an update to the Roadless Areas Process Paper (Appendix B) The rationale for or against selection of areas for recommended wilderness in Alternative 3M has been added to this Process Paper update, along with the Rating of Wilderness Characteristics (Table IV-14) As this re-evaluation of recommended wilderness was completed, a decision was made to include a large part of the Diamond Peak Roadless area as recommended wilderness This was done because the area rated second highest of all roadless areas on the Forest The 33,000 acres in Diamond Peak and 13,000 acres of digitizing updates to Italian Peaks raised the total recommended wilderness acres for Alternative 3M from the 125,000 acres in the DEIS up to 171,000

Table IV-14 Rating of Wilderness Characteristic Factors for Remaining Roadless Areas (based on Section 2 of individual narratives from the 1985 Supplement to the DEIS for the 1985 Forest Plan)

| Area Name | Area Number | Manageability & Boundaries | Influence on Natural Integrity | Opportunity for Solitude | Opportunity for Challenging Experience | Rating Score |
|---|---|---|---|---|---|---|
| Diamond Peak (88,689 ac) | 15-601 | moderate | low | high | high | 11 |
| Italian Peak (141,792 ac) | 15-945 | moderate | low | high | moderate | 10 |
| Garfield Mtn (43,439 ac) | 15-961 | high | moderate | moderate | low-mod | 9 |
| Mt Jefferson (63,969 ac) | 15-962 | 1/ | | | | 0 |
| Raynolds Pass (7,709 ac) | 15-603 | moderate | low | low | low | 7 |
| Lionhead (16,892 ac) | 15-963 | moderate | low | high | moderate | 10 |
| Two-top (6,983 ac) | 15-604 | moderate | high | moderate | low | 6 |
| Winegar addition (4,032 ac) | 15-347 | low | moderate | moderate | low | 6 |
| West Slope Tetons | 15-610 | 2/ | | | | 0 |
| Garns Mtn (95,632 ac) | 15-611 | moderate | low | high | moderate | 10 |
| Palisades (174,862 ac) | 15-613 | moderate | low | high | high | 12 |
| Bald Mtn (17,037 ac) | 15-614 | low | moderate | low | low | 5 |
| Bear Creek (97,775 ac) | 15-615 | moderate | low | moderate | low | 8 |
| Poker Peak (19,577 ac) | 15-616 | high | low | low | low | 8 |
| Caribou City (11,769 ac) | 15-161 | low | low | moderate | moderate | 8 |
| Pole Creek (2,683 ac) | 15-160 | low | moderate | low | low | 5 |

Rating Score note Manageability and Opportunity columns are scored - low=1, mod =2, high=3 Influence on Natural Integrity column is scored - low=3, mod =2, high=1 A rating of 10 or better is considered sufficient for wilderness recommendation, except in Garn's Mtn where a decision was made to manage for motorized use in Alternative 3-M, rather than roadless The score of 10 was selected as the "break-point" because it represents the quality level of the areas previously recommended in the current Forest Plan, with the exception of the Winegar Hole addition, which had broad public support

1/ This area was released for multiple use mgmt by decision of 1990 FEIS by BLM

2/ This area was released for multiple use mgmt by the 1984 Wyo Wilderness Act

With the exception of Alternative 2 which has no recommended wilderness, the acreage of recommended wilderness increases from Alternative 1 to Alternative 6, with the largest increases in Alternatives 5 and 6 (Table II-1) Motorized OHV travel would be impacted by Alternatives 3-6 and significant forestwide reductions in summer, cross-country OHV travel would result from Alternatives 5 and 6 to be consistent with the 1 3 prescription access table In addition, the High Mountain Heliski operation which is dependent almost entirely on the Palisades Roadless Area could be eliminated by Alternatives 3 - 6 if wilderness designation resulted from recommendations of the Plan Revision This heliski operation was seriously impacted in 1984 when the Wyoming Wilderness Act shut the skiing operation out of their main permit area There would be little or no area left open to support this operation if designation occurred in the Palisades with no exception to allow continuance This could eliminate a unique recreational opportunity for over 450 skiers annually Considerable snowmachine activity and groomed snowmobile trails and play areas in Alternatives 5 and 6 could also be eliminated in the Garns Mountain and Caribou areas if wilderness designation occurred in these areas as recommended

Existing Designated Wilderness - The main difference in designated wilderness would be in the Opportunity Class I-III allocations (Table IV-15) Opportunity Class I, II and III (see Plan Glossary and Jedediah Smith Wilderness Process Paper) areas are represented by prescriptions 1 1 6, 1 1 7 and 1 1 8 respectively Alternative 1 contains prescriptions to match the current management situation Alternatives 2-6 *contain a variety of applications of the new prescriptions based on the LAC opportunity classes developed* by the Jedediah Smith Project Team as documented in a process paper on file in the Supervisor's Office These Opportunity Classes involve levels of recreation, research and maintenance and potential resulting changes in resource or social impacts Generally, Alternatives 2 and 3 would have the highest social interaction effects among recreationists and the greatest chance for disturbance of wildlife Alternatives 3M and 4 would have less chance of social interaction or wildlife disturbance impacts Alternatives 5 and 6 would have the least chance of user conflicts or impacts to the wilderness resources or values, since these two alternatives do not contain any Class III (highest recreation level) areas

*Cumulative Effects* - Alternative 1 has the highest probability of potential adverse impacts to wilderness character over time This is because it lacks a management and monitoring process to measure change in wilderness values *All other alternatives should have little cumulative impact or secondary effects,* since the LAC monitoring process should allow adverse interactions or impacts to be noted and a management response applied to appropriately deal with problems if they arise Likewise, designation of wilderness in any alternative would have little effect on timber harvest However, potential for effects on harvest would be greatest in Alternatives 5 and 6 which have the largest amount of recommended wilderness

Table IV-15 Opportunity Class and Acres for each Wilderness Prescription *For Designated Wilderness by Alternative 1/*

| Mgmt Rx | Opportunity Class | Alternative (Thousand Acres) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 3-M | 4 | 5 | 6 |
| 1 1 1 | NA 2/ | 40 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 1 2 | NA 2/ | 11 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 1 3 | NA 2/ | 32 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 1 4 | NA 2/ | 25 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 1 5 | NA 2/ | 27 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 1 6 | I | 0 | 83 | 83 | 102 | 102 | 115 | 115 |
| 1 1 7 | II | 0 | 39 | 39 | 20 | 20 | 19 | 19 |
| 1 1 8 | III | 0 | 13 | 13 | 13 | 13 | 0 | 0 |

1/ Opportunity Class - Class I is lowest recreation use level, and Class III is the highe
2/ Prescriptions 1 1 1 - 1 1 5 are for the Current Forest Plan, which does not use LAC/Opportunity Class

**Roadless Areas**

Indicators - Acres of roadless

*Consequences Which Vary by Alternative* - The acres of roadless in Table II-1 have not changed from the DEIS However, approximately 1,500 acres of roadless area in the Moody Creek area has been changed to non-roadless protecting prescription in the Final Plan as compared to the DEIS and Draft Plan This change represents less than two-tenths of one percent of the inventoried roadless acres The acres shown in Table II-1 reflect those protected by prescriptions which would prevent adverse impacts to wilderness potential The reason that Alternative 3M is approximately 70 M acres less than existing condition, is that the prescriptions in Alternative 3M would not provide complete protection of roadless character As shown

in Table II-1, the acres of roadless area protected by prescriptions would decrease slightly from Alternative 1 to Alternative 2 and then increase again through Alternative 6 Alternative 6 would have the highest amount, which approximates the existing inventory Roadless areas receive the highest level of management protection in Alternative 6 because of the recommended wilderness (1 3 prescription) allocation, which increases significantly between Alternatives 1 and 6 and because of lower motorized road and trail density standards Alternative 2 is an exception, in that it has no recommended wilderness acres in it As a result, cross-country summer OHV travel opportunities become significantly reduced between Alternatives 2 and 6 Table II-1 shows another example of the increasing restriction to OHV activity within the indicator entitled "acres roadless closed to summer OHV " This acreage increases from 243,000 acres in Alternative 1 to 378,000 acres in Alternative 5 and takes a sharp rise to 614,000 acres in Alternative 6 This pattern is similar to and verifies the recommended wilderness indicator discussed previously

Alternative 3M allows scheduled timber harvest within or near the Caribou City and Bear Creek Roadless areas adjacent to portions of those roadless areas on the Caribou N F. Therefore, project-specific planning for any harvest in these areas of the Forest will likely have to address the existing settlement agreement issues on the Caribou N F if harvest is proposed prior to the year 2000

*Cumulative Effects* - It should be noted that the Summer Transportation maps show some roads in roadless areas This is considered acceptable since these are service level D roads that are not maintained for travel by standard passenger vehicles Potential effects from timber harvest and roading would be highest under Alternative 2, with approximately 6,360 acres of roadless area possibly impacted during the next decade, compared to 71,600 projected in the 1985 Forest Plan However, this represents potential impact of only one percent or less to the inventoried roadless acres This potential impact declines to 4,970 acres in Alternative 3, 3,030 acres in Alternative 1, 2,990 acres in Alternative 4, to 2,910 acres in Alternative 3M, to 1,530 acres in Alternative 5 and no acres in Alternative 6

**Wild, Scenic and Recreational Rivers**

*Consequences Common to All Alternatives* - The eligibility of these rivers is not affected by the alternatives and all of the outstanding resource values will be protected by management prescriptions until such time as suitability studies are completed Suitability studies need to be completed for all of these segments This would need to be done on a priority basis for approximately one-third of the streams at a time, starting with those in the South Fork-Snake River Basin because of a current cooperative agreement with the State of Idaho These studies would be done in coordination with the State of Idaho's studies and legislative recommendations The remaining streams would probably be done in two additional studies - one for those in the Henry's Fork basin and a second for those in the Teton River basin and probably in that order of priority The values represented by State of Idaho Water Resources designations for the Henry's and South Forks will be protected by the proposed Wild, Scenic and Recreation classification prescriptions and the forestwide direction to protect native cutthroat trout watersheds

*Consequences Which Vary by Alternative* - Alternative 3M has deleted from eligibility the 3 5 miles for McCoy Creek which were shown as tentatively eligible pending a joint study with the Caribou N F That study was done in July 1996 and the findings were documented in a study report which has been added to the Wild, Scenic and Recreational Rivers Eligibility Determination Process Paper R Other changes in the Final Plan include changing one-half of a mile of the Henry's Fork at Upper Mesa Falls from a proposed classification of Wild to Scenic This was done because of the large amount of developments and public use within this section

**Visual Resources**

Indicator - Visual Quality Objectives (VQO)—Acres by VQO Class and associated ranges of VQO

*Consequences Which Vary by Alternative* - With the exception of Alternative 2, the alternatives generally trend toward larger allocations of VQO's for Preservation, Retention and Partial Retention going from

Alternative 1 to Alternative 6 (Table II-1)

It should be noted that the VQO data in Table II-1 is mostly displayed as a range of VQO, such as retention to partial retention This was necessary because the alternative prescriptions are described as a range, rather than with a single VQO Therefore, the analysis could not be done in a comparative manner to the existing VQOs shown in Chapter III

Alternatives 1-3 could result in some reduction in visual quality in areas of additional intensive timber harvest activity where VQOs of Modification and Maximum Modification are higher than in Alternatives 3M - 6 Alternatives 5 and 6 would tend to maintain and could improve existing visual quality except in areas of management needs For example, there are areas along major travel routes and use areas where greater restrictions on timber harvesting might prevent maintaining existing natural or created openings for scenic vistas over extended time periods Such restrictions could preclude enhancement of some landscapes in thick monotonous timber stands

**Developed Recreation**

*Consequences Common to All Alternatives* - Consequences will basically be the same for all alternatives because developed recreation facility construction and reconstruction will be about the same in all alternatives This will include heavy maintenance and some reconstruction of recreation facilities, but little new site development However, there may be some tendency for higher demand for developed recreation facilities in Alternatives 1-2, with decreasing demand in Alternatives 3-6 Demand for facilities in all alternatives will eventually become greater than supply Therefore, development opportunities on private or other lands will increase

*Consequences Which Vary by Alternative* - Generally, the higher the overall development and management activity levels, the higher the recreation use potential and associated development This is due to user response to higher amounts of available opportunities and road and trail access In Alternatives 1-2, there would be continuing diversity of opportunities with considerable motorized access As the alternatives (3-6) increase in motorized restrictions for wildlife protection the need for developed facilities may decline somewhat However, it is possible that the need for development of facilities such as trailheads to access wilderness, rivers, etc may increase over time even in these lower-scale development alternatives This increase might offset the projected decline in amount of developed facilities

*Cumulative Effects* - As the alternatives become more restrictive in terms of motorized access and opportunity (i e , Alternatives 3-6), there would likely be some displacement of recreationists from areas now being used This could place a heavier burden on existing developed facilities and create a need for new ones in a more concentrated geographic area Furthermore, as recreation demand continues to increase, displacement and crowding could have a negative effect on recreation and social experiences Additional displacement from adjacent heavy use areas such as Yellowstone National Park could further increase these effects

**Dispersed Recreation**

Indicators - Acres allocated to dispersed camping prescription

*Consequences Common to All Alternatives* - Approximately the same number of road-accessed, dispersed campsites (293) would continue to be used in all alternatives The number of sites would probably stay the same, because existing sites that would become unavailable due to new management allocations would simply be relocated to sites in other adjacent areas Approximately one-third of these are heavy-use sites used by large groups (35+) during most days of the summer

*Consequences Which Vary by Alternative* - In the mapping of alternatives, a varying number of heavy-use dispersed campsites was allocated to the 4 3 dispersed campsite management prescription Alternative

1 was given the least allocation for heavy-use dispersed sites (Table II-1) because very little management of dispersed sites is being done at present Alternatives 2-4 have the most acres allocated (approximately 2,800 each) and Alternatives 5-6 were designed with 1,500 acres each of dispersed site prescription (Prescription 4 3) because the latter two are intended as less management intensive alternatives The intent of this prescription allocation was to recognize the heavy public interest in these sites for camping and to place a management emphasis on maintaining them while also maintaining soil resources and aquatic and riparian habitat Provided funding for monitoring and management of these sites is available, alternatives with the highest acreage allocation should provide a better chance of maintaining recreation settings and opportunities, reducing or minimizing impacts to soils and vegetation, and maintaining or improving aquatic habitat This is because restrictions on use of open fires, tents and hardening of sites, etc could be put into effect to reduce impacts to vegetation and soils in or near aquatic zones

Summer-use trail mileage of nonmotorized system trails would increase across all alternatives This is due to restrictions for wildlife, watershed and recommended wilderness

*Cumulative Effects* - It is possible in Alternatives 1-3 that some existing, dispersed camping sites and trails would need to be moved or closed to resolve conflicts with wildlife or aquatic management standards and guidelines In Alternatives 3M through 6, displacement or closure of such areas would be more likely to occur because there is less access and because aquatic buffer restrictions are greater This could have an adverse impact on recreation experiences, due to having to add more facilities elsewhere or due to crowding/congestion in smaller geographic areas This could result in a need for increased monitoring, law enforcement and management costs to prevent unacceptable impacts to soil, vegetation, aquatic or wildlife resources

**Outfitters and Guides**

*Consequences Which Vary by Alternative* - The number of new outfitter and guide permits issued would probably be less in Alternatives 3M - 6 than in 1-3 Overall activity and amount of outfitted use would also be less in Alternatives 3M - 6 The type of activities outfitted in Alternatives 3M - 6 would be more related to backcountry, nonmotorized uses, due to increased restrictions on motorized and mechanized equipment in roadless, recommended wilderness and designated wilderness areas

*Cumulative Effects* - Cumulative impacts would be higher in Alternatives 1-3 than in 3M - 6 due to the higher demand for and access to recreation opportunities

**Special Uses (Recreation)**

*Consequences Common to All Alternatives* - Requests for special use permits for activities such as special events (e g , races, group activities, etc ) and outfitting and guiding will likely increase gradually for all alternatives At some point of saturation, the permitted activities would reach a plateau and level off

*Consequences Which Vary by Alternative* - The trend for special uses in response to alternatives would be similar to that for developed sites In Alternatives 1-3, there would be more increase in demand for special events and motorized access permits such as guided snowmachine or OHV trips. However, in Alternatives 4-6, the trend would be more towards undeveloped, backcountry experiences such as mountain biking, backpacking, horsepacking, hunting and similar opportunities The number of new special use permits would probably be less in Alternatives 3M - 6 than in 1-3 and overall recreation use under permitted activities would also be less

*Cumulative Effects* - Cumulative impacts of actual recreational use would likely be higher in Alternatives 1-3 than in Alternatives 3M - 6, but those impacts would tend to be in the more easily accessed areas and closer to existing developed areas or special interest roads, trails or attractions In Alternative 3M - 6, the additional cumulative impacts of recreation use would tend to be in more undeveloped, backcountry areas

with a more primitive experience level These, too, could have a measurable effect on wildlife, etc

SOCIAL AND ECONOMIC EFFECTS

Indicators - The indicators used are jobs, personal income, employee compensation, payments to local governments (from both the 25 % Fund and the Payments in Lieu of Taxes program), the Forest budget, population characteristics, land use patterns, effects on American Indians and civil rights concerns The factors are all discussed under the larger categories of lifestyles, attitudes-beliefs-values and social organization Background information on these indicators is contained in Chapter III and in the AMS

*Consequences Common to All Alternatives*

Population Characteristics - As discussed in Chapter III, the area is experiencing significant population increases This rate of increase is not expected to be significantly affected by any of the alternatives

The proportion of the area's population which is interested in the Forest for its recreational uses is expected to increase as recreational use continues to grow The proportion of the area's population which is interested in the Forest for timber and livestock production is expected to decline

Increasing development of private property located within the Forest or along its boundaries speaks to the desirability many people identify in having the Forest as a neighbor That increased development and its associated contributions to the local tax bases are expected to continue regardless of which alternative is selected Contractions in the local economy associated with a reduced level of timber harvest have already largely occurred The mills in St Anthony and Rexburg closed in 1992 and 1995 respectively Most of the equipment has long since been disposed of Reductions in the tax base associated with these closures occurred prior to the actions associated with the Forest Plan Revision

Increasing development may jeopardize traditional uses of private land like livestock grazing It may simply not make good sense economically for an individual to run livestock on land ripe for real estate development

The permanence of the Forest does in itself provide a certain attraction for those considering relocating a family or business Private property can be managed many different ways while the Forest will "always" be managed as a National Forest

Land Use Patterns - Lands adjacent to and within the Forest are increasingly passing from traditional uses like ranching to new uses like subdivisions Forest management has to consider these new neighbors when deciding how best to manage Forest resources with particular attention being devoted to fire protection, visual quality and recreation opportunity This challenge can be expected to continue to increase under all alternatives as the human population of the area increases

Some newcomers to the area have deviated from long-held local custom by closing off access through their property to Forest lands Their focus on having a Forest in a more natural condition has also been at odds with those who see the Forest as being a resource to be used These sorts of conflicts can be expected to continue, if not worsen, under all the alternatives due to continuing in-migration

American Indians - Input from the Shoshone-Bannock tribes indicates their strong concern for continuing the viability and abundance of plants, fish and wildlife on the Forest for the use of their members consistent with their treaty rights (Shoshone-Bannock 1992 a-b) Some of that input has focused on project-specific needs like providing designated routes for motorized access during the tribes' hunting season The tribes have also commented on their need to have the public and the Forest Service respect their rights to practice their native religion All the alternatives are structured so as to afford tribal members the

rights guaranteed them by treaty

Heritage Resources - No significant differences in alternatives would likely exist However, there would be more risk of disturbance of sites in Alternatives 1-3M than in 4-6 This risk is proportional to the incidence of ground-disturbing activities, as is the likelihood of discovering new heritage resource sites during project-specific site surveys

Lifestyles - The overall level of recreational use is expected to continue to increase along with its associated income and employment opportunities Increased recreation use means more people from outside the immediate local area visiting, spending money and in some cases investing in local property The overall increase in recreation is expected to occur regardless of which alternative is selected A certain percentage of the people visiting Yellowstone National Park can be expected to visit Forest attractions like Mesa Falls, for instance

As Yellowstone and GTNPs become more crowded the Forest can also expect to accommodate more of the resulting spillover traffic For instance, because snowmachining in Yellowstone National Park is reaching saturation levels, the Forest is expected to receive more of that traffic—regardless of which alternative is selected

The area also provides opportunities for further development of recreational activities The recently opened Grizzly Bear Theme Park just outside Yellowstone's boundaries is an example of the kind of development which might occur regardless of which alternative is selected for the Revision

All the alternatives provide for a ceiling of 20 MMBF per decade for material harvested outside the ASQ and fuelwood categories This material may be logged, if appropriate, to meet ecosystem objectives Any employment associated with this activity would be the same for all the alternatives

Civil Rights - No civil rights effects associated with the alternatives have been identified The contraction in the local timber industry (which has largely already occurred) is not expected to have disproportionate effects on women or minority groups No civil rights effects have been identified as varying across the alternatives

It is possible that with reduced budgets it will be more difficult for the Forest to achieve its affirmative action objectives Some have speculated that reductions in the Forest budget might disproportionately affect women and minorities The recent downsizing which occurred on the Forest did not have that effect Future downsizing efforts are not expected to have disproportionately negative effects on women or minorities

*Consequences Which Vary by Alternatives*

American Indians - Tribal members use the Forest in many different ways Some of these uses are identical to those of the general population and are described elsewhere herein Other interests may be unique to tribal members For instance, gathering Forest products is an important part of the culture of some tribal members Those who rely on open roads or motorized trails to access favorite spots may have to find alternative sites if motorized access is restricted It is also possible that closing motorized access to some areas may effectively deny access to the physically challenged

Discussions with the tribes to-date have not revealed a preference for more or less roading per se Concerns have been voiced about closing roads during the tribes hunting season — something that needs to be addressed on a continuing, site-specific basis In general though, as the alternatives reduce the amount of roads and trails available for motorized use, the time and effort involved in hunting is expected to increase That also applies to other tribal activities which require access to the land Reducing motorized use may improve the suitability of the land for vision quest and various other cultural activities

Each alternative maintains large areas of the Forest in both motorized and nonmotorized use but it is unclear whether one alternative meets overall Tribal needs better than another

The Forest recognizes the rights afforded the tribes by treaty and by law as outlined in Chapter III of this document All the alternatives comply with these requirements

Lifestyles - Under Alternative 1 the reduced timber harvests of the recent past (1992-1995) would increase slightly This would mean that more of those people whose livelihoods depend on timber harvesting would retain those jobs and the associated income Because access to fuelwood is frequently aided by timber harvests, people might find it a little easier to get fuelwood for home use

Those whose livelihoods are affected by the availability of Forest forage for domestic livestock would not expect to see their use of that resource significantly change in terms of overall use Area livestock producers would however, have to invest more resources into the improvement of range allotments without necessarily seeing any increased use of available forage

In terms of the way the Forest looks, people are likely to be generally pleased as young trees continue to reestablish in the large clearcuts of the Caldera and Plateau areas near Yellowstone National Park

People's reliance on the Forest as a recreation resource rather than as a provider of timber or livestock forage will continue Area schools and roads will be receiving less money from Forest activities that generate receipts through the 25 percent Fund However, PILT are expected to rise sharply as shown in Table IV-16, for all alternatives because of recent legislative changes The budget for the Forest (and its associated local expenditures for payroll and supplies) is shown in Table IV-17

What Table IV-16 and IV-17 show in their entirety is that the Forest's primary effect on the local economy derives from the recreational activity it provides No alternative is expected to significantly change the overall level of use — though usage is expected to shift over the landscape and by type Clark county stands apart in many respects because of its very small population It is the most rural of the counties in the APFEI It struggles to provide the services people normally expect to see a county government provide It has been hit hard recently by reductions in Forest 25 percent Fund payments which have not been made up by increased PILT Projections are however, that scheduled increases in PILT will more than make up for past reductions in 25% Fund payments

Attitudes, Beliefs, Values - Many people believe the Forest should be used to produce timber products in conjunction with other Forest uses Alternative 1 allocates a similar amount of land to intensive timber production as the existing Forest Plan It increases timber harvests from the levels of the recent (1992-1995) past

The Forest will be stepping up its enforcement efforts to ensure that roads and trails closed to motorized traffic are not used by motorized vehicles Even though in Alternative 1 these efforts are focused on enforcing existing motorized use restrictions, many people will see them as increased efforts to restrict motorized access Others who see the Forest as being currently over-roaded are not likely to accept Alternative 1's substantial reductions in motorized use through increased enforcement, more effective closures or an improved public involvement program

There is great skepticism as to whether the road closures can be effectively implemented without the support of the local citizenry The likelihood exists that there will be an increased level of conflicts between Forest Service personnel working to effectively close roads and trails and those who have grown accustomed to using them

The motorized access situation is particularly troublesome in that for a number of years, roaded access on the Forest was continually increasing—largely as a consequence of logging activity People had come to expect more and more motorized access In recent years, that access has been decreasing in order to

provide better habitat for wildlife Restricting motorized access can adversely or beneficially affect how people pursue their customs and traditions Closing a route to motorized access may deny one family access to a traditional wood-gathering site, for instance—while at the same time, another family may gain a mountain bike trail

Alternative 1 would likely not be acceptable to those whose belief systems are more tuned to nonconsumptive use of the Forest That is due in large part to the fact that in the past, Alternative 1 called for scheduling timber harvests at such high levels that they could not be continued into the future Thus, the frame of reference people have for logging on the Forest is that areas entered for logging are logged very heavily — not harvested at rates that are sustainable As formulated, Alternative 1 discontinues the practice of logging at levels that cannot be continued into the future It is unlikely though, that those whose value systems were offended by Alternative 1's high harvest rates of the past could come to accept this alternative even without the high harvest levels

Table IV-16 Projections of Payments in Lieu of Taxes (PILT) and 25% Fund Payments *
(Thousand dollars, nominal terms)

| COUNTY | Recent Levels (1992 - 1996) | Average Annual Figures for Decade 1 for Each Alternative | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 3M | 4 | 5 | 6 |
| BONNEVILLE | | | | | | | | |
| Total PILT | $398 | $708 | $700 | $704 | $710 | $715 | $720 | $727 |
| Targhee-Related 25% Fund | 40 | 47 | 52 | 46 | 39 | 32 | 25 | 15 |
| Total | 438 | 755 | 752 | 750 | 749 | 747 | 745 | 742 |
| CLARK | | | | | | | | |
| Total PILT | 39 | 66 | 66 | 66 | 66 | 66 | 66 | 66 |
| Targhee-Related 25% Fund | 82 | 96 | 106 | 94 | 78 | 66 | 51 | 31 |
| Total | 121 | 162 | 172 | 160 | 144 | 132 | 117 | 97 |
| FREMONT | | | | | | | | |
| Total PILT | 264 | 499 | 488 | 501 | 518 | 531 | 546 | 568 |
| Targhee-Related 25% Fund | 120 | 140 | 155 | 137 | 96 | 96 | 75 | 45 |
| Total | 384 | 639 | 643 | 638 | 627 | 627 | 621 | 613 |
| JEFFERSON | | | | | | | | |
| Total PILT | 142 | 227 | 227 | 227 | 227 | 227 | 227 | 227 |
| Targhee-Related 25% Fund | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Total | 142 | 227 | 227 | 227 | 227 | 227 | 227 | 227 |
| MADISON | | | | | | | | |
| Total PILT | 37 | 66 | 66 | 66 | 68 | 68 | 70 | 71 |
| Targhee-Related 25% Fund | 9 | 10 | 11 | 10 | 8 | 7 | 5 | 3 |
| Total | 47 | 76 | 77 | 76 | 76 | 75 | 75 | 74 |
| TETON | | | | | | | | |
| Total PILT | 53 | 98 | 96 | 98 | 101 | 103 | 106 | 109 |
| Targhee-Related 25% Fund | 20 | 23 | 25 | 22 | 18 | 16 | 12 | 7 |
| Total | 73 | 121 | 121 | 120 | 119 | 119 | 118 | 116 |
| APFEI | 933 | 1,664 | 1,643 | 1,662 | 1,690 | 1,710 | 1,735 | 1,768 |
| Targhee-Related 25% Fund | 272 | 316 | 349 | 309 | 257 | 217 | 168 | 101 |
| Total | 1,205 | 1,980 | 1,992 | 1,971 | 1,947 | 1,927 | 1,903 | 1,869 |

Columns may not total due to rounding
* PILT are a function of a given county's population, the area within it which is administered by the Forest Service, Bureau of Land Management, National Park Service Bureau of Reclamation Army, Fish and Wildlife Service, and Army Corps of Engineers, a schedule of payments the last of whose changes occurs in 1999, payments received from other federal programs, the rate of inflation and the level of funding PILT figures shown in this table use the schedule of payments for 1999-on, the 25 % Fund payments shown and funding at 72 852% (the average of the 77 373% funded in 1995 and the 68 330% funded in 1996) The figures shown do not relfect any increase for inflation which is a factor in the calculations

Big game hunting and in particular elk hunting, is a major event on the Forest Participants eagerly await the season's arrival The success they have enjoyed in recent years would be expected to continue with the selection of Alternative 1, although with continuing growth in the previously clearcut areas and more effective road closures, hunter success may be more difficult to achieve

Sense of Control, Sense of Self-Sufficiency - The recent (1992-1995) reduced timber harvest rates would be increased only slightly in Alternative 1 During the recent reduced harvest period, businesses that could not get raw material from other timber sources either closed down or continued operations at reduced levels Employees of those affected business had to find other jobs or relocate These recent harvest reductions occurred because the Forest could not generate the timber harvests projected in the existing Forest Plan and comply with the full body of existing laws, regulations and Forest Plan direction itself Projected decreases in fuelwood offerings are primarily associated with a recognition that the many restrictions on Forest fuelwood gathering have combined to make it less attractive for consumers

People whose primary interest in the Forest is on nonconsumptive use would likely have a mixed response to the Forest's management under Alternative 1 Many of the Forest's watersheds that were previously heavily logged would be left largely undisturbed in Alternative 1 — including much of the area in the highly visible US Highway 20 corridor used by so many people heading into Yellowstone National Park The timber harvest would, however, be moved into other areas to which a different set of recreationists might object

Local governments receive payments associated with the Forest from the 25 percent Fund, which remits to local governments 25 percent of Forest gross receipts, and from the PILT program, which bases payments to local counties on their population, their area in certain federal ownerships, their receipts from other federal sources, a schedule of payments, the Consumer Price Index and the level of funding Area counties receive substantially more from the latter program than from the former It is expected to increase sharply in the coming decade, as shown in Table IV-16 Payments from the 25 percent Fund are expected to change as shown in Table IV-16 Money from these funds help compensate the local governments for expenses they incur relative to the federally-owned lands within their jurisdiction

Social Organization Community Cohesion - Selecting the Continue the Forest Plan Alternative (Alternative 1) would likely have no perceptible effect on community cohesion

Social Organization Community Stability - People involved in the timber industry and its related industries would likely see only minimal increases in jobs More jobs will become available in the sectors serving recreationists The livestock industry would see little change other than the need to invest more money into permitted use areas For some who are operating on the margin, that could be the difference between maintaining an operation and getting out of the business, but overall use of the Forest forage resource by livestock is expected to change very little Those trends have been in place in the local area for some time They will continue under Alternative 1

Economic Efficiency - The primary measure of economic efficiency used in the analysis is Present Net Value (PNV), i e , "The difference between the discounted value (benefits) of all outputs to which monetary values or established market prices are assigned and the total discounted costs of managing the planning area (36 CFR 219 3) "

Dollar values were identified for recreation, timber, livestock grazing and water Included in the analysis are all costs of managing the Forest, including firefighting, law enforcement and monitoring

As shown in Table IV-17, the range of the PNVs is quite small The predominant reason for this small range is that recreation and water benefits, which comprise the great bulk of dollar-valued benefits, are not expected to vary by alternative Changes in recreation use may occur, such as concentration of use in smaller areas or movement of recreationists from one type of recreation to another The overall level of recreation is expected to be the same for all alternatives Likewise, no changes in water flows from the

Forest are anticipated by alternative Changes in benefits thus derive from changes in the range and timber programs

Variations in costs do occur across the alternatives and over time These are associated with different levels of timber harvest, increasing road restrictions and law enforcement and increasing costs of firefighting

Lifestyles - The numbering scheme of these alternatives stretches from 2 to 6 As the numbers assigned to the alternatives increase the alternatives move generally toward

- Fewer opportunities to make a living off the Forest by producing timber products or raising livestock
- Restricting those management activities which leave lasting visual reminders
- Increasing the possibility of lasting visual reminders due to unmanaged occurrences like wildfires
- Reduced incidence of livestock grazing
- Fewer roads and trails
- Fewer roads and trails open to motorized use
- Less cross-country motorized use
- More nonmotorized recreation opportunities
- Greater protection of wildlife habitat
- More recommended wilderness
- Less need for reforestation
- Faster watershed improvement

Timber-related employment would be expected to vary directly and proportionally to the projected ASQ

Reductions in domestic livestock grazing are significant in Alternatives 4, 5 and 6 The economic viability of grazing operations is likely to diminish as restrictions are placed on the allotments to improve resource conditions

Aesthetically, those desiring a more natural appearing landscape will see the heavily logged areas of the Forest coming back in new growth in all the alternatives The alternatives with higher levels of ASQ will harvest larger amounts of timber in other less-logged or nonlogged watersheds around the Forest Those areas will show the effects of humans working on the land, building roads, removing timber and establishing new timber stands in direct proportion to the amount of ASQ

Those alternatives with fewer miles of road and trail open for motorized use (as shown in Chapter II) would likely see increased concentrations of motorized trail use on the miles remaining open, lower increases in recreation dependent on motorized use, increases in nonmotorized recreation, or some combination thereof The way people recreate on the Forest will definitely change People will not have the same type of hunting experience in every alternative Opportunities for solitary experiences on the Forest will change as well

Attitudes, Beliefs, Values - The numbering scheme of these alternatives stretches from 2 to 6 Alternative 3M was substantially modified based on public input between the Draft and this Final document It provides many exceptions to the following generalization As the numbers assigned to the alternatives increase, the alternatives move generally toward

- Greater accommodation of those who feel the Forest's resources should be left to change without human intervention
- Less accommodation of those who feel the Forest's resources should be used for the benefit of humans
- Greater trust that developments which occur without human intervention will benefit the ecosystem

Table IV-17 Summary of Forest Economic Effects on the Area of Primary Economic Influence (APFEI)

| | Recent Levels | Average Annual Figures for Decade 1 for Each Alternative (Dollar figures are expressed as million dollars) | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 3M | 4 | 5 | 6 |
| Targhee-Related JOBS 2/ | | | | | | | | |
| Livestock | 102 | 103 | 99 | 99 | 99 | 93 | 86 | 86 |
| Recreation | 2,032 | 2,136 | 2,136 | 2,136 | 2,136 | 2,136 | 2,136 | 2,136 |
| Timber (ASQ-based) | 52 | 66 | 77 | 64 | 48 | 36 | 21 | 0 |
| Total | 2,186 | 2,305 | 2,312 | 2,299 | 2,283 | 2,268 | 2,243 | 2,222 |
| Targhee-Related EMPLOYEE COMPENSATION 3/ | | | | | | | | |
| Livestock | $1 0 | $1 0 | $0 9 | $0 9 | $0 9 | $0 9 | $0 8 | $0 8 |
| Recreation | 39 3 | 41 3 | 41 3 | 41 3 | 41 3 | 41 3 | 41 3 | 41 3 |
| Timber (ASQ) | 1 1 | 1 4 | 1 6 | 1 4 | 1 0 | 0 8 | 0 4 | 0 |
| Total | 41 4 | 43 7 | 43 8 | 43 6 | 43 2 | 43 0 | 42 5 | 42 1 |
| Targhee-Related PROPERTY INCOME 3/ | | | | | | | | |
| Livestock | $1 9 | $1 9 | $1 8 | $1 8 | $1 8 | $1 7 | $1 6 | $1 6 |
| Recreation | 25 1 | 26 4 | 26 4 | 26 4 | 26 4 | 26 4 | 26 4 | 26 4 |
| Timber (ASQ) | 0 9 | 1 1 | 1 3 | 1 1 | 0 8 | 0 6 | 0 4 | 0 |
| Total | 27 9 | 29 4 | 29 5 | 29 3 | 29 0 | 28 7 | 28 4 | 28 0 |
| Total APFEI TRANSFER PAYMENTS 4/ | | | | | | | | |
| Bonneville | $195 8 | $284 1 | $284 1 | $284 1 | $284 1 | $284 1 | $284 1 | $284 1 |
| Clark | 2 1 | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 | 3 0 |
| Fremont | 31 9 | 43 6 | 43 6 | 43 6 | 43 6 | 43 6 | 43 6 | 43 6 |
| Jefferson | 38 8 | 55 5 | 55 5 | 55 5 | 55 5 | 55 5 | 55 5 | 55 5 |
| Madison | 35 7 | 52 8 | 52 8 | 52 8 | 52 8 | 52 8 | 52 8 | 52 8 |
| Teton | 9 1 | 12 8 | 12 8 | 12 8 | 12 8 | 12 8 | 12 8 | 12 8 |
| APFEI | 313 5 | 451 8 | 451 8 | 451 8 | 451 8 | 451 8 | 451 8 | 451 8 |
| Total APFEI Payments in Lieu of Taxes | $0 93 | $1 66 | $1 64 | $1 66 | $1 69 | $1 71 | $1 74 | $1 77 |
| Targhee-related 25% Fund Payments | 0 27 | 0 32 | 0 35 | 0 31 | 0 26 | 0 22 | 0 17 | 0 10 |
| TOTAL | 1 21 | 1 98 | 1 99 | 1 97 | 1 95 | 1 93 | 1 90 | 1 87 |
| Forest Expenditures | | $12 3 | $12 6 | $12 7 | $13 5 | $12 3 | $12 2 | $10 3 |
| Forest Expenditures Plus Other Federal Costs | | 13 6 | 13 9 | 14 1 | 14 9 | 13 8 | 13 8 | 11 4 |
| Present Value of Benefits (PVB) 5/ | NA | $2,857 | $2,885 | $2,851 | $2,792 | $2,759 | $2,709 | $2,595 |
| Present Value of Costs (PVC) 5/ | NA | 369 | 403 | 410 | 427 | 396 | 397 | 380 |
| Present Net Value (PNV) 5/ | NA | 2,461 | 2,482 | 2,440 | 2,366 | 2,363 | 2,313 | 2,215 |
| Cash Receipts 6/ | $1 2 | $1 4 | $1 6 | $1 4 | $1 2 | $1 | $0 8 | $0 4 |
| Payments-in-Kind 6/ | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

Columns may not sum to totals due to rounding

1/ Recent levels for livestock are 1991-1993, recreation 1994-1996, and timber 1992-1995 Transfer payments are 1994 Payments to local governments are 1992-1996 Forest budget is 1992-1996 Dollar figures are not adjusted for inflation

2/ Source IMPLAN model Full and part-time employment seasonal and yearlong

3/ Source IMPLAN model 1992 dollar terms Employee Compensation comprises wages and salaries plus the value of benefits and any contributions to social security and pension funds by the employer and the employees Property Income comprises Proprietary Income (the income of sole proprietorships), Indirect Business Taxes (sales excise and value-added taxes, and customs duties), and Other Property Income (dividend interest and rental income) USDA Forest Service, 1993 Micro IMPLAN User's Guide Carol Tyler, Susan Winter, Greg Alvard Eric Siverts Land Management Planning Systems Group Fort Collins CO

4/ Income payments to persons for which no current services are performed These are payments by government and business to individuals and nonprofit institutions Generally they are paid in monetary form major exceptions are food stamps and medical vendor payments Government transfer payments to nonprofit institutions exclude payments for work under research and development contracts Source Regional Economic Information System (REIS) 1969-1994, Bureau of Economics Analysis, as maintained by the University of Virginia website http //www lib virginia edu/socsci/reis/reis1 html Decade 1 estimates were developed by regressing a year 2002 figure from the REIS data for years 1984 1989 1993 and 1994

5/ 150 year period of analysis, 4 percent discount rate, 1996 dollar terms

6/ Nominal dollars Average of 1994-1996 for recent levels Payment-in-kind are purchaser road credits Figures shown for the alternatives are in 1996 dollar terms

Social Organization (Community Cohesion and Stability) - Any of the alternatives would create stress on the local social organization The most stressful would likely be those alternatives near the extremes of the spectrum—1 and 2, 5 and 6—because they respond more clearly to the needs of one group rather than those of another For instance, Alternatives 5 and 6 recognize the needs of those favoring increases in nonmotorized recreation and protection of wildlife habitat as being more important than the needs of those who favor motorized recreation use and timber harvest on the Forest

In order for the local communities to come together in a positive manner, some sense of a new social order must emerge on the local scene that integrates the diverse views held on how the Forest should be managed Otherwise the tensions and stresses associated with an un-networked leadership are likely to continue The Forest can also work constructively in this area by maintaining its efforts in public involvement

To the extent that new social order is not achieved, there will likely be progressively more vandalism and trespass associated with the alternatives as they decrease motorized access on the Forest

**Facilities**

*Consequences Common to All Alternatives* - The individual facilities are not anticipated to have any major effects on environmental components beyond those existing today The Forest may alter and repair such facilities as administrative sites and other structures on the land owned by the federal government, as necessary to carry out its mission Any proposed facilities will be subject to environmental analysis to verify the need for the proposal, to review alternatives and to determine site-specific effects and mitigation measures as needed Decisions on proposals will be based on separate environmental assessments or impact statements

**Non-Recreational Special Uses**

*Consequences Common to All Alternatives* - There are approximately 204 existing special use permits, in addition to recreation special use permits on the Forest Ditches, canals, fences, power plants, powerlines, telephone lines, fences, roads, electronic sites, communication sites and dams are all examples of these uses

Any new proposed special use permits will be subject to environmental analysis to verify the need for the proposal, to review alternatives and to determine site-specific effects and mitigation measures as needed Decisions on proposals will be based on separate environmental assessments or impact statements

*Consequences Which Vary by Alternative* - Alternative 2 identifies two potential communication sites One site is on the Island Park Ranger District, located on Two Top Mountain The other is located on Palisades Ranger District on Big Elk Mountain The other alternatives are unchanged

## PRODUCTION OF COMMODITY RESOURCES

### Timber

Indicator - Volume Harvested, Allowable Sale Quantity (ASQ)

Other Indicators

1 Unscheduled Timber Harvested
2 Firewood/Product Volume
5 Harvest System
6 Timber Stand Improvement (TSI)
8 Suitable Timber Acres
6 Acres Harvested
7 Noninterchangable Component (NIC)
8 Harvest Volume as a Percent of Long Term Sustained Yield
9 Supply and Demand for Wood Products
10 Reforestation

*Consequences Common to All Alternatives*

Unscheduled Timber Harvest - This is volume harvested from forested lands other than ASQ lands All alternatives allow unscheduled timber harvesting for the following purposes

-Public safety,
-Visual quality,
-Long term maintenance of vegetation conditions,
-Commercial, personal use and camp firewood,
-Commercial and administrative post and pole cutting,
-Administrative use,
-Achieve mature growth standards,
-Meet specific recreation objectives,
-Attain desired vegetation characteristics,
-Improve wildlife habitat, and,
-Where needed to meet management prescription goals

The harvest volume allowed with unscheduled timber harvest for all alternatives is 20 0 MMBF for the decade Treatments will occur to implement EM, meet various prescription direction, goals and objectives and follow forestwide standards and guidelines Accomplishment of unscheduled timber harvest is not mandatory and requires site-specific NEPA analysis

Firewood/Product Volume - All alternatives allow harvest of wood products other than ASQ volume A goal of the Revision is to conduct an inventory for determining a sustainable level of firewood and then offer that level A current estimate of volume (firewood and products) that would be available from the forest annually during this planning period (the first decade of revision implementation) is 3 8 MMBF This compares to approximately 4 6 MMBF that was sold during Fiscal Year 95 and 6 3 MMBF which is a four-year average for the years of 1992-95

All alternatives harvest less firewood and product volume compared to the levels associated with the past planning period Demand for firewood is down, due to a decreased supply and the quality of offered material, over the past 4-5 years The anticipated supply level is below the expected demand This will result in more competition for sales and therefore, increased cost to purchasers Demand for product volume (post and poles) is increasing within the planning area There will be a decrease in availability of

personal use post and poles for farm and ranch use and a move toward competitive bids as demand will exceed supply The supply of poles may be augmented by pre-commercial thinning material as thinning opportunities will increase during this planning period

Harvest System - The ASQ acres for all alternatives will be harvested using even-aged silvicultural systems (clearcut, commercial thinning, seed tree, shelterwood and overstory removal) and uneven-aged systems (group selection, individual tree selection and commercial thinning) Specific direction regarding appropriate harvest systems for each species will be developed through silviculture prescriptions by certified silviculturists on a site-specific basis

Timber Stand Improvement - All of the alternatives allow 19,500 acres of TSI to be accomplished during the decade

*Consequences Which Vary by Alternative* - Table IV-18 displays the land classifications for the Forest

Table IV-18 Land Classification by Each Alternative

| | ALT 1 | ALT 2 | ALT 3 | ALT 3M | ALT 4 | ALT 5 | ALT 6 |
|---|---|---|---|---|---|---|---|
| Non-Forest land (includes water) | 681,079 | 681,079 | 681,079 | 681,079 | 681,079 | 681,079 | 681,079 |
| Forest land | 1,213 198 | 1,213,198 | 1,213,198 | 1,213,198 | 1,213,198 | 1,213,198 | 1,213,198 |
| Forest land withdrawn from timber production | 115 695 | 115,695 | 115,695 | 115,695 | 115,695 | 115,695 | 115,695 |
| Forest land not capable of producing crops of industrial wood | 84,458 | 84,458 | 84,458 | 84,458 | 84,458 | 84,458 | 84,458 |
| Forest land physically unsuitable | 309,945 | 309,945 | 309,945 | 309,945 | 309,945 | 309,945 | 309,945 |
| Tentatively suitable Forest land | 703,100 | 703,100 | 703,100 | 703,100 | 703,100 | 703,100 | 703,100 |
| Forest land not appropriate for timber production | 114,518 | 106,142 | 177,982 | 237,532 | 303,481 | 503,362 | 703,100 |
| Unsuitable Forest land | 624,616 | 616,240 | 688,080 | 747,630 | 813,579 | 1,013,460 | 1,213,198 |
| Total suitable Forest land | 588,582 | 596,958 | 525,118 | 465,568 | 399,619 | 199,738 | 0 |

Timber Prescription Areas - Table IV-19 displays the total number of acres within each alternative which are allocated to timber management activities The display represents total acres within timber management prescription boundaries (includes forested and nonforested)

Table IV-19 Total Acres Within Timber Management Prescriptions

| | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
|---|---|---|---|---|---|---|---|
| Timber Prescription Ac | 773,821 | 848,224 | 665,042 | 601,167 | 523,375 | 271,510 | 0 |

Suitable Timber Acres - All seven alternatives have different amounts of acres suited for timber management Table IV-20 displays the numbers of acres of suitable timber available by alternative Total tentatively suitable acres for the Forest are 703,100 The process used to determine total suitable acres is found in Process Paper C

| Table IV-20 Available Suitable Acres for Timber Management Activities | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| Suitable Acres | 588,582 | 596,958 | 525,118 | 465,568 | 399,619 | 199,738 | 0 |

Total suitable acres shown reflect tentatively suitable forest acres within the timber management prescription acres shown in Table IV-19 The difference between tentatively suitable acres (703,100) and those shown in Table IV-20, reflect specific constraints within the prescription mix in each alternative The alternatives with the largest acreages of suitable forest land will have the most effect on forested vegetation

Table IV-21 displays the current and projected future age class distribution on suitable lands if ASQ projections are met Alternative 6 is not shown in the table Alternative 6 has no suitable acres and proposes no scheduled harvest (ASQ), therefore, no change is anticipated during the decade from vegetation treatments

Table IV-21 Current and Projected 2007 Age Class Distribution On Suitable Lands 1/

**Alternative 1**

| Age Class | Present | Future |
|---|---|---|
| 0-9 (years) | 288,610 | 4,890 |
| 10-29 | 62,519 | 281,189 |
| 30-49 | 3,489 | 11,327 |
| 50-89 | 114,998 | 60,928 |
| 90-159 | 163,924 | 210,042 |
| 160 + | 15,043 | 20,206 |

**Alternative 2**

| Age Class | Present | Future |
|---|---|---|
| 0-9 (years) | 236,942 | 5,710 |
| 10-29 | 61,527 | 288,576 |
| 30-49 | 3,304 | 11,212 |
| 50-89 | 115,405 | 61,138 |
| 90-159 | 165,244 | 210,639 |
| 160 + | 14,536 | 19,683 |

**Alternative 3**

| Age Class | Present | Future |
|---|---|---|
| 0-9 (years) | 195,446 | 4,780 |
| 10-29 | 59,250 | 245,253 |
| 30-49 | 3,094 | 10,709 |
| 50-89 | 107,585 | 57,036 |
| 90-159 | 147,765 | 190,877 |
| 160 + | 11,977 | 16,462 |

**Alternative 3-M**

| Age Class | Present | Future |
|---|---|---|
| 0-9 (years) | 178,549 | 3,530 |
| 10-29 | 53,565 | 223,882 |
| 30-49 | 2,874 | 9,360 |
| 50-89 | 92,776 | 50,589 |
| 90-159 | 127,077 | 163,742 |
| 160 + | 10,728 | 14,466 |

**Alternative 4**

| Age Class | Present | Future |
|---|---|---|
| 0-9 (years) | 151,864 | 1,664 |
| 10-29 | 41,961 | 186,870 |
| 30-49 | 1,734 | 7,604 |
| 50-89 | 79,665 | 42,704 |
| 90-159 | 114,806 | 147,889 |
| 160 + | 9,590 | 12,888 |

**Alternative 5**

| Age Class | Present | Future |
|---|---|---|
| 0-9 (years) | 75,804 | 1,550 |
| 10-29 | 17,037 | 89,477 |
| 30-49 | 932 | 3,732 |
| 50-89 | 40,268 | 21,966 |
| 90-159 | 59,032 | 74,610 |
| 160 + | 6,666 | 8,403 |

1/ Displays the current and future age class distribution of suitable acres for each alternative during the planning period Changes between current and future are based on projected vegetation treatments (ASQ)

Acres Harvested - Table IV-22 displays harvest acres for each alternative Harvest acres are determined by the number of suitable acres within management prescriptions that allow timber harvest activities The differences between the acres shown below and the suitable acres shown above is due to specific con-

straints within each prescription area, past timber activities and that sustainability is based on a 150 year period of analysis rather than the first decade Process Paper B provides information on the constraints used for this analysis

| Table IV-22 Scheduled Harvest Acres by Alternative (ASQ) in Decade 1 | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| Harvest Acres (Yr) | 2,838 | 3,308 | 2,778 | 2,052 | 1,547 | 900 | 0 |
| Harvest Acres (Dec) | 28,380 | 33,080 | 27,780 | 20,520 | 15,470 | 9,000 | 0 |
| % of Total | | | | | | | |
| Forested Acres | 2 3 | 2 7 | 2 3 | 1 7 | 1 3 | 0 1 | 0 0 |
| % of Tentatively | | | | | | | |
| Suitable Acres | 4 0 | 4 7 | 4 0 | 2 9 | 2 2 | 1 3 | 0 0 |
| % of Alternative | | | | | | | |
| Suitable Acres | 4 8 | 5 6 | 5 3 | 4 4 | 3 9 | 4 5 | 0 0 |
| Mixed Conifer Harvest Acres | 553 | 645 | 542 | 400 | 301 | 175 | 0 |
| Spruce/Fir Harvest Acres | 11 | 13 | 10 | 8 | 6 | 3 | 0 |
| % Tractor Logging | 98 | 98 | 98 | 98 | 98 | 98 | 0 0 |
| % Cable Logging | 2 | 2 | 2 | 2 | 2 | 2 | 0 0 |
| Regeneration Harvest | | | | | | | |
| Clearcut | 187 | 218 | 183 | 135 | 102 | 59 | 0 |
| Shelterwood | | | | | | | |
| Prep Cut | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Seed Cut | 447 | 520 | 437 | 323 | 244 | 142 | 0 |
| Removal Cut | 302 | 353 | 295 | 218 | 164 | 96 | 0 |
| Selection | | | | | | | |
| Group | 507 | 591 | 497 | 367 | 277 | 161 | 0 |
| Individual Tree | 1,030 | 1,200 | 1,009 | 745 | 561 | 326 | 0 |
| Intermediate Harvest | | | | | | | |
| Commercial Thinning | 365 | 426 | | | | | |
| Salvage/Sanitation | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Timber Stand Imprvmt | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Reforestation | 465 | 500 | 465 | 415 | 380 | 340 | 230 |

Alternative 2 harvests the most acres during the decade followed by 1, 3, 3M, 4 and 5 There are no ASQ harvest acres associated with Alternative 6 All alternatives harvest 2 7 percent or less of the total forested acres and 5 6 percent or less of total suitable acres over the next decade

Harvest Volume - Harvest volume data is shown in Table IV-23 ASQ is the amount of timber volume that each alternative schedules to be harvested based on the number of suitable acres, average volume per acre and management direction within each prescription area

| Table IV-23 Harvest Volume Data (MBF) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| Annual (ASQ)<br>Decade (ASQ) | 11,068<br>110,680 | 12,900<br>129,000 | 10,834<br>108,340 | 8,000<br>80,000 | 6,033<br>60,330 | 3,510<br>35,100 | 0<br>0 |
| Average Vol/Ac | 3,900 | 3,900 | 3,900 | 3,900 | 3,900 | 3,900 | 0 |
| Doug Fir Volume<br>MX3 Volume | 5,136<br>2,157 | 5,986<br>2,515 | 5,027<br>2,114 | 3,711<br>1,559 | 2,800<br>1,174 | 1,630<br>683 | 0<br>0 0 |
| LPP Volume<br>MX Volume | 1,903<br>1,829 | 2,219<br>2,129 | 1,864<br>1,790 | 1,376<br>1,322 | 1,037<br>998 | 605<br>581 | 0<br>0 0 |
| SF Volume | 43 | 51 | 39 | 32 | 22 | 11 | 0 |

Alternative 2 provides the most volume harvested during the decade, followed by Alternatives 1, 3, 3M, 4 and 5 Alternative 6 does not provide any ASQ harvest

Volumes per acre are shown above in Table IV-23 The average volume per acre across the alternatives is about 3 9 MBF During the previous planning period (1981 - 1990) the planned volume per acre averaged around 5 0 MBF and the actual sawtimber volume per acre was 6 2 MBF The planned volume per acre is less than the previous planning period due to two wildlife constraints One requires 20 logs per acre in each decomposition class be left on-site These logs should be a minimum of 7-inch in diameter (average 9 5-inch in diameter) and be 20 feet long This would equate to about 0 75-1 0 MBF per acre left on the ground if adequate down and woody material is not available The second constraint requires leaving snags and snag recruitment trees For a 100 percent biological potential at the high end, 10 snags per acre and 25 snag recruitment trees per acre (half in the 7 0-inch-9 9-inch diameter class) would have to be left This would also equate to 0 65-1 25 MBF per acre being left standing

Noninterchangable Component (NIC) - Table IV-24 displays the number and percent of suitable acres by alternative that fall into a NIC NIC acres are ASQ acres associated with forested slopes between 40-60 percent, specific prescriptions (5 3 2 - 5 3 5, 5 7, 5 8 and 5 9 2) and areas designated as roadless This component indicates a portion of the ASQ which need not be substituted for from other areas or species types Volume programmed from a NIC need not be replaced by volume from other NICs Alternative 1 has the largest amount of NIC acres followed by Alternatives 3, 2, 3M, 4 and 5 Alternative 5 also has the least amount of suitable acres of any alternative with a scheduled timber harvest

| Table IV-24 NIC Acres by Alternative (Total Suitable) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| NIC Acres (Total)<br>% of Suitable Acres | 321,612<br>55 | 231,514<br>39 | 250,443<br>48 | 227,229<br>49 | 183,236<br>46 | 22,800<br>11 | 0<br>0 |
| Acres Roadless | 61,450 | 76,190 | 38,608 | 34,875 | 27,361 | 17,273 | 0 |
| Acres 40-60% Slopes | 8,029 | 8,684 | 7,348 | 6,498 | 6,500 | 4,754 | 0 |
| Acres both roadless and 40 - 60% slopes | 1,614 | 2,596 | 1,034 | 889 | 825 | 733 | 0 |
| Acres Prescriptions | 250,519 | 144,044 | 203,453 | 184,967 | 148,550 | 0 | 0 |

Table IV-25 displays the potential volume that could come from each NIC category

| Table IV- 25 Decadal NIC Volume Estimated by Alternative (MBF) | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| NIC Volume (total) | 38,446 | 63,063 | 45,856 | 32,000 | 18,969 | 5,967 | 0 |
| % of ASQ | 35 | 49 | 42 | 40 | 31 | 17 | 0 |
| Roadless | 11,817 | 24,804 | 19,383 | 11,349 | 11,661 | 5,616 | 0 |
| % | 30 | 40 | 42 | 35 | 62 | 94 | 0 |
| Slopes 40-60% | 1,090 | 1,291 | 1,084 | 780 | 601 | 351 | 0 |
| % | 1 | 20 | 3 | 3 | 3 | 6 | 0 |
| Prescriptions | 26,520 | 25,350 | 25,389 | 19,851 | 6,708 | 0 | 0 |
| % | 69 | 40 | 55 | 62 | 35 | 0 | 0 |

Table IV-26 displays which of the 16 Roadless Areas have the potential to be entered during the decade by alternative for ASQ harvest Alternative 2 enters the most and Alternative 6 does not enter any

| Table IV-26 Roadless Areas with Suitable Acres Assigned Potential Harvest Possibilites | | | | | | | |
|---|---|---|---|---|---|---|---|
| Roadless Area Name | 1 | 2 | 3 | 3M | 4 | 5 | 6 |
| Diamond Peak | | | | | | | |
| Italian Peak | | X | X | | | | |
| Garfield Mtn | X | X | X | X | X | X | |
| Mt Jefferson | X | X | X | X | X | X | |
| Reynolds Pass | X | X | | | | | |
| Lionhead | | X | | | | | |
| Two-top | X | X | | | | | |
| Winegar addition | | X | | | | | |
| West Slope Tetons | X | X | X | X | X | X | |
| Garns Mtn | X | X | X | X | X | X | |
| Palisades | | | | | | | |
| Bald Mtn | | | | | | | |
| Bear Creek | | X | X | X | X | | |
| Poker Peak | | | | | | | |
| Caribou City | | X | X | X | X | | |
| Pole Creek | X | X | X | X | X | | |

Long Term Sustained Yield Capacity (LTSYC) - LTSYC is the highest uniform wood yield from lands being managed for timber production that may be sustained, under a specified management intensity, consistent with multiple use objectives Table IV-27 displays the LTSYC on an annual basis for each alternative LTSYC generally shown in MCF (thousand cubic feet) is also displayed in MBF (thousand board feet) (estimate) terms for ease in comparing the alternatives

Table IV-27 Long Term Sustained Yield Capacity (LTSYC)

| | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
|---|---|---|---|---|---|---|---|
| LTSYC (MCF/Yr ) | 6,181 | 6,269 | 5,513 | 4,889 | 4,196 | 2,097 | NA |
| LTSYC (MBF/Yr ) | 25,997 | 25,632 | 22,868 | 20,275 | 17,403 | 8,693 | NA |
| Proposed ASQ Harvest Volume as % of LTSYC | 43 | 50 | 47 | 39 | 35 | 40 | NA |

LTSYC indicates the amount of volume that is produced annually from the suited acres shown for each alternative in the long term This includes growth from all trees and does not necessarily mean total merchantable volume that is available for harvest By law, harvest levels cannot exceed LTSYC Alternative 2 comes the closest to meeting its LTSYC but only utilizes 50 percent in decade 1, about one half the annual growth predicted in the long term Alternative 2 is followed by Alternatives 3, 1, 5, 3M and 4 respectively

Supply and Demand - Chapter III displays information on the current supply for sawtimber and wood products and the predicted demand from operators in our area Table IV-28 displays how the volume available from each alternative meets the demand

Table IV-28 Harvest Levels Compared to Projected Demand as Percentage of Annual Quantity

| | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
|---|---|---|---|---|---|---|---|
| % Present Demand | 42 | 47 | 41 | 33 | 28 | 20 | 11 |
| % Survival Level | 48 | 54 | 47 | 38 | 33 | 24 | 12 |

Present demand is for 35 7 MMBF of wood products Alternative 1 provides 11 07 MMBF sawtimber and 3 8 MMBF of firewood products for a total of 14 87 MMBF or 42 percent of demand Alternative 2 provides the most volume in terms of past supply and present demand but falls well short of historical levels provided by the Forest Even during recent years (1991 - 1994) the Forest provided 54 4 percent of the volume available to the local demand area Under Alternative 2, the Forest will supply about 47 percent of the volume available to the local market Following Alternative 2, Alternatives 1, 3, 3M, 4, 5 and 6 provide decreasing amounts Survival level is the minimum level of timber demand, from all operations, necessary to meet the needs of timber industry and personal use

Future Harvest Levels - Table IV-29 displays future levels of harvest It is assumed that management direction will remain the same for 150 years

| Table IV-29 Future Harvest Levels (Average Annual MBF) | | | | | | | |
|---|---|---|---|---|---|---|---|
| Decade | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| 2 | 10,076 | 17,472 | 8,989 | 7,970 | 6,841 | 3,419 | 0 |
| 3 | 10,136 | 17,723 | 9,043 | 8,018 | 6,882 | 3,440 | 0 |
| 4 | 10,121 | 18,677 | 9,029 | 8,005 | 6,871 | 3,434 | 0 |
| 5 | 10,205 | 18,960 | 9,105 | 8,072 | 6,929 | 3,463 | 0 |
| 10 | 25,290 | 25,634 | 22,563 | 20,004 | 17,403 | 8,582 | 0 |
| 15 | 25,632 | 25,868 | 22,868 | 20,275 | 17,403 | 8,698 | 0 |

Reforestation - Table IV-30 displays the level of reforestation activities expected during the planning period and will be a mixture of artificial and natural regeneration The amount of each will depend on the species harvested, harvest system used and suitability for natural regeneration during the planning period This will be determined through site-specific analysis

| Table IV-30 Forest Reforestation Acres | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Alt 1 | Alt 2 | Alt 3 | Alt 3-M | Alt 4 | Alt 5 | Alt 6 |
| Acres of Reforestation | 4,650 | 5,000 | 4,650 | 4,150 | 3,800 | 340 | 230 |

*Cumulative Effects*

Silvicultural Systems - Even-aged management systems will continue to be used resulting in even-aged stands Uneven-aged systems will also be used, but will have very little cumulative effect on forest succession as the seral stage generally does not change when these systems are used

The type of silvicultural system applied has a bearing on the environmental effects The systems are selected to achieve the objectives for an area, consistent with site-specific conditions

Even-aged systems - The even-aged system of clearcutting, shelterwood and seed tree cutting affect the vegetation by creating earlier seral stages This favors seral tree species (generally lodgepole pine, aspen and Douglas-fir) for the habitat type in which the cutting occurred

Clearcutting removes all the merchantable vegetation at one time and requires the starting of a new stand by either natural regeneration or by planting seedlings The new stand is generally established within 3 years of harvesting

The shelterwood harvesting system also moves the vegetation to earlier seral stages This system removes 60-70 percent of the vegetation at the first harvest, but leaves mature trees for shelter Shelter trees moderate the environmental effects in comparison to clearcutting Shelter trees provide shade that reduces soil temperature 10 to 30 degrees Fahrenheit and soil moisture is retained longer Both conditions increase survival rates of the seedlings produced from the seed of shelter trees or of planted trees When the new seedlings are two to eight feet tall, the overwood harvest is made, that is the shelter trees are removed leaving a new stand in the brush/seedling stage of succession

Uneven-aged systems - The uneven-aged systems (group and individual tree selection, including salvage) do not generally change the seral stage over a large area The individual tree selection system will not change the seral stage but may more quickly cause the stand to reach climax conditions, by favoring climax tree species and reducing the amount of the seral species The group selection (openings of one-fourth to two acres) will create sufficient light and growing space to obtain regeneration of the seral species Uneven aged systems have the least effect on the composition of the forested vegetation

Even-aged management appears to include the most efficient and silviculturally correct cutting system for the lodgepole pine type Uneven-aged systems appear to be the most efficient and silviculturally correct cutting system for spruce-fir types However, during project analysis, the different silvicultural cutting systems will be reviewed to determine which systems best meet the silvicultural requirements of the tree species and site conditions of individual stands

The harvesting of fuelwood will not substantially affect the forested vegetation Fuelwood activities generally remove only the dead material (standing or down), thinning materials from beneath the crown canopy and slash from commercial timber harvests This type of activity does not move stands forward or backwards in succession

Intermediate cutting methods - Intermediate cutting methods such as thinning from above or below will be used throughout all timber types, intermediate cuts will be used to manage stand densities

Fuelwood - The recent levels of fuelwood availability will continue to decrease due to the low number of acres treated under any alternative Requirements for more down and woody vegetation and maintaining snags within harvest units will also reduce available fuelwood material offered in slash piles Use of aspen for firewood material could increase due to the increased aspen acreage that is available for treatment

Fire - The hazard from wildfire on the suited lands should remain about the same as in the past as the acres available to harvest, once harvested, will not reduce the composition of the mature component significantly The hazard on the unsuitable lands should remain constant or slightly increase as the stands continue to mature and no activities are initiated to reduce fuel loading

Insects and Disease - Insects and disease will continue to be present in both the suited and unsuitable lands Vegetation management activities planned during this period will decrease in amount on the suited acres, but even a 2 percent or less reduction in mature stands provides some benefit in reducing insects and disease problems On the unsuited lands, insect and disease could build up to epidemic proportions

Growth on the managed stands would increase with management intensity As more lands are developed, *total growth would increase Growth on the unsuitable lands would remain constant or decrease as the* stands increase in age and are past culmination in the later seral stages

**Livestock Grazing**

Indicators -

1 Amount of permitted AUMs and livestock
2 Number of grazing permittees and permits
3 Amount of acres open to grazing
4 Number of allotments open to grazing
5 Acres of Range Management Prescription 6 1 (a-b)

*Consequences Common to All Alternatives* - For Alternatives 1 through 6, three vacant sheep allotments (1,483 AUMs) on the Island Park Ranger District and four vacant sheep allotments (2,830 AUMs) on the Ashton Ranger District will be closed to sheep and cattle grazing to better manage grizzly bear habitat, one vacant sheep allotment (585 AUMs) and one vacant sheep permit (540 AUMs) on the Dubois Ranger District and another vacant sheep allotment (750 AUMs) on the Palisades Ranger District will be closed to sheep and cattle grazing to improve watershed and soils conditions (Process Paper L) This reduction of 6,188 sheep AUMs reduces the number of open sheep allotments from 78 to 69 and closes 95,409 acres to grazing of domestic livestock Since these allotments/permit are currently vacant, this reduction in a real sense has already occurred Presently, based on 1993 data, the numbers of livestock actually using the forest are 20,362 cattle for 84,212 AUMs and 54,478 sheep for 44,006 AUMs The reasons for the

difference between actual and permitted use are 1) the grazing capacities (livestock numbers and AUMs) for the vacant sheep allotments are counted as permitted because they are open allotments that are available for grazing, but because of resource concerns have not been grazed the last eight to ten years, and 2) livestock numbers and AUMs annually fluctuate because of market trends, changes in ranching operations, annual forage availability based on climate and weather conditions and implementation of changes in an AOP and/or AMP

For Alternatives 1 through 6 and the existing situation, all reconstruction of existing range improvements and all proposed new improvements will be needed equally These improvements are needed to 1) arrest deteriorated range conditions and improve rangeland health, 2) maintain or implement improved grazing systems and AMPs and 3) mitigate site-specific situations identified in previously completed NEPA documents All proposed new nonstructural improvements (burns, spray, rotobeat, seedings, etc ) and noxious weed control will be implemented to improve ecological conditions by meeting management objectives such as DVC and PFC No increase in AUMs or livestock carrying capacity is anticipated from nonstructural range improvements

There are 15 vacant sheep (S&G) allotments and no vacant cattle (C&H) allotments on the forest As previously mentioned, nine vacant sheep allotments and one vacant sheep permit, for a total of 6,188 AUMs, will be immediately closed to cattle and sheep grazing when the Record Of Decision is signed The remaining six vacant sheep allotments (4,206 AUMs) will remain open to grazing to be used by either permanent or swing sheep permittees (Table III-40) Two of these sheep allotments are on the Island Park Ranger District (Blue Creek and Hotel Creek) and are phase-out allotments (see Alternative 3M discussion and Process Papers L and N).

Depending on specific management prescription application, which varies by alternative, all permittees will be required to comply with the OROMTRD standards on their allotments (Process Paper N) Most grazing allotments are in more than one management prescription area

*Consequences Which Vary by Alternative* - Unless otherwise specified, all environmental consequences are calculated to occur by the end of the first decade The effects of implementation on indicators for all alternatives are shown in Table IV-30

With the existing Forest Plan (Alternative 1), livestock management (grazing) systems are utilized to maintain or improve forage outputs for livestock and wildlife and to protect and improve watershed conditions Direction is not given to sustain livestock use at any specified level The direction is to "Obtain optimum use of all suitable grazing lands on the Forest consistent with other resource needs " Information about this direction and how well the existing Forest Plan met objectives can be found in the Range Section of the AMS

Riparian utilization in Alternative 1 is expressed as a percentage of forage utilized and ranges between 30 and 65 percent for herbaceous vegetation and 20 to 40 percent for browse, depending on the type of grazing system and range condition There is a 100 foot buffer zone on each side of all perennial streams

Range Management Prescription 6 1 (a-b) provides two options Category (a) allows motorized cross country travel with no open road density while Category (b) allows no motorized cross country travel and has an open road density of less than or equal to 2 0 miles/square mile Presently, with the existing situation, unless otherwise shown as closed, all areas/roads/trails on the forest are open for motorized cross country travel with no road density restrictions

Compared to the existing situation, Alternative 1 implements Range Management Prescription 6 1 (a-b) on 204,197 acres (202,701 acres in Category (a) and 1,496 acres in Category (b)) and maintains the existing number of grazing permits, permittees, sheep numbers and cattle allotments open to grazing Compared to the existing situation, Alternative 1 projects a slight increase (one percent) in cattle numbers and cattle AUMs (1,201 AUMs) and reduces the number of sheep AUMs by 612 As previously mentioned, a 6,188 AUM reduction in sheep grazing has already occurred

Alternatives 2-6 express riparian forage utilization in terms of stubble height of key species on and away from the HGL and have wider buffer zones than Alternative 1 or the existing situation With Alternatives 2-6, livestock management (grazing) systems are utilized to maintain or improve forage outputs for livestock and wildlife and to protect and improve watershed conditions The amount of protection varies among alternatives Direction is not given to sustain livestock use at any specified level

Alternative 2 implements an AIZ Prescription which provides for a 4-inch stubble height of key plant species at the HGL for all riparian areas either at the end of the grazing period or for all pastures grazed after September 1 Alternative 2 has buffer widths ranging from 100 feet to 200 feet on each side of all fish bearing streams, depending on the subsection Compared to the existing situation, Alternative 2 implements Range Management Prescription 6 1 (a-b) on 193,403 acres (96,969 acres in (a) and 96,434 acres in (b)) and maintains the existing number of grazing permits, permittees and cattle allotments open to grazing

Table IV-31 Comparison of Indicators by Alternative by the End of Decade 1

| Indicator | Existing | 1 | 2 | 3 | 3-M | 4 | 5 | 6 |
|---|---|---|---|---|---|---|---|---|
| AUMs 5/ | | | | | 1/ | 1/ | 4/ | 4/ |
| Sheep | 55,295 | 48,495 | 48,195 | 48,195 | 48,195 | 47,596 | 39,140 | 39,096 |
| Cattle | 93,480 | 94,681 | 90,341 | 90,156 | 90,156 | 82,217 | 82,217 | 82,217 |
| Livestock 5/ | | | | | | | | |
| Sheep | 71,985 | 61,985 | 61,585 | 61,585 | 61,585 | 61,585 | 44,045 | 44,045 |
| Cattle | 22,066 | 21,266 | 20,016 | 20,016 | 20,016 | 18,216 | 18,216 | 18,216 |
| Permittees | | | | | | | | |
| Sheep | 33 | 33 | 33 | 33 | 22 | 22 | 22 | 22 |
| Cattle | 142 | 142 | 142 | 142 | 142 | 132 | 132 | 132 |
| Permits | | | | | | | | |
| Sheep | 76 | 76 | 76 | 76 | 60 | 60 | 60 | 60 |
| Cattle | 201 | 201 | 201 | 201 | 201 | 187 | 187 | 187 |
| Acres | | | | | | | | |
| Open 3/ | 1 466 | 1 371 | 1 371 | 1 371 | 1 371 | 1 371 | 1 245 | 1 245 |
| Closed 3/ | 401 | 496 | 496 | 496 | 496 | 496 | 622 | 622 |
| Allotments 2/ | | | | | | | | |
| Sheep | 78 | 69 | 69 | 69 | 69 | 69 | 53 | 53 |
| Cattle | 76 | 76 | 76 | 76 | 76 | 76 | 76 | 76 |
| Acres Rx 6 1 | | | | | | | | |
| "a" 3/ | 0 | 202 7 | 97 0 | 97 0 | 0 | 0 | 0 | 0 |
| "b" 3/ | 0 | 1 5 | 96 4 | 95 6 | 157 4 | 171 2 | 32 2 | 17 5 |

1/ Phase out of sheep allotments/AUMs in bighorn sheep and grizzly bear habitat is expected to be completed within 30 years No reductions associated with the phase-out are anticipated over the coming decade
2/ Allotments open to grazing
3/ Millions of acres
4/ These figures reflect the immediate closure of sheep allotments/AUMs in bighorn sheep and grizzly bear habitat
5/ Based on 1993 Forest Service Range Management Information System (FRAMIS) data

The grazing period is defined as the period of time livestock are using a specified pasture or unit within a grazing allotment, as identified in the yearly AOP or the AMP The end of the grazing period will not coincide with the end of the permitted season, unless that pasture or unit is grazed last The grazing period for a pasture or unit is shorter and not equal to the grazing season because there is usually more than one unit or pasture per allotment The permitted season for the allotment is shown on the permit, the

grazing period for pastures or units is shown in the AOP

Compared to the existing situation, Alternative 2 projects additional reductions of sheep and cattle numbers and AUMs (Table IV-30) Alternative 2 will also require grazing permittees to comply with OROMTRD restrictions on an additional 96,434 acres (Category (b) portion of the 193,403 acres) As a result of providing improved riparian management, reductions in livestock AUMs are projected Forestwide, a three percent reduction in cattle AUMs can be expected with implementation of Alternative 2 Most of the livestock reductions will occur on the Dubois Ranger District with reductions of 300 sheep AUMs and 4,224 (11 percent) cattle AUMs

Alternative 3 is the same as Alternative 2, except for two items 1) a slight reduction in cattle AUMs (185 AUM difference) and 2) the number of acres in Range Management Prescription 6 1 b (850 less acres in Alternative 3)

Alternative 3M, like Alternatives 2 and 3, implements the AIZ Prescription which provides for a 4-inch HGL stubble height for all riparian areas either at the end of the grazing period or for all pastures grazed after September 1 However, Alternative 3M has wider buffer widths than Alternatives 2 or 3, which range from 150 feet to 300 feet on each side of all fish-bearing streams, depending on the subsection

For cattle numbers, AUMs, permittees, permits and allotments, Alternative 3M has the same effects as Alternative 3

Compared to the existing situation, Alternative 3M implements a phase-out of sheep grazing on an opportunity basis to better manage grizzly bear and big horn sheep habitat on 16 open sheep allotments and one grazing permit on the Dubois, Island Park and Teton Basin Ranger Districts (Process Papers L and N) This phase-out will reduce sheep grazing by an additional 8,456 active AUMs The reduction sustained as a result of grizzly bear habitat amounts to 3,964 AUMs on nine allotments, the reduction associated with bighorn sheep habitat amounts to 2,660 AUMs on five allotments and one permit and the reduction associated with both bighorn and grizzly bear habitat is 1,832 AUMs on two allotments The phase-out not only reduces the sheep grazing on the allotments, but closes them to grazing as well, including cattle As a result, an additional 125,853 acres would be closed on an opportunity basis (Process Papers L and N) As explained in Process Paper N, the allotments would be closed after all sheep are gone from the subsection

Because of additional resource concerns, another 599 AUM reduction in sheep AUMs is anticipated with Alternative 3M This reduction is not associated with the phase-out of sheep grazing

Compared to the existing situation, Alternative 3M implements Range Management Prescription 6 1 (a-b) on 157,385 acres All of which is in category b which allows no motorized cross country travel and has an open road density of less than or equal to 2 0 miles/square mile It also has the same effects on cattle grazing activities as Alternative 3

Compared to the existing situation, Alternatives 4, 5 and 6 will achieve the best riparian and upland vegetation conditions in the shortest amount of time while still maintaining livestock production (Process Paper J), but will result in additional reductions of cattle AUMs It is estimated that implementation of Alternatives 4,5, or 6 will reduce cattle AUMs 12 percent (11,263 AUMs) forestwide Alternative 4 implements the AIZ Prescription which provides for a 6-inch stubble height for riparian forage utilization at the end of the grazing period or for all pastures grazed after September 1 and has buffer widths ranging from 150 feet to 300 feet on each side of all fish-bearing streams, depending on the subsection The most significant reductions in cattle AUMs will occur on the Dubois, Palisades, Teton Basin and Ashton Ranger Districts with projected reductions of 7,986 AUMs (22 percent), 1,770 AUMs (10 percent), 486 AUMs (8 percent) and 925 AUMs (6 percent) respectively

Alternative 4 also implements the same phase-out of sheep grazing on the same allotments/acres for the same reasons as Alternative 3M and has the same consequences for the Dubois, Island Park and Teton Basin Ranger districts

Compared to the existing situation, Alternative 4 implements Range Management Prescription 6 1 b on 171,222 acres, all of which is in Category (b) which allows no motorized cross country travel and has an open road density of less than or equal to 2 0 miles/square mile

Alternative 5 is somewhat similar to Alternative 4, except for two items Alternative 5 does not allow sheep grazing in critical Grizzly Bear or bighorn sheep habitat As a result, all sheep grazing (nine allotments) on the Island Park Ranger District and four to five sheep allotments on the Teton Basin Ranger District and two winter allotments and one winter permit on the Dubois Ranger District will be immediately closed to sheep grazing rather than phased-out Alternative 5 implements Range Management Prescription 6 1 (b) on 32,186 acres

Except for a 44 AUM reduction in sheep AUMs on the Dubois Ranger District and the acres of Range Management Prescription 6 1, Alternative 6 is identical to Alternative 5 Alternative 6 implements Prescription 6 1 (b) on 17,484 acres

*Cumulative Effects* - Because ranching operations and allotment conditions vary across the forest, it is difficult to determine how each individual allotment or permittee will respond to implementation of the standards, guidelines and prescriptions associated with each alternative For example, a change in AUMs can be the result of changes in the number of livestock, permitted season or a combination of both As demonstrated by past situations the loss of AUMs can sometimes be mitigated while improvement in other resources such as fish and wildlife habitat and other noncommodity indicators occur

Forestwide, Alternative 1 will increase cattle AUMs and maintain the sheep AUMs presently in use on the Forest However, on a Forestwide scale, Alternative 1 will not meet the objectives

Compared to the existing situation Forestwide, the implementation of Alternatives 2, 3 or 3M are not likely to significantly or adversely affect the majority of livestock grazing permittees with grazing privileges on the Forest, except for cattle permittees on the Dubois Ranger District Improved riparian conditions as a result of implementation of a 4-inch stubble height along the HGL in the AIZ, is the main reason for the expected reduction in cattle AUMs across the Forest

Compared to the existing conditions, implementation of Alternatives 4, 5 or 6 will significantly affect livestock permittees on all Ranger Districts Because of improved riparian conditions resulting from implementation of the 6-inch stubble height standard along the HGL, Alternatives 4, 5 and 6 will have the most impact to cattle permittees, especially those on the Dubois and Palisades Ranger Districts Improved grizzly bear and bighorn sheep habitat resulting from the immediate closure of some sheep allotments in Alternatives 5 and 6 will have the most impact to sheep permittees, especially those on the Island Park, Teton Basin and to a lesser extent, Dubois Ranger District

## IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

Irreversible commitment of resources refers to a decision that disturbs or reduces a nonrenewable resource or a renewable resource to the point that renewal can only occur over a long period of time and/or at a great expense Examples are minerals extraction, loss of cultural resources and construction of major roads or hydroelectric projects

Irretrievable commitment of resources refers to lost production or use of renewable resources due to land use decisions This represents the opportunities foregone for the period of time that the resource is unavailable

Mineral extraction activities will require site-specific environmental analysis that explores the extent and consequences of irreversible commitments To lessen the irreversible commitment of resources, it is the Forest manager's job to provide mitigation that will minimize adverse environmental impacts

The Forest has about 2,791 miles of open or restricted roads Table IV-12 shows what will happen to that figure over the coming decade Open and restricted road miles may be regarded as being effectively withdrawn from vegetation production Roads reclaimed or obliterated may be regarded as beginning to regain their capability to produce vegetation

There would be some irreversible losses to soil hydrologic function and site productivity in areas where management activities are directed Adherence to soil quality standards and guidelines, which are designed to reduce adverse impacts to an acceptable level, should allow soils to recover their natural properties for resiliency (e g , soil organic matter in both surface and subsoil layers, available water holding capacity, etc )

Road construction, timber harvest, grazing, dispersed recreation and motorized recreation OHV use have the highest likelihood of producing irreversible damage to the soil resource Wildfires within the cool, dry Douglas-fir forests, moist Douglas-fir forest and mid and lower elevation subalpine forests, where one or more fire cycles has elapsed due to fire suppression, might result in fires having a higher severity and intensity, resulting in irreversible losses (e g , changes in the soils' chemical and physical properties or in the development of hydrophobic layers with subsequent increased overland flows and accelerated erosion) to the soil resource

The portions of the inventoried roadless areas that are developed by roading and timber harvest will be lost for future wilderness consideration Estimated acres that would be developed at some point during the next 150 years range from 0 acres in Alternative 6 to 63,600 acres in Alternative 2 Activities that are not scheduled by the Revision or are unforeseen, such as those external to the Forest Service (mining, power transmission lines), may also be regarded as an irreversible or irretrievable commitment of resources See Table II-1 for a summary of wilderness and undeveloped acreage by alternative.

Adverse Environmental Effects that Cannot be Avoided - Adverse effects on some components of the environment cannot be avoided by actions proposed under the alternatives Actions to benefit one component may have at least temporary adverse effects on another A broad range of alternatives have been formulated, each with its own resource or environmental emphasis. Alternatives include management standards and guidelines, along with mitigation measures, to avoid or reduce adverse environmental effects Monitoring will be used to measure how effective the standards and mitigation measures are in reducing adverse effects

Some of the adverse effects that cannot be avoided in all alternatives include the following

- Forest management activities frequently result in impacts upon the visual resource. These changes in the landscape, although usually temporary, are often objectionable to some observers

- A short-term increase in fire hazard will occur due to waste material, limbs and tops left on the ground during and following timber harvest operations

- A long-term increase in fire hazard will occur because actions are not being taken to reduce fuel loadings which are judged to be in excess of those which existed in the past

- Intermittent and localized decrease in air quality may result due to dust from road construction, road maintenance and use, and due to smoke from wildfires, prescribed burns and campfires

- Short-term localized increases in soil erosion, vegetation degradation and stream sedimentation may occur due to land-disturbing activities

- Elimination of small areas from vegetation production will occur due to construction of permanent physical developments

- Potential for additional conflicts between recreation use and other land use activities will increase in some alternatives

- Temporary disturbance of wildlife and their habitat conditions in localized areas may result from increased human activity and changed vegetation conditions

- Energy will be used to manage and provide goods and services

- Increased soil compaction may occur on activity sites such as timber harvest areas and recreation areas

Many of these adverse effects are temporary, occurring during the site-specific activity, or transitional as forest vegetation progresses through seral stages

Short-term Uses of the Human Environment and the Maintenance of Long-term Productivity - Short-term uses are those that generally occur on a yearly basis, such as livestock grazing of forage or recreation site irrigation as a use of water Long-term productivity refers to the capability of the land to provide for future generations The quality of life for future generations is determined by the capability of the land to maintain its productivity

Alternatives that have the greatest amount of timber harvest activity will result in the most short-term and continuing activity that may have an effect on the long-term productivity Alternative 2 has the most potential for long-term effects, while Alternative 6 has the least Other alternatives present middle range effects

The loss of N F grazing privileges can cumulatively affect the stability of traditional values and income opportunities of the local rural areas For example, if a local permittee losses a grazing privilege that accounts for 35 percent of the time needed to sustain livestock production for the overall ranching operation, then loss of the permit needs to be made up elsewhere The purchase of additional hay or feed, reducing the base livestock herd or acquiring pasture elsewhere are ways this loss can be mitigated If the 35 percent cannot be made up and the base herd is reduced to a level where it is no longer profitable or the costs for additional hay or pasture are too expensive or not available, then the ranch or portions of the ranch could be sold Ranches and farms sold in this region have typically been sold for housing units or subdivisions The loss of open space (ranch and farm land) that often also provides quality wildlife habitat, is an irreversible and irretrievable commitment of resources, resulting in direct adverse effects to such things as wildlife and fish habitat, aesthetics and the economic and social environment

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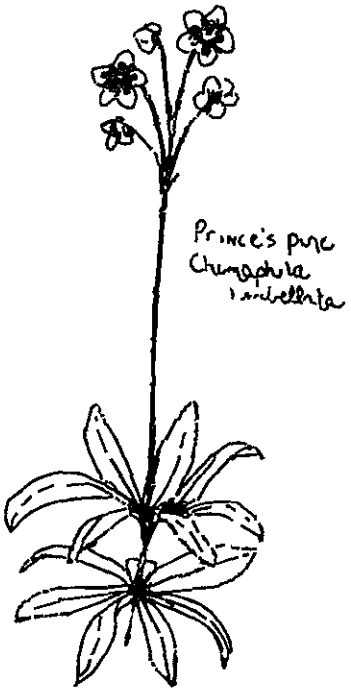
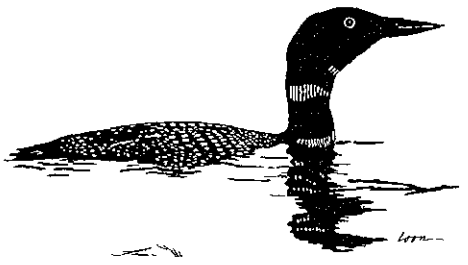



# Appendix

## Appendix A. Response to Public Comments (Separate Document)

## Appendix B. Update to The Roadless Areas Process Paper For Wilderness Recommendation Rationale

## Appendix C. Summer And Winter Access



United States
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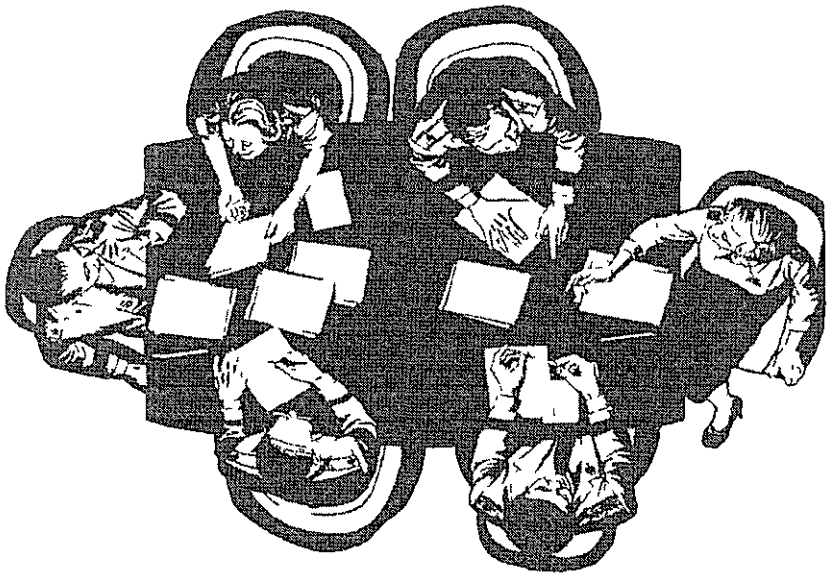
**Intermountain Region**

**Targhee National Forest**

# Appendix A Response To Public Comments

Targhee National Forest
1997 Revised Forest Plan



This Appendix A to the FEIS is a separate document because of its large size

# APPENDIX B

## UPDATE TO THE ROADLESS AREAS PROCESS PAPER FOR WILDERNESS RECOMMENDATION RATIONALE

The following text is provided as an update of the Roadless Process Paper This narrative rationale for/ against proposing each of the 16 remaining roadless areas as recommended wilderness in the Revised Forest Plan (Alternative 3M) is based on the ratings shown in Table IV-14 as shown in Chapter IV of the FEIS

Italian Peak—This area was recommended for wilderness consideration for the following reasons

The area has moderate manageability potential, low impacts to natural integrity, and high opportunity for solitude It also has a high degree of opportunity for challenging experiences Topography, vegetation, rock formations, and size of the area enhance the opportunity for primitive recreation This area is recommended in the current Forest Plan and is adjacent to a recommended area on the Beaverhead National Forest The total area recommended on both forests would be approximately 62,000 acres, which would be a fairly good wilderness package, although on the small end of the scale The southern boundary for this area has been adjusted slightly from that displayed in the DEIS in an effort to match the boundary in our current Travel Plan Map This line was selected for ease in boundary management and to select the area with the least impact potential from roads and motorized activity There has been widespread public support for this area

Diamond Peak—A portion (33,000 acres) of this area shown in the DEIS in Rx's 2 2, 3 1 1a, and 3 2c north of Pass Cr is recommended and has been changed in the FEIS to Rx 1 3 accordingly, for the following reasons

The area is contiguous with 06-601 on the Salmon-Challis National Forest, and the Challis Forest Plan and EIS contains an analysis and recommendation that the entire area NOT be recommended as wilderness However, because of the area's large size (166,639 acres), natural integrity, high opportunities for solitude and challenging experience, and considerable public comments, it should be considered for proposed wilderness contingent on additional analysis by the original lead forest (Salmon-Challis) We have contacted the Salmon-Challis Forest and requested they conduct additional analysis on this area as their Plan is revised The final decision on recommendation for consideration as wilderness will be made based on that Forest's plan

Garfield Mountain—This area was not recommended for wilderness consideration for the following reasons

This area has moderate impacts to natural integrity by physical developments for mining and grazing The area is also very linear and narrow in shape, and is almost divided by two roads in the middle of its configuration Opportunity for a challenging, remote, backcountry experience is low to moderate Public interest in previous years as well as in public comments on the DEIS is very low There are no significant biodiversity features within this area that would warrant special consideration

Mt Jefferson—This area was not recommended for wilderness consideration for the following reasons

This area was studied and released for multiple use management in 1990 by an Environmental Impact Statement prepared by the BLM Boundaries of the area would be difficult to manage, and administration would have to be by three different federal agencies due to landownership Influence on natural integrity is high due to mining and roads Opportunity for solitude is low and opportunity for challenging experience would only be moderate This area does not score at a level equal to other previously recommended wilderness on the Forest, and there is more public comment against recommendation than for it in response to the DEIS Most of the public comment on this area is in support of designation as a wildlife migration corridor Therefore, we are not recommending it again for wilderness consideration in this Plan Revision

Raynolds Pass—This area was not recommended for wilderness consideration for the following reasons

This area is very small and adjacent to the moderately developed area surrounding Henrys Lake Although boundary management would be fairly easy, the amount of disturbance to natural integrity is very high due to primitive roads Opportunity for solitude and a challenging experience are low This area rates very low on the rating table, and there was no public comment supporting recommendation. Biodiversity is relatively minor in this area

Lionhead—This area was recommended for wilderness consideration for the following reasons

Boundaries are fairly well defined and management would be compatible with adjacent lands. Influence on natural integrity is low Opportunity for solitude and a challenging experience are high and moderate respectively This area was recommended in the current Forest Plan It is contiguous to an area on the Gallatin National Forest to the north and its wilderness potential is thus increased This area also contains significant biodiversity features The area receives significant snowmachine and ATV use, and to accommodate this use, we have excluded a small roaded area along the eastern boundary from the recommended wilderness

Two-Top—This area was not recommended for wilderness consideration for the following reasons

Boundaries are fairly well defined The area is very small, and a primitive road through the middle of the area, vegetation manipulation, and mining activities interrupt the natural integrity Opportunity for solitude is moderate, but opportunity for challenging experience is low There were no public comments in response to the Plan Revision DEIS that indicated support for recommendation This area rated relatively low in the wilderness characteristics table and has received little support from the public for recommendation

Winegar Addition—This area was recommended for wilderness consideration for the following reasons

Although this area is less than 5,000 acres, it is adjacent to the existing Winegar Hole Wilderness This area was recommended for consideration in the existing Forest Plan, but since it is in Idaho, it was not included in the Wyoming Wilderness Bill which designated Winegar Hole Quality of wilderness characteristics is only low to moderate, but the addition of this area has had considerable public support, because it would "round out" the existing designated wilderness

West Slope Tetons—This area was not recommended for wilderness consideration for the following reasons

Much of this area was included in the original recommendation for wilderness designation, and was not selected by the Congress Therefore, we do not propose to revisit that decision (Wyoming Wilderness Act of 1984) which released the area for multiple use management Very few public comments were received in favor of recommending this area as wilderness in our Revised Plan

Garns Mountain—This area was not recommended for wilderness considerations for the following reason

Garns Mountain Roadless Area has little development of any type that would impact the natural integrity of the area for wilderness considerations This area is a fairly large block of land with moderately easy defined boundaries Opportunity for challenge is moderate with some steep and remote terrain, but also considerable amounts of much easier terrain This area is currently used for motorized and non-motorized travel and is considered important by all user groups for recreational access Opportunity for solitude is high if motorized use is removed However, our Plan Revision proposes to designate this area for motorized use on trails, and to improve the trails in this area to provide a significant system of high quality that will meet public demand Support and opposition are often very vocal concerning this area's recommendation for wilderness There are no significant biodiversity features within this area that warrant special consideration, although there are areas within the roadless area which have high value resources

Palisades—A portion of this area was recommended for wilderness considerations for the following reason

Palisades Roadless area has no development of any type that would impact the natural integrity of the area for wilderness considerations This area is a fairly large block of land with moderately easy defined boundaries Opportunity for solitude and challenge is high in most of the area with steep and remote terrain Most of this area is currently closed to motorized travel Where motorized travel is allowed, terrain restricts travel to designated routes Public interest has been fairly strong for this area to be included into wilderness although some opposition has also been voiced There are significant biodiversity features within this area that warrant special considerations Furthermore, all oil and gas leases (which were the reason for not recommending this area in our current Forest Plan) have been terminated and there are no current leases or applications on file

Only approximately 2/3 of the Idaho portion of this roadless area was recommended This was due in part to the decision to continue to allow the motorcycle and snowmachine use in the area from Rainey Creek North In addition, the difficulty in boundary identification and management would be reduced by using the Rainey/Palisades Cr Ridge

Bald Mountain—This area was not recommended for wilderness considerations for the following reason

Bald Mountain Roadless area is moderately developed with fence and adjacent road development that may impact the natural integrity of the area for wilderness considerations This area is moderately small in size with boundary identification being difficult to define

Opportunity for solitude and challenge is low to moderate for most of the area This area is currently used for multiple use travel and is considered important by all user groups for recreational access Public interest has been low for this area to be recommended as wilderness There are no significant biodiversity features within this area that warrant special considerations

Bear Creek—This area was not recommended for wilderness considerations for the following reason

Bear Creek Roadless area, although undeveloped, does have evidence of human influence through fence, trail and adjacent road development that may impact the natural integrity of the area for wilderness considerations This area is moderately large tract of land but has many roads which have been "cherry stemmed" into the center of the roadless area Boundaries will be moderately difficult to define although distinct boundaries could be established. Opportunity for challenge is low for most of the area. Opportunity for solitude is moderate This area is currently used for multiple use travel and is considered important by all user groups for recreational access Public interest has been low for this area to be included into wilderness There are no significant biodiversity features within this area that warrant special considerations

Poker Peak—This area was not recommended for wilderness considerations for the following reason

Poker Peak Roadless area is developed with fence and adjacent road development that may slightly impact the natural integrity of the area for wilderness considerations This area is moderately small in size with boundary identification being fairly easy to determine Opportunity for solitude and challenge is low for most of the area Much of this area is currently closed to motorized travel The remaining portion is used by OHVs during the hunting season Public interest has been low for this area to be included into wilderness There are no significant biodiversity features within this area that warrant special considerations

Caribou City—This area was not recommended for wilderness considerations for the following reason

Caribou City Roadless area has no development that should impact the natural integrity of the area for wilderness considerations This area on the Targhee NF is moderately small in size with boundary identification being difficult to define, however, added to the portion on the Caribou NF, the area is a fairly large tract of land Opportunity for solitude and challenge is moderate for most of the area. This area is currently used for multiple use travel and is considered important by all user groups for recreational access Public interest has been low for this area to be included into wilderness There are no significant biodiversity features within this area that warrant special considerations

Pole Creek—This area was not recommended for wilderness considerations for the following reason

Pole Creek Roadless area is moderately developed with fence and adjacent road development that may impact the natural integrity of the area for wilderness considerations This area is moderately small in size with boundary identification being difficult to define Part of this roadless area is located on the Caribou NF Combining both areas still shows this area to be very small in size and very linear in shape Opportunity for solitude and challenge is low for this area This area is currently used for multiple use travel, but not considered important to the public need Public interest has been low for this area to be included into wilderness There are no significant biodiversity features within this area that warrant special considerations

# APPENDIX C

# SUMMER AND WINTER ACCESS

## SUMMER ACCESS ANALYSIS PROCESS

The Forest Service is authorized and required by law to plan, develop, manage and maintain a system of roads and trails to serve National Forest resources and uses The legal basis and specific authorities for regulation of motorized vehicle use on the National Forest are found in the Code of Regulations at 36CFR Part 295 After World War II, four-wheel drive vehicles became available to the public More recently, other varieties of off-highway vehicles have become popular, such as the motorized trail bike, three, and four-wheel drive All Terrain Vehicles (ATV) and trucks The development and popularity of these vehicles, and their effects on public lands, has had a significant role in the establishment of motorized use regulations

One objective of national forest management is to be no more restrictive on road or trail vehicle use than is necessary to sustain and protect the natural resources Since wildlife habitat and effects of motorized use on other resources (water quality, soils, riparian, etc ) are extremely variable across the Forest, the restrictions on vehicles vary from place to place In some locations, yearlong closure or even obliteration of roads occurs, while in others, seasonal restrictions are effective in protecting resources Topography, vegetation, soils, public support, and other factors also influence the extent and duration of road and trail restrictions

As part of the plan revision process, a number of issues about roads and access were raised by the public, the Forest Service and other Federal, State, and local agencies Following is a summary of these issues

- What roads and trails are required for management of the Targhee National Forest?
- Should roads be built, where, and to what standard?
- What roads will be kept open and what roads will be closed?
- What parts of the forest will be open to off highway vehicles?
- What road densities are appropriate?
- What areas should have restricted motorized access in order to reduce impacts to forest resources?
- How should closed roads be maintained?
- What are the appropriate ways to close a road (gates, barriers, signs, what is the best time frame, etc )
- How can the forest guarantee right-of-way to the forest where private lands block access?
- How should access to private lands within the forest be provided for landowners?
- What is the funding situation for enforcement, monitoring, and administration of forest roads?

A major objective of forest plan revision efforts is to resolve conflict by finding integrated, compatible management methods and prescriptions that allow public use of roads and trails to occur in a way that can best meet the needs of the resources and the recreating public This report documents the process forest resource professionals used in analyzing current conditions and developing a travel management plan

that would be compatible with other resource objectives, such as protecting soils, water quality, riparian habitat, wildlife habitat, or other forest resources

A forest team was established in 1991 to analyze motorized access on the Forest District Travel Plan maps that show the official transportation system of roads and trails, the kind of authorized use permitted on each road or trail (motorized, nonmotorized), and open and closed areas for cross-country motorized use were used in the analysis After an initial review the Forest was asked to complete additional analysis, since some members of the public felt the District Travel Plan maps did not accurately represent the transportation system that currently exists on the Forest

The team considered two methods to address these additional concerns The first method involved a survey during the 1992 fall hunting season in cooperation with Wyoming and Idaho Fish and Game departments A District person and a Fish and Game Conservation Officer were assigned to monitor Forest system roads in designated areas to determine if motorized use was occurring on roads that were gated and closed After some initial monitoring, the survey was dropped, because the agencies felt survey data collected was not adequate to quantify motorized use in a way that would be meaningful for Elk Habitat or Elk Vulnerability Models

The second method was developed in an effort to match the analysis scale the Forest used to determine Elk Habitat Effectiveness modeling Elk Habitat Effectiveness (EHE) modeling was designed using the 38 principal watersheds on the Forest Forest personnel, Idaho Department of Fish and Game (IDFG) and Wyoming Game and Fish Department (WGF) agreed to separately analyze those portions of watersheds that were split by the State line New criteria were identified for analyzing motorized roads and trail density

The objective of this analysis was to accurately capture the total miles of roads and trails being used by motorized vehicles Ranger District personnel and local state Fish and Game officers inventoried each watershed using the following criteria

1 Accurately describe and quantify the existing situation for motorized use on roads, trails, open ridges, etc during the spring-summer-fall season

2 Principal watersheds will be used as the basis for the analysis and will include all roads and trails within each of the watersheds and within the outer boundary of the Forest. This includes all system roads and trails, all "ghost" (nonsystem) roads and trails, ridges and open terrain (estimate miles for these cases) that are used by motorized vehicles during the spring-summer-fall season

3 Open miles of roads and trails means miles of roads and trails (including system, ghost, open ridges, etc ) that are used by motorized vehicles on an average of one to two vehicles per week during the spring-summer-fall seasons Reliance on Forest/District travel plan maps is not appropriate, because some closures have not been effective and the Forest needs to account for ineffective closures

Closed miles of roads and trails means miles of roads and trails that are not used by motorized vehicles, or the average use is less than one to two vehicles per week, during the spring-summer-fall season.

Roads and trails that experience motorized use for short periods, such as a one- or two-week period for tree planting, should not be counted in open road and trail miles

4 For roads and trails that fall on a watershed boundary, include total miles for both watersheds and indicate the number of miles that are being counted in the adjacent watershed Although some double counting may occur, this process should track how much double counting is actually occurring

Results of these inventories were tabulated and used to establish the current existing condition of roads and trails being used by motorized vehicles on the Forest

During 1994, Idaho Fish and Game raised the issue that the Forest still lacked accurate information on motorized access on the forest and expressed concerns that some areas on the Forest had vegetation and terrain which allowed for unrestricted, cross-country, off-highway vehicle (OHV) use Additional analysis was completed, using vegetation and slope, to identify areas which might be more accessible to OHV use (see Attachment F of Process Paper D for the criteria used in this analysis) The analysis, called the "infinitely open analysis," used the 38 principal watersheds as the basis for the analysis Results showed that these watersheds currently range from less than one percent "infinitely open" to 95 percent "infinitely open" under the present travel plan

Because the Elk Vulnerability (EV) model requires a number for motorized road and trail density, the "infinitely open" areas were converted to a road and trail density figure The conversion used a formula that added an additional six miles of motorized road for each square mile of "infinitely open" area in each watershed This conversion resulted in the addition of 4,669 miles of motorized road to the previously inventoried road and trail miles This total number from the conversion and the inventoried road and trail miles was used in the Elk Vulnerability model (See Table 5 7 in Process Paper D) This table presents the current total motorized access density for each principal watershed, incorporating both the road and trail inventory and the "infinitely open" analysis The total access densities presented in Table 5 7 were used in the Elk Vulnerability analysis to display the existing condition

Open Road and Open Motorized Trail Route Density (OROMTRD) was established for individual management prescriptions using the most current research studies on motorized access in grizzly bear areas, elk vulnerability and elk habitat effectiveness models

Each of the proposed alternatives in the Forest Plan revision was analyzed Each Ranger District mapped the roads and trails that would remain open under each of the alternatives. These maps were then digitized in the Forest's Geographic Information System (GIS) database Using GIS technology, the miles of roads and trails that would remain open in each watershed under each alternative were calculated Additionally, each alternative varied in the amount of land open for cross-country OHV use An "infinitely open" analysis was completed for each alternative to account for this motorized use (See Process Paper D for more detailed information on Motorized Road and Trail Analysis and the effects on Elk Habitat Effectiveness and Elk Vulnerability )

During the revision process several refinements were made Using GIS capabilities, roads and trails were calculated for each prescription Maps were created that displayed current road and trail densities by prescription, and future road and trail densities under the proposed Forest Plan Revision Interdisciplinary teams, made up of Forest resource specialists and line officers, reviewed and analyzed the results Factors of resource damage to soil, water, wildlife habitat, fisheries, riparian area, as well as recreation opportunities for trail systems, accessible scenic areas, and current volume and type of use on a road or a trail were considered

The following chart, completed in 1997, displays by District and by alternative the miles of roads and trails that will remain open or have restricted use Each Alternative also lists the miles of roads and trails that have been identified as "not necessary for administrative use" by the Forest

| Table C-1 Motorized Acces by District by Alternative | | | | | | | |
|---|---|---|---|---|---|---|---|
| Dubois | Alt 1 | Alt 2 | Alt 3 | Alt 3M | Alt 4 | Alt 5 | Alt 6 |
| Miles of open road | 399 | 385 | 325 | 359 | 225 | 188 | 131 |
| Miles of restricted road | 43 | 41 | 54 | 45 | 32 | 6 | 7 |
| Miles of open trail | 73 | 77 | 65 | 99 | 74 | 4 | 4 |
| Miles of restricted trail | 6 | 9 | 9 | 166 | 4 | 0 | 0 |
| Miles eliminated | 224 | 240 | 287 | 262 | 410 | 473 | 530 |
| Island Park | Alt 1 | Alt 2 | Alt 3 | Alt 3M | Alt 4 | Alt 5 | Alt 6 |
| Miles of open road | 492 | 554 | 450 | 423 | 497 | 405 | 407 |
| Miles of restricted road | 210 | 84 | 220 | 154 | 156 | 157 | 150 |
| Miles of open trail | 20 | 22 | 20 | 25 | 20 | 20 | 20 |
| Miles of restricted trail | 2 | 0 | 2 | 132 | 2 | 0 | 2 |
| Miles eliminated | 1 | 73 | 40 | 130 | 294 | 517 | 153 |
| Ashton | Alt 1 | Alt 2 | Alt 3 | Alt 3M | Alt 4 | Alt 5 | Alt 6 |
| Miles of open road | 476 | 452 | 372 | 356 | 332 | 231 | 294 |
| Miles of restricted road | 244 | 162 | 92 | 56 | 55 | 51 | 55 |
| Miles of open trail | 36 | 22 | 14 | 18 | 13 | 9 | 13 |
| Miles of restricted trail | 78 | 4 | 3 | 95 | 4 | 0 | 4 |
| Miles eliminated | 248 | 117 | 267 | 319 | 343 | 449 | 382 |
| Teton | Alt 1 | Alt 2 | Alt 3 | Alt 3M | Alt 4 | Alt 5 | Alt 6 |
| Miles of open road | 149 | 180 | 155 | 152 | 137 | 143 | 148 |
| Miles of restricted road | 134 | 72 | 46 | 65 | 40 | 37 | 31 |
| Miles of open trail | 124 | 108 | 102 | 142 | 101 | 31 | 17 |
| Miles of restricted trail | 5 | 11 | 1 | 204 | 1 | 0 | 2 |
| Miles eliminated | 22 | 50 | 118 | 85 | 130 | 121 | 126 |
| Palisades | Alt 1 | Alt 2 | Alt 3 | Alt 3M | Alt 4 | Alt 5 | Alt 6 |
| Miles of open road | 370 | 292 | 286 | 287 | 281 | 270 | 249 |
| Miles of restricted road | 33 | 15 | 23 | 37 | 25 | 13 | 12 |
| Miles of open trail | 320 | 241 | 233 | 258 | 213 | 168 | 27 |
| Miles of restricted trail | 1 | 1 | 1 | 271 | 1 | 0 | 0 |
| Miles eliminated | 0 | 76 | 74 | 57 | 77 | 99 | 191 |
| Forest Total | Alt 1 | Alt 2 | Alt 3 | Alt 3M | Alt 4 | Alt 5 | Alt 6 |
| Miles of open road | 1,882 | 1,863 | 1,589 | 1,577 | 1,372 | 1,237 | 1,228 |
| Miles of restricted road | 209 | 131 | 115 | 25 | 108 | 63 | 80 |
| Miles of open trail | 522 | 470 | 435 | 540 | 421 | 232 | 81 |
| Miles of restricted trail | 752 | 854 | 889 | 817 | 903 | 1,092 | 1,242 |
| Miles eliminated | 246 | 555 | 767 | 853 | 1,113 | 1,290 | 1,306 |

Determinations for leaving a road open were made using a priority system First priority was given to Federal Highway system roads, State and county roads, existing roads needed to access private property, Yellowstone National Park, State Parks and State lands, and existing roads that access administrative sites, electronic sites, communication sites (under permit) or high use recreation sites such as ski areas, boat ramps, campgrounds, etc In some areas the application of management prescriptions and the road density standard resulted in these "first priority" roads being the only roads designated "open" for the area The Forest incorporated guidelines from the Eastside Ecosystem Management Project (EEMP) to establish a rule set to insure consistency as each District prepared their access maps (See Road Analysis Process, in Appendix A) District personnel and Forest planning specialists met over several months to fine-tune and coordinate motorized access between Districts Roads and trails were selected for restriction or closure depending on the need to maintain wildlife habitat, prevent resource damage, and to balance the level of use or recreation opportunity Cost of maintaining the road or trail was also a factor A set of Road Decision Criteria Tables have been developed, showing the decision in keeping roads and trails open in each Alternative The tables are displayed in the 50 pages following page C-7, by Ranger District

In some cases non-system trails and non-system roads were identified as needed for access, in managing the Forest These roads and trails may not have Forest numbers assigned to them but if they remain on the Forest Transportation Inventory System, they will be given a name and a Forest number, for identification on Forest Maps and on the ground The identification name and number will be given after the ROD has been signed

All districts, with the exception of Island Park, used the method described above to determine District road and trail densities Island Park Ranger District worked with the Intermountain Region using aerial photography to determine District road and trail densities The results of this study show a total of 4,192 miles of existing roads and trails on the Forest, including both "system" and "non-system" roads and trails Of these, 2,831 miles are being used by motorized vehicles and include roads and trails that have ineffective restrictions on them, such as gates, berms, etc The remaining 1,361 miles of roads and trails are designated non-motorized A total of 1,126,757 acres were identified as open for cross-country travel, but only 440,422 acres were identified as suitable for cross-country travel due to steep slopes or type of vegetation cover

Comments received during public scoping on the Forest Plan revision in the spring of 1996 were considered and some suggestions were used in determining how the forest will implement access management in the future A site-specific analysis will be used to determine which roads and trails will be closed, restricted, or obliterated An interdisciplinary team will prepared a separate analysis to address the 853 miles of roads and trails have been identified as "not necessary for administrative use" by the Forest The analysis will include a cost estimate for this project

Public acceptance and compliance with access management strategies will directly affect full implementation of other resource program objectives

## WINTER VISITOR ACCESS ANALYSIS PROCESS

In 1994, Yellowstone and Grand Teton National Parks in coordination with adjacent Forests, began a review of the 1990 Winter Use Plan Winter visitors in and around the Park's boundaries were contacted and surveyed concerning possible issues and concerns with winter management or resource conditions Yellowstone National Park was concerned that use levels had already reached levels forecast to be reached in future years The purpose of the resulting Greater Yellowstone Winter Visitor Use Management (GYWVUM) assessment was to evaluate existing conditions and future opportunities for winter use management During this time, the Targhee National Forest was completing an EIS for the Grand Targhee Ski Resort Master Development Plan A significant issue during this analysis was concern for winter recreation use and wildlife conflict potential on the Teton Basin District A commitment was made during this analysis to carry the findings of recent studies (e.g , Teton Basin District Winter Wildlife/Winter Recreation Management Plan—Draft) into the Forest Plan Analysis that was also underway The purpose of incorporating this analysis into the Forest Plan revision was to get a broader picture of the concerns and proposed management actions so that a better planning job could be done and consultation with the US Fish and Wildlife Service could be done on a level of planning acceptable to that agency

Since the Forest Plan Revision and GYWVUM planning processes were being conducted almost simultaneously, the winter use and wildlife analysis for the GYWVUM process were considered and incorporated into the Forest Plan Analyses from the GYWVUM assessment which were used in the Forest Plan Revision include the following

- Issues and concerns assessment based on surveys, public meetings, and public comments and letters

- Coordinated Goal Statements and Management Opportunities, based on an evaluation of the issues and the mapping of the following resource data

    a) actual recreation use areas
    b) known winter range areas for wildlife
    c) snow cover adequacy for winter activities
    d) conflict areas between types of use or within uses
    e) conflict areas between recreation and wildlife
    f) closure areas
    g) steep slopes or otherwise unusable areas
    h) road and trail systems and access parking and facilities
    i) avalanche and other hazard areas
    j) trespass areas into the Parks, wilderness, or other closure

As this data and mapping was done for the GYWVUM assessment, much of the mapping was incorporated into the Winter Transportation Plan for the Forest Plan—Alternative 3M Alternative Winter Transportation Plans and opportunities were also considered during the Forest Plan Revision analysis and EIS in other alternatives to the proposed Plan As a result of this analysis, 93 miles of planned snowmachine routes were identified and added to the Alternative 3M Winter Transportation Plan These routes were planned in areas away from winter range conflict areas in an attempt to provide users with additional opportunities and to reduce wildlife impacts These routes would be marked and/or groomed in coordination with the counties in the future as additional capacity was determined to be needed, and as county funding and workload allows These routes would be added to the Forest Travel Plan as they were developed

This Winter Transportation Plan concept was reviewed with the public through numerous GYWVUM assessment meetings and through public review and comment on the Forest Plan Revision DEIS maps Due to comments and administrative review of the draft Winter Transportation Plan, the following adjustments were made for the Final Forest Plan and FEIS

• The following planned routes shown on the draft Winter Transportation Plan Map have been deleted from the final map

a) Snow Creek Butte—deleted due to potential trespass concerns for Yellowstone National Park

b) Cottonwood Creek and Camas Creek—deleted due to desire to manage these areas as undeveloped backcountry area

c) Rainey Creek—deleted due to concerns with wintering wildlife and feed ground operations

The Forest Plan includes winter recreation Goals, Objectives, Standards, Guidelines, Prescriptions, and a Winter Transportation Plan which have been prepared in concert with the GYWVUM assessment analysis as much as possible Not all of the pending guidelines of that assessment have been incorporated into the Forest Plan, but an objective was included in the Plan to address the remainder of the pending guidelines to provide for other winter opportunities The objective states "By 2000, establish by prescriptions, Travel Plan designation or other method a few nonmotorized winter recreation activity areas with easy access for users such as telemark skiers, snowshoers, and snowboarders Conform to results anticipated from the GYWVUM Assessment currently underway" The GYWVUM assessment is not scheduled to be completed until the end of 1997

References to this process have been included in Chapters III and IV of the FEIS

# OPEN ROAD AND OPEN MOTORIZED TRAIL ROUTE (OROMTRD) DECISON CRITERIA TABLES

## DEFINITIONS

Following are the definitions of the criteria used on the OROMTR Decision Criteria Tables:

A. Core Access: Needed to access private property, adjoining State and Federal Parks or State Lands, and roads that access administrative sites, campgrounds and picnic areas, electronic sites, permitted communications sites, ski areas, boat rams and special recreation sites such as Mesa Falls and Big Springs.

B. First Priority: In some areas the application of management prescriptions and density standards resulted in this type of road/trail being the only facility designated "open" in the area.

C. Eastside Ecosystem Management Project (EEMP) Guidelines: EEMP guidelines used to establish a rule set to insure consistency as each District prepared their access maps.

D. Coordinated Access: Roads/trails that provide inter-District access.

E. Maintenance of Wildlife Habitat: Road/trail selected causes less impact.

F. Resource Damage: Road/trail selected caused less impact.

G. Cost: Lower cost to maintain road/trail.

H. District-specific criteria (if any).

I. District-specific criteria (if any).

# List of Process Papers

# List of Process Papers

| Process Paper: | Title |
|---|---|
| A | Issue Identification and Public Involvement |
| B | FORPLAN Analysis |
| C | Tentatively Suitable Timber Analysis |
| D | Wildlife Analysis for the Forest Plan Revision |
| E | Benchmarks |
| F | Sensitive Plant Speices |
| G | Idaho and Wyoming Rare Plant Species |
| H | Range Suitability (Capability) Criteria for Cattle Range |
| I | Range Suitability (Capability) Criteria for Sheep Range |
| J | Logic Used to Estimate Effects of Livestock Grazing on Riparian and Upland Vegetation |
| K | Forest Range Environmental Study (FRES) Management Strategy |
| L | Sheep Allotments affected by Grizzly Bear, Bighorn Sheep, and Watershed Conditions |
| M | Explanation of how OROMTRD affects Livestock Grazing Permittees in Implementing the Forestwide Standard |
| N | Explanation of how the Phase Out of Sheep Allotments will be Implemented |
| O | Implementing Ecosystem Management in Forest Plan Revisions (Sept 23, 1994) |
| P | Adjacent Land Use Patterns Analysis |
| Q | Roadless Areas |
| R | Wild, Scenic and Recreational Rivers Eligibility Determination |
| S | Recreational Use Projection Process for Targhee National Forest Plan Revision |
| T | Jedediah Smith Wilderness Environmental Assessment for Forest Plan Amendment |
| U | Supply, Demand and Production Potential |
| V | Key Indicators for Issue 1, Sustainability, Fire and Natural Disturbances |
| W | Draft Properly Functioning Condition (Sept 17, 1996) |
| X | Dispersed Camping Protocol for Monitoring Soil Quality |
| Y | Targhee National Forest Rangeland Monitoring Protocol |
| Z | Existing and Potential Rangeland Improvements |

# LIST OF PREPARERS

The following is a list of the current Forest Leadership Team (FLT) and Forest Interdisciplinary Team (IDT) members and others who developed the Targhee National Forest Plan, Final Environmental Impact Statement, and supporting documents

A Current Forest Leadership Team

Patricia Bates
District Ranger, Teton Basin Ranger District

Carol Cushing
Branch Chief for Land Management Planning

Ron Dickemore
District Ranger, Palisades Ranger District

Larry Gorringe
Branch Chief for Engineering, Lands, and Minerals

Adrienne Keller
District Ranger, Ashton and Island Park Ranger Districts

Ann Matejko
Public Affairs Officer

Mac Murdock
District Ranger, Dubois Ranger District

Jerry Reese
Forest Supervisor

Ric Rine
Branch Chief for Ecosystems

Chuck Sorenson
Administrative Officer, Branch Chief for Fire Management, Acting Forest Supervisor

B Forest Interdisciplinary Team (Present Members)

B Lynn Ballard
Natural Resource Specialist

| | |
|---|---|
| Education | B S , Forest Resource Management |
| Experience | U S Forest Service |
| | Timber Management - 14 years |
| | Winter Sports Planning - 6 years |
| Function | Core Team Member, Timber, and Insect & Disease |

Leon Bleggi
Transportation Planner

| | |
|---|---|
| Education | Associate Degree, Engineering, Utah Valley Community College |
| | Wildlife Management, University of Southern Utah |
| Experience. | Bureau of Reclamation |
| | Engineering Design and Inspection |
| | Underwater Inspector (SCUBA Diver) - 8 Years |
| | U S Forest Service |
| | Engineering Design and Inspection - 11 years |
| | Forest Transportation Planner - 12 years |
| Function | Core Team Member, Engineering, Access Management, Facilities |

Carol Cushing
Planning Branch Chief

| | |
|---|---|
| Education | B S , Forest Management |
| Experience | U S Forest Service - 16 years |
| Function | Planning Staff |

Katina Harrison*

| | |
|---|---|
| Function | Document Preparation |

Mark Orme
Wildlife Biologist

| | |
|---|---|
| Education | B S , Forestry, University of Idaho |
| | M S , Wildlife Management, University of Idaho |
| Experience | U S Forest Service - 14 5 years |
| | University of Idaho - 2 years |
| | Idaho Department of Fish and Game - 2 years |
| Function | Wildlife Section |

Dale Pekar
Team Leader, Forest Plan Revision

| | |
|---|---|
| Education | B A , Economics and Sociology |
| | M S , Economics |
| Experience | U S Army Corps of Engineers |
| | U S Forest Service |
| | Land Management Planning, Economic & Social Analysis - 19 years |
| Function | Economic and Social Analysis |

Alan R Silker
Recreation Staff Officer

| | |
|---|---|
| Education | B S , Forest Management |
| | M S , Forest Recreation Management |
| Experience | U S Forest Service |
| | Recreation Management - 25 years |
| | Winter Sports Planning - 20 years |
| Function | Developed and Dispersed Recreation, Roadless, Wilderness, and Wild, Scenic, and Recreational Rivers analysis |

Fred Straus
GIS Coordinator, Analyst

| | |
|---|---|
| Education | B A , Forest Management |
| Experience | Peace Corps |
| | U S Forest Service |
| | Timber Management - 17 years |
| Function | GIS, FORPLAN, Data Management, and Analysis |

C Others Providing Substantial Contributions

Kendall Adams
Forest Land Surveyor

| | |
|---|---|
| Education | Cert Civil Technology |
| Experience | Bureau of Reclamation |
| | Surveyor - 5 years |
| | U S Forest Service |
| | Engineering - 9 years |
| | Lands - 9 years |
| Function | Lands |

Bart Andreasen
Landscape Architect

| | |
|---|---|
| Education | B S , Landscape Architecture and Environmental Planning |
| Experience | Bureau of Land Management |
| | Visual Resources, Recreation Management - 1 year |
| | U S Forest Service |
| | Visual Resources, Recreation Management - 16 year |
| Function | Visual Resources, Off-Highway Vehicles, and ROS |

David Betz
Data Base Manager

| | |
|---|---|
| Function | GIS Analysis |

Keith Birch
Forest Aviation and Fire Management Officer

| | |
|---|---|
| Education | B S , Forest/Range Management, Idaho State University |
| Experience | U S Forest Service |
| | Forest Engineering - 8 years |
| | Range Management - 8 years |
| | Recreation Management - 8 years |
| | Fire Management - 7 years |
| Function | Air Quality, and Fire |

Brannon Bleggi*

| | |
|---|---|
| Function | Visual Resources |

Bob Boyles
GIS/CEM Specialist

| | |
|---|---|
| Education | B S , Information Systems/Accounting, University of Nevada |
| Experience | U S Army, Dept of Veteran Affairs |
| | U S Forest Service |
| Function | GIS and CEM Analysis |

Dan Delany
Forest Fisheries Biologist

| | |
|---|---|
| Education | B S , Wildlife Management |
| Experience | Bureau of Land Management |
| | Range Management - 2 years |
| | Fisheries and Wildlife Management - 14 years |
| | U S Forest Service |
| | New Perspectives - 1 year |
| | Fisheries and Wildlife Management - 5 years |
| Function | Fisheries and Aquatic Ecology |

Kris Drewes
Forestry Technician

| | |
|---|---|
| Function | GIS Analysis |

Rod Dykehouse
Forest Fuels Specialist

| | |
|---|---|
| Education | A A S , Forest Technology, Michigan Technology University |
| Experience | U S Forest Service |
| | Fire Management - 17 years |
| Function | Fire, Air Quality, Jedediah Smith Wilderness Fire Management Plan |

Ed Fischer
Assistant Forest Planner

| | |
|---|---|
| Education | B S , Forest Management, Michigan State University |
| | Course work completed toward M S in Silviculture at Oregon State University and University of Washington |
| Experience | U S Forest Service |
| | Forestry - 12 years |
| | Planning - 5 years |
| Function | Chapter 1, Wild and Scenic Rivers |

Jim Gerber *

| | |
|---|---|
| Function | Timber |

Kevin Greenwood
Island Park Ranger District

| | |
|---|---|
| Function | Range |

Walt Grows
Range Management Specialist

| | |
|---|---|
| Education | B S , Forest Recreation (major) |
| | B S , Range Managment (minor) |
| Experience | U S Forest Service |
| | Resource Management - 20 years |
| | Forest Planner, Range Sub-Staff, District Ranger, Resource Officer |
| | (Assistant District Ranger), and Range Conservationist |
| Function. | Range, Acting Forest Planner |

Jack Haddox
Natural Resource Specialist
Island Park Ranger District

| | |
|---|---|
| Education | B S , Range and Forest Management, Colorado State University |
| Experience | U S Forest Service |
| | Range Management - 10 years |
| | Recreation Management - 8 years |
| Function | Recreation and Lands |

Lynn Hansen*

| | |
|---|---|
| Function | Lands |

Gene Hardin
Forester
Island Park Ranger District

| | |
|---|---|
| Education | B S , Forest Management, Clemson University |
| | Region 6 Silviculture Institute Oregon State University of Washington |
| | Wilderness Management, Colorado State University |
| Experience | U S Forest Service - 19 years |
| Function | Roadless Areas |

James F Hayes*
Operations Research Analyst
Prospect Ranger District, Rogue River National Forest

| | |
|---|---|
| Education | B A , Mathematics |
| | Graduate work in Systems Science and English Literature |
| Experience | Southern Oregon Regional Services Institute |
| | Urban Planning - 3 years |
| | U S Forest Service |
| | Land Management Planning - 11 years |
| | Project Planning - 3 years |
| Function | FORPLAN Modelling, Writer/Editor (Process Paper B) |

Sue Heald*
Forest Silviculturist

| | |
|---|---|
| Education | B S , Forestry |
| Experience | U S Forest Service - 12 years |
| Function | Ecosystem Management Analysis, and Writer/Editor |

Dusty Hincks
Palisades Ranger District

| | |
|---|---|
| Function | Range |

Robin Jenkins
Island Park Ranger District

| | |
|---|---|
| Function | Wild, Scenic, and Recreational Rivers |

Bill Kirchhoff *

| | |
|---|---|
| Function | GIS Analysis |

Bob Kirkpatrick *

| | |
|---|---|
| Function | Facilities |

Julie Lehmann*

| | |
|---|---|
| Function | GIS Analysis |

Bill LeVere*

Lilly Mayer *

| | |
|---|---|
| Function | Threatened, Endangered and Sensitive Species |

Maureen McBrien*, Past Forest Planner

Martha Merrill*

| | |
|---|---|
| Function | District Representative, Wilderness Specialist |

Kaylene Monson
Rangeland Management Specialist
Palisades Ranger District

| | |
|---|---|
| Education | B S , Range Science |
| Experience | U S Forest Service - 5 years |
| Function | Range Management |

Duane Monte
Soil Scientist

| | |
|---|---|
| Education | B S , Natural Resource Management/Biology - UWSP |
| | Post Graduate Work - Soil Science - UWSP |
| | University of Wisconsin - Stevens Point |
| Experience | U S Soil Conservation Service - 4 Years |
| | U S Forest Service -16 Years |
| Function | Riparian, Wetlands, Aquatic Infln, and Soils section |

Ronna Simon Monte
Hydrologist

| | |
|---|---|
| Education | B S , Geology |
| | M S , Geography |
| | M S , Watershed Management |
| Experience | U S Forest Service |
| | Watershed Management - 6 years |
| | U S Geological Survey |
| | Water Resource Monitoring, Quality Assurance - 1 year |
| Function | Water section and assistance on Wetlands section |

Craig Morris *

| | |
|---|---|
| Function | FORPLAN |

Brent Porter
Recreation Forester
Palisades Ranger District

| | |
|---|---|
| Education | B S , Utah State University, 1972 |
| Experience | U S Forest Service since 1972 |
| | Recreation, Lands, and Trails - 20 years |
| | Timber - 16 years |
| | Minerals - 20 years |
| Function | Recreation, Recreation Special Uses |

Cheryl Probert
Dubois Ranger District

| | |
|---|---|
| Function | Range |

John Pruess
Minerals Specialist

| | |
|---|---|
| Education | B A , Liberal Arts, Gettysburg College |
| | M F , Timber Management, Duke University |
| Experience | U S Forest Service - Timber - 16 years |
| | Minerals - 16 years |
| | Lands - 5 years |
| Function | Minerals and Lands sections |

Betsy Rickards *

| | |
|---|---|
| Function | NFMA and NEPA Compliance |

Robert Riley
Supervisory Forester

| | |
|---|---|
| Function | Timber |
| | Public Involvement |

Dee Sessions
Forest Silviculturist

| | |
|---|---|
| Function | Public Involvement |

Bill Shands *

| | |
|---|---|
| Function | Public Involvement |

Greg Sorensen
Teton Basin Ranger District

| | |
|---|---|
| Function | Range |

Bob Specht
Forest Botanist

| | |
|---|---|
| Education | B S , Botany |
| Experience | Bureau of Land Management |
| | Botanist - 1 year |
| | Range Technician - 2 years |
| | Range Conservationist - 1 year |
| | Soil Conservation Service |
| | Soil Conservationist - 1 1/2 years |
| | Range Conservationist - 6 years |
| | District Conservationist - 4 years |
| | U S Forest Service |
| | Botanist - 3 years |
| Function | Vegetation |

Gretchen Straus *

| | |
|---|---|
| Function | Adjacency Analysis |

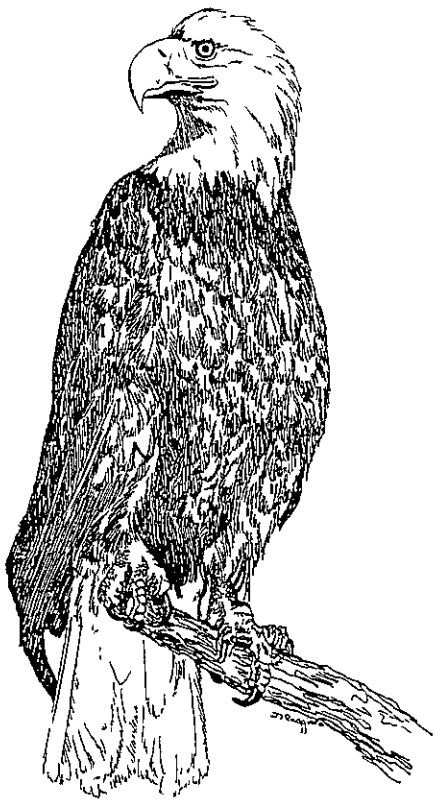
Keith Tweedie
Dubois Ranger District

| | |
|---|---|
| Function | Range |

Skip Willingham
Forest Archaeologist

| | |
|---|---|
| Education | B A , Anthropology and Philosophy, University of Alabama |
| Experience | U S Forest Service |
| | Heritage Resource Management - 13 years |
| | Office of Archaeological Research, University of Alabama - 4 years |
| Function | Heritage Resources |

* - Not affiliated with the Targhee National Forest



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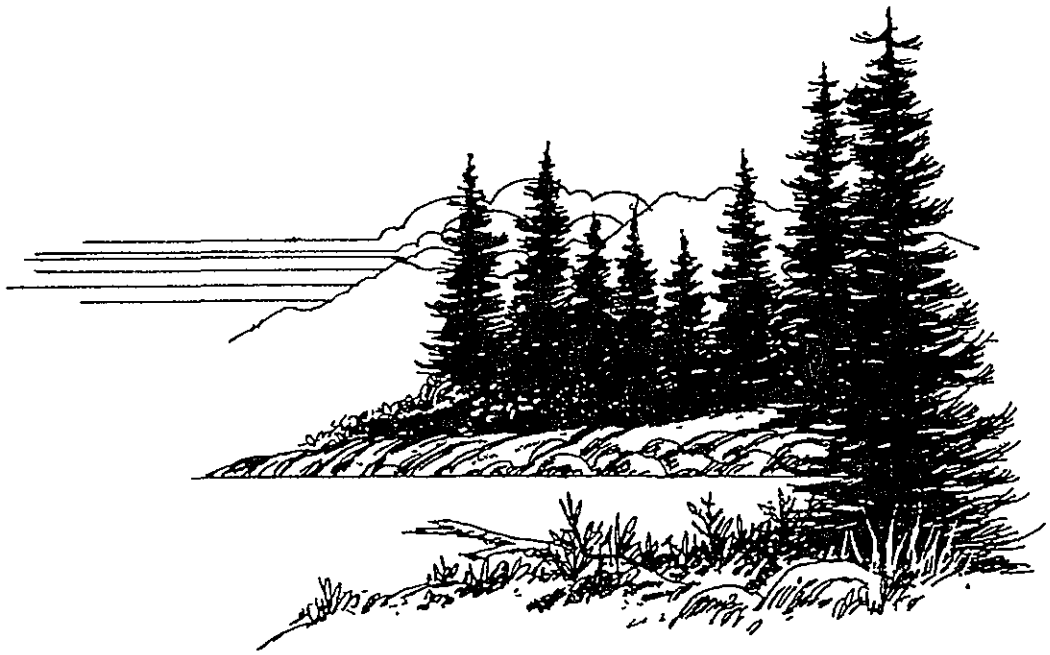

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BLUE RIBBON FLIES
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BOISE NATIONAL FOREST
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BRIDGER TETON NATIONAL FOREST
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BUREAU OF INDIAN AFFAIRS
BUREAU OF LAND MANAGEMENT
BUREAU OF RECLAMATION
BUREC
BUTTE COUNTY COMMISSIONER
C & B TIMBER
CA 4-WHEEL DRIVE CLUB, IN
CARIBOU NATIONAL FOREST
CHAMBERS OF COMMERCE
CHERRY CREEK VISITOR CENTER
CHRISTIANSEN LOGGING
CITIZENS FOR TETON VALLEY
CITIZENS INTERESTED IN BULL RUN,INC
CITY OF IDAHO FALLS
CITY OF IRWIN
CITY OF ISLAND PARK
CLARK COUNTY COMMISSIONERS
CLARK COUNTY SHERIFF
CLARK COUNTY SNOWRIDERS SNWBILE CL
CLARK TIMBER
CLARK TIMBER/ID WOMEN IN TIMBER
COMMUNITY CENTER INC
DENVER PUBLIC LIBRARY
DEPARTMENT OF COMMERCE
DEPARTMENT OF ENVIRONMENTAL QUALITY
DEPARTMENT OF HEALTH & WELFARE-DEQ ORGANIZATION
DEPARTMENT OF HEALTH HUMAN SERVICE
DEPARTMENT OF INTERIOR
DEPARTMENT OF JUVENILE CORRECTIONS
DEPARTMENT OF LANDS
DEPARTMENT OF TOURISM AND IND DEV
DEPARTMENT OF TRANSPORTATION
DEPT OF ECOLOGY
DEPT OF HEALTH & HUMAN SERVICES
DEPT OF LANDS
DEPUTY ASSIST SECRETRY OF DEFENSE
DEQ
DIVISION OF ENVIRONMENTAL QUALITY
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DOE-BPA
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DRIGGS CITY COUNCIL
E C I P D A
EAGLE ROCK BACKCOUNTRY HORSEMAN
EASTERN IDAHO REG MEDICAL CENTER
ECONOMIC DEVELOPMENT COUNCIL
ECONOMIC RESEARCH SERVICE NRS
ENVIRONMENTAL PROJECT AGENCY
ENVIRONMENTAL PROTECTION AGENCY
EPA
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FALL RIVER REVIEW
FEDERAL AVIATION ADMINISTRATION
FEDERAL ENERGY REGULATORY COMM
FEDERAL HIGHWAY ADMINISTRATION

FEDERAL RAILROAD ADMIN
FEDERAL RAILROAD ADMINISTRATION
FISH & WILDLIFE
FISHLAKE NATIONAL FOREST
FLATHEAD NATIONAL FOREST
FMID
FOREST PEST MANAGEMENT
FORESTRY SCIENCES LAB
FOUR CORNERS TRAIL CLUB
FREMONT CO P&Z
FREMONT COUNTY COMMISSIONER
FREMONT COUNTY COMMISSIONERS
FREMONT ECONOMIC ACTION TEAM
FREMONT-HERALD CHRONICLE
FRIENDS OF FALL RIVER
GALLATIN NATIONAL FOREST
GOVERNOR OF IDAHO
GRAND TARGHEE
GRAND TARGHEE RESORT
GRAND TARGHEE SKI & SUMMER RESORT
GRAND TETON NATIONAL PARK
GRAND VALLEY STATE UNIVERSITY
GREATER I F CHAMBER OF COMMERCE
GREATER YELLOWSTONE COALITION
GREATER YELLOWSTONE CONSERVATION
GREEN, WILLIAM SCOTT
GREYSTONE
GRIZZLY BEAR TASK FORCE
ORGANIZATION
GRIZZLY DISCOVERY CENTER
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HELI-SKIING HIGH MOUNTAIN
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HENRY'S FORK WATERSHED COUNCIL
HIGH COUNTRY NEWS
HIGH COUNTRY RC&D
HIGH MOUNTAIN TRAIL MACHINE ASSOC
HOLLAND & HART
HOUSE OF REPRESENTATIVES
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ID OUTFITTERS & GUIDES
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IDAHO STATE UNIVERSITY
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INTERNATIONAL LLAMA ASSOCIATION
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MORRIS & WOLFF, P.A.
MOUNTAIN ROTORS

NATIONAL AREAS
NATIONAL PARK SERVICE
NATIONAL WILDLIFE FEDERATION
NATIVE ECOSYSTEMS COUNCIL
NAVAL OCENAOGRAPHY DIVISION
NEC
NEW MEXICO TROUT
NOAA ECOLOGY & CONSERVATION OFFICE
NORTHWEST POWER PLANNING COUNCIL
NRCS
NYBAKKEN AND ASSOCIATES
OFFICE OF PLANNING AND ANALYSIS
OFFICE OF THE GOVERNOR
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PENTA POSTS CO INC
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SAWTOOTH SNOWMOBILE CLUB
SDSA
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STATE OF IDHAO
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STATE OF WYOMING
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TETON GROUP OF SIERRA CLUB
TETON SOIL CONSERVATION DISTRICT
TETON TEEPEE LODGE
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TRUE OIL COMPANY
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U S CORP OF ENG ENVIR
U S DEPARTMENT OF ENERGY
U S DEPARTMENT OF INTERIOR
U S DEPARTMENT OF TRANSPORTATION
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U S ENVIRONMENTAL PROTECTION AGENCY
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WEST YELLOWSTONE NEWS
WILD FOREVER
WILDERNESS SOCIETY
WILDLIFE COUNCIL, REGION 6
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WYOMING DEPARTMENT OF COMMERCE
WYOMING DEPARTMENT OF GAME AND FISH

WYOMING GAME AND FISH DEPARTMENT
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WYOMING STATE FORESTRY DIVISION
WYOMING STATE LEGISLATURE
WYOMING STATE PLANNING AND COORD
WYOMING TRANSPORTATION DEPT
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YELLOWSTONE NATIONAL PARK
YELLOWSTONE SCD
YELLOWSTONE TRACK SYSTEMS
YELLOWSTONE VILLAGE

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KIM REMIEN
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ED TURNER
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GLENN E WALKER
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JOHN WALKER
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ANN WEINRICH
MIKE AND BARBARA WEST
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LEON WESTON
MARTIN WESTON
DAVE WHEELOCK
GARY AND ALMA WHITAKER
NED WILDE
TERRI WILKENSEN
JAMES WILKINSON
JERRY WILLIAMS
RONALD D WILLIAMS
RONALD WILLIAMS
WESLEY WILLIAMSON

# Index

# Index

## D



## E



## F



## G



## H



## I

## J



## K



## L



## M



## N



## O



## P

## Q



## R



## S



## T



## U

## V



## W



## Y





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