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Forest Service

July 2004

Forest Plan Amendments for

Grizzly Bear Conservation for the Greater Yellowstone Area National Forests

Draft Environmental Impact Statement

Beaverhead-Deerlodge National Forest
Bridger-Teton National Forest
Caribou-Targhee National Forest
Custer National Forest
Gallatin National Forest
Shoshone National Forest

Idaho, Montana, and Wyoming

Cover photograph by Jim Yule

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Abstract: The Forest Service proposes to amend six forest plans on six Greater Yellowstone Area national forests (Beaverhead-Deerlodge, Bridger-Teton, Caribou-Targhee, Custer, Gallatin, and Shoshone National Forests) to incorporate the habitat standards and other relevant provisions in the Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area (Conservation Strategy). Forest plans to be amended are the 1986 Beaverhead Forest Plan, the 1990 Bridger-Teton National Forest Land and Resource Management Plan, the 1997 Revised Forest Plan—Targhee National Forest, the 1987 Custer National Forest and Grasslands Land and Resource Management Plan, the 1987 Gallatin National Forest Plan, and the 1986 Shoshone National Forest Land and Resource Management Plan. The purpose and need is to ensure conservation of habitat to sustain the recovered grizzly bear population, update the management and monitoring of grizzly bear habitat, and provide consistency among GYA national forests in managing grizzly bear habitat. Four alternatives and their environmental effects are presented: Alternative 1 is the no action alternative (the IGBC Guidelines and current forest plans would continue to guide management of grizzly bear habitat in the recovery zone or primary conservation area [PCA]); Alternative 2 is the proposed action and preferred alternative (habitat standards and other relevant provisions in the Conservation Strategy would guide management of grizzly bear habitat in the PCA); Alternative 3 (more strict standards would guide management of grizzly bear habitat in the PCA); and Alternative 4 (same as Alternative 3 inside the PCA and increases the size of the area beyond the PCA where management direction would favor grizzly bears with more restrictive standards). The amendments, if an action alternative were selected, would go into effect when all partner agencies have signed the Conservation Strategy and the Final Rule delisting the Yellowstone grizzly bear population has been published in the Federal Register.

Information for Reviewers: Reviewers should provide the Forest Service with their comments during the review period of the draft environmental impact statement. This will enable the Forest Service to analyze and respond to the comments at one time and to use information acquired in the preparation of the final environmental impact statement, thus avoiding undue delay in the decisionmaking process. Reviewers have an obligation to structure their participation in the National Environmental Policy Act process so that it is meaningful and alerts the agency to the reviewers' position and contentions. Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519, 553 (1978). Environmental objections that could have been raised at the draft stage may be waived if not raised until after completion of the final environmental impact statement. City of Angoon v. Hodel (9th Circuit, l986) and Wisconsin Heritages, Inc. v. Harris, 490 F. Supp. 1334, 1338 (E.D. Wis. 1980). Comments on the draft environmental impact statement should be specific and should address the adequacy of the statement and the merits of the alternatives discussed (40 CFR 1503.3).

Send comments to:	**R2 Grizzly Bear FP Amendments** **c/o USFS Content Analysis Team** **P O Box 22810** **Salt Lake City, UT 84122-2810**
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Date comments must be received:	**90 days from the date the Notice of Availability is published in the Federal Register**

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Chapter 1 Purpose and Need for Action

Introduction

The Forest Service has prepared this Draft Environmental Impact Statement in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This Draft Environmental Impact Statement (DEIS) discloses the direct, indirect, and cumulative environmental impacts that would result from the proposed action and alternatives.

Document Structure

The document is organized into four chapters:

- *Chapter 1. Purpose and Need for Action:* This chapter includes information on the history of the project proposal, the purpose and need for the project, and the agency's proposal for achieving that purpose and need. This section also details how the Forest Service informed the public of the proposal, how the public responded, and lists the issues related to the proposed action.
- *Chapter 2. Alternatives, Including the Proposed Action*: This chapter provides a more detailed description of the agency's proposed action as well as alternative methods for achieving the stated purpose. These alternatives were developed based on issues raised by the public and other agencies. This discussion also includes mitigation measures. Finally, this section provides two summary tables: of the features of the alternatives considered in detail and of the environmental consequences associated with each alternative.
- *Chapter 3. Affected Environment and Environmental Consequences*: This chapter describes the environmental effects of implementing the proposed action and other alternatives. This analysis is organized by resource area.
- *Chapter 4. Consultation and Coordination*: This chapter provides lists of preparers and those who provided oversight during the development of the DEIS. The DEIS distribution list is in this chapter.
- *Sources Cited:* The sources cited is a list of references used in the preparation of the environmental impact statement. This list includes links to relevant sources of information.
- *Appendices:* The appendices provide additional detailed information to support the analyses presented in the DEIS.

Additional documentation, including detailed analyses of project-area resources, may be found in the project planning record located at the Shoshone National Forest Supervisor's Office, 808 Meadow Lane Avenue, Cody, WY 82414-4549.

1.1 Grizzly Bear Conservation in the Greater Yellowstone Area

In 1975, the U.S. Fish and Wildlife Service (USFWS) listed the grizzly bear as a threatened species in the lower 48 states, placing the species under federal protection under the Endangered Species Act (ESA) of 1973, as amended. Since listing, government agencies have worked to improve management coordination and habitat conditions, minimize grizzly bear/human conflicts and bear mortality, and increase public awareness and appreciation for the grizzly bear in the Greater Yellowstone Area (GYA).

Interagency Coordination

In 1975, land management agencies in the GYA initiated an effort to develop consistent management direction for grizzly bears. The first document, Guidelines for Management Involving Grizzly Bears in the Greater Yellowstone Area, was completed in 1979 (Mealey 1979). The USFWS determined in a biological opinion (USDI FWS 1979) that implementation of the Guidelines would promote conservation of the grizzly bear. The Interagency Grizzly Bear Committee (IGBC) was formed in 1983 to coordinate management and research actions more

effectively for recovery of the grizzly bear. The original 1979 Guidelines were modified slightly and the updated version, the Interagency Grizzly Bear Guidelines (Guidelines) (IGBC 1986), was approved by the IGBC in 1986. Following management direction in the Guidelines, lands within the Yellowstone grizzly bear recovery zone were mapped and managed according to three different management situations[1]. The recovery zone was defined as the area within which the population and habitat would be monitored to assess achievement of recovery and would be large enough and of sufficient habitat quality to support a recovered grizzly bear population. Beginning in 1979, habitats for grizzly bears inside the recovery zone in the GYA have been managed under direction specified in the Guidelines[2]; this direction has been instrumental in recovery of the grizzly bear in the GYA.

In 1983, the Yellowstone Ecosystem Subcommittee (YES), a subcommittee of the IGBC, was formed to coordinate efforts specific to the GYA. The Interagency Grizzly Bear Study Team (IGBST) was created in 1973 to provide scientific information for the management and recovery of the grizzly bear in the GYA. Scientific protocols have been developed to monitor the grizzly bear population and important habitat parameters.

Recovery Plan

The 1982 and 1993 Grizzly Bear Recovery Plans[3] (USDI FWS 1982, USDI FWS 1993) were developed to identify actions necessary for the conservation and recovery of the grizzly bear. The 1993 Grizzly Bear Recovery Plan (Recovery Plan) required the documentation of the habitat necessary to support a recovered population, and referenced the existing grizzly bear recovery zone, divided into 18 bear management units (BMUs), to provide a basis for ensuring that grizzly bears and their habitats were well distributed across the recovery zone.

The Recovery Plan defined a recovered grizzly bear population as one that could sustain a defined level of mortality, and is well distributed throughout the recovery zone. The Recovery Plan outlined a monitoring scheme that employed three demographic sub-goals to measure and monitor recovery of the Yellowstone grizzly bear population.

- Maintain a minimum of 15 unduplicated females with cubs-of-the-year over a six-year average both inside the recovery zone and within a 10-mile area immediately surrounding the recovery zone.
- Sixteen of 18 BMUs within the recovery zone must be occupied by females with young, including cubs-of-the-year, yearlings, or two-year olds, as confirmed by the IGBST from a six-year sum of observations. No two adjacent BMUs may be unoccupied during the same six-year period. This is equivalent to verified evidence of at least one female grizzly bear with young at least once in each BMU over a six-year period.
- The running six-year average for total known, human-caused mortality as confirmed by the IGBST is not to exceed 4% of the minimum population estimate. The running six-year average annual known, human-caused female grizzly bear mortality is not to exceed 30% of the 4% total mortality limit over the most recent three-year period. These mortality limits cannot be exceeded in any two consecutive years.

The Recovery Plan did not designate critical habitat or specify recovery targets for habitat. Habitat management for grizzly bears in the GYA has been implemented according to the

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[1] Management Situation 1: Grizzly habitat maintenance and improvement, and grizzly bear/human conflict minimization receive the highest management priority.
Management Situation 2: The grizzly bear is an important, but not the primary use of the area.
Management Situation 3: Grizzly habitat maintenance and improvement are not management considerations. For a complete description of the three management situations, *see* Appendix B.

[2] Most Forests incorporated the 1986 Guidelines into their forest plans. Forest plans for the Custer and Beaverhead National Forests reference the 1979 Guidelines. The two Guidelines documents are very similar and all future references in this DEIS will refer to the 1986 Guidelines, unless otherwise stated.

[3] The 1993 Recovery Plan is a revised and updated version of the original Recovery Plan, published in 1982. Throughout this DEIS, any reference to the Recovery Plan is to the 1993 version, unless otherwise stated.

Guidelines. The USFWS has developed habitat criteria that will be added to the Recovery Plan before any proposal for delisting. Those criteria are the same as the habitat standards identified in the proposed action in this document.

Land and Resource Management Plans for the Greater Yellowstone Area National Forests

The forest plans for the GYA forests were approved at various times between 1986 and 1997. Since their approval, the Forest Service has amended these plans with some amendments relating directly to the management of grizzly bear habitat. As a minimum, all six GYA forests included the Guidelines in their plans or incorporated them through amendment; some forests have incorporated additional direction for grizzly bear management. As a result, existing forest plan direction regarding grizzly bear habitat management and the age of that direction vary between the six GYA national forests. A summary of current forest plan direction related to habitat for grizzly bears is found in the description of Alternative 1 in chapter 2. USFWS biological opinions on the forest plans and amendments for the six GYA national forests have consistently noted that the implementation of the plans are not likely to jeopardize the continued existence of the grizzly bear in the GYA.

Management Actions Related to Habitat and Mortality Risk

The following is a brief summary of the actions and projects that national forests have accomplished both inside and outside the recovery zone to maintain or improve grizzly bear habitat and reduce grizzly bear/human conflicts. A more detailed list of the actions and projects for each national forest is included in the project record.

Food storage orders/regulations. Forests began implementing food storage orders in the mid to late 1980s. Food storage orders require the public to store food and garbage properly so bears cannot obtain access to the food or garbage. Food storage orders have been applied to the recovery zone and many areas outside the recovery zone. In some areas where grizzly bears have expanded outside of the recovery zone, some forests have implemented voluntary sanitation programs to reduce grizzly bear/human conflicts. Efforts are currently underway to expand the food storage orders to additional areas outside of the recovery zone.

Bear resistant facilities/sanitation. Forests have provided bear resistant facilities (i.e. bear resistant food boxes, food tubes, garbage containers, meat hanging poles, panniers, etc.) at campgrounds, trailheads, dispersed campsites, and other areas. These bear resistant facilities have been provided within the recovery zone and some areas outside of the recovery zone. Some forests have programs to loan or rent bear resistant facilities to the public for short-term uses. National forests have worked with local communities to fence garbage dumps and close garbage dumps to resolve conflicts with grizzly bears. The Forest Service has worked with communities, counties, and organizations to implement food and garbage storage ordinances and to provide bear resistant garbage containers on lands outside of the national forests.

Information and education. Substantial information and education materials (pamphlets, brochures, signs, videos, etc.) and programs have been provided to the public at all GYA Forest Service offices. Signs and brochures are available at campgrounds, trailheads, dispersed recreation sites, picnic areas, etc. Forests contributed financing for the production of the information and education film “Living in Grizzly Country.” Forests have cooperated with state wildlife management agencies and other cooperating institutions and individuals in giving “Living in Bear Country Workshops,” which include bear identification, safe camping, hiking, hunting, and working procedures to use in bear country, and the proper use of bear deterrent pepper spray. Wilderness rangers and other backcountry patrols have been used to inform and educate the public on food storage orders, and to check on compliance with these orders. Field patrols have been used during hunting seasons to reduce hunter-caused conflicts and grizzly bear mortalities.

Special grizzly bear requirements in contracts and permits. Contracts and special use permits contain clauses requiring protection of the grizzly bear and its habitat, and proper food storage and sanitation. Some contract and permit clauses require temporary or permanent cessation of

permitted activities to resolve grizzly bear/human conflicts. Timber sale prescriptions and contracts incorporate provisions to protect grizzly bear habitat, for example, silvicultural prescriptions maintain or enhance food sources, timing clauses reduce chances of grizzly bear/human conflicts, and contract clauses require proper food storage and sanitation and temporary or permanent cessation of permitted activities to resolve grizzly bear/human conflicts. Oil and gas leases have been modified to protect grizzly bear habitat.

Access restrictions/regulations. Important food sites (such as army cutworm moth sites) have been identified, with management emphasis to keep new trails and other human activities away from these sites. Roads and trails have been decommissioned (permanently closed) or restricted to motorized access to provide security for grizzly bears. Many areas within and outside the recovery zone have been closed to cross-country motorized travel to provide security and habitat protection. Areas have been closed to overnight camping to avoid grizzly bear/human conflicts. Temporary area closures have been implemented when necessary to resolve grizzly bear/human conflicts. Annual monitoring is performed to evaluate compliance with access restrictions and to provide information and education to the public. Gates and signs are maintained annually. The Forest Service has completed formal consultation with the USFWS on the effects of snow machine use on grizzly bears.

Black bear baiting. In Idaho and Wyoming, forests have worked with state wildlife management agencies to prohibit black bear baiting within the recovery zone, and to educate hunters on the identification of grizzly bears. Black bear baiting is illegal in Montana.

Whitebark pine. Whitebark pine seeds are an important food source for grizzly bears. A GYA Whitebark Pine Task Group has been formed to gather information on the status of this tree in the GYA. Current work on whitebark pine includes planting in several areas of the GYA to provide long-term habitat improvement, cone collection from healthy superior trees, silvicultural treatments to improve growth and establishment, prescribed burning to encourage whitebark pine seedling establishment, inventory and blister rust surveys, inventories to locate superior trees, work to prevent mountain pine bark beetle attacks on superior trees, and reading of whitebark pine cone transects every year in cooperation with the IGBST.

Planning, coordination, and cooperation. The Guidelines, developed in cooperation with other federal and state agencies, have been incorporated into existing forest plans and have provided the overall management direction for maintaining or improving grizzly bear habitat on National Forest System lands. Forest Service personnel contributed to the development of the Conservation Strategy and the state management plans for the grizzly bear, and participated in annual coordination meetings with state agencies, other federal agencies, organizations, and various committees. In cooperation with other federal agencies, the Forest Service developed the grizzly bear Cumulative Effects Model (CEM) to help assess the habitat value and the habitat effectiveness of grizzly bear habitat within the recovery zone. The Forest Service cooperates in the collection of data on the grizzly bear population and habitat throughout the GYA. The national forests also work cooperatively with the USFWS and state wildlife management agencies on nuisance grizzly bear management.

Livestock grazing. To resolve conflicts with grizzly bears, many domestic sheep allotments both within and outside the recovery zone have been closed. Portions of cattle allotments have been rested from cattle grazing to reduce conflicts with grizzly bears, and one cattle allotment has been closed to grazing. Livestock grazing permits include special provisions such as proper food and attractant storage and carcass removal. Annual monitoring of livestock allotments is performed to check on compliance and conflicts. Animal carcasses are disposed of to reduce conflicts with grizzly bears.

Land adjustment. On the Gallatin, Shoshone, and Targhee National Forests, important grizzly bear habitat has been acquired through land exchanges and acquisitions.

Conservation Strategy

The Recovery Plan called for the development of a grizzly bear conservation strategy to 1) describe and summarize habitat and population management, and 2) demonstrate the adequacy, continuity, and continued agency application of population and habitat management regulatory mechanisms. Development of a conservation strategy began in 1993, when biologists representing federal and state land and wildlife management agencies were appointed to the Interagency Conservation Strategy Team. In March 2000, a draft conservation strategy was released to the public for review and comment. In 2003, the Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area (Conservation Strategy) (Interagency Conservation Strategy Team 2003) was released. The Conservation Strategy

- Describes and summarizes the coordinated efforts to manage the grizzly bear population and its habitat to ensure continued conservation in the GYA
- Specifies the population, habitat, and nuisance bear standards to maintain a recovered grizzly bear population
- Documents the regulatory mechanisms and legal authorities, policies, and management and monitoring programs that exist to maintain a recovered grizzly bear population
- Documents the commitment of the participating agencies

The Conservation Strategy was developed to be the document guiding management and monitoring of the Yellowstone grizzly population and its habitat upon recovery and delisting. The Conservation Strategy describes a Primary Conservation Area (PCA), which is the Yellowstone grizzly bear recovery zone identified in the Recovery Plan. Upon implementation of the Conservation Strategy, management using grizzly bear management situations would no longer be necessary. The PCA boundary would replace the recovery zone boundary.

The states of Idaho, Montana, and Wyoming developed state grizzly bear management plans that would be implemented when the grizzly bear is delisted. The state plans were incorporated as integral parts of the Conservation Strategy. These state grizzly bear management plans recommend and encourage land management agencies to maintain or improve habitats that are important to grizzly bears and to monitor habitat conditions outside the PCA. Each state recognizes the importance of motorized access management and road density issues related to grizzly bears and other wildlife. This access management issue has also been recognized in each state's elk management efforts.

Land management agencies would work cooperatively with state wildlife agencies to meet identified population and habitat goals for grizzly bears in the GYA. The process of implementing these goals would be coordinated by the Yellowstone Grizzly Coordinating Committee[4] (YGCC), representing all the agencies with responsibility for grizzly bear management in the GYA. The Conservation Strategy emphasizes the importance of continued coordination and cooperative working relationships among management agencies to continue application of best scientific principles and maintain effective actions to benefit the coexistence of grizzly bears and humans in the ecosystem.

Current Population Characteristics

All demographic recovery targets identified in the Recovery Plan have been met since 1998. The numbers of females with cubs-of-the-year (COY) at the end of 2002 were more than double the target identified in the Recovery Plan. The grizzly bear population continues to expand in distribution and increase in numbers (Eberhardt et al. 1994, Boyce 1995, Boyce et al. 2001, Schwartz et al. 2002, Interagency Conservation Strategy Team 2003). Section 3.3.3 provides a more detailed description of the status of the Yellowstone grizzly bear population.

[4] The YGCC (Yellowstone Grizzly Coordinating Committee) replaces the YES (Yellowstone Ecosystem Subcommittee) when the grizzly bear is delisted.

Potential for Delisting

The USFWS intends to review the status of the Yellowstone grizzly bear population under the Endangered Species Act.

The USFWS actions listed below are concurrent with the development of this DEIS:

- Completion of the Distinct Population Segment analysis and connectivity analysis for the Yellowstone grizzly bear
- Formal consideration of status change and preparation of the Proposed Rule for delisting the Yellowstone grizzly bear. The Proposed Rule documents the status of the population according to the five factors in the Endangered Species Act section 4(a)(1). These factors include population and habitat status and the existence of adequate regulatory mechanisms, as described in the Conservation Strategy and other appropriate direction. The Distinct Population Segment analysis is also referenced.
- Publication of the Proposed Rule in the Federal Register
- Public comment period with public hearings
- Consideration and incorporation of public comments and any new information developed as a result of the comment period
- Publication of the Final Rule in the Federal Register of status change or continuation of listed status in conjunction with release of the final habitat criteria to the Recovery Plan and release of the final Distinct Population Segment analysis

1.2 Purpose and Need for Action

The management of grizzly bear habitat on national forests in the GYA is a dynamic process. Experience provides the public and land managers with new understanding and insights regarding the conservation of grizzly bear habitat. Scientific research continues to bring forth new theories, observations, and findings relevant to the management of these resources. This learning is continuous. Most importantly, the Yellowstone grizzly bear population has increased over the past 25 years to the point where all demographic sub-goals in the Recovery Plan have been met or exceeded since 1998. As a result, the USFWS intends to review the status of the Yellowstone grizzly bear population under the Endangered Species Act. Part of the status review will be a determination of the adequacy of regulatory mechanisms and an evaluation of the threats to the habitat of the grizzly bear in the GYA (Figure 1).

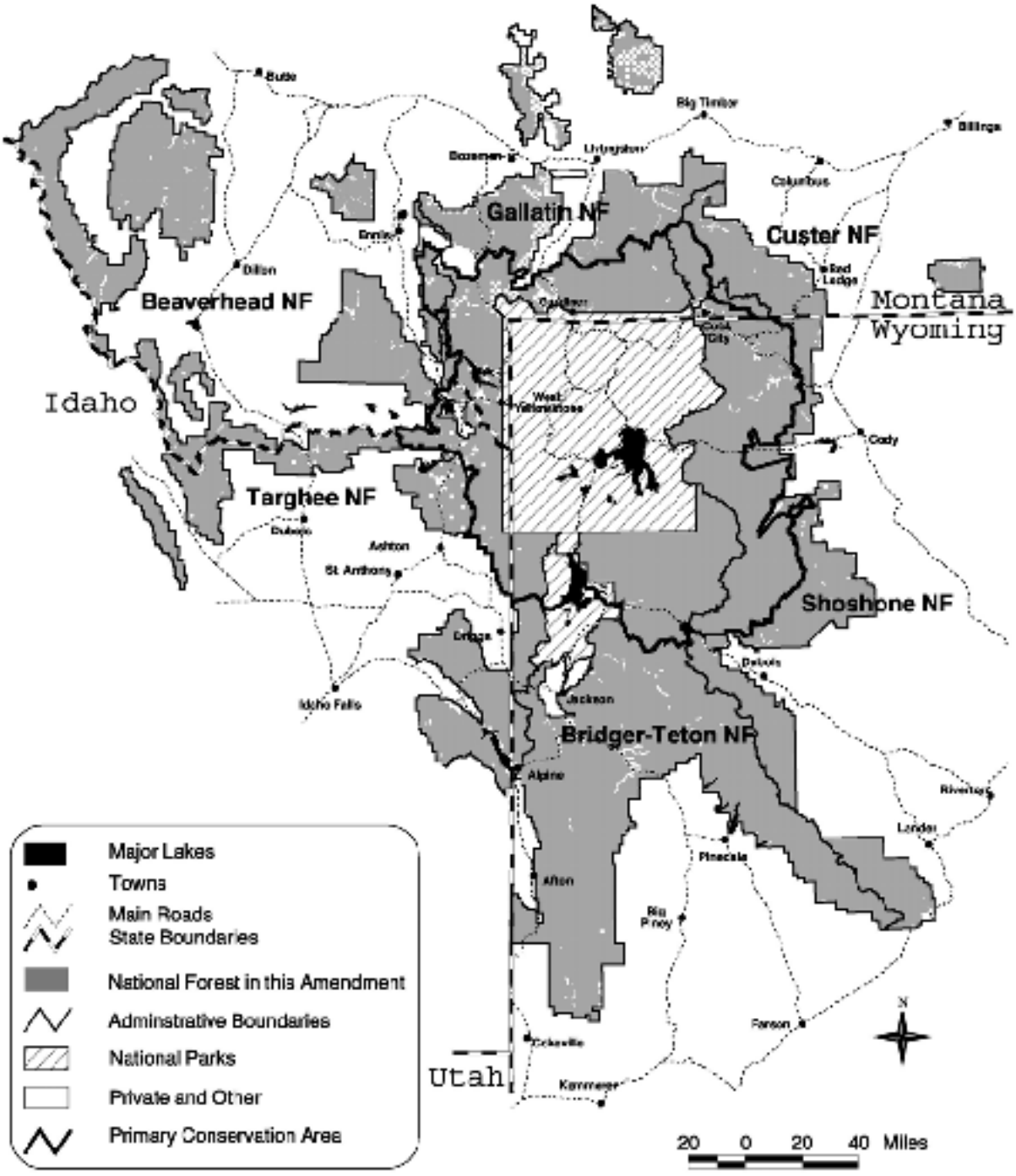
This proposal has been initiated to incorporate the habitat standards and other relevant provisions in the Conservation Strategy into the forest plans of the six GYA national forests.

The purpose of this proposal is to:

- Ensure conservation of habitat to sustain the recovered grizzly bear population
- Update the management and monitoring of grizzly bear habitat to incorporate recent interagency recommendations and agreements, as described in the Conservation Strategy
- Improve consistency among GYA national forests in managing grizzly bear habitat
- Ensure the adequacy of regulatory mechanisms for grizzly bear habitat protection upon delisting as identified in the Recovery Plan

There is a need to improve the coordination and consistency of forest plan direction in the GYA regarding grizzly bear habitat management, and to update this direction to reflect new management insight, the latest scientific information, and the changing characteristics of the Yellowstone grizzly bear population. Direction for managing the grizzly bear was recently developed through a nine-year interagency effort documented in the Conservation Strategy. Additionally, there is a need to clarify forest plan grizzly bear habitat management direction with the pending change in the Yellowstone grizzly bear population's status under the ESA. Further, there is a need to maintain habitat conditions in the PCA to sustain the recovered grizzly bear population in the foreseeable future.

Figure 1. The six GYA national forests and the Primary Conservation Area (PCA) boundary.



1.3 Proposed Action

Proposed direction tied to the purpose and need is summarized below. Additional details are discussed in chapter 2.

The Forest Service proposes to amend the forest plans for the Beaverhead, Bridger-Teton, Custer, Gallatin, Shoshone, and Targhee National Forests.

The following definitions apply to the descriptions of management direction shown in Figure 2.

Goals are general descriptions of desired results.

Objectives are measurable steps to accomplish goals, which the agency will strive to accomplish; however, accomplishments may depend on budgets or other factors.

Standards limit an agency's actions on the landscape.

Guidelines are like standards, but site-specific deviation is permitted after completion of the appropriate analysis and public involvement processes.

Figure 2. Summary of direction that would be added to forest plans under the proposed action (Alternative 2) within the PCA.

Goal	Manage grizzly bear habitat within the PCA to sustain the recovered Yellowstone grizzly bear population.
Standard 1 Secure Habitat	Maintain the percent of secure habitat in bear BMU subunits at or above 1998 levels. Temporary and permanent changes are allowed under specific conditions identified in the Application Rules.
Standard 2 Developed Sites	Maintain the number and capacity of developed sites at or below 1998 levels, with the following exceptions: any proposed increase, expansion, or change of use of developed sites from the 1998 baseline must be consistent with the Application Rules and will be analyzed, and potential detrimental and positive impacts documented, through biological evaluation or assessment.
Standard 3 Livestock Grazing	Do not create new active commercial livestock grazing allotments and do not increase permitted sheep AMs from the 1998 baseline. Monitor, evaluate, and phase out remaining domestic sheep allotments as opportunities arise with willing permittees. Implementation must be consistent with the Application Rules.
Standard 4	The Guidelines and Management Situations no longer apply[5].
Standard 5 Nuisance Bears	Coordinate with state wildlife management agencies to apply Conservation Strategy nuisance bear standards.
Guideline 1 Motorized Access	Use localized area restrictions to address conflicts with winter use activities, where conflicts occur during denning or after bear emergence in the spring.
Monitoring Item 1	Monitor, and annually submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report: secure habitat, open motorized access route density (OMARD) greater than one mile/square mile, and total motorized access route density (TMARD) greater than two miles/square mile.
Monitoring Item 2	Monitor, and annually submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report: changes in the number and capacity of developed sites on the national forest, and compare with the 1998 baseline identified in Appendix A.
Monitoring Item 3	Monitor, and annually submit for inclusion in the Interagency Grizzly Bear Study Team Annual Report: the number of commercial livestock grazing allotments on the national forest and the number of permitted domestic sheep AMs within the PCA.
Monitoring Item 4	Measure changes in seasonal habitat effectiveness in each BMU and subunit by regular application of the Cumulative Effects Model (CEM) or the best available system and compare outputs to the 1998 baseline. Annually review CEM databases, and update as needed. When funding is available, monitor representative trails or access points where risk of grizzly bear mortality is highest.

Application Rules and definitions for Standards 1 through 3 are described in detail in section 2.1.

[5] An exception is the Caribou-Targhee National Forest. The use of management situation lines is an integral part of management under the Targhee National Forest 1997 Revised Forest Plan.

1.4 Scope

Scope consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement. The proposed action and alternatives consist of goals, objectives, standards, and guidelines, and will not establish new management areas, nor change suitability designations. The analysis evaluates four alternatives:

- Alternative 1, the no action alternative
- Alternative 2, the proposed action
- Other reasonable courses of action, Alternatives 3 and 4

This analysis evaluates the direct, indirect, and cumulative effects of the proposed action and alternatives.

The proposed action is focused on grizzly bears and grizzly bear habitat and does not direct all actions that relate to grizzly bear management. Other actions related to the grizzly bear and its habitat that can occur outside this proposal are:

- Coordination among governments and organizations through MOUs, agreements, and other organizing structures
- Information and education about the bear through the general operations of the agency
- Continued implementation of food storage orders and associated efforts to keep attractants unavailable to bears (new or changes in food storage orders could occur as local situations warrant)
- Management of the grizzly bear as a sensitive species, under Forest Service Manual direction, once the bear is removed from protection under the ESA. Existing manual direction for grizzly bears may be modified to be consistent with the designation of the grizzly bear as a sensitive species.

The geographic area of interest for the proposed action is the Primary Conservation Area (PCA).

This proposed action is programmatic in nature and guides implementation of site-specific projects that tier to forest plans. Additional NEPA compliance would be required for site-specific projects.

Figure 3. Units and plans affected by this proposal.

National forest	Forest Service region	Land and resource management plan to be amended	Year plan approved	Year scheduled for plan revision completion
Beaverhead-Deerlodge	Region 1	Beaverhead Forest Plan	1986	2005
Bridger-Teton	Region 4	Bridger-Teton National Forest Land and Resource Management Plan	1990	2009
Caribou-Targhee	Region 4	1997 Revised Forest Plan—Targhee National Forest	1997	2012
Custer	Region 1	Custer National Forest and Grasslands Land and Resource Management Plan	1987	2010
Gallatin	Region 1	Gallatin National Forest Plan	1987	2010
Shoshone	Region 2	Shoshone National Forest Land and Resource Management Plan	1986	2008

Six national forests in Forest Service Region 1 (Northern Region), Region 2 (Rocky Mountain Region), and Region 4 (Intermountain Region) are part of this proposal. Reconsideration of other

goals, objectives, land allocations, and other direction in a forest plan are not part of this proposed action, but may be addressed when forest plans are revised. Figure 3 lists the schedule for forest plan revisions. The number of plans affected by this proposal is different from the number of administrative units affected, because some units have been consolidated.

1.5 Decision Framework

This DEIS was prepared to evaluate the effects of the proposed action and to look at alternative ways of achieving the purpose and need, while responding to the significant issues. The DEIS is being accomplished through an intra-agency agreement called "Greater Yellowstone National Forests Coordinated Grizzly Bear Amendments Between the Beaverhead-Deerlodge National Forest, Bridger-Teton National Forest, Caribou-Targhee National Forest, Custer National Forest, Gallatin National Forest, Shoshone National Forest, Intermountain Region Regional Office, Northern Region Regional Office, and the Rocky Mountain Region Regional Office" that was signed in May 2003. The agreement called for establishing a core interdisciplinary team and an extended team of resource specialists to assist with effects analyses and write-ups. A steering team comprised of the six forest supervisors and key personnel from regional offices helped guide this effort. Consultation with the USFWS will be completed on the programmatic effects of the proposed action.

Given the purpose and need, the responsible officials will decide whether to amend forest plans to ensure conservation of habitat to support the recovered grizzly bear population by incorporating standards and monitoring requirements from the Conservation Strategy, and if so, what that direction would contain. This direction would supersede conflicting or inconsistent direction.

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Cody, WY 82414-4549

The proposed action and alternatives to the proposed action are proposed to go into effect when all partner agencies have signed the Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area and the Final Rule delisting the Yellowstone grizzly population has been published in the Federal Register.

Grizzly bear management direction for Yellowstone and Grand Teton National Parks is being updated to incorporate relevant portions of the Conservation Strategy. Upon delisting, the states of Idaho, Montana, and Wyoming would manage grizzly bear populations as directed by the Conservation Strategy and associated state grizzly bear management plans. This proposal is an integral part of the interagency efforts agreed to under the Conservation Strategy for management of the recovered grizzly bear population in the GYA.

Additional direction for the grizzly bear, including but not limited to, guidance on information and education, food storage orders, coordination with other agencies on project level analyses for

habitat connectivity, and the designation of the grizzly bear as a regionally sensitive species, will be promulgated through the Forest Service directives system and special orders.

Other Related Efforts

Canada lynx

The Forest Service is currently in the process of amending 18 forest plans in the northern Rockies (Northern Rockies Lynx Amendment) (USDA Forest Service and USDI Bureau of Land Management 2004) to incorporate recommended management direction for lynx conservation that was not included in the existing plans. The management direction proposed for the Northern Rockies Lynx Amendment was developed by an interagency team of government biologists and was written into the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000). Canada lynx were listed as a threatened species in 2000 due to lack of guidance for conservation of lynx and snowshoe hare habitat in existing plans. The recommended management direction focuses on managing vegetation within the historic range of variability, maintaining dense understory conditions for prey (primarily snowshoe hares) by limiting pre-commercial thinning with some exceptions, recommending no expansion of snow routes and play areas in lynx habitat to minimize snow compaction, and identifying and maintaining connectivity within and between habitat areas. Lynx habitat exists within the lodgepole pine, subalpine fir, and Engelmann spruce forests throughout the PCA.

Forest Health Initiatives

Based on direction in the National Fire Plan, the Healthy Forests Initiative, and the Healthy Forests Restoration Act of 2003, the Forest Service has initiated proposals for maintaining or restoring healthy forests and lands by reducing heavy fuel loading and insect and disease risks. Management of vegetation and reduction of fuel loadings is generally emphasized around structures, called the wildland urban interface. The effects of this proposed action and the alternatives on these initiatives are briefly discussed in chapter 3.

Roadless

Since 2000, the Forest Service has had various roadless management policies in place. While no roadless rule is in effect, the effects to inventoried roadless areas are briefly discussed in chapter 3. Alternatives 3 and 4 consider inventoried roadless areas in maintaining or improving secure habitat, including removal of all motorized routes.

Forest Plan Revision

Five GYA national forests will revise their forest plans in the next few years, as shown in Figure 3 . Additionally, the Gallatin National Forest is amending its forest plan for travel management.

National Park Plans

Yellowstone National Park and Grand Teton National Park manage bears under the Guidelines and respective park General Management Plans. Until such time that each park is able to incorporate the Conservation Strategy into its General Management Plan, the parks will implement the Conservation Strategy by amending their respective Superintendents' Compendiums, followed by concurrence from the Regional Director that this mechanism will stand in place until each Park is able to incorporate the Conservation Strategy into a General Management Plan. The superintendents of each park will incorporate the guidelines and procedures outlined in the Conservation Strategy during their next respective updates of the park General Management Plans. Yellowstone National Park's revised direction on winter use is currently in litigation.

National Elk Refuge

The updated management plan for the National Elk Refuge near Jackson, Wyoming is scheduled for completion in 2006.

1.6 Public Involvement

The Notice of Intent (NOI) to prepare an environmental impact statement was published in the Federal Register on July 16, 2003. The NOI asked for public comment on the proposal from July 16 through August 15, 2003. On August 12, 2003, a revised NOI was published, extending the comment period to September 2, 2003. Additionally, as part of the public involvement process, a description of the proposed action was

- Mailed to 3,577 individuals, organizations, and agencies in July 2003
- Published in news releases in local newspapers in the GYA
- Posted on a Web site at http://www.fs.fed.us/r1/wildlife/igbc/Subcommittee/yes/YEamend/gb_internet.htm
- Listed in each forest's Schedule of Proposed Actions report beginning in the summer of 2003

Briefings were held with individuals and organizations as requested. An e-mail address was established to receive e-mail comments.

Nearly 55,000 responses were received, including 396 unique responses and 54,505 form responses.

All correspondence is retained in the project file.

1.7 Issues

NEPA regulations (40 CFR 1501.2(c)) require that federal agencies study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflict concerning alternative uses of available resources. The scoping process was used to identify conflicts associated with the proposed action and to identify issues to use as a basis for developing alternatives.

Comments that addressed the effects of the proposed action were sorted into several primary issues—these issues were used to develop alternatives to the proposed action that meet the purpose and need.

Some issues were not addressed in this DEIS. A list of issues not carried forward can be found in section 1.7.2. A detailed summary of comments received during scoping can be found in the project record.

1.7.1 Primary Issues

Adequate Habitat Standards

Many respondents requested more restrictive habitat standards or an extension of habitat standards to lands outside the PCA, or both, to provide additional protection for the grizzly bear, including habitat connectivity within the GYA. Some of the respondents requested the elimination of temporary changes in secure habitat, no new developed sites, mandatory phase out of sheep grazing, and establishing road density standards. Some felt logging would degrade habitat for the bear. Others felt that habitat standards should be extended to areas outside the PCA. Others requested fewer restrictions, including omitting the Plateau Bear Management Unit from habitat standards. Many respondents had concerns about 1998 as a baseline for resource management. Although the grizzly bear population achieved all demographic recovery goals by 1998 with this management regime in place, some respondents felt the baseline could be adjusted to allow either more management flexibility, or increase protections for the grizzly bear.

Issue Indicators

- Acres of long-term secure habitat within the PCA
- Acres of long-term secure habitat outside the PCA
- Acres of denning habitat closed to snow machine use
- Potential for conflicts at developed sites

- Potential for conflicts with sheep (number of allotments)
- Potential for conflicts with cattle (number of allotments)
- Potential area closures to provide adequate security for major foods
- Potential for major food source enhancement
- Potential for sustaining the recovered grizzly bear population

Changes in the PCA Boundary

There were concerns about the size of the PCA boundary. Some felt the PCA is adequate because it has allowed the grizzly bear population to achieve all demographic recovery targets. Others felt that the PCA is too small as habitats outside the PCA have been occupied by grizzly bears and contributed to the recovery of the grizzly bear. Others felt that the PCA should be smaller and the numbers of bears reduced.

Issue Indicators

- Acres of long-term secure habitat within the PCA
- Acres of long-term secure habitat outside the PCA

Recreation Opportunities

Many respondents had concerns that the habitat standards would result in reduced motorized recreation opportunities and in closing more roads. Although not part of the proposed action, concerns about food storage requirements were expressed and some respondents felt that black bear baiting should be restricted in grizzly bear habitat. There were concerns about the effects to special use permitted resorts, ski areas, and lodges if developed sites were limited to 1998 levels. Additionally, some respondents felt that information and education could play an important role in how to recreate in bear country.

Issue Indicators

- Effects to developed recreation—number of sites where capacity is held to 1998 or 2003 levels
- Effects to motorized summer recreation—miles of motorized access routes to be decommissioned
- Effects to developed and dispersed summer recreation use—closures where conflicts occur
- Effects to motorized winter recreation—acres closed to snow machine use

Social and Economic Effects

Some respondents were concerned with the economic effects on income, employment, and lifestyle changes related to livestock operations, ranches, people associated with the timber industry, and recreation-related businesses. Some counties have passed resolutions banning the presence of grizzly bears, and are concerned about the economic well being of their areas. Some expressed that reduced grazing could accelerate the breakup of ranches into subdivisions in the GYA if ranching is not economically viable.

Issue Indicators

- Community infrastructure/developed sites affected
- Government coordination – level of agreement about bear management
- Effects on ranching lifestyles – number of allotments affected
- Livestock-related employment and income
- Timber-related employment and income
- Acres of land area with restrictions and mitigation allowed or not allowed

Vegetation, Fuels, and Access

Some respondents, including land managers, were concerned that the standards would be too restrictive and would affect the ability to manage hazardous fuels; programs such as the Healthy Forests Initiative would be compromised and treatment of fuels in the wildland urban interface could be affected. Managers are concerned the proposed action would limit the administrative use

of roads and motorized trails, and the construction of roads and motorized trails—this potentially influences activities such as timber harvest, wildfire suppression, administrative management activities, and other uses associated with Forest Service roads and motorized trails.

Issue Indicators

- Potential change from existing level of timber management
- Potential change from existing level for whitebark pine enhancement
- Effects to access for fire suppression
- Reduction in flexibility for fire treatments
- Ability to treat fuels in the wildland urban interface
- Miles of motorized access routes to be restricted or decommissioned

Minerals

Some respondents were concerned that the habitat standards would limit oil and gas and mining and exploration programs because of limitations on developed sites and secure habitat. Others felt additional restrictions should be imposed on these programs.

Issue Indicators

- Potential change to oil and gas leasing decisions or proposed operations
- Effects on hardrock mineral development
- Effects on salable and mineral materials operations

Food Source Stability

Some respondents said that threats to food sources are not fully understood and must be further studied, suggesting that major foods for bears, such as army cutworm moths, spawning cutthroat trout, whitebark pine nuts, and wild ungulate carcasses may not be available in future years because of disease or other threats. Some said fire prevention is a prime factor in the decline of whitebark pine. Some respondents felt that due to the uncertainty of the loss of these major foods, that a larger area should be managed for grizzly bears.

Issue Indicators

- Potential area closures to provide adequate security for major foods
- Potential for major food source enhancement
- Acres of long-term secure habitat outside the PCA
- Potential change from existing level for whitebark pine enhancement

Connectivity and Linkage between the Six GYA National Forests

Some respondents felt that the ability for bears to move between important habitats in the GYA should be addressed. They suggested that the Forest Service should increase efforts to make the landscape in these linkage areas less lethal for bears through implementation of food storage requirements, elimination of domestic sheep, and habitat maintenance and restoration of degraded areas.

Issue Indicators

- Acres of long-term secure habitat within the PCA
- Acres of long-term secure habitat outside the PCA

Commercial Livestock Grazing

Some respondents were concerned about how much impact the habitat standards would have on livestock grazing, and in particular, what the effects would be from phasing out sheep grazing. Grizzly bear/livestock conflicts were also a concern, as well as changes in livestock operations.

Issue Indicators

- Number of sheep allotments closed
- Number of cattle allotments estimated to be closed

1.7.2 Issues Not Addressed in this Analysis

The following issues and comments were received through public and internal scoping. The IDT did not carry them forward in the analysis because they were either 1) outside the scope of the proposed action, 2) already decided by law, regulation, forest plan, or other higher level decision, 3) irrelevant to the decision to be made, or 4) conjectural and not supported by scientific or factual evidence. Some of the issues will be addressed during future site-specific analyses as projects are proposed.

Connectivity and Linkage Zones outside the GYA National Forests

Issue: Many respondents felt the Forest Service should manage for increased habitat connectivity and linkage zones connecting the Yellowstone grizzly bear population with grizzly bear populations in other recovery zones.

The scope of the proposed action addressed in this DEIS is limited to the six national forests within the Greater Yellowstone Area. It does not propose any changes to management direction on other national forests. Land management and grizzly bear habitat management direction for other national forests is outside the scope of this proposal. Issues and concerns associated with habitat connectivity between grizzly bear recovery zones may be addressed through appropriate interagency coordination efforts. The analysis in the DEIS addresses how the proposed action and alternatives potentially affect habitat connectivity within the six GYA national forests.

Concerns for maintaining the genetic diversity of the Yellowstone grizzly bear population in the absence of movement between ecosystems is addressed in the Conservation Strategy. Because the Yellowstone population is an isolated population, genetic declines over time are expected due to inbreeding effects. The Conservation Strategy recommends appropriate actions to maintain genetic diversity between the Yellowstone and the Northern Continental Divide Ecosystem (NCDE) grizzly populations, with monitoring and managing adaptively for genetic health.

An evaluation of the potential linkage between existing ecosystems is a key task in the Recovery Plan. In 2001, the USFWS issued a report titled Identification and Management of Linkage Zones for Wildlife between Large Blocks of Public Land in the Northern Rocky Mountains (USDI FWS 2001). This report was updated in 2003 (Servheen et al. 2003b) and documents a five-year process of evaluating potential linkages between the NCDE, Selkirk and Cabinet/Yaak, and Bitterroot recovery areas. Servheen et al. (2003b) define linkage zones as “the area between larger blocks of habitat where animals can live at certain seasons where they can find the security they need to successfully move between these larger blocks of habitat.” Linkage zones are not corridors, which imply an area used just for travel. Linkage zones are areas that can support low-density wildlife populations often as seasonal residents. The USFWS is currently working on a similar evaluation of habitat fracture and potential linkage between the Yellowstone recovery area and the NCDE and Bitterroot recovery zones.

The linkage opportunities for connecting grizzly bear ecosystems are in Montana and Idaho. The Yellowstone Grizzly Bear Management Plan (State of Idaho 2002) does not preclude allowing bears to occupy new habitats. The Grizzly Bear Management Plan for Southwestern Montana (State of Montana 2002) recognizes the importance of linkage zones and has a long-term goal for grizzly bears “to allow populations in western Montana to reconnect by occupying currently unoccupied habitats.”

The conclusion that this issue is outside of the scope of this proposed action does not imply that the Forest Service considers habitat connectivity and the need for maintaining linkage between recovery zones to be unimportant. Maintenance of linkage zones between ecosystems is a multifaceted issue, involves more species than just grizzly bears, and is well beyond the authorities of the Forest Service alone to address. However, the Forest Service, in concert with the IGBC, the USFWS, and various other governmental and non-governmental groups, continues to evaluate opportunities to improve habitat connectivity and linkage zones. The IGBC has agreed through an MOU to support linkage zone identification and the maintenance of existing linkage

opportunities for wildlife. The IGBC has appointed three task forces (public lands, private lands, and highways) to evaluate linkage opportunities. The private land task force has completed a report (Parker and Parker 2002) that provides agency personnel with guidance for involving rural communities in the development of linkage zones.

Forest Service wildlife biologists are evaluating regional and finer scale opportunities for maintaining and improving habitat connectivity and linkage zones. The Forest Service recently created a national level position to coordinate efforts to maintain linkage associated with roads and highways. Region 1 of the Forest Service conducts an annual workshop entitled "People, Economics and Forest Carnivore Management" that stresses connectivity issues for carnivores. Invitees include Forest Service personnel and representatives from the Federal Highways Administration and the three state highway departments. Connectivity analyses and considerations for wildlife in road construction and reconstruction have become common practice within the Forest Service.

Management of the Grizzly Bear Population

Issue: Many respondents were concerned about the size of the population (there are too few, or too many, grizzly bears); how populations would be managed, including the use of hunting as a management tool; and mortality limits.

Management of grizzly bear populations, including size, mortality rates, and possible hunting of the bear are outlined in the Conservation Strategy, and are outside the scope of this analysis. The USFWS and three state wildlife agencies manage the grizzly bear population.

Delisting the Grizzly Bear

Issue: Some respondents wanted to see the grizzly bear delisted immediately, while some do not want the grizzly bear delisted at all.

The decision to delist the grizzly bear is the responsibility of the USFWS. The relationship between this proposal and delisting is discussed in sections 1.1 and 1.5.

Thresholds and Mechanisms to Compensate for Possible Food Declines

Issue: Some respondents felt that an approach is needed that recognizes differences in habitat productivity, including food sources, between BMUs throughout the ecosystem and that defines thresholds for habitat security by BMU so as to prompt corrective actions if such thresholds are violated. They also felt that the approach should determine what level of habitat security and habitat effectiveness is needed to ensure a positive growth rate in each of the BMUs, accounting for changing levels of key foods in the future.

Differences in habitat productivity between BMUs were evaluated in the Conservation Strategy. The analysis demonstrated that secure habitat in each BMU subunit contained similar proportions of relative habitat value when compared to the subunit as a whole. However, the amount of secure habitat or the abundance of certain key foods within specific BMUs and subunits and the relationship to birth and death rates of grizzly bears is not known. It is not known how much habitat is necessary to support a specific number of bears. Proposed habitat security thresholds do provide the necessary trigger to prompt corrective action if those thresholds are violated. Grizzly bear home ranges are large and often overlap several BMUs; therefore, it is not appropriate to manage populations at a BMU level and the mechanisms to manage populations at the BMU level are not available (Schwartz personal communication 2004).The Forest Service is currently cooperating on an effort to address grizzly bear demographics relative to landscape variables (roads, development, habitat values, and habitat effectiveness) to see if any are useful in predicting reproduction and survival.

Concerns over the future decline of key foods are speculative and supported by little data. It has been suggested that whitebark pine is at risk for decline (Pease and Mattson 1999, Willcox and Ellenberger 2000, Mattson and Merrill 2002, Interagency Conservation Strategy Team 2003) due to the presence of blister rust. However, blister rust has been in the GYA since the 1940s and no major die-offs of whitebark pine due to blister rust have been noted. Recent research has

suggested that female grizzly bears feed little on cutthroat trout and the potential effect of the loss of this major food may not be significant demographically (Schwartz personal communication 2004). Further, there are no known scientific publications supporting the notion that moth numbers will decline in future years. Ungulate numbers fluctuate primarily due to weather conditions, predation, and agency management strategies.

The uncertainty over future availability of the major foods and the effect on the grizzly bear population is discussed in chapter 3. The potential loss of major foods is addressed in this DEIS through consideration of Alternative 4. All alternatives include monitoring requirements related to trends in the abundance of the major foods. Furthermore, the Conservation Strategy commits others agencies, such as Yellowstone National Park, to contribute to monitoring key foods.

It is not currently possible to predict the amount of secure habitat needed under different food or habitat regimes. The secure habitat thresholds in the proposal were originally identified in the Conservation Strategy, which is an adaptive document designed to respond to changing conditions and new information. The Forest Service will be a member of the Yellowstone Grizzly Coordinating Committee that will coordinate management of the grizzly bear upon delisting. Mechanisms are in place to modify management direction if necessary.

In conclusion, alternatives were identified that would increase the level of habitat security to a minimum of 70% where feasible inside and outside the PCA. All subunits inside the PCA with secure habitat percentages greater than 70% are occupied by females with young and survival is high. Even subunits with lower than 70% secure habitat are occupied by females with young. The 70% level of habitat security is higher than secure habitat thresholds identified for other grizzly bear ecosystems in the lower 48 states.

Chapter 2 Alternatives, Including the Proposed Action

Introduction

This chapter describes and compares the alternatives considered for the Forest Plan Amendments for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests. It includes a description of each alternative considered in detail. This section also presents the alternatives in comparative form, sharply defining the differences between each alternative and providing a clear basis for choice among options by the decision makers and the public. Some of the information used to compare the alternatives is based upon the design of the alternative and some of the information is based upon the environmental, social, and economic effects of implementing each alternative.

2.1 Alternatives Considered in Detail

The Forest Service developed four alternatives, including the no action and proposed action alternatives. Two alternatives were developed in response to issues raised by the public.

Figure 4. Criteria and definitions common to all action alternatives.

Criteria	Definition
Motorized access routes	Motorized access routes are all routes having motorized use or the potential for motorized use (restricted roads) including motorized trails, highways, and forest roads. Private roads and state and county highways are counted.
Removing motorized routes	To result in an increase in secure habitat, motorized routes must either be decommissioned or restricted with permanent barriers. Non-motorized use is permissible.
Season definitions	Season 1 – March 1 through July 15 Season 2 – July 16 through November 30
Project	A project is an activity requiring construction of new roads, reconstructing or opening a restricted road, or recurring helicopter flights at low elevations.
Secure habitat	Secure habitat is more than 500 meters from an open or gated motorized access route or recurring helicopter flight line. Secure habitat must be greater than or equal to 10 acres in size. Large lakes (greater than one square mile) are not included in the calculations.
Developed site	A developed site includes but is not limited to sites on public land developed or improved for human use or resource development such as campgrounds, trailheads, improved parking areas, lodges (permitted resorts), administrative sites, service stations, summer homes (permitted recreation residences), restaurants, visitor centers, and permitted resource development sites such as oil and gas exploratory wells, production wells, plans of operation for mining activities, work camps, etc.
Vacant allotments	Vacant allotments are livestock grazing allotments without an active permit, but that may be restocked or used periodically by other permittees at the discretion of the land management agency to resolve resource issues or other concerns.
Recurring conflicts	Recurring grizzly bear/human or grizzly bear/livestock conflicts are defined as three or more years of recorded conflicts during the most recent five-year period.

Some grizzly bear management direction will continue under all alternatives, including direction described in Forest Service Manual 2600 Wildlife, Fish, and Sensitive Plant Management. This includes direction on:

- Keeping attractants unavailable to bears (food storage)
- Coordination with other Forest Service regions and other federal and state agencies

- Participation on the IGBC and associated subcommittees
- Grizzly bear mortality prevention
- Information and education programs to inform users of proper behavior in bear country
- Translocation of grizzly bears including the use of helicopters in wilderness
- Habitat analysis and planning
- Animal damage control efforts

In addition, minerals development under the 1872 General Mining Law would be allowed, but mitigated to avoid impacts to bears.

2.1.1 Alternative 1

Alternative 1 is the no action alternative. NEPA regulations require the Forest Service to identify the no action alternative and use it as a baseline for comparing the environmental consequences of the other alternatives (40 CFR 1502.14(d), and Forest Service Handbook 1909.15 Environmental Policy and Procedures, 14.1).

Under Alternative 1, current forest plans would continue to guide management of grizzly bear habitat in the recovery zone. All forests have goals that provide suitable and adequate amounts of habitat for recovery of a viable grizzly bear population in the Greater Yellowstone Area as identified in the Recovery Plan. All forests have incorporated the Guidelines. Some forests have added more specific forest plan direction that builds upon general statements in the Guidelines. Individual forests have added forest plan direction on grizzly bear management since 1986.

Other direction includes special orders, biological opinions issued by the USFWS, cooperative agreements, and Forest Service manual and handbook direction. The goals and objectives of the forest plans, as amended, and other direction would remain unchanged under this alternative.

The grizzly bear would retain its protected threatened status under the Endangered Species Act and all forests would continue to consult with the USFWS on all actions authorized, permitted, or carried out by the Forest Service.

Grizzly Bear Guidelines

The Guidelines require management of grizzly bear habitat by Management Situation (MS) 1, 2, or 3 (Appendix B). Specific management guidelines for each of five resource areas for each MS are identified. The five resource areas are 1) wildlife, 2) timber and fire, 3) range, 4) recreation, and 5) minerals, watershed and special uses. The specific guidelines relate to 1) maintaining or improving habitat, 2) minimizing grizzly bear/human conflict potential, and 3) resolving grizzly bear/human conflicts. Direction for habitat management, keeping attractants unavailable to bears, and resolving conflicts in the Guidelines is specific to the recovery zone. No direction is given for management of grizzly bears or their habitat outside the recovery zone; however, most forests have implemented and would continue to implement project level direction similar to that specified in the Guidelines outside the recovery zone in areas occupied by grizzly bears in cooperation with the USFWS. The Guidelines are considered dynamic and subject to change as research provides additional data. In addition, MS designations are subject to review and reclassification.

For the National Forest System lands in the grizzly bear recovery zone

- 59.3% are within MS 1
- 37.3% are within MS 2
- 1.4% are within MS 3
- 2% are not identified as a MS

The acres not identified as MS are all on the Beaverhead National Forest and are primarily designated wilderness (Figure 5).

The following is a brief description of each MS and a summary of the direction for maintaining and improving habitat and minimizing conflicts. Specific direction for resolving grizzly bear/human conflicts under the Guidelines is found in Appendix B.

Management Situation 1. The area contains grizzly population centers and habitat components needed for the survival and recovery of the species or a segment of its population. Grizzly habitat maintenance and improvement and grizzly bear/human conflict minimization receive the highest management priority.

The guidelines for MS 1 specify direction that will be implemented on timing and spacing of resource management activities, management of roads and trails to preclude conflicts, management of attractants, habitat improvement through vegetation manipulation, maintenance of mature whitebark pine, protection of import food production areas from livestock grazing, and management of wildlife and ungulate carcasses. Clauses are required in operating plans, permits, contracts and special use permits to maintain or improve habitat for grizzlies, to cooperate in meeting agency goals and objectives for grizzly bears, and to resolve grizzly bear/human conflicts. Logging, fire activities, minerals activities, specials uses, grazing, and recreation activities that will adversely affect grizzly populations and their habitat would not be permitted. Conflicts with bears and livestock are resolved in favor of the bear (Appendix B).

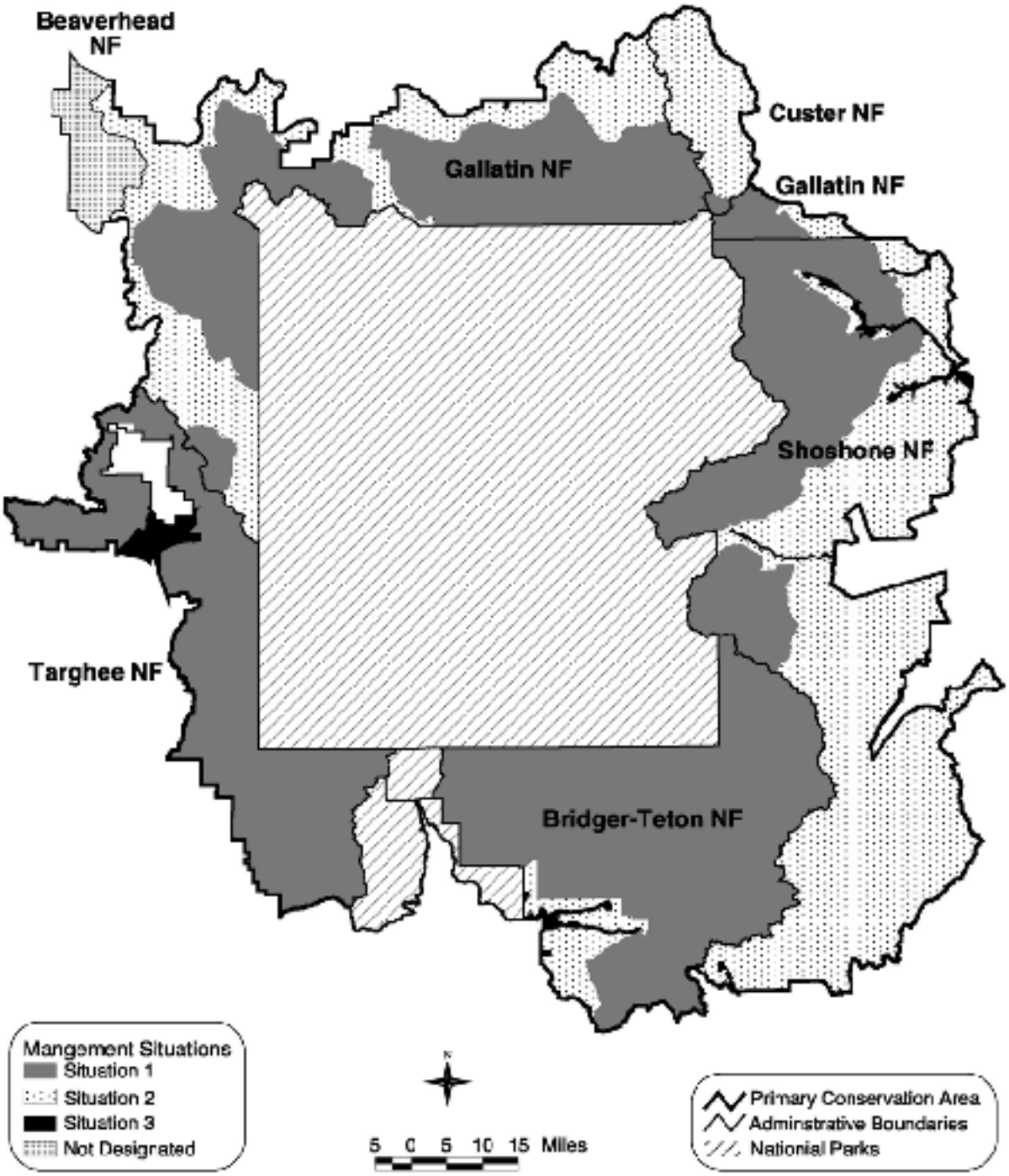
Management Situation 2. Current information indicates that the area lacks distinct population centers; highly suitable habitat does not generally occur, although some grizzly habitat components exist and grizzlies may be present occasionally. The grizzly bear is an important, but not the primary use of the area.

Specific guidelines for MS 2 are similar to those identified for MS1 but in many cases the direction is to be implemented where feasible and/or only where grizzly presence is likely. Where grizzly presence is likely, the guidelines require keeping attractants unavailable to bears and managing ungulate and wildlife carcasses. Generally, grizzly habitat improvement is not a consideration. Some exceptions are silvicultural treatments will be designed to maintain or favor mature whitebark pine, and important food production areas will be protected from livestock grazing. Logging, fire activities, minerals activities, special uses, grazing, and recreation activities that will adversely affect grizzly populations will be avoided, if feasible. Conflicts with bears and livestock are resolved on a case-by-case basis (Appendix B).

Management Situation 3. Developments, such as campgrounds, resorts or other high human use associated facilities and human presence result in conditions that make grizzly bear presence untenable for humans and/or grizzlies. Grizzly habitat maintenance and improvement are not management considerations.

Individual guidelines are specific with direction that will be implemented on management of attractants and wildlife and ungulate carcasses where grizzly bear presence is likely. Clauses are required in operating plans, permits, contracts and special use permits to cooperate in meeting agency grizzly management goals and objectives. Conflicts with livestock and bears are generally resolved by removing or relocating the bear (Appendix B).

Figure 5. Management Situations 1, 2, and 3 inside the recovery zone on the six GYA national forests.



Individual Forest Plan Direction for Grizzly Bear Habitat Management

Beaverhead National Forest

The Beaverhead Forest Plan, approved in 1986, includes a goal to provide habitat that contributes to the recovery of threatened and endangered species in accordance with approved Recovery Plans.

The Forest Plan states that there is no "occupied habitat" on the Forest. However, the Forest Plan contains direction to document all grizzly bear use of the Forest and to evaluate habitat suitability in the Madison Range. Any habitat designated in the future as "occupied" will be managed according to the Greater Yellowstone Grizzly Bear Recovery Plan. The Recovery Plan states that the Guidelines should be applied. Nuisance bears will also be managed according to the Guidelines. Amendment 10 closed the non-wilderness portion of the recovery zone to motorized access.

The grizzly bear is a management indicator species and the Forest Plan requires annual monitoring of acres of habitat and number of animals.

Bridger-Teton National Forest

Forestwide grizzly bear recovery objectives identified in the 1990 Bridger-Teton National Forest Land and Resource Management Plan are:

- Provide suitable and adequate amounts of habitat for recovery of a viable grizzly bear population in the Greater Yellowstone Area as identified in the Grizzly Bear Recovery Plan
- Long-term Forest habitat management should provide vegetation diversity, approximate natural conditions, and include all successional stages important to the grizzly bear
- Prevent needless encounters between grizzly bears and people, and prevent grizzly bears from gaining access to attractants such as food and garbage

Management of grizzly bears and habitat inside the recovery zone is directed by "existing and future Interagency Grizzly Bear Management Guidelines." Direction is also specified to follow the special order for sanitation, to make some changes in livestock distribution and numbers as necessary to avoid adverse effects to grizzly bears and not to allow changes in class of livestock in MS 1 and MS 2. Several management areas inside the recovery zone emphasize enhancement of habitat and maintenance of recovered grizzly bear populations. Various standards and guidelines in these management areas require considerations for cover retention, size of openings, duration of activities, and size of the area impacted. Direction for several management areas inside the recovery zone states that no surface disturbing activities can occur until the grizzly bear CEM can be run to help determine potential effects on the bear. An oil and gas stipulation on part of the recovery zone states that if the grizzly bear is removed from protections under ESA, no surface occupancy (NSO) stipulation will apply.

The grizzly bear is a management indicator species and monitoring requirements include compliance with interagency grizzly bear guidelines by ground checking 75% of certain Forest activities to ensure compliance with food storage regulations and to use the CEM to ensure habitat capability for grizzly bears does not drop below recovery levels.

Custer National Forest

There is a Forestwide goal in the 1987 Custer National Forest and Grasslands Land and Resource Management Plan for the management of threatened and endangered species "to provide habitat that contributes to the recovery of the species." Management inside the recovery zone is directed by the Guidelines and is incorporated into the Forest Plan by reference. Forestwide wildlife standards state that if threatened or endangered species are found during project level planning, the surface disturbing activity will be modified in such a way that the species will not be adversely affected, the surface disturbing activity will be disallowed, or consultation with the USFWS will be arranged. Additionally, all non-wilderness areas inside the recovery zone have oil

and gas stipulations for no surface occupancy, or are available but not offered for lease. The Forest Plan requires monitoring of acres by habitat condition for grizzly bears.

Gallatin National Forest

The 1987 Gallatin National Forest Plan has a goal to provide habitat for viable populations of threatened and endangered species, including the grizzly bear.

A modified version of the Guidelines provides direction for grizzly bear management inside the recovery zone and is included in the Forest Plan as Appendix G. Direction is in the form of either standards or guidelines and the applicable MS. Additional direction for MS 1 and MS 2 areas on the duration of timber harvest activities, timing of re-entry, and maintenance of 5,000-acre security areas adjacent to sale activities is incorporated through the Biological Opinion on the Forest Plan and is included in the Forest Plan as Appendix H. Management area direction inside the recovery zone includes direction to 1) manage roads and trails and recreation activities to control public use in areas with a high potential for grizzly conflicts, 2) limit minerals activities to specific areas or periods to reduce mortality risk and reduction in habitat quality for grizzly bears, and 3) no new sheep allotments and sheep will not be restocked onto vacant allotments in MS 1 areas.

Amendment 19 established an objective to manage human access within the recovery zone in order to help meet the goal of grizzly bear recovery. Access standards were included in the Forest Plan that require, within BMU subunits, no increase in open motorized access route density and total motorized access route density, no decrease in core areas from 1995 levels, and to adopt "Yellowstone access standards" when they become available.

The Forest Plan includes requirements to monitor preventable grizzly bear mortalities and population trends of the grizzly bear as a management indicator species.

In 2004, the Forest will complete a new travel management plan for public access and travel within the entire Forest and incorporate it into the Forest Plan.

Shoshone National Forest

The 1986 Shoshone National Forest Land and Resource Management Plan includes a goal to "maintain or improve habitat for threatened and endangered species including participation in recovery efforts for listed species."

An amendment to the Forest Plan in 1991 established the primacy of the Guidelines over all other Plan direction. This amendment incorporated the Guidelines, in total, by reference. In addition, the Forest Plan provides specific direction for minimizing impacts to grizzly bears from timber harvest activities. Standards provide direction on the timing and duration of timber harvest activities, restrict the number of entries per decade in a sale area for MS 1 areas, require periods of inactivity following sale activities before reentry in MS 2, prohibit entry in drainages with cover for grizzly bears below certain levels, and require 5,000-acre security areas adjacent to sale activities. Direction is also specified to apply a permit system in wilderness areas if necessary to prevent grizzly bear/human conflicts. A no surface occupancy stipulation for oil and gas development is applied to MS 1 lands outside wilderness, some MS 2 lands, and in moth aggregation areas. Security areas (5,000 acres) are required adjacent to oil and gas activity and no drilling is allowed within two miles of grizzly bear denning sites. A Forestwide standard in the Allowable Sale Quantity amendment (USDA Forest Service 1994a and b) specifies no net increase in roads and a biological opinion from the USFWS requires no net gain in developed sites along the North Fork Shoshone River corridor.

The grizzly bear is a management indicator species and served as the basis for formulation of habitat diversity standards in the Forest Plan. Monitoring is required for known human-caused grizzly bear mortalities, compliance with the 1986 Guidelines, and grizzly bear habitat effectiveness.

Targhee National Forest

The Revised Targhee National Forest Plan was approved in 1997. Forestwide goals specific to the grizzly bear include direction to maintain habitat conditions sufficient to sustain a recovered population of grizzly bears, to integrate the forest road and trail system with the needs of humans and grizzly bears, and to increase grizzly bear security.

Forestwide objectives for grizzly bear habitat are to

- Meet the recovery criteria in the Grizzly Bear Recovery Plan
- Implement the IGBC Guidelines
- Provide safe, secure sites for nuisance bears
- Achieve road density standards in the BMUs within three years of the implementation of the ROD [Record of Decision] in coordination with USFWS and state wildlife agencies
- Develop fire management plans for each of the BMUs to address wildfires and prescribed fire

In addition to direction requiring implementation of the Guidelines, the Forest has included Forestwide and specific management area direction for management areas inside the recovery zone. The Forest Plan incorporates many of the management concepts embedded in the Conservation Strategy, as the revised Plan was being developed in close coordination with the development of the Conservation Strategy.

The Forest Plan includes a Forestwide guideline identifying focus groups for grizzly bear education. All sheep allotments inside the recovery zone will be phased out on an opportunity basis. Prescriptions are designated for grizzly bear core and security areas where human activities are restricted or limited. Open and total motorized access route density standards are identified for each of the BMUs inside the recovery zone. Inside the recovery zone, operating plans, special use permits, and grazing permits require management of human attractants and livestock carcasses. Temporary cessation or modification of permitted activities will occur to resolve grizzly bear/human conflicts. Where grazing is allowed inside the recovery zone, high quality food production areas for grizzly bears will receive special grazing direction. In areas where timber harvest is allowed inside the recovery zone, it is required that 7,000-acre security areas are maintained adjacent to sale areas.

There are numerous other standards and guidelines relating to timing of projects, size of projects, location of roads, administrative use of roads, restricting roads to project activities, improving grizzly bear habitat, and minimizing grizzly bear/human conflicts depending on the management area. The recovery zone is not available for oil and gas leasing. All standards and guidelines specifically for grizzly bears are directed only within the recovery zone.

The grizzly bear is a management indicator species and monitoring items specific for grizzly bears include grizzly bear population trend in cooperation with the IGBST, habitat changes through annual updates of relevant GIS databases, and improvement of grizzly bear habitat through use of the CEM. In addition, the Forest will monitor achievement of road density standards and road closure effectiveness.

Summary of Direction for Alternative 1 for all GYA National Forests

Direction for long-term maintenance of secure habitat would continue as per the management area direction for individual forest plans (sections 3.2 and 3.3.4). Any changes in secure habitat and motorized access route density outside of management areas that preclude road construction would be determined through analysis directed by the Guidelines for each management situation and other specific forest plan direction. Reductions in secure habitat and increases in motorized access route density could occur.

Any proposed changes in the number and capacity of developed sites would primarily be evaluated as directed by the Guidelines according to the management situation. In most situations increases could occur, especially in MS 2 and MS 3 areas.

Increases in the number of allotments or number of sheep would be directed primarily by the Guidelines; increases could occur, particularly in MS 2 and MS 3.

Inside the recovery zone, all forests (except 2.4% of the Targhee National Forest and 8.6% of the Bridger-Teton National Forest) would restrict motorized access to designated routes. Over-the-snow use would be monitored and mitigated around known denning sites, according to the terms and conditions of the 2002 Biological Opinion on the Effects of Snowmobile Use on Grizzly Bears (USDI FWS 2002). The Targhee National Forest would restrict over-the-snow use to resolve specific conflicts with grizzly bears.

Most areas inside the recovery zone would be either not available for oil and gas leasing, or the no surface occupancy stipulation would apply. Approximately 2.8% of National Forest System lands in the recovery zone are available for surface occupancy for oil and gas leasing. Outside the recovery zone, oil and gas leasing would vary by forest. Hardrock minerals and salable minerals operations would be allowed and mitigated under current laws and regulations and forest plan standards.

Direction to keep human food and garbage and pet and processed livestock foods unavailable to bears is included in all forest plans as per the Guidelines.

BMUs and subunits have been used for over a decade to evaluate population and habitat information inside the recovery zone (Figure 6). Subunits provide the optimal scale for evaluation of seasonal feeding opportunities and landscape patterns of food availability for grizzly bears (Weaver et al. 1986). Existing forest plans, except the Gallatin Forest Plan and the 1997 Revised Targhee Forest Plan, do not contain specific direction for management of habitats by subunit. However, habitat inside the PCA on all forests would continue to be evaluated and monitored by subunits in cooperation with the IGBST. Individual forests would monitor whitebark cone production in cooperation with the IGBST, as part of monitoring grizzly bear food sources.

Bear baiting, under state direction, is not allowed inside the PCA. Outside the PCA, Montana is closed to bear baiting, Idaho is open for black bear baiting, and Wyoming allows bear baiting in most areas, unless conflicts occur with grizzlies (some areas are currently closed).

Figure 6. Bear management units and subunits.

2.1.2 Alternative 2 (Proposed Action and Preferred Alternative)

Alternative 2 was presented as the proposed action during the scoping period. The purpose of this alternative is to implement the appropriate habitat standards and monitoring protocols as documented in the Conservation Strategy.

This alternative would provide additional programmatic direction in the form of habitat standards and guidelines for management of grizzly bear habitat security, developed sites, nuisance grizzly bear management, and livestock grazing within the PCA. All standards apply only to the PCA.

Standards are based on 1998 human activity levels. In 1998, all demographic recovery criteria were met, and the population was increasing at a rate of 3 to 4% rate annually (Eberhardt and Knight 1996, Boyce et al. 2001, Schwartz et al. 2002, Keating et al. 2002, Haroldson and Frey 2003, Interagency Conservation Strategy Team 2003). The main assumption is that the levels of habitat security and other habitat conditions in 1998 provided the base environment that led to this ongoing growth of the bear population. Secure habitat and the number and capacity of developed sites changed little during the previous 10 years. The secure habitat and developed site standards apply to each of the BMU subunits on National Forest System lands inside the PCA (Figure 6).

Goal

Grizzly bear habitat within the PCA would be managed to sustain the recovered Yellowstone grizzly bear population.

Standard 1 - Secure Habitat

The percent of secure habitat within each BMU subunit would be maintained at or above levels that existed in 1998. Temporary and permanent changes would be allowed under specific conditions identified below.

Application Rules for Changes in Secure Habitat

Permanent changes to secure habitat. A project may permanently change secure habitat provided that replacement secure habitat of equivalent habitat quality (as measured by the CEM or equivalent technology) would be provided in the same grizzly subunit. The replacement habitat must be maintained for a minimum of 10 years and would either be in place before project initiation or be provided concurrently with project development as an integral part of the project plan. A proactive increase in secure habitat may be banked to offset the impacts of future projects of that administrative unit within that subunit.

Temporary changes to secure habitat. Temporary reductions in secure habitat could occur to allow projects, if all of the following conditions are met:

- Only one project is active per grizzly subunit at any one time.
- The total acreage of active projects within a given BMU would not exceed 1% of the acreage in the largest subunit within that BMU (Appendix A). The acreage of a project that counts against the 1% limit is the acreage associated with the 500-meter buffer around any gated or open motorized access route or recurring low level helicopter flight line, where the buffer extends into secure habitat.
- Secure habitat would be restored within one year after completion of the project.

Acceptable activities in secure habitat. Activities that do not require road construction, reconstruction, opening a restricted road, or recurring helicopter flight lines at low elevation do not detract from secure habitat. Examples of such activities include thinning, tree planting, prescribed fire, trail maintenance, and administrative studies/monitoring. However, these activities should be concentrated in time and space to the extent feasible to minimize disturbance. Land management agencies would be sensitive to these activities occurring adjacent to active projects and would analyze the effects in the NEPA process for the project.

- Helicopter use to respond to emergencies such as fire suppression or search and rescue activities does not detract from secure habitat under this definition. Likewise, helicopter use for short-term activities such as prescribed fire ignition/ management, periodic administrative flights, and other similar activities does not constitute a project under this definition.
- Motorized access routes with permanent barriers, decommissioned or obliterated roads, non-motorized trails, winter snow machine trails, and other motorized winter activities do not count against secure habitat.
- Project activities occurring between December 1 and February 28 do not count against secure habitat.
- To the fullest extent of its regulatory authority, the Forest Service would minimize effects on grizzly habitat from activities based in statutory rights, such as access to private lands under the Alaska National Interest Lands Conservation Act (ANILCA) and the 1872 General Mining Law. In those expected few cases where the mitigated effects would result in an exceedance of the 1998 baseline that cannot be compensated for within that subunit, compensation, in the PCA, to levels at or above the 1998 baseline would be accomplished in adjacent subunits when possible, or the closest subunit if this is not possible, or in areas outside the PCA adjacent to the subunit impacted.
- Existing oil and gas leases would be honored, and proposed APDs (Application for Permit to Drill) and operating plans within those leases would strive to meet the Application Rules for changes in secure habitat. New leases, APDs, and operating plans would meet Standards 1 and 2.

Standard 2 - Developed Sites

The number and capacity of developed sites within the PCA would be maintained at or below the 1998 level with the following exceptions: any proposed increase, expansion, or change of use of developed sites from the 1998 baseline in the PCA (Appendix A) would be analyzed, and potential detrimental and positive impacts on grizzly bears documented through biological evaluation or assessment by the action agency.

Application Rules for Developed Sites

Mitigation of detrimental impacts would occur within the affected subunit and would be equivalent to the type and extent of impact. Mitigation measures would be in place before the initiation of the project or included as an integral part of the completion of the project.

- Consolidation and/or elimination of dispersed campsites would be considered adequate mitigation for increases in human capacity at developed campgrounds if the new site capacity were equivalent to the dispersed camping eliminated.
- New sites would require mitigation within that subunit to offset any increases in human capacity, habitat loss, and increased access to surrounding habitats.
- Administrative site expansions would be exempt from human capacity mitigation expansion if such developments were necessary for enhancement of management of public lands and other viable alternatives were not available. Temporary construction work camps for highway construction or other major maintenance projects would be exempt from human capacity mitigation if other viable alternatives were not available. Food storage facilities and management must be in place to ensure food storage compliance, i.e. regulations established and enforced, camp monitors, etc. All other factors resulting in potential detrimental impacts to grizzly bears would be mitigated as identified for other developed sites.
- To benefit the bear, land managers may improve the condition of existing developed sites by adjusting the capacity, season of use, and access to surrounding habitats. The improvements may then be used at a future date to mitigate equivalent impacts of proposed site development increase, expansion, or change of use for that administrative unit within that subunit.
- To the fullest extent of its regulatory authority, the Forest Service would minimize effects on grizzly habitat from activities based in statutory rights, such as the 1872 General Mining

Law. In those expected few cases where the mitigated effects would result in an exceedance of the 1998 baseline that cannot be compensated for within that subunit, compensation, in the PCA, to levels at or below the 1998 baseline would be accomplished in adjacent subunits when possible, or the closest subunit if this is not possible, or in areas outside the PCA adjacent to the subunit impacted. Mitigation for Mining Law site impacts would follow standard developed site mitigation to offset any increases in human capacity, habitat loss, and increased access to surrounding habitats.

- Existing oil and gas leases would be honored, and proposed APDs and operating plans within those leases would strive to meet the developed site standard. New leases, APDs, and operating plans would meet the developed site standard.
- Developments on private land are not counted against this standard.

Standard 3 - Livestock Grazing

Inside the PCA, no new active commercial livestock grazing allotments would be created and there would be no increases in permitted sheep AMs from the identified 1998 baseline (Appendix A). Existing sheep allotments would be monitored, evaluated, and phased out as opportunities arise with willing permittees.

Application Rules for Livestock Grazing

Allotments include both vacant and active commercial grazing allotments. Reissuance of permits for vacant cattle allotments may result in an increase in the number of permitted cattle, but the number of allotments would remain the same as the 1998 baseline. Combining or dividing existing allotments would be allowed as long as acreage in allotments does not increase. Any such use of vacant cattle allotments resulting in an increase in permitted cattle numbers would be allowed only after an analysis to evaluate impacts on grizzly bears. Where recurring conflicts occur on cattle allotments inside the PCA, and as opportunities exist with willing permittees, one alternative for resolving the conflict may be to phase out cattle grazing or to move the cattle to a currently vacant allotment where there is less likelihood of conflict. Should such cattle grazing be phased out, the cattle allotment with the history of chronic conflicts may be closed to grazing without further NEPA analysis.

Standard 4

The Guidelines and Management Situations would no longer apply[6].

Standard 5 - Nuisance Bears

Forests would coordinate with state wildlife management agencies to apply Conservation Strategy nuisance bear standards (Appendix E).

Guideline 1 - Motorized Access

Localized area restrictions would be used to address conflicts with winter use activities, where conflicts occur during denning or after bear emergence in the spring.

Monitoring

Monitoring requirements in the proposed action include monitoring adherence to the standards, and monitoring changes in motorized access route density and habitat effectiveness inside the PCA. These requirements are described in section 2.1.5.

2.1.3 Alternative 3

This alternative was developed in response to comments calling on the Forest Service to provide more restrictive habitat protection for the grizzly bear inside the PCA. The purpose is to address the potential future loss of major bear foods, and further reduce the potential for grizzly bear/human conflicts and bear mortality inside the PCA. This alternative maintains the current

[6] An exception is the Caribou-Targhee National Forest. The use of management situation lines is an integral part of management under the Targhee National Forest 1997 Revised Forest Plan.

size of the area where management direction would favor grizzly bears with more restrictive standards. The major differences between this Alternative 1 and Alternative 2 are that:

- No permanent or temporary reduction in secure habitat would be allowed and secure habitat would be increased
- Proposed increases in developed sites or capacity of developed sites could not be mitigated and would not be allowed
- Sheep grazing in the PCA would be eliminated within three years rather than phased out

Alternative 3 would require additional restrictions to resolve grizzly bear/human conflicts and protect important food sources, restrict off-road travel (except over-the-snow use) to designated routes, eliminate over-the-snow use in grizzly bear denning areas, and not allow new oil and gas leases.

Standards are based on 1998 human activity levels. The secure habitat and developed site standards apply to each of the BMU subunits on National Forest System lands inside the PCA (Figure 6).

Goal

Grizzly bear habitat within the PCA would be managed to sustain the recovered Yellowstone grizzly bear population.

Standard 1 - Secure Habitat

The percent of secure habitat within each BMU subunit would be maintained at or above levels that existed in 1998 (Appendix A). No permanent or temporary changes would be allowed. Where secure habitat is below 70%, it would be increased to 70% within five years, where feasible. Areas to be restored would be prioritized based on quality of bear habitat. Inventoried roadless areas would be maintained in a roadless condition, and existing motorized routes in inventoried roadless areas would be removed within five years.

Application Rules for Secure Habitat

Statutory or contractual rights. To the fullest extent of its regulatory authority, the Forest Service would minimize effects on grizzly habitat from activities based in statutory rights, such as access to private lands under the ANILCA and the 1872 General Mining Law. In those expected few cases where the mitigated effects would result in a decrease in secure habitat below the 1998 baseline that cannot be compensated for within that subunit, compensation, in the PCA, to levels at or above the 1998 baseline would be accomplished in adjacent subunits when possible, or the closest subunit if this is not possible, or in areas outside the PCA adjacent to the subunit impacted.

Existing oil and gas leases would be honored, and proposed APDs and operating plans within those leases would strive to meet Standards 1 and 2.

Acceptable activities in secure habitat. Activities that do not require road construction, reconstruction, opening a restricted road, or recurring helicopter flight lines at low elevation do not detract from secure habitat. Examples of such activities include thinning, tree planting, prescribed fire, trail maintenance, and administrative studies/monitoring. However, these activities should be concentrated in time and space to the extent feasible to minimize disturbance. Land management agencies would also be sensitive to these activities occurring adjacent to active projects and would analyze the effects in the NEPA process for the project.

- Helicopter use to respond to emergencies such as fire suppression or search and rescue activities does not detract from secure habitat under this definition. Likewise, helicopter use for short-term activities such as prescribed fire ignition/ management, periodic administrative flights, and other similar activities does not constitute a project under this definition.
- Motorized access routes with permanent barriers, decommissioned or obliterated roads, non-motorized trails, winter snow machine trails, and other motorized winter activities do not count against secure habitat.

- Project activities occurring between December 1 and February 28 do not count against secure habitat.

Standard 2 - Developed Sites

The number and capacity of developed sites within the PCA would be maintained at or below the 1998 level, except for statutory or contractual rights.

Application Rules for Developed Sites

- To the fullest extent of its regulatory authority, the Forest Service would minimize effects on grizzly habitat from activities based in statutory rights, such as the 1872 General Mining Law. In those expected few cases where the mitigated effects would result in an exceedance of the 1998 baseline that cannot be compensated for within that subunit, compensation, in the PCA, to levels at or below the 1998 baseline would be accomplished in adjacent subunits when possible, or the closest subunit if this is not possible, or in areas outside the PCA adjacent to the subunit impacted. Mining Law site impacts would require mitigation to offset any increases in human capacity, habitat loss, and increased access to surrounding habitats.
- Existing oil and gas leases would be honored, and proposed APDs and operating plans within those leases would strive to meet Standards 1 and 2.
- Developments on private land are not counted against this standard.

Standard 3 - Livestock Grazing

Inside the PCA, no new active commercial livestock grazing allotments would be created and permitted sheep grazing would be closed within three years, starting with those allotments with recurring conflicts with grizzly bears. Those portions of cattle allotments with recurring conflicts with grizzly bears would be closed.

Application Rules for Livestock Grazing

Allotments include both vacant and active commercial grazing allotments. Reissuance of permits for vacant cattle allotments may result in an increase in the number of permitted cattle, but the number of allotments would remain the same as the 1998 baseline. Combining or dividing existing allotments would be allowed as long as acreage in allotments does not increase. Any such use of vacant cattle allotments resulting in an increase in permitted cattle numbers would be allowed only after an analysis by the action agency to evaluate impacts on grizzly bears.

Standard 4

The Guidelines and Management Situations would no longer apply[7].

Standard 5 - Nuisance Bears

Forests would coordinate with state wildlife management agencies to apply Conservation Strategy nuisance bear standards (Appendix E).

Standard 7 - Off-road Motorized Access

Motorized access (except over-the-snow use) would be restricted to designated routes. In denning areas, over-the-snow use would be eliminated during the denning period (November 1 through April 30).

Standard 8 - Oil and Gas Leasing

No new oil and gas leases would be allowed. Existing leases would be honored. Hardrock minerals would be allowed and mitigated under current laws and regulations and forest plan standards. (See the Application Rules for Standards 1 and 2.)

Standard 9 - Recreation Conflicts

Developed sites or dispersed camping, including outfitter camps, with recurring grizzly bear/human conflicts would be eliminated. Human use of backcountry trails would be reduced or eliminated seasonally or yearlong in areas with recurring bear/human conflicts.

[7] An exception is the Caribou-Targhee National Forest. The use of management situation lines is an integral part of management under the Targhee National Forest 1997 Revised Forest Plan.

Standard 10 - Food Sources

Where needed, critical food sources including whitebark pine seed production, army cutworm moth aggregation sites, major fish spawning areas, elk parturition areas, and big game winter ranges would be maintained. Seasonal area closures would be used to provide adequate security to ensure important food areas are available to bears.

Monitoring

Monitoring requirements in Alternative 3 would include monitoring adherence to the standards, and monitoring changes in motorized access route density and habitat effectiveness inside the PCA. These requirements are described in section 2.1.5.

2.1.4 Alternative 4

This alternative was developed in response to comments calling on the Forest Service to extend grizzly bear habitat protection beyond the Primary Conservation Area. The purpose is to address the potential future loss of major bear foods, increase the probability of habitat connectivity with other ecosystems, improve linkage and connectivity between key habitats within the six GYA national forests, and further reduce the potential for grizzly bear/human conflicts and bear mortality throughout the GYA. This alternative increases the size of the area where management direction would favor grizzly bears with the more restrictive standards described for Alternative 3. For Alternative 4, the boundary outside the PCA and the standards and guidelines were developed using information obtained from scoping (Figure 7). Existing evaluations of suitable habitat and linkage areas for grizzly bears within the six GYA forests were used as the basis for delineation of this boundary (Walker and Craighead 1997, Willcox and Ellenberger 2000, Merrill and Mattson 2004).

Standards are based on 1998 human activity levels inside the PCA, and 2003 levels in areas outside the PCA. The secure habitat and developed site standards apply to each of the BMU subunits and analysis areas on National Forest System lands inside this area.

Analysis units created for this assessment outside the PCA were similar in size to BMU subunits inside the PCA. Fourth and fifth level watershed boundaries were used as the primary delineator because grizzly bear habitat use information was incomplete to assist in the development of these analysis units.

Goal

Grizzly bear habitat within the PCA and additional areas outside the PCA would be managed to sustain the recovered Yellowstone grizzly bear population.

Standard 1 - Secure Habitat

The percent of secure habitat within each BMU subunit would be maintained at or above levels that existed in 1998 and at or above 2003 levels outside the PCA. No permanent or temporary changes would be allowed. Where secure habitat is below 70%, it would be increased to 70% within five years, where feasible. Areas to be restored would be prioritized based on quality of bear habitat. Inventoried roadless areas would be maintained in a roadless condition, and existing motorized routes in inventoried roadless areas would be removed within five years. Projects would be limited to no more than three years in duration and associated activities would occur at a time when the habitat is of little or no importance to grizzly bears.

Application Rules for Secure Habitat

Statutory or contractual rights. To the fullest extent of its regulatory authority, the Forest Service would minimize effects on grizzly habitat from activities based in statutory rights, such as access to private lands under the ANILCA and the 1872 General Mining Law. In those expected few cases where the mitigated effects would result in a decrease in secure habitat below the appropriate baseline that cannot be compensated for within that subunit or analysis unit, compensation, to levels at or above the appropriate baseline would be accomplished in adjacent

subunits or analysis units when possible, or the closest subunit if this is not possible or in areas outside the Alternative 4 boundary as close as possible to the impacted subunit or analysis unit.

Existing oil and gas leases would be honored, and proposed APDs and operating plans within those leases would strive to meet Standards 1 and 2.

Acceptable activities in secure habitat. Activities that do not require road construction, reconstruction, opening a restricted road, or recurring helicopter flight lines at low elevation do not detract from secure habitat. Examples of such activities include thinning, tree planting, prescribed fire, trail maintenance, and administrative studies/monitoring. However, these activities should be concentrated in time and space to the extent feasible to minimize disturbance. Land management agencies would also be sensitive to these activities occurring adjacent to active projects and would analyze the effects in the NEPA process for the project.

- Helicopter use to respond to emergencies such as fire suppression or search and rescue activities does not detract from secure habitat under this definition. Likewise, helicopter use for short-term activities such as prescribed fire ignition/ management, periodic administrative flights, and other similar activities does not constitute a project under this definition.
- Motorized access routes with permanent barriers, decommissioned or obliterated roads, non-motorized trails, winter snow machine trails, and other motorized winter activities do not count against secure habitat.
- Project activities occurring between December 1 and February 28 do not count against secure habitat.

Standard 2 - Developed Sites

The number and capacity of developed sites within the PCA would be maintained at or below the 1998 level, and at or below the 2003 level outside the PCA, except for statutory or contractual rights.

Application Rules for Developed Sites

- To the fullest extent of its regulatory authority, the Forest Service would minimize effects on grizzly habitat from activities based in statutory rights, such as the 1872 General Mining Law. In those expected few cases where the mitigated effects would result in an exceedance of the appropriate baseline that cannot be compensated for within that subunit or analysis unit, compensation, to levels at or below the appropriate baseline would be accomplished in adjacent subunits or analysis units when possible, or the closest subunit if this is not possible, or in areas outside the Alternative 4 boundary as close as possible to the impacted subunit or analysis unit. Mining Law site impacts would require mitigation to offset any increases in human capacity, habitat loss, and increased access to surrounding habitats.
- Existing oil and gas leases would be honored, and proposed APDs and operating plans within those leases would strive to meet Standards 1 and 2.
- Developments on private land would not be counted against this standard.

Standard 3 - Livestock Grazing

Inside the PCA, no new active commercial livestock grazing allotments would be created and permitted sheep grazing would be closed within three years, starting with those allotments with recurring conflicts with grizzly bears. Those portions of cattle allotments that have a trend of recurring conflicts with grizzly bears would be closed.

Application Rules for Livestock Grazing

Allotments include both vacant and active commercial grazing allotments. Reissuance of permits for vacant cattle allotments may result in an increase in the number of permitted cattle, but the number of allotments would remain the same as the identified baseline. Combining or dividing existing allotments would be allowed as long as acreage in allotments does not increase. Any such use of vacant cattle allotments resulting in an increase in permitted cattle numbers would be allowed only after an analysis by the action agency to evaluate impacts on grizzly bears.

Standard 4

The Guidelines and Management Situations would no longer apply[8].

Standard 5 - Nuisance Bears

Forests would coordinate with state wildlife management agencies to apply Conservation Strategy nuisance bear standards (Appendix E).

Standard 7 - Off-road Motorized Access

Motorized access (except over-the-snow use) would be restricted to designated routes. In denning areas, over-the-snow use would be eliminated during the denning period (November 1 through April 30).

Standard 8 - Oil and Gas Leasing

No new oil and gas leases would be allowed. Existing leases would be honored. Hardrock minerals would be allowed and mitigated under current laws and regulations and forest plan standards. (See the Application Rules for Standards 1 and 2.)

Standard 9 - Recreation Conflicts

Developed sites or dispersed camping, including outfitter camps, with recurring grizzly bear/human conflicts would be eliminated. Human use of backcountry trails would be reduced or eliminated seasonally or yearlong in areas with recurring bear/human conflicts.

Standard 10 - Food Sources

Where needed, critical food sources including whitebark pine seed production, army cutworm moth aggregation sites, major fish spawning areas, elk parturition areas, and big game winter ranges would be maintained. Seasonal area closures would be used to provide adequate security to ensure areas are available to bears.

Guideline 1 - Black Bear Baiting

Forests would coordinate as necessary with states in closing black bear baiting where grizzly bear conflicts occur because of black bear baiting.

Objective 1 - Food Storage

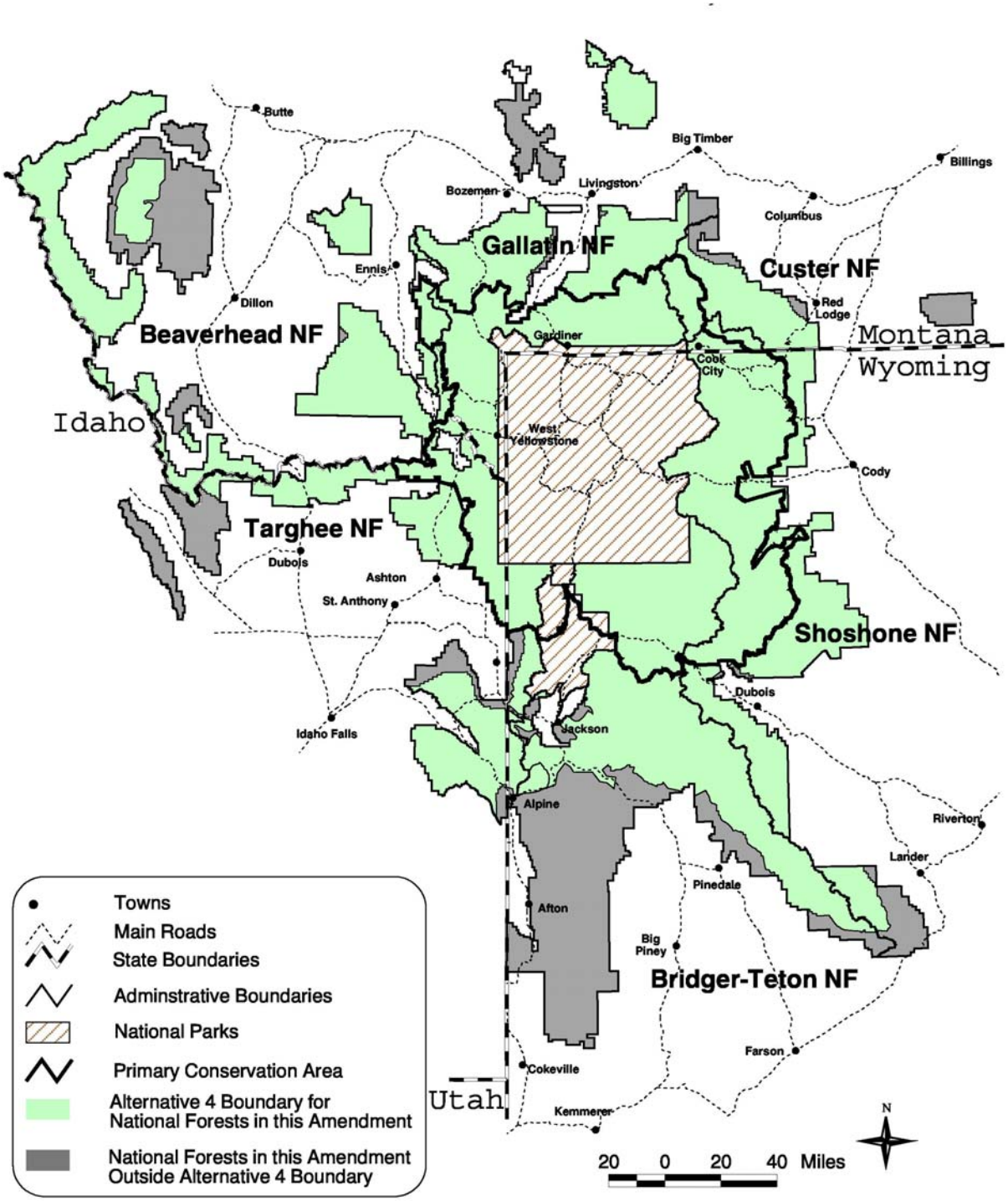
A uniform forestwide food storage order, where not currently in place, would be implemented within one year.

Monitoring

Monitoring requirements in Alternative 4 include monitoring adherence to the standards, and monitoring changes in motorized access route density and habitat effectiveness inside the PCA and to areas outside the PCA included in Alternative 4. These requirements are described in section 2.1.5. Additionally, compliance with food storage orders would be monitored. Additional information on criteria and definitions is presented in Figure 4.

[8] An exception is the Caribou-Targhee National Forest. The use of management situation lines is an integral part of management under the Targhee National Forest 1997 Revised Forest Plan.

Figure 7. The boundary of Alternative 4.



2.1.5 Habitat Monitoring Common to All Action Alternatives

Habitat monitoring would focus on evaluation of implementation of the habitat standards identified in the Conservation Strategy. Monitoring of other important habitat parameters would provide additional information to fully evaluate the status of the habitat for supporting the recovered grizzly bear population and the effectiveness of habitat standards.

Alternatives 2, 3, and 4 would require monitoring inside the PCA; results would be compared to 1998 activity levels. For Alternative 4, monitoring would occur outside the PCA, with results compared to 2003 activity levels.

Additional monitoring for whitebark pine cone production and winter-killed ungulate carcasses would be implemented as described in the Conservation Strategy. The Forest Service would not have the lead on these monitoring activities, but would work in cooperation with other land management agencies. Habitat connectivity would be evaluated in association with road construction and reconstruction activities on National Forest System Lands as described in the Conservation Strategy. Habitat standards and other habitat parameters would be monitored as follows.

Secure Habitat and Motorized Access Route Density Monitoring Protocol

Secure habitat, open motorized access route density (OMARD) greater than one mile/square mile, and total motorized access route density (TMARD) greater than two miles/square mile would be monitored utilizing the CEM Geographic Information System (GIS) databases and reported annually within each subunit in the IGBST Annual Report. Protocols would be established for an annual update of motorized access routes and other CEM GIS databases for the PCA. To provide evaluation of motorized access proposals relative to the 1998 or 2003 baseline, automated GIS programs would be available on each administrative unit.

Developed Sites Monitoring Protocol

Changes in the number and capacity of developed sites on public lands would be compiled annually, compared to the 1998 or 2003 baseline, and included in the IGBST Annual Report.

Livestock Grazing Monitoring Protocol

To ensure no increase from the 1998 or 2003 baseline, numbers of commercial livestock grazing allotments and numbers of sheep AMs would be monitored and reported to the IGBST annually by the permitting agencies.

Habitat Effectiveness Monitoring Protocol

Changes in seasonal habitat effectiveness in each BMU subunit would be monitored by regular application of the grizzly bear CEM or the best available system and compared to the 1998 or 2003 baseline, and included in the IGBST Annual Report, as applicable.

2.2 Alternatives Considered but Eliminated from Detailed Study

Federal agencies are required by NEPA to rigorously explore and objectively evaluate all reasonable alternatives and to briefly discuss the reasons for eliminating any alternatives that were not developed in detail (40 CFR 1502.14). Public comments received in response to the proposed action provided suggestions for alternative methods for achieving the purpose and need. Some of these alternatives may have been outside the scope or similar to the alternatives considered in detail. Therefore, a number of alternatives were considered, but dismissed from detailed consideration for reasons summarized below.

2.2.1 Alternative 5

This alternative proposes implementation of the appropriate habitat standards and monitoring protocols as documented in the Conservation Strategy (similar to Alternative 2), plus less restrictive habitat direction for areas outside the PCA. These areas were described in the state

management plans. The Interdisciplinary Team initiated detailed study of this alternative until determining it was similar to Alternative 4. Alternative 5 would extend habitat standards outside the PCA to nearly the same area as Alternative 4. Standards would be less restrictive than Alternative 4. A complete analysis was unnecessary because the effects would have been within the range of effects for Alternatives 2 and 4.

2.2.2 Alternative 6

This alternative was developed in response to public comments calling on the Forest Service to reduce the area of habitat protection and the amount of restrictions for the grizzly bear; in particular, the Plateau BMU would be removed from the PCA. This alternative was not given further detailed study in this analysis as it did not meet the purpose and need for action, which is to ensure conservation of habitat to support continued recovery of the grizzly bear population in Greater Yellowstone Area national forests.

During the planning process to revise the Targhee Forest Plan, public comments were received suggesting that the Plateau BMU should be removed as a bear management unit. This suggestion was made based on the perception that the Plateau BMU was poor quality habitat and had low grizzly bear use.

During 1993 and 1994, a technical committee appointed by the Yellowstone Ecosystem Subcommittee conducted a study to evaluate habitat capability and grizzly bear use in the Plateau BMU (Puchlerz 1994). Results and recommendations from that study are summarized below.

Methods used in the study included calculating habitat value and habitat effectiveness values for the Plateau BMU using the Unified Cumulative Effects Model and other modeling software. The habitat value is a measure of the amount and quality of vegetative and non-vegetative habitat currently in the unit, and habitat effectiveness is the habitat value after discounting for current human activity. Results indicated that both subunits within the Plateau BMU (Caldera and Moose Creek/Pitchstone) were of adequate size to support an adult female grizzly bear with young. Each subunit was larger than the average annual home ranges of females with young.

Grizzly bear use of habitat within the Plateau BMU was examined through an analysis of historic records, including mortality data, and through a special effort to capture and instrument individual grizzly bears during 1993 and 1994. Results of the historic information from records of grizzly bear mortalities between 1959 and 1993 documented nine mortalities in the Plateau BMU. Other historic information and numerous references immediately adjacent to this area would lead one to believe that grizzly bears were common inhabitants of these areas. The results of the capture and instrument study showed one grizzly bear within that BMU in 1994, plus the occurrence of other sightings and tracks in 1993 and 1994.

The technical committee recommended that the Targhee National Forest improve habitat effectiveness levels by implementing access management measures approved by the IGBC in July 1994. With improved habitat effectiveness, occupancy should be expected. Continued monitoring for evidence of reproducing females was recommended. These recommendations implied that the BMU should be kept in the recovery zone. In addition, this recommendation was brought before the Yellowstone Ecosystem Subcommittee in 1995, where it was approved that the Plateau BMU remain in the recovery zone.

2.2.3 Other Alternatives

Many public comments included variations on providing additional habitat protection for the grizzly bear through extension of habitat standards beyond the PCA. Some of the reasons were to address the potential future loss of major bear foods and increase the probability of habitat connectivity with other ecosystems. Some of the comments called for extending habitat standards either to occupied grizzly bear habitat, or to inventoried roadless areas, or to all National Forest

System lands in the GYA. These alternatives were combined and are represented by Alternative 4.

Another suggestion was termination or removal of existing oil and gas leases as one variation on Alternative 4. The variation will not be considered in detail because the Forest Service and BLM have limited authorities to implement this alternative. The agencies could recommend existing lease rights be purchased by the government, or recommend existing lease rights be condemned. Implementing both of the above recommendations would involve legislation to prevent existing lease rights from being exercised and possibly money appropriated, or congressional action to exchange lease rights for rights of equal value elsewhere. Additionally, the Forest Service has not completed court-ordered NEPA and ESA compliance on the suspended leases on the Gallatin National Forest; therefore, our administrative duties have not been completed. The leases cannot be developed until the court-ordered work is completed. Removal of current oil and gas leases is premature.

Under a buy-back scenario, the final value of mineral rights granted under existing oil and gas leases would be negotiated and could ultimately be determined by the courts. Currently, there are approximately seven issued oil and gas leases on the Gallatin National Forest and one on the Targhee National Forest inside the PCA. There are approximately 50 leases on the forests in the Alternative 4 area outside the PCA. Special appropriation from congress would be required to authorize the buy back of existing leases.

Condemnation proceedings could be initiated by the government to permanently enjoin leaseholders from exercising their lease rights. Condemnation requires conclusive evidence that lease activities are environmentally unacceptable. Regardless, lessees would still be compensated for their losses as described above.

The Forest Service and BLM could propose legislation, or recommend that congress enact legislation, preventing lease development. Legislation could be worded such that compensation would be granted for those rights lost due to condemnation. Evaluating an exchange of equal value for existing leases was also considered. Under this concept, lease rights of a value equal to those lease rights within Alternative 4 would be offered to existing lessees.

2.3 Summary of the Specific Features of the Alternatives Considered in Detail

This section provides only a *summary* of the features of each alternative. Complete descriptions of the alternatives are in section 2.1; the descriptions include references to appendices and figures that are necessary to completely understand the features of each alternative.

Figure 8. Components of the alternatives.

Alternative 1	Alternative 2	Alternative 3	Alternative 4
No action (existing forest plans) The Guidelines apply inside the PCA.	Proposed action Direction applies inside the PCA.	Direction applies inside the PCA.	Direction applies inside the PCA and to additional areas outside the PCA.
Goal All forest plans have direction to provide suitable and adequate amounts of habitat for recovery of a viable grizzly bear population in the GYA as identified in the Recovery Plan.	Goal Manage grizzly bear habitat within the PCA to sustain the recovered Yellowstone grizzly bear population.	Goal Manage grizzly bear habitat within the PCA to sustain the recovered Yellowstone grizzly bear population	Goal Manage grizzly bear habitat within the area defined for Alternative 4 to sustain the recovered Yellowstone grizzly bear population.
Secure habitat Long-term secure habitat maintained by existing forest plan direction. Consultation with USFWS required for all access decisions.	Standard 1 - Secure habitat Maintain secure habitat in BMU subunits at or above 1998 levels. Mitigation allowed using Application Rules.	Standard 1 - Secure habitat Maintain secure habitat in BMU subunits at or above 1998 levels. Where secure habitat is below 70%, increase to 70% where feasible. Maintain inventoried roadless areas in a roadless condition, and remove any existing motorized routes in inventoried roadless areas.	Standard 1 - Secure habitat Maintain secure habitat in BMU subunits at or above 1998 levels inside the PCA and at or above 2003 levels outside the PCA. Where secure habitat is below 70%, increase to 70% where feasible. Maintain inventoried roadless areas in a roadless condition, and remove any existing motorized routes in inventoried roadless areas.
Developed sites Consultation with USFWS using the Guidelines required for all developed site decisions.	Standard 2 - Developed sites Maintain the number and capacity of developed sites at or below 1998 levels, with some exceptions.	Standard 2 - Developed sites Maintain the number and capacity of developed sites at or below 1998 levels.	Standard 2 - Developed sites Maintain the number and capacity of developed sites at or below 1998 levels inside the PCA, and at or below 2003 levels outside the PCA.

Alternative 1	Alternative 2	Alternative 3	Alternative 4
No action (existing forest plans) The Guidelines apply inside the PCA.	Proposed action Direction applies inside the PCA.	Direction applies inside the PCA.	Direction applies inside the PCA and to additional areas outside the PCA.
Livestock grazing Grizzly bear/livestock conflicts in MS 1 favor the grizzly bear.	Standard 3 - Livestock grazing Do not create new active commercial livestock grazing allotments and do not increase permitted sheep AMs from the 1998 baseline. Phase out remaining domestic sheep allotments as opportunities arise with willing permittees.	Standard 3 - Livestock grazing Do not create new active commercial livestock grazing allotments and close all sheep allotments within three years, starting with those allotments with recurring conflicts with grizzly bears. Close those portions of cattle allotments that have a trend of recurring conflicts with grizzly bears.	Standard 3 - Livestock grazing Do not create new active commercial livestock grazing allotments and close all sheep allotments within three years, starting with those allotments with recurring conflicts with grizzly bears. Close those portions of cattle allotments that have a trend of recurring conflicts with grizzly bears.
The Guidelines and management situations apply.	Standard 4 The Guidelines and management situations no longer apply.	Standard 4 The Guidelines and management situations no longer apply.	Standard 4 The Guidelines and management situations no longer apply.
Nuisance bears Nuisance bear management is guided by the Guidelines.	Standard 5 - Nuisance bears Coordinate with state wildlife management agencies to apply Conservation Strategy nuisance bear standards.	Standard 5 - Nuisance bears Coordinate with state wildlife management agencies to apply Conservation Strategy nuisance bear standards.	Standard 5 - Nuisance bears Coordinate with state wildlife management agencies to apply Conservation Strategy nuisance bear standards.
Motorized access Inside the PCA, all forest plans restrict motorized access to designated routes. Over-the-snow use is monitored and would be mitigated around known denning sites.	Guideline 1 - Motorized access Localized area restrictions would be used to address conflicts with winter use activities, where conflicts occur during denning or after bear emergence in the spring.	Standard 7 - Motorized access Restrict motorized access (except over-the-snow use) to designated routes. In denning areas, eliminate over-the-snow use during the denning period.	Standard 7 - Motorized access Restrict motorized access (except over-the-snow use) to designated routes. In denning areas, eliminate over-the-snow use during the denning period.
Oil and gas leasing Most areas inside the PCA are either not available or no surface occupancy for oil and gas leasing. Outside the PCA, oil and gas leasing varies by forest.	Oil and gas leasing Same as Alternative 1. New leases, APDs, and operating plans would meet Standards 1 and 2.	Standard 8 - Oil and gas leasing No new oil and gas leases.	Standard 8 - Oil and gas leasing No new oil and gas leases.

Alternative 1	Alternative 2	Alternative 3	Alternative 4
No action (existing forest plans) The Guidelines apply inside the PCA.	Proposed action Direction applies inside the PCA.	Direction applies inside the PCA.	Direction applies inside the PCA and to additional areas outside the PCA.
Recreation conflicts The Guidelines provide direction for grizzly bear/human conflicts at developed and dispersed sites.	Recreation conflicts See Standard 5.	Standard 9 - Recreation conflicts Eliminate developed sites or dispersed camping, including outfitter camps, with recurring grizzly bear/human conflicts. Limit human use of backcountry trails in high bear-use areas	Standard 9 - Recreation conflicts Eliminate developed sites or dispersed camping, including outfitter camps, with recurring grizzly bear/human conflicts. Limit human use of backcountry trails in high bear-use areas.
Food sources The Guidelines provide direction for grizzly bear habitat improvement, including whitebark pine.		Standard 10 - Food sources Where needed, maintain and restore critical food sources. Use area closures to provide adequate security to ensure areas are available to bears.	Standard 10 - Food sources Where needed, maintain and restore critical food sources. Use area closures to provide adequate security to ensure areas are available to bears.
Bear baiting Bear baiting is not allowed inside the PCA, per state regulations. Outside the PCA, state management varies.	Bear baiting Same as Alternative 1.	Bear baiting Same as Alternative 1.	Bear baiting Inside the PCA, same as Alternative 1. Outside the PCA, Guideline 1. As necessary, coordinate with states in closing black bear baiting where grizzly bear conflicts occur.
Food storage Food storage orders would remain in place in all areas inside the PCA and in some areas outside the PCA.	Food storage Same as Alternative 1.	Food storage Same as Alternative 1.	Objective 1 - Food storage Within one year, implement a uniform food storage order forestwide, where not currently in place.
Monitoring Monitoring under forest plan direction would continue.	Monitoring Item 1 Monitor secure habitat and motorized access routes.	Monitoring Item 1 Monitor secure habitat and motorized access routes.	Monitoring Item 1 Monitor secure habitat and motorized access routes.
	Monitoring Item 2 Monitor number and capacity of developed sites.	Monitoring Item 2 Monitor number and capacity of developed sites.	Monitoring Item 2 Monitor number and capacity of developed sites.

Alternative 1	Alternative 2	Alternative 3	Alternative 4
No action (existing forest plans) The Guidelines apply inside the PCA.	Proposed action Direction applies inside the PCA.	Direction applies inside the PCA.	Direction applies inside the PCA and to additional areas outside the PCA.
	Monitoring Item 3 Monitor the number of commercial livestock grazing allotments and the number of permitted domestic sheep AMs.	Monitoring Item 3 Monitor the number of commercial livestock grazing allotments and the number of permitted domestic sheep AMs.	Monitoring Item 3 Monitor the number of commercial livestock grazing allotments and the number of permitted domestic sheep AMs.
	Monitoring Item 4 Measure changes in seasonal habitat effectiveness.	Monitoring Item 4 Measure changes in seasonal habitat effectiveness.	Monitoring Item 4 Measure changes in seasonal habitat effectiveness, including areas outside the PCA.

2.3.1 Summary of the Comparison of the Effects of the Alternatives

This comparison of effects is a *summary* of the conclusions presented in chapter 3. Effects common to all alternatives are not included in this table. See chapter 3 for a full discussion of the anticipated environmental effects of the alternatives.

Figure 9. Alternative comparison of effects.

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Grizzly Bears				
Acres of long-term secure habitat within the PCA	2.5 million	2.8 million	3.0 million	3.0 million
Acres of long-term secure habitat outside the PCA	3.1 million	3.1 million	3.1 million	5.0 million
Acres of denning habitat closed to snow machine use	3.9 million	3.9 million	4.7 million	6.3 million
Potential for conflicts at developed sites	Moderate	Low to moderate	Low	Lowest
Potential for conflicts with sheep	Moderate	Low to moderate	Low	Lowest
Potential for conflicts with cattle	High	High	Moderate	Lowest
Potential area closures to provide adequate security for major foods	Few	Few	Some	Most

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Potential for major food source enhancement	Moderate	Low to moderate	High	Highest
Potential for sustaining the recovered grizzly bear population	Moderate to high	High	Higher	Highest
Vegetation				
Potential change from existing level of timber management	None	Potential limit to size and number of individual projects	Minus 10%	Minus 33%
Potential change from existing level for whitebark pine enhancement	None	Some reduction No specific direction	Increased emphasis in PCA	Increased emphasis in and out of PCA
Fire and Fuels				
Effects to access for fire suppression	No change from existing	Low	Moderate	High
Reduction in flexibility for fire treatments	No change from existing	Low	Moderate	High
Ability to treat fuels in the wildland urban interface	No change from existing	Potential limit to size and number of individual projects requiring new motorized access	Precludes projects requiring new motorized access in PCA	Precludes projects requiring new motorized access in and out of PCA
Grazing				
Number of domestic sheep allotments closed inside the PCA	2 (phase out)	4 (phase out)	4 (close)	4 (close)
Number of domestic sheep allotments closed outside the PCA	0	0	0	75
Estimated number of cattle allotments closed inside the PCA	0	0	3	3
Estimated number of cattle allotments closed outside the PCA	0	0	0	2
Amount of change from existing level of sheep AMs	3,590 (phase out)	7,130 (phase out)	7,130 (close)	232,260 (close)

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Minerals				
Potential change to oil and gas leasing decisions or proposed operations	No change	Operations could be allowed in the PCA Time delays and costs would increase due to increased mitigations	Approximately 0.7 million additional acres no t available for oil and gas leasing/exploration	Approximately 4.0 million additional acres not available for oil and gas leasing/exploration
Effects on hardrock mineral development	No change	Operations allowed in the PCA Time delays and costs would increase due to increased mitigations	Operations allowed in the PCA Time delays and costs would increase due to increased mitigations	Operations allowed in the PCA Time delays and costs would increase due to increased mitigations
Effects on salable and mineral materials operations	No change	Operations could be allowed in the PCA Time delays and costs would increase due to increased mitigations	Mineral material sites classified as developed sites would be precluded Approximately 50% of future large sites might not be possible	Mineral material sites classified as developed sites would be precluded Approximately 80% of future large sites might not be possible
Recreation				
Effects to developed recreation—number of sites where capacity is held to 1998 or 2003 levels	0	267 sites Mitigation allowed	267 sites No mitigation	721 sites No mitigation
Effects to motorized summer recreation—miles of motorized access routes to be decommissioned	0	0	500	1,900
Effects to developed and dispersed summer recreation—closures where conflicts occur	Closure in MS 1, as identified	No closures Nuisance bear standards apply	Closure where recurring conflicts	Closure where recurring conflicts
Effects to motorized winter recreation—acres closed to snow machine use	Temporary closures as conflicts identified in denning areas	Temporary closures as conflicts identified in denning areas	0.6 million	1.6 million
Transportation				
Miles of road to be decommissioned	0	0	500	1,900

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Social and economic				
Community infrastructure[9]/developed sites affected	No plan direction	15 Mitigation allowed	15 No mitigation	16 No mitigation
Acres of land area with restrictions and mitigation allowed or not allowed	2.0 million acres in MS 1 Current forest plan direction	3.4 million acres Mitigation allowed	3.4 million acres with more strict standards than Alternative 2 No mitigation allowed	9.4 million acres with more strict standards than Alternative 2 No mitigation allowed
Effects on ranching lifestyles—number of active livestock allotments and number of sheep allotments affected	74 (2 sheep to be phased out)	74 (4 sheep to be phased out)	74 (4 sheep to be closed)	429 (79 sheep to be closed)
Livestock-related employment and income	No change	No change	Some decrease	Most decrease
Timber-related employment and income	No change	No change	Some decrease	Most decrease

[9] Infrastructure includes water treatment sites, power sub-stations, landfills, city/county/state facilities, dams, etc. on National Forest System lands.

Chapter 3 Affected Environment and Environmental Consequences

Introduction

This chapter summarizes the physical, biological, social, and economic environments of the six GYA national forests and the effects of implementing each alternative on those environments. It also presents the scientific and analytical basis for the comparison of alternatives presented in chapter 2.

Data Sources

The acreage information presented in the tables, figures, and maps in this DEIS was generated from a variety of sources. Several sources were used, including but not limited to data from ORACLE databases and ArcInfo Geographic Information Systems (GIS) geospatial data sets. Each forest provided data sets about various activities on the six GYA national forests. Data sets have varying degrees of accuracy and the acreage figures from the various sources do not match exactly. When added, all acres (regardless of the source) are within 1% of the official land status.

Nature of Effects

Direction in the proposed action and alternatives is programmatic in nature and applies to future management activities—it does not prescribe site-specific activities on the ground or irreversibly commit resources. CEQ regulations define direct effects as those occurring at the same time and place as the proposed action and alternatives. There are no direct environmental consequences of the proposed action and alternatives; therefore, the analysis in the DEIS discusses only the indirect and cumulative effects of the alternatives. Direct effects would result from site-specific projects, and would be evaluated when those decisions are made.

In analyzing effects, standards would be met because complying with standards is mandatory. The analysis of effects is based primarily on projections of how future activities and areas would change because of the proposed standards. Such projections are inherently uncertain.

This DEIS describes changes in effects resulting from incorporating grizzly bear conservation measures. Generally, effects are presented as changes from existing plans, represented by Alternative 1.

3.1 The Greater Yellowstone Area

Since the 1990s, the GYA has been acknowledged as an ecosystem that extends beyond the core of Yellowstone National Park. Numerous studies have described the national parks and surrounding national forests as a larger ecological system (Craighead 1991, Rasker and Hansen 2000, Hansen et al. 2002).

The GYA is approximately 18 million acres, including approximately 13.6 million acres of public lands (Rasker and Hansen 2000). These public lands represent about 76% of the GYA. In contrast, the PCA is approximately 98% in public ownership. As grizzly bears continue to extend their range beyond the PCA, increasingly more private lands will be affected. The proposed action and alternatives prescribe direction for only National Forest System lands.

The GYA includes portions of six national forests, Yellowstone and Grand Teton National Parks, two national wildlife refuges, state lands, tribal lands, Bureau of Land Management lands, Bureau of Reclamation lands, and private lands.

Public lands are concentrated around the Yellowstone Plateau as the central core. Geographically, the GYA includes the headwaters of the Missouri-Mississippi, Snake-Columbia, and Green-Colorado river systems, the Yellowstone Plateau, and 14 surrounding mountain ranges. Elevations in the PCA range from 4,288 feet to 12,496 feet and average 8,038 feet. Notable changes between the forested terrain of the mountains and the rangelands of surrounding basins occur between 5,000 and 7,000 feet (Marston and Anderson 1991).

3.2 The Six GYA National Forests and Analysis Areas

The six national forests included in this proposal are the Beaverhead, Bridger-Teton, Custer, Gallatin, Shoshone, and the Targhee National Forests, with a total area of about 13 million acres within proclaimed boundaries (Figure 1). Parts of individual forests are outside of the area generally defined as the GYA discussed above. This proposal evaluates the effects of the alternatives on the entire area encompassed by these forests. The Custer National Forest is an exception, in that only the Beartooth Ranger District is included in the analysis.

Acres of the six GYA national forests for the various analysis areas referenced in this document are displayed in Figure 10. These acres include all private, state, and Bureau of Land Management inholdings. GIS coverages used in the various effects analysis varied as to whether inholdings were identified. Land management status on many of the national forests has changed since the time some of the coverages were developed. Direction identified in this proposal does not apply to inholdings. No attempts were made to refine these data due to the programmatic nature of this proposal. Acres of inholdings in each national forest as of 2003 are displayed in Figure 11.

Large lakes greater than 640 acres were not included in the analysis. Large lakes comprise about 43,000 acres on the six national forests (Figure 10). To be consistent with the approach used in the Conservation Strategy and to improve the accuracy of secure habitat calculations, large lakes were excluded from the analysis of grizzly bear secure habitat. Other publications referenced in this DEIS may not have excluded large lakes; therefore, comparing acres and calculations in this DEIS with other references and between the various sections in the DEIS may result in small discrepancies in acre totals due to the presence or absence of inholdings and large lakes in the analysis.

The PCA is approximately 5,893,000 acres in size and includes portions of six national forests, two national parks, and other intermingled lands. National forests account for 58.5% of the PCA, national parks account for 39.4% of the PCA, and other ownerships account for 2.1% of the PCA. These totals include about 118,000 acres of large lakes on all ownerships.

The Alternative 4 boundary encompasses the PCA and additional areas within each of the proclaimed boundaries of the six national forests for a total area of about 12,194,000 acres. The approximately 9,836,000 acres inside proclaimed Forest Service boundaries include about 330,000 acres of inholdings and 28,000 acres of large lakes. For the area of Alternative 4 outside the PCA, the approximately 6,301,000 acres inside proclaimed Forest Service boundaries include 15,000 acres of large lakes and 242,000 acres of inholdings (Figure 10 and Figure 11).

Figure 10. Area (in thousands of acres) of the six GYA national forests within proclaimed boundaries (acres of large lakes in parentheses)[1].

National forest	Total	Inside PCA	Outside PCA	Alternative 4 outside PCA	Alternative 4	Not Alternative 4
Beaverhead	2,198	71	2,127	1,580	1,650	548
Bridger-Teton	3,465(10)	724	2,741(10)	1,294	2,017	1,448(10)
Custer[2]	603	114	489	341	455	148
Gallatin	2,126 (13)	909 (13)	1,217	1,004	1,912 (13)	213
Shoshone	2,468	1,232	1,236	1,099	2,330	138
Targhee	1,868(21)	486	1,381(21)	985(15)	1,471(15)	397(5)
Total	12,727(43)	3,536(13)	9,192(30)	6,301(15)	9,836(28)	2,891(15)

[1] Includes large lakes > 640 acres and non-Forest Service inholdings.
[2] Only the Beartooth Ranger District is included in the proposed action and alternatives in this document.

Figure 11. Acres (in thousands) of inholdings inside the proclaimed boundaries of the six GYA national forests[1].

National forest	Total	Inside PCA	Alternative 4	Outside PCA	Alternative 4 outside PCA	Outside Alternative 4 and outside PCA
Beaverhead	38	2	28	36	24	12
Bridger-Teton	38	3	17	35	14	21
Custer[2]	13	1	4	12	3	9
Gallatin	277	62	206	215	144	71
Shoshone	31	9	26	22	17	5
Targhee	61	11	50	50	39	10
Total	459	88	330	371	242	128

[1] Acres of inholdings shown here may not match acres depicted as inholdings in the various effects analyses in this document. These acres reflect the land status as of 2003; many of the GIS coverages used in the effects analyses have not been updated to show changes due to land exchanges or acquisitions. Discrepancies are most pronounced for the Gallatin National Forest.

[2] Only the Beartooth Ranger District is included in the proposed action and alternatives.

Overview of Management Area Direction in Forest Plans

The six national forest plans allocated lands to management area categories. A management area category describes the natural resource setting for an area of land and establishes the types of management actions that are allowed to occur within the area of land. All management areas can be placed into eight management area categories. The acres within these eight management area categories in the PCA and Alternative 4 areas vary by national forest (Figure 12 and Figure 13). The categories are summarized below. Management area descriptions with more detail can be found in the project record.

Category 1. Ecological processes such as fire, insects, and disease are allowed to operate relatively free from the influence of humans. Typical types of Management Area Category 1 areas are designated as wilderness, roadless, and backcountry lands.

Category 2. These areas provide for conservation of representative or particularly rare and narrowly distributed ecological settings or components. These areas are often formally designated. Research Natural Areas, National Recreation Areas, designated Wild and Scenic Rivers, and Special Interest Areas are typically included in Management Area Category 2.

Category 3. Ecological values are in balance with human occupancy and consideration is given to both. Resource management activities may occur, but natural ecological processes and resulting patterns will normally predominate. Restrictions on motorized travel may vary from area to area and from season to season.

Category 4. Ecological values are managed to provide recreational use, but are maintained well within the levels necessary to sustain overall ecological systems. Sights and sounds of people on the site are expected and may even be desired. Motorized transportation is common.

Category 5. These areas are primarily forested ecosystems that are managed to meet a variety of ecological and human needs. A substantially modified natural environment often characterizes these areas. Users expect to see other people and evidence of human activities. Motorized transportation is common. Areas with a timber harvesting emphasis are included in this category.

Category 6. These areas are primarily grasslands or other non-forested ecosystems managed to meet a variety of ecological and human needs. Users expect to see other people and evidence of

human activities. Motorized transportation is common. Areas with intensive grazing are included in this category.

Category 8. Ecological conditions, including processes, are likely to be permanently altered by human activities beyond the level needed to maintain natural-appearing landscapes and ecological processes. These areas include campgrounds, mining areas, and ski areas.

For all of the National Forest System lands combined, 64.2% of the acres within the PCA and 42.5% of the acres in Alternative 4 areas outside the PCA are in Management Area Category 1 (wilderness, roadless, and backcountry lands).

Figure 12. Acres (in thousands) of National Forest System lands within the PCA and percent within eight management area categories.

National forest	Acres within the PCA[1]	Percent within eight management area categories						
		1	2	3	4	5	6	8
Beaverhead	69	100	0	0	0	0	0	0
Bridger-Teton	724	80.7	4.2	6.2	5.5	3.3	0	0.1
Custer	114	92.8	0	5.8	0	1.4	0	0
Gallatin	809	51.7	9.7	21.8	15.3	1.1	0	0.5
Shoshone	1223	76.3	0.1	0	16.3	7.3	0	0
Targhee	475	16.8	20.8	8.5	0	53.6	0	0.2
Total	3,413	64.2	6.1	7.9	10.6	11.1	0	0.2

[1] These acres do not include large lakes > 640 acres. Large lakes comprise about 13,000 acres within proclaimed Forest Service boundaries in the PCA (Figure 1). Non-Forest Service inholdings are excluded except for the Bridger-Teton and Custer National Forests. Acres of non-Forest Service inholdings on the Gallatin National Forest have changed since the management area GIS coverages that generated these acres were developed. The acres of inholdings depicted in Figure 11 represent the status of inholdings on the six national forests. Management area direction applies only to National Forest System lands.

Figure 13. Acres (in thousands) of National Forest System lands in Alternative 4 areas outside the PCA and percent within eight management area categories.

National forest	Acres for Alternative 4 outside the PCA[1]	Percent within eight management area categories						
		1	2	3	4	5	6	8
Beaverhead	1,556	30.5	0.3	26.5	0.5	19.8	22.1	0.3
Bridger-Teton	1,294	60.6	17.9	2.0	0	19.2	0	0.3
Custer	341	67.9	0	9.5	4.0	15.2	0.9	2.5
Gallatin	783	50.2	3.6	11.2	13.1	20.5	1.2	0.3
Shoshone	1,081	44.4	0	0	35.6	19.9	0	0
Targhee	934	19.2	14.5	15.5	0.3	37.3	12.6	0.6
Total	5,989	42.5	6.7	11.7	8.5	22.3	7.9	0.4

[1]These acres do not include large lakes > 640 acres. Large lakes comprise about 15,000 acres within proclaimed Forest Service boundaries in Alternative 4 areas outside the PCA (Figure 7). Non-Forest Service inholdings are excluded except for the Bridger-Teton and Custer National Forests. Acres of non-Forest Service inholdings on the Gallatin National Forest have changed since the management area GIS coverages that generated these acres were developed. The acres of inholdings depicted in Figure 11 represent the status of inholdings on the six national forests. Management area direction only applies to National Forest System lands.

3.3 Grizzly Bears

Introduction

Grizzly bears in the lower 48 states occupy less than 2% of their historic range. Habitat loss and uncontrolled human-caused mortality have been the primary reasons for the elimination of bears from much of their former range. How and where bears use existing habitat is primarily a function of available foods moderated or precluded by the presence of humans. Management of human activities in grizzly bear habitat is key for long-term sustainability of grizzly bear populations.

A viable population exists today largely because of two tracts of national park and Forest Service wilderness habitat that function as a core for the grizzly population. These areas are the Greater Yellowstone Ecosystem and the Northern Continental Divide Ecosystem.

Management Direction for Grizzly Bears

Primary Conservation Area (PCA)

The PCA has been divided into 18 bear management units (BMUs) and 40 BMU subunits to provide a basis for ensuring that habitats for bears were well distributed across the PCA (Figure 6 and Appendix A).

The PCA was identified in an interagency effort and accepted by the USFWS as part of the Recovery Plan. The size and extent of the existing PCA and the management direction applied within have allowed the grizzly bear population to increase and achieve all demographic recovery targets identified in the Recovery Plan. While there is some disagreement on the amount of population increase, most of the available information suggests that the population is growing 3 to 4% annually (Eberhardt et al. 1994, Boyce 1995, Knight et al. 1995, Eberhardt and Knight 1996, Boyce et al. 2001). See discussion in section 3.3.3 on the grizzly bear population in the GYA.

All forests follow the management direction in the Guidelines. Lands within the PCA were mapped and managed according to three different management situations (Figure 5). A brief description of each management situation can be found in chapter 2 under the description of Alternative 1 (full descriptions are provided in Appendix B). For all of the National Forest System lands combined, 59.3% of the acres in the PCA are within MS 1, 37.3% are within MS 2, 1.4% are within MS 3, and 2% are not identified as a management situation. The acres not identified as a management situation are all on the Beaverhead National Forest and are primarily designated wilderness.

Figure 14. Acres (in thousands) of lands within the PCA and management situation emphasis.

Land management agency	Acres within the PCA[1] (% of total PCA)	Percent of PCA acres in MS 1 for each agency	Percent of PCA acres in MS 2 for each agency	Percent of PCA acres in MS 3 for each agency
Beaverhead National Forest	69 (1.2%)	Not identified	Not identified	Not identified
Bridger-Teton National Forest	724 (12.5%)	90.7%	7.8%	1.5%
Custer National Forest	114 (2.0%)	3.0%	97.0%	0.0%
Gallatin National Forest	809 (14.0%)	60.3%	39.6%	0.1%
Shoshone National Forest	1,223 (21.2%)	33.8%	64.1%	2.1%
Targhee National Forest	475 (8.2%)	98.0%[4]	0.0%[4]	2.0%
National parks[2]	2,225 (38.5%)	99.8%	0.1%	0.1%
Other[3]	138 (2.4%)	Not applicable	Not applicable	Not applicable

[1] These acres do not include acres of lakes > 640 acres. Large lakes comprise 118,000 acres within the PCA (2% of the PCA). Non-Forest Service inholdings are excluded except for the Bridger-Teton and Custer National Forests. Acres of non-Forest Service inholdings on the Gallatin National Forest have changed since the GIS coverages that generated these acres were developed. The acres of inholdings depicted in Figure 11 represent the status of inholdings on the six national forests. Management situation direction only applies to federal lands.
[2]National parks include Yellowstone and Grand Teton National Parks and the Rockefeller National Parkway.
[3] Other includes Bureau of Land Management lands, state lands, and private lands.
[4] The 1997 Revised Forest Plan changed all Management Situation 2 areas to Management Situation 1.

Secure Habitat (inside the PCA)

Secure habitat is defined as areas more than 500 meters from an open or gated motorized access route or recurring helicopter flight line, greater than or equal to 10 acres in size. This is the same definition used in the Conservation Strategy. Currently there are 2,849,400 acres of secure habitat on National Forest System lands within the PCA, which is 83% of the total National Forest System lands within the PCA (Figure 15). Appendix A displays secure habitat for each BMU subunit.

Figure 15. Acres (in thousands) of National Forest System lands within the PCA and existing secure habitat[1].

National forest	Acres within the PCA	Acres of secure habitat (percent)
Beaverhead	69	66 (96%)
Bridger-Teton	724	659 (91%)
Custer	114	111 (97%)
Gallatin	809	587 (73%)
Shoshone	1,223	1,137(93%)
Targhee	475	290 (61%)
Total	3,413	2,849 (83%)

[1] These acres do not include acres of lakes > 640 acres. Large lakes comprise 13,000 acres within National Forest proclaimed boundaries in the PCA. Non-Forest Service inholdings are excluded except for the Bridger-Teton and Custer National Forests. Acres of non-Forest Service inholdings on the Gallatin National Forest have changed since the GIS coverages that generated these acres were developed. The acres of inholdings depicted in Figure 11 represent the status of inholdings on the six national forests.

Beaverhead National Forest. There is no motorized access to the Beaverhead National Forest portion of the PCA. Ninety-six percent of the National Forest System lands within the PCA is secure habitat. The vast majority of this area is designated wilderness, and the relatively small non-wilderness portion of the PCA was closed to motorized use year round by Amendment 10 of the Beaverhead Forest Plan (Off-highway Vehicle Amendment). The amount of secure habitat in the Beaverhead National Forest portion of Hilgard BMU subunit 1 has not changed over the last 10 years.

Bridger-Teton National Forest. Management area prescriptions in the Bridger-Teton Forest Plan emphasize motorized use on approximately 46,900 acres (7%) of the PCA within the Forest. Motorized use is prohibited or discouraged on the remaining 677,000 acres of the PCA. Currently, 91% of the National Forest System land within the PCA is secure habitat (Figure 15). The Bridger-Teton Forest Plan does not contain any Forestwide standard addressing open or total motorized access density or secure habitat areas. Access prescriptions and standards for individual management areas are variable, with some suggesting that motorized route density may exceed one mile per square mile of the management area. Over the last five years, the amount of secure habitat has remained unchanged.

Custer National Forest. Most of the PCA (98.6%) is designated wilderness or in a management area which emphasizes wildlife habitat protection and discourages permanent road construction. Currently, 97% of the National Forest System land within the PCA is secure habitat. A small portion (1.4% of the PCA) emphasizes the exploration, development, and production of energy and mineral resources, but no activity has occurred. Secure habitat has remained the same over the last five to 10 years.

Gallatin National Forest. During the last five to 10 years, the Gallatin National Forest has closed or obliterated more than 100 miles of road within BMU subunits, increasing the amount of secure habitat. The road closures occurred mainly on the Hebgen Lake Ranger District in the Taylor Fork (Hilgard 1 and 2), the Madison 1 and 2, and the Henrys Lake 2 BMU subunits. Currently, 73% of the National Forest System land within the PCA is secure habitat.

Shoshone National Forest. The Shoshone Forest Plan, as amended, has a standard for no net increase in roads. The activity levels associated with Plan objectives are relatively low. In practice, secure habitat is being maintained or increased. The amount of secure habitat has increased in Shoshone BMU subunits 3 and 4 due to road closures in the North Fork of the Shoshone River corridor. The amount of secure habitat has stayed the same over the last decade in all other BMU subunits. Currently, 93% of the National Forest System land within the PCA is secure habitat.

Targhee National Forest. Forestwide access management standards limit open motorized access route density to 0.6 miles per square mile in Henrys Lake subunits 1 and 2, the Plateau BMU, and the Bechler-Teton BMU. This standard also limits total motorized access route density in these same BMUs and subunits to one mile per square mile. The standards specify management requirements for road closures and administrative use on restricted roads. Standards associated with individual management areas supplement these Forestwide standards. The Targhee Forest Plan contains a Forestwide goal to increase grizzly bear security. The amount of secure habitat within each BMU increased after the 1997 Revised Targhee Forest Plan was completed. The reason for the increase in the amount of secure habitat was that the Revised Forest Plan called for the decommissioning of about 433 miles of road within the BMUs to achieve the open motorized access route density standards and the total motorized access route density standards. The Forest has completed about 80% of the decommissioning work; the remaining 20% is waiting on additional site-specific NEPA to be completed. When the road density standards are fully implemented, 61% of the National Forest System land within the PCA will be secure habitat.

Secure Habitat (outside the PCA)

For Alternative 4 areas, secure habitat outside the PCA is displayed in Figure 16. Currently, there are 4,307,000 acres of secure habitat on National Forest System lands outside the PCA, which is 71.9% of the total National Forest System lands within Alternative 4 areas outside the PCA. Appendix A displays secure habitat for each analysis area outside the PCA within the Alternative 4 areas.

Figure 16. Acres (in thousands) of National Forest System lands for Alternative 4 outside the PCA and existing secure habitat.

National forest	Acres for Alternative 4 outside the PCA[1]	Acres of secure habitat for Alternative 4 outside the PCA[1] (percent)
Beaverhead	1,556	994 (63.9%)
Bridger-Teton	1,923	985 (76.2%)
Custer	341	307 (90.0%)
Gallatin	783	619 (79.0%)
Shoshone	1,081	852 (78.9%)
Targhee	934	550 (58.9%)
Total	5,989	4,307 (71.9%)

[1]These acres do not include acres of lakes > 640 acres. Large lakes comprise 15,000 acres within Forest Service proclaimed boundaries in the Alternative 4 areas outside the PCA. Non-Forest Service inholdings are excluded except for the Bridger-Teton and Custer National Forests. Acres of non-Forest Service inholdings on the Gallatin National Forest have changed since the GIS coverages that generated these acres were developed. The acres of inholdings depicted in Figure 11 represent the status of inholdings on the six national forests.

3.3.1 Grizzly Bear Habitat—Affected Environment

Home Range Size

The home ranges of adult grizzly bears frequently overlap. The home ranges of adult male grizzlies are generally two to four times larger than that of females. The home ranges of grizzly females appear to be smaller while they are with cubs, but ranges expand when the young are yearlings in order to meet increased foraging demands. The average total home range for grizzly bears in the Yellowstone area is approximately 884 km^2 (341 mi^2) for females and 3,757 km^2 (1,450 mi^2) for males (Blanchard and Knight 1991).

Grizzly bears disperse as subadults. Their pattern of dispersal is not well documented. Dispersing young males apparently leave their mother's home ranges and their dispersal may be mediated by the avoidance of the home ranges of established adults. Young females may establish a home range soon after family breakup, often within the vicinity of their mothers' home ranges. Grizzly bear mothers may tolerate female offspring and may shift their home ranges to accommodate them (USDI FWS 1993).

Home range sizes of grizzly bears vary in relation to food availability, weather conditions, and interactions with other bears. In addition, individual bears may extend their range seasonally or from one year to the next (USDI FWS 1993).

BMUs are approximately the size of the lifetime home ranges of adult females; subunits approximate the size of the annual home ranges of adult females. These areas are important in evaluating the effect of human activities on grizzly bears because of their relationship to bear home ranges—impacts of human activities must be evaluated in the context of all other activities within a bear's home range.

Food Habits

The broad historic distribution of grizzly bears suggests adaptability in food habits of different populations. Although the digestive systems of bears are essentially that of carnivores, bears are successful omnivores, and in some areas may be almost entirely herbivorous. Bears feed on animal matter or vegetable matter that is highly digestible and high in starch, sugars, protein, and stored fat.

Grizzly bears must avail themselves of foods rich in protein or carbohydrates in excess of maintenance requirements in order to survive denning and post-denning periods. Other plant materials are eaten as the plants emerge, when crude protein levels are highest.

Grizzly bears are opportunistic feeders and will prey or scavenge on almost any available food including ground squirrels, ungulates, carrion, and garbage. In areas where animal matter is less available, roots, bulbs, tubers, fungi, and tree cambium may be important in meeting nutrient requirements. High quality foods such as berries, nuts, and fish are important in some areas.

The search for food has a primary influence on grizzly bear movements. Upon emergence from the den, they seek lower elevations, drainage bottoms, avalanche chutes, and ungulate winter ranges where their food requirements can be met. Throughout late spring and early summer, they follow plant maturity back to higher elevations. In late summer and fall, there is a transition to fruit and nut sources, as well as other plant materials. This is a generalized pattern, however, and it should be kept in mind that bears are individuals trying to survive and will go where they can best meet their food requirements.

Grizzly bears in the GYA have the highest percent of meat consumption in their diet of any inland grizzly bear population (Hilderbrand et al. 1999). Approximately 30 to 70% of the Yellowstone grizzly bear diet is some form of meat. Adult males eat the greatest proportion of meat. Meat is considered to be any form of animal including ungulates (i.e. deer, elk, moose, bison), fish, army cutworm moths, other insects, and small mammals (i.e. ground squirrels, mice, voles).

Specific to the GYA, four seasonal foods have been identified as being important to the grizzly bear population.

- Ungulates (primarily elk and bison, but also deer and moose) are especially important during spring after emergence from dens and through the calving/fawning seasons (Cole 1972, Gunther and Renkin 1990, Mattson et al. 1991, Mattson and Knight 1992, Green et al. 1997, Mattson 1997a). Recent research has demonstrated that grizzly bears seek hunter-killed carcasses and gut-piles (Haroldson et al. 2004).
- Whitebark pine seeds are the most important fall food of Yellowstone grizzly bears, and the availability of nuts influences annual feeding strategies and movement patterns, and influences the number of grizzly bear/human conflicts and human-caused bear mortalities (Kendall 1983, Blanchard 1990, Mattson et al. 1992 a and 1992b, Mattson and Reinhart 1997, Mattson 1997b).
- Army cutworm moths are a preferred source of nutrition for many grizzly bears in the Yellowstone ecosystem and represent a high quality food that is available during the summer (Mattson et al. 1991, French et al. 1994, Ternent et al. 2001).
- Grizzly bears feed on spawning cutthroat trout along the tributaries of Yellowstone Lake during the spawning season from May 1 to July 15 (Mattson and Reinhart 1995).

The four major foods identified above are limited in distribution and subject to wide annual fluctuations in availability. While these foods are the most important to bears, bears have learned to utilize alternative foods during times when these foods are in short supply. During years when these food sources are abundant, there are few bear/human conflicts (Gunther et al. 1997). In contrast, during years when there are shortages of one or more of these foods, grizzly bear/human conflicts are more frequent as bears seek human foods and there are generally higher numbers of human-caused grizzly mortalities (Mattson et al. 1992a and 1992b, Gunther et al. 1997). As such,

management efforts identified in the Conservation Strategy are focused on "providing adequate habitat and space and security for bears so they can meet their life requisite needs" and minimizing grizzly bear/human conflicts by controlling the availability of human food and garbage.

Concerns have been expressed over the potential future decline of these key foods for various reasons, especially whitebark pine, due to their importance to grizzly bears in the GYA (Pease and Mattson 1999, Willcox and Ellenberger 2000, Interagency Conservation Strategy Team 2003). For this reason, special interagency monitoring systems have been developed to monitor possible changes in these foods and these monitoring efforts will continue under the Conservation Strategy (Interagency Conservation Strategy Team 2003). If problems should occur, management strategies would be modified through appropriate interagency cooperative efforts.

Cover

The relative importance of cover to grizzly bears was documented by Blanchard (1978) in a four-year study in the GYA. Ninety percent of 2,261 aerial radio relocations of 46 instrumented grizzly bears were in forest cover too dense to observe the bear. The importance of an interspersion of open parks as feeding sites associated with cover is also recorded in Blanchard's study, as only 1% of the radio relocations were in dense forest more than a kilometer from an opening.

Forest cover was found to be very important to grizzly bears for use as beds. Most beds were found less than a yard or two from a tree; only 16 of 233 beds observed (6.7%) were without immediate cover (Blanchard 1978, USDI FWS 1993).

The IGBST studied the effects of the large 1988 wildfires on grizzly bears. On the average, grizzly bears used burned habitats in proportion to their availability within individual annual ranges during 1989 to 1992. Seasonal indices of movement and annual range sizes of cohorts (bears of the same gender and age) were not statistically different from the 1975 to 1987 averages (Blanchard and Knight 1996, Interagency Grizzly Bear Conservation Strategy Team 2003). Standards for grizzly bear cover were not developed for the Conservation Strategy or for this proposal because changes in the distribution and quantity and quality of cover are not necessarily detrimental to grizzly bears.

Denning Chronology and Habitat

Grizzly bears in the GYA can den from the end of September to the last week in April or early May, with entrance and emergence dates being affected by the gender and reproductive status of the bears (Judd et al. 1986, Haroldson et al. 2002).

- Den entry for females began during the fourth week in September, with 90% denned by the fourth week of November.
- Earliest den entry for males occurred during the second week of October, with 90% denned by the second week of December.
- Mean week of den entry for known pregnant females was earlier than males. The earliest week of den entry for known pregnant females was earlier than other females and males.
- Male bears emerged from dens earlier than females. The earliest den emergence for males occurred during the first week of February, with 90% of males out of dens by the fourth week of April.
- Earliest den emergence for females occurred during the third week of March; by the first week of May, 90% of females had emerged.
- Denning periods differed among classes and averaged 171 days for females that emerged from dens with cubs, 151 days for other females, and 131 days for males.
- Known pregnant females tended to den at higher elevations and, following emergence, remained at higher elevations until late May. Females with cubs remained relatively close (< 3 km) to den sites until the last two weeks in May.

Denning habitat has been described as follows (Judd et al. 1986, Haroldson et al. 2002):

- Den sites are associated with moderate tree cover (26 to 75% canopy cover).
- Den sites are usually on 30 to 60 degree slopes.
- Den sites occurred on all aspects, although northerly exposures were most common.
- Grizzly bears usually dig new dens, but occasionally used natural cavities or a den from a previous year.
- Mean elevation at den sites for females with cubs that emerged from dens was 8,845 feet. Mean elevation for other females was 8,467 feet, and for males was 8,444 feet.

Denning habitat is well distributed and abundant throughout the GYA (Judd et al. 1986, Cherry 2001, Podruzny et al. 2002).

Habitat Connectivity and Linkage Zones

Habitat fragmentation has been widely recognized as a primary cause of the decline of many species. The importance of maintaining or improving connectivity between blocks of important habitat for grizzly bears and other carnivores is receiving increased attention. Several models have been developed in an attempt to identify linkage zones in the Northern Rockies between and within ecosystems and at various scales (Walker and Craighead 1997, Craighead et al. 2001, Servheen et al. 2003b, Merrill and Mattson 2004).

Servheen et al. (2003) define linkage zones as "the area between larger blocks of habitat where animals can live at certain seasons where they can find the security they need to successfully move between these larger blocks of habitat." Linkage zones are not corridors, which imply an area used just for travel. Linkage zones are areas that can support low-density wildlife populations often as seasonal residents. The main factors generally considered to affect the quality of linkage zones are major highways, railroads, road density, human site development, availability of hiding cover, and the presence of riparian areas.

The concept of linkage zones is not specific to grizzly bears but rather an issue for many wildlife species, especially carnivores (Walker and Craighead 1997, Ruediger et al. 1999, Ruediger et al. 2000, Claar et al. 2003, Servheen et al. 2003b). Human population increase is rapidly affecting many of the remaining possible linkage areas between ecosystems in the Northern Rockies and the time for maintaining these connection opportunities is growing short (Ruediger et al 1999). As such, the IGBC has agreed through an MOU to support linkage zone identification and the maintenance of existing linkage opportunities for wildlife. The IGBC has appointed three task forces (public lands, private lands, and highways) to evaluate linkage opportunities. The private land task force has completed a report (Parker and Parker 2002) that provides agency personnel with guidance for involving rural communities in the development of linkage zones.

Servheen et al. (2003b) identified potential linkage zones between the northern grizzly bear ecosystems and the USFWS is currently working on a similar evaluation of habitat fracture and potential linkage between the Yellowstone recovery zone and the NCDE and Bitterroot recovery zones. Grizzly bears, however, have never been documented moving between ecosystems in the Northern Rockies in recent times (Servheen personal communication 2004).

Concerns for maintaining the genetic diversity of the Yellowstone grizzly bear population in the absence of movement between ecosystems is addressed in the Conservation Strategy. The Conservation Strategy recommends translocation of two or more bears from other ecosystems by 2020 if genetic analysis shows no movement into the GYA from the NCDE. The Conservation Strategy also recognizes that roads and highways may impact bear movements, and requires that monitoring and surveys be conducted throughout the GYA before designs are initiated. This information would be used to complete a connectivity analysis to identify important crossing areas. This direction applies to all federal and state signatories of the Conservation Strategy.

Maintaining or improving connectivity between the GYA and other ecosystems is outside the scope of this proposal; all alternatives provide various amounts of protection to areas identified as important in maintaining or improving connectivity within the GYA (Walker and Craighead 1997, Willcox and Ellenberger 2000, Merrill and Mattson 2004).

3.3.2 Grizzly Bear/Human Interactions—Affected Environment

A primary factor in providing for the conservation of grizzly bears is the management of grizzly bear/human interactions. Grizzly bear mortality is almost solely attributable to grizzly bear/human conflicts with a common outcome of bear removal by interagency bear managers or killing by humans for other reasons. In addition to mortality concerns, providing secure habitat (areas free of motorized access) is important to enable bears to fully use their food sources, denning sites, and other living needs. Human presence can limit bear use of habitat, create tolerance among some bears that allows for interaction at great risk to the bears, or attract bears to unnatural or unsecured food sources increasing the risk of habituation to unnatural foods and human conflict.

Grizzly Bear Mortalities

Figure 17 and Figure 18 display the trend of known and probable grizzly bear deaths in the GYA from 1973 (after closing the Yellowstone National Park garbage dumps) to 2002. Figure 17 shows human-caused grizzly bear deaths, and Figure 18 shows natural and unknown-caused grizzly bear deaths. From 1973 to 2002, there were a total of 372 grizzly bear deaths (Haroldson and Frey 2003). There have been 272 human-caused grizzly bear deaths (73% of the total) and 100 natural and unknown-cause grizzly bear deaths (27% of the total). The abundance of natural food sources, such as years of abundant whitebark pine cone production, contributes to fewer deaths. From 1973 through 1996, grizzly bear deaths occurred outside of the PCA in only five years. Starting in 1997, grizzly bear deaths have occurred each year outside the PCA.

Figure 17. Human-caused grizzly bear deaths in the GYA, 1973 through 2002.

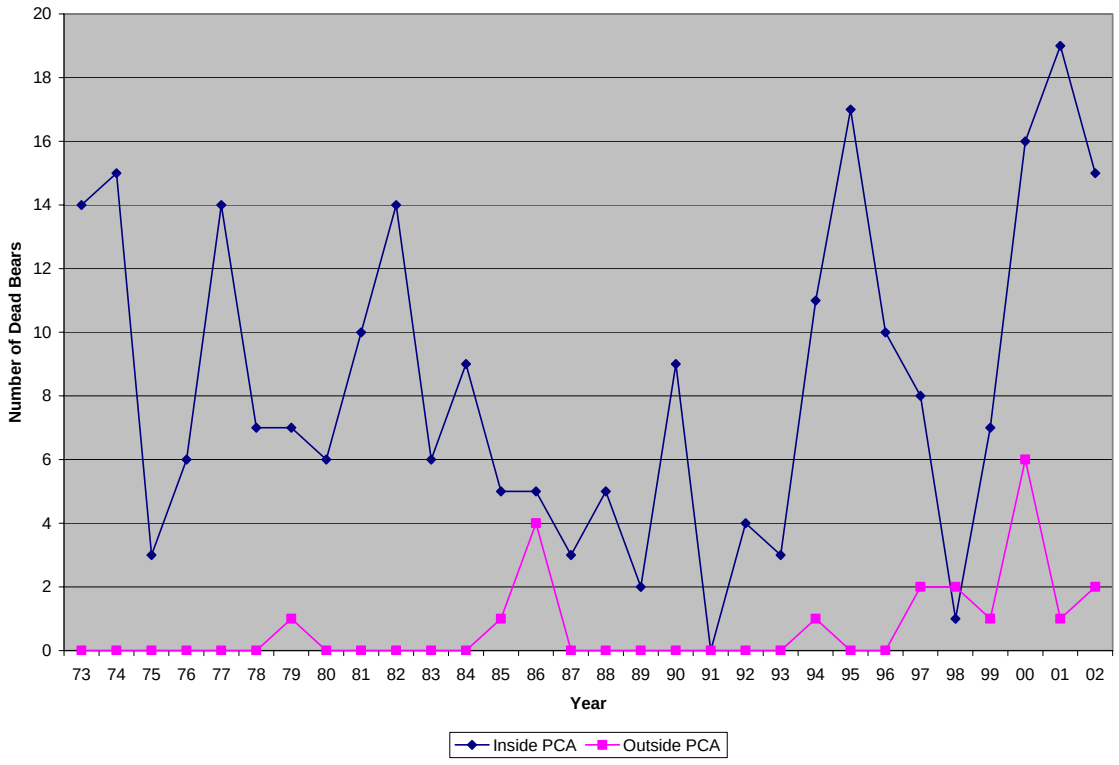
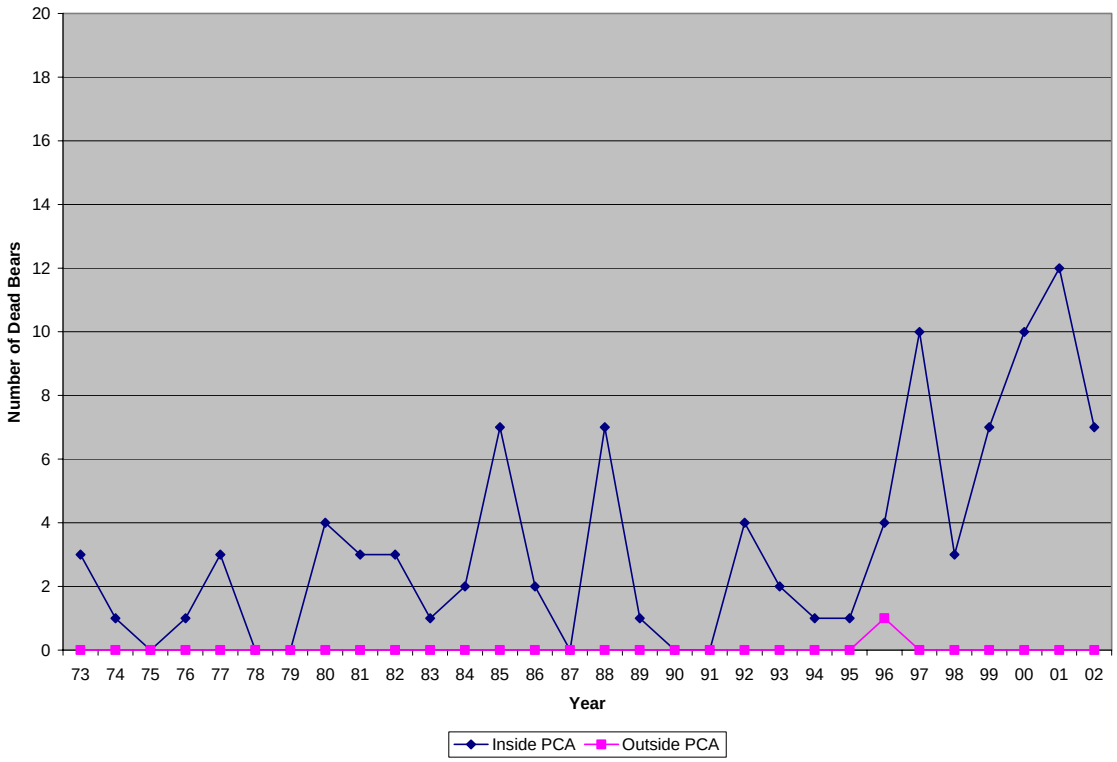


Figure 18. Natural and unknown-caused grizzly bear deaths in the GYA, 1973 through 2002.



The causes of grizzly bear deaths and their distribution by landownership are shown in Figure 19. For the years 1975 to 2002, 59% of the grizzly bear deaths (136 out of 230) occurred on National Forest System lands. However, not all of those deaths are attributable to Forest Service management activities or actions. On National Forest System lands, 91 of the 136 grizzly bear deaths (67%) are in the categories of poached/malicious, hunting, human injury/death management removal, road kill, electrocution, and capture mortality, which are not directly attributable to Forest Service management activities or actions. Forty-five of the 136 grizzly bear deaths (33%) are in the categories of backcountry site, front country developed site, domestic sheep, and cattle and horses, which are indirectly attributable to Forest Service management activities or actions. To reduce grizzly bear deaths on National Forest System lands, the Forest Service has closed domestic sheep allotments and cattle allotments with recurring conflicts, established food storage regulations, provided bear resistant containers for garbage and food storage, provided information and education materials and programs, established special grizzly bear requirements in contracts and permits, and issued access restrictions and regulations.

Figure 19. Known and probable human-caused grizzly bear deaths by reason and landownership from 1975 through 2002 (excluding natural causes, unknown causes, and human removals) (IGBST data).

Land ownership	Poached malicious	Hunting[1]	Back-country site[2]	Front country developed site[3]	Human injury/death management removal	Road kill	Electro-cution	Capture mortality[4]	Domestic sheep[5]	Cattle and horses management removal[6]	Total
Beaverhead NF									1		1
Bridger-Teton NF	5	25	10	1						3	44
Custer NF											0
Gallatin NF	8	12	2	5	1	2		2			32
Shoshone NF	13	12	4	7		2	1	1	1	2	43
Targhee NF	4	1						2	9		16
Yellowstone NP	1			14	2	7	3	5			32
Grand-Teton NP		1		1						1	3
State MT						1					1
State WY											
State ID											
Private MT	2	3		21	1			2	5	3	37
Private WY				14	1		1	1		2	19
Private ID				2							2
Total	33	54	16	65	5	12	5	13	16	11	230

[1] The hunting category includes hunting-defense of life and property, hunting-mistaken identity, and hunting-illegal.
[2] The backcountry site category includes backcountry-illegal and backcountry-defense of life and property.
[3] The front country developed site category includes front country-defense of life and property and front country-management removal.
[4] The capture mortality category includes research and management actions.
[5] The domestic sheep category includes sheep-defense of life and property, sheep-depredation management removal, and sheep-illegal.
[6] The cattle and horse category includes cattle-illegal, cattle-depredation management removal, and horse-depredation management removal.

Grizzly Bear/Human Conflicts

Grizzly bear/human conflicts are defined as incidents in which grizzly bears injure people, damage property, kill or injure livestock, damage beehives, obtain anthropogenic (unnatural) foods, or damage or obtain garden and orchard fruits and vegetables. All conflicts reported to state and federal agencies are entered into state databases and complied annually by Yellowstone National Park and reported in the IGBST Annual Report. Grizzly bear/human encounters that did not result in human injury or property damage are also recorded but categorized as confrontations rather than conflicts (Figure 19, Figure 20, and Figure 21). Figure 22 highlights the causes of the conflicts and where they occur. From 1992 through 2003, 741 grizzly bear/human conflicts (46% of the total recorded conflicts) occurred on National Forest System lands. The majority of the conflicts on National Forest System lands were due to livestock depredation (62%), followed by unnatural foods (23%), property damage (12%), and human injury (3%).

Figure 20. Grizzly bear/human conflicts throughout the GYA, 1992 through 2003 (IGBST Conflicts Database).

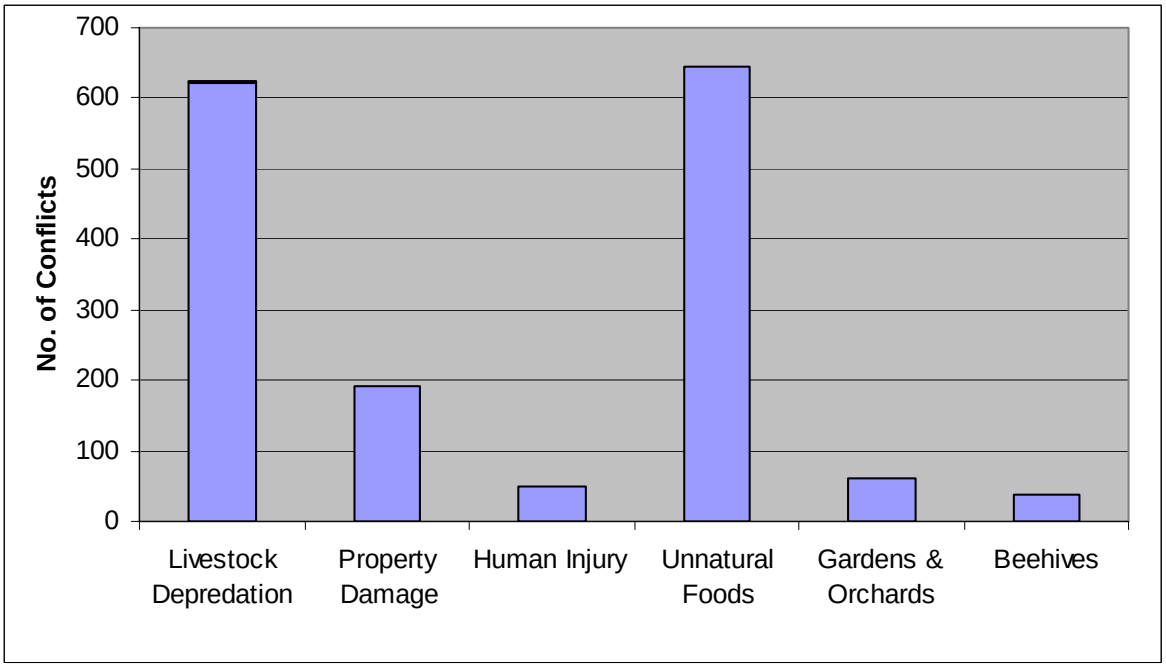


Figure 21. Grizzly bear/human and grizzly bear/livestock conflicts for the years 1992 through 2003.

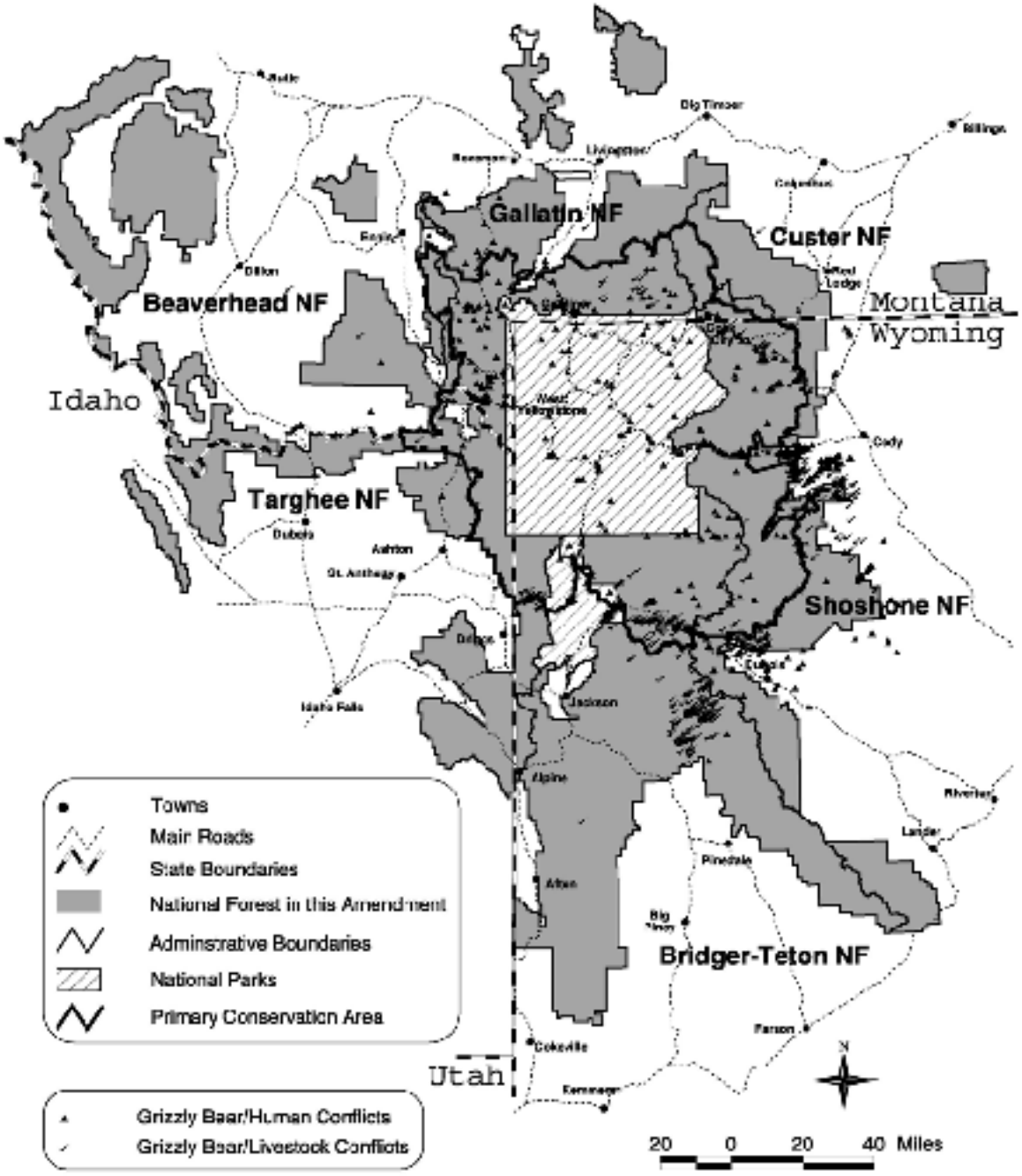


Figure 22. Number of grizzly bear/human conflicts by landowner and category, 1992 through 2003 (IGBST Conflicts Database).

Land management agency	Category						
	Livestock depredation	Property damage	Human injury	Unnatural foods	Gardens and orchards	Beehives	Total
Beaverhead NF	1	1	0	1	0	0	3
Bridger-Teton NF	312	9	12	23	0	0	356
Custer NF	0	1	0	1	0	0	2
Gallatin NF	13	22	8	49	0	0	92
Shoshone NF	85	53	5	93	0	0	236
Targhee NF	50	0	0	2	0	0	52
Yellowstone NP	0	32	14	30	12	0	88
Grand Teton NP	35	1	5	3	0	0	44
Private MT	11	12	2	128	26	0	179
Private WY	110	57	2	291	21	35	516
Private ID	1	1	0	17	1	0	20
State MT	0	1	0	0	0	0	1
State WY	3	2	0	6	0	2	13
State ID	1	0	0	0	0	0	1
BLM	1	0	0	0	0	0	1
Total	623	192	48	644	60	37	1,604

Grizzly Bear/Motorized Access and Secure Habitat Interactions

The management of human use levels through access route management is one of the most powerful tools available to balance the needs of grizzly bears with the needs and activities of humans. It has been documented in several research projects, completed and ongoing, that unregulated human access and development within grizzly bear habitat can contribute to increased bear mortality and affect bear use of existing habitat (IGBC 1998, Interagency Conservation Strategy Team 2003).

Historically, management of motorized use has been primarily accomplished through restriction of certain types of motorized use on established access routes, i.e. management of open motorized route densities. Recent research has shown that secure habitat (areas that are free of motorized traffic, also referred to as core areas) is an important component of grizzly bear habitat (IGBC 1998).

By managing motorized access, the following grizzly bear management objectives can be met (IGBC 1998):

- Minimize human interaction and potential grizzly bear mortality
- Minimize displacement from important habitats
- Minimize habituation to humans
- Provide relatively secure habitat where energy requirements can be met

The IGBC Taskforce Report (IGBC 1998) identifies three access parameters for measuring motorized access and its effect on habitat security for grizzly bears:

- Total Motorized Access Route Density (TMARD)
- Open Motorized Access Route Density (OMARD)
- Secure Habitat or Core Areas

OMARD and TMARD are calculated as the percent of a BMU subunit in a defined density category, including areas with zero density. Secure habitat is calculated as the area greater than 500 meters from an open or gated motorized access route (greater than or equal to 10 acres in size) and free of motorized access. In the process of the development of the Conservation Strategy it was determined that development of habitat standards for all three access parameters was unnecessary and somewhat redundant in meeting the grizzly bear management objectives identified above.

History has demonstrated that grizzly bear populations survived where frequencies of contact with humans were very low. Populations of grizzly bears persisted in those areas where large expanses of relatively secure habitat were retained and where human-induced mortality was low. In the Yellowstone area, this is primarily associated with national parks, wilderness areas, and large blocks of public lands (IGBC 1998). Habitat security requires minimizing mortality risk and displacement from human activities in a sufficient amount of habitat to allow the population to benefit from this secure habitat and respond with increasing numbers and distribution. Habitat security allows a population to increase in numbers and distribution as lowered mortality results in more reproduction and cub recruitment into the adult population. This results in an increasing population. As the population increases, it begins to expand in range and distribution. Both of these responses to habitat security are currently ongoing in the Yellowstone population as the population is increasing at 3 to 4% per year (Boyce et al. 2001) and increasing in distribution (Schwartz et al. 2002). See the discussion in section 3.3.3 on the grizzly bear population in the GYA.

Secure habitat must also provide the basic seasonal habitat requirements for grizzly bears and should be representative of seasonal habitats available to bears in the entire analysis area (IGBC 1998). The CEM was used to evaluate the relative habitat value of the existing secure habitat inside the PCA (Interagency Conservation Strategy Team 2003). Habitat value, as currently used in the CEM, is an index of the inherent productivity of grizzly bear habitat. The CEM is also used to measure habitat effectiveness, which is a measure of the energy potentially derived from an area given the impacts of human activities on bear habitat use. Habitat effectiveness is higher in secure habitat than non-secure habitat of the same habitat value because of the absence of motorized access routes.

Grizzly Bear/Developed Site Interactions

The effects of human activity associated with developments on grizzly bear habitat use have been reported by Mattson et al. (1987), and include the following:

- Grizzly bear use was lower in areas near human developments
- Foraging behavior was disrupted
- Dominant bears tended to displace subordinate bears into areas with more human development
- Adult females and subadult males residing closer to developments were more likely to be involved in management actions (such as being trapped and relocated)

The Forest Service and National Park Service have instituted food storage orders or regulations and have provided bear resistant garbage containers at developed sites throughout the PCA and many areas outside. This work was undertaken to reduce grizzly bear/human conflicts associated with developed sites as well as dispersed sites. Mattson and Knight (1991) analyzed grizzly bear mortality data by three eight-year periods (1962 to 1969, 1975 to 1982, and 1983 to 1990) and by

association with different levels of human access, including major developments, primary roads, secondary roads, and backcountry areas. They reported that unit area mortality rates associated with all levels of access decreased over the three time periods. Renkin and Gunther (1996) evaluated bear mortalities in relation to developed sites over a 10-year period (1987 to 1996) and found that bear mortalities in relation to developed areas declined during that period. Even though grizzly bear/human conflicts still occur throughout the GYA, these studies show that efforts to reduce those conflicts have been successful.

Grizzly Bear/Livestock Interactions

Knight and Judd (1983) reported the following information about bears that kill livestock:

- All instrumented (radio-collared) grizzly bears known to have had the opportunity (bears that came in close contact with sheep), killed sheep.
- Most grizzly bears that encountered cattle did not make kills.
- All known cattle killers were adult bears, while sheep killers included both adults and subadults.
- They concluded that sheep grazing in occupied grizzly range is a serious problem, since bears kill sheep more readily and because the sheep are closely tended by herders that are protective of their flocks.

Anderson et al. (1997) reported the following information from a study on grizzly bear/cattle interactions on two cattle allotments in northwest Wyoming:

- From a minimum of 24 grizzly bears that were known to use two cattle allotments during a three-year period, seven bears (possibly eight) preyed on cattle.
- Thirty percent of 194 cattle mortalities documented during the three years were the result of bear predation, 65% were not bear-related, and 5% were classified as unknown.
- Predatory grizzly bears selected calves (51 of 58, or 88%) over adult and yearling cattle.
- All sex/age groups of grizzly bears, except subadult male, were associated with cattle depredations. However, three adult males were responsible for 84% of the documented losses where individual depredators could be identified.
- Cattle depredations were limited to a relatively short period (three to eight weeks) during two of the three grazing seasons, and five of the eight bears suspected of killing cattle did not appear to kill more than one calf each.
- Translocating grizzly bears appears to be a viable option for reducing losses, since homing bears may not return before that depredation period ends. Additionally, translocation could prevent the occasional depredator, which appears to be common among grizzlies, from being unnecessarily removed from the population.
- Removing cattle carcasses from allotments also appeared to reduce bear densities, but it could not be determined whether this would reduce depredations.
- Since adult males are responsible for the majority of cattle depredations, selective removal may also be a possible management option, particularly when habitual adult males are involved and translocation, aversion tactics, or carcass removal efforts are ineffective.

In summary, most, if not all, grizzly bears that come in contact with domestic sheep prey on sheep and conflicts are inevitable. Within the PCA, 40% of the sheep allotments active in 2003 have had documented grizzly bear conflicts. Several sheep allotments that have had conflicts with grizzly bears have been closed.

The majority of grizzly bears that come in contact with cattle do not make kills. Within the PCA, 24% of the cattle allotments active in 2003 have had documented grizzly bear conflicts (Figure 50).

Conflicts between livestock and grizzly bears have resulted in the relocation, removal, or direct mortality of grizzly bears. Many of the conflicts with grizzly bears and sheep have been resolved inside the PCA due to the closure of many of the affected allotments. Conflicts with livestock have increased in recent years primarily outside the PCA. There were 461 documented grizzly bear/livestock conflicts on the six national forests from 1992 to 2003 (Figure 21). However, only 12% of the documented grizzly bear mortalities since 1975 have been livestock related (Figure 19).

Grizzly Bear/Snow Machine Interactions

Five of the GYA national forests (Beaverhead, Bridger-Teton, Custer, Gallatin, and Shoshone) analyzed the effects of snow machine use on grizzly bears and consulted with the USFWS (USDA Forest Service 2001a, USDI FWS 2002). This analysis provided the following findings:

- There has been only one documented conflict. Knight et al. (1976) cited a radio-collared grizzly that abandoned its den after snow machine activity nearby (cited in Schallenberger 1980).
- Snow machine use has been around for many years, and has increased over a long period.
- Bears have had a chance to either habituate or move to new den sites if disturbed.
- Bears tend to den in remote areas with characteristics that are not entirely conducive to snow machining (steep, forested habitats).
- Snow is an excellent sound insulator.
- A large proportion of the PCA and area where bears may occur (68 and 63%, respectively) provides suitable denning habitat.
- A large proportion of known dens in the Yellowstone area (88%) are located in areas where snow machine use does not occur and suitable denning habitat is well distributed on the forests.
- On the five national forests, only 3 to 19% of the secure area within the PCA that is suitable for denning is potentially used by snow machines. In the area where bears may occur, 6 to 31% falls into this category.
- Information on effects of snow machining on bears is largely anecdotal, although there is sufficient information to indicate that some individual bears have the potential to be disturbed.
- Potential effects of snow machining on reproduction and survival in Yellowstone grizzly bears are not evident in the population statistics. The grizzly bear population in the GYA has achieved all demographic recovery parameters as established in the 1993 Grizzly Bear Recovery Plan.

The USFWS issued a biological opinion stating that current authorized snow machine activity is not likely to jeopardize the continued existence of the grizzly bear (USDI FWS 2002). The USFWS stated that the best information suggests that current levels of snow machine use are not appreciably reducing the likelihood of either the survival or recovery of grizzly bears in the Yellowstone PCA. The USFWS did not anticipate a high level of incidental take, and stated that incidental take was unquantifiable. The USFWS concluded that the level of take of grizzly bears that has and would result from snow machine use is low, based on the best available recent and long-term Yellowstone grizzly bear population information, the amount of protected and unprotected denning habitat available in the Yellowstone ecosystem, the location and characteristics of most grizzly bear den sites, the expert opinions of grizzly bear researchers in the Yellowstone ecosystem, and the best available information on grizzly bear denning.

For the Targhee National Forest, grizzly bear denning habitat and potential conflicts with snow machine use were analyzed and included in consultation with the USFWS as part of the 1997 Revised Forest Plan. There have been no documented grizzly bear/snow machine use conflicts on

the Targhee. The 1997 Revised Forest Plan contains a standard allowing curtailment of snow machine use to resolve documented conflicts with grizzly bears within the PCA.

3.3.3 Grizzly Bear Population—Affected Environment

The Recovery Plan established three demographic (population) recovery targets that must be achieved for a recovered grizzly bear population, and defined a recovered grizzly bear population as one that could sustain a defined level of mortality and is well distributed throughout the PCA. The three demographic (population) recovery targets include:

- Maintain a minimum of 15 unduplicated females with cubs-of-the-year (COY) over a six-year average both inside the PCA and within a 10-mile area immediately surrounding the PCA.
- Sixteen of 18 BMUs within the PCA must be occupied by females with young, including COY, yearlings, or two-year olds, as confirmed by the IGBST from a six-year sum of observations. No two adjacent BMUs may be unoccupied during the same six-year period. This is equivalent to verified evidence of a least one female grizzly bear with young at least once in each BMU over a six-year period.
- The running six-year average of total known, human-caused grizzly bear mortality as confirmed by the IGBST is not to exceed 4% of the minimum population estimate. The running-six-year average known, human-caused female grizzly bear mortality is not to exceed 30% of the 4% total mortality limit over the most recent three-year period. These mortality limits cannot be exceeded in any two consecutive years. Beginning in 2000, probable mortalities were included in the calculation of mortality thresholds; COY orphaned as a result of human causes will be designated as probably mortalities.

At the end of 2002, the number of unduplicated females with COY over a six-year average both inside the PCA and within a 10-mile area immediately surrounding the PCA was 38, more than double the Recovery Plan target of 15 (Figure 23). In fact, the Recovery Plan target for the number of unduplicated females with COY (15) has been exceeded since 1988 (Interagency Conservation Strategy Team 2003). In 2002, 50 unduplicated females with COY were documented inside the PCA and within a 10-mile area immediately surrounding the PCA, which is the highest number recorded for a single year (Interagency Conservation Strategy Team 2003).

At the end of 2002, the distribution of females with young, based on the most recent six years of observations in the ecosystem, was 18 out of 18 BMUs. The recovery criterion of having 16 of 18 BMUs occupied with no two adjacent units vacant has been met. This criterion is important as it ensures that females occupy the majority of the PCA and that successful reproductive females are not concentrated in one portion of the ecosystem.

At the end of 2002, the minimum population estimate was 416 bears, the running six-year average of total known, human-caused grizzly bear mortality was 10.5, and the running-six-year average of known, human-caused female grizzly bear mortality was 4.3 (Haroldson and Frey 2003). As shown in Figure 23, the total mortality and the female mortality are under the mortality thresholds set in the Recovery Plan.

Figure 23. The status of the Recovery Plan demographic (population) recovery parameters, 1997 through 2002[1].

Recovery Plan demographic (population) recover parameters	Recovery Plan target six-year average	Existing number six-year average
Maintain a minimum of 15 unduplicated females with COY over a six-year average both inside the PCA and within a 10-mile area immediately surrounding the PCA.	>15	38
Sixteen of 18 BMUs within the PCA must be occupied by females with young, including COY, yearlings, or two-year olds, as confirmed by the IGBST from a six-year sum of observations. No two adjacent BMUs may be unoccupied during the same six-year period.	>16	18
Human-caused mortality: The running six-year average of total known, human-caused mortality[2] as confirmed by the IGBST is not to exceed 4% of the minimum population estimate[3]. The running-six-year average of known, human-caused female grizzly bear mortality[2] is not to exceed 30% of the 4% total mortality limit over the most recent three-year period.	<16.6 <5.0	10.5 4.3

[1]Data for this table came from Haroldson and Frey 2003 and the Interagency Conservation Strategy Team 2003.
[2] Beginning in 2000, probable mortalities were included in the calculation of mortality thresholds, and COY orphaned as a result of human causes will be designated as probably mortalities (Interagency Conservation Strategy Team 2003).
[3]At the end of 2002, the minimum population estimate was 416 bears (Haroldson and Frey 2003).

Grizzly Bear Population Research

Grizzly bear population trends in the GYA have been researched extensively. The following provides a sequential summary of research over the last decade pertaining to grizzly bear population trends in the GYA.

- Eberhardt et al. (1994) reported: The trend of the Yellowstone grizzly bear (*Ursus arctos horribilis*) population was estimated using reproductive rates calculated from 22 individual females and survival rates from 400 female bear-years. The point estimate of the rate of increase was 4.6%, with 95% confidence limits of 0 and 9%. The major finding of the present study is that the Yellowstone grizzly bear population appears to be increasing. Adult survival is the most important determinant of the rate of increase of the population, with reproductive rate the next most important factor and subadult survival somewhat less important than reproductive rate.
- Knight et al. (1995) reported: Using annual totals of distinct family groups suggested an increasing trend. The slope of a log-linear regression (R^2=0.41) indicated a 3.9% annual increase. Confidence limits (95%) obtained by bootstrapping were 2 to 6%. These results compared favorably with those of Eberhardt et al. (1994).
- Eberhardt and Knight (1996) reported: The initial results of our study indicated a slow rate of decrease through 1980, roughly 2% per year (Knight and Eberhardt 1985). Current analyses (Eberhardt et al. 1994, Knight and Blanchard 1995; Knight et al. 1995) show a positive annual rate of change (roughly 2 to 5%). The turning point appeared to occur in the mid 1980s, when the policy of preventing adult female mortalities whenever feasible began to be widely observed. A high adult female survival rate is essential to maintain large mammal populations having low reproductive rates.
- Pease and Mattson (1999) reported: We concluded that, within the limits of uncertainty implied by the available data and our methods, of data analysis the size of the Yellowstone

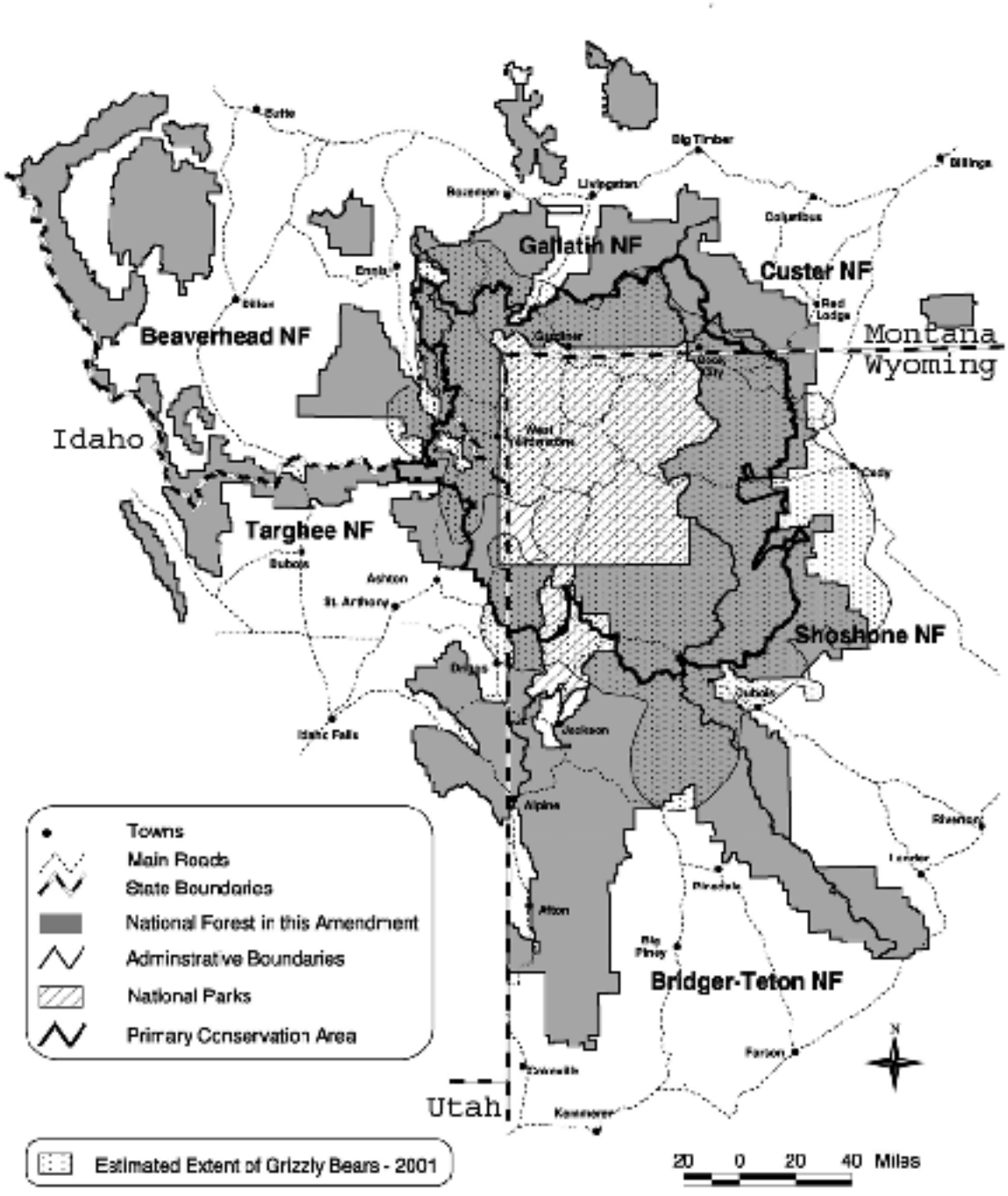
grizzly bear population changed little from 1975 to 1995. Our analysis used demographic data from 202 radio-telemetered bears followed between 1975 and 1992 and accounted for whitebark pine (*Pinus albicaulis*) crop failures during 1993 to 1995. We calculate the population growth rate = 1.00 from 1975 to 1983 (four mast and five nonmast years) and 1.02 from 1984 to 1995 (seven mast and five nonmast years). Overall, we find that population growth rate = 1.01 ± 0.04 (mean ± 1 se) from 1975 to 1995.

- Boyce et al. (2001) reported: We provide a Monte Carlo technique, which confirms that the Yellowstone ecosystem grizzly bear population increased during the period 1986 to 1998.
- Boyce et al. (2001) updated earlier research (Boyce 1995) and reported: The trend in the adjusted number of adult females with COY corroborates other data indicating that the GYE bear population increased during 1983 through 1997. Recent data provide optimistic projections of the likelihood of persistence for grizzly bears in the GYE—a 99.2% probability that the GYE grizzly bear population will persist for 100 years. Extending to a 500-year period, we find that probability of persistence decreases to 96.1%. Hunters are the second greatest source of grizzly bear mortality in the GYE. Hunters shoot grizzly bears deliberately, in self-defense, or because they mistake grizzlies for black bears. Reducing hunter related mortalities could increase the probability of long-term persistence of grizzlies in the GYE. Count data, demographic analysis, and grizzly bear distribution all indicate that the GYE bear population increased during the past decade, probably because of cooperative efforts by state and federal agencies and the public to reduce conflicts between humans and bears. Managing to ensure capability of dispersal for bears among subpopulations through linkage zone management and/or by transplants can improve prospects for long-term viability of grizzly bear populations.
- Schwartz et al. (2002) reported: The Yellowstone grizzly bear has been expanding its range during the past two decades and now occupies historic habitats that had been vacant. We used kernel estimators to develop distribution maps of occupied habitats based on initial sighting of unduplicated females (n=300) with cubs-of-the-year, information from radiomarked bears (n=105), and locations of conflicts, confrontations, and mortalities (n=1,235). The current distribution (1990 to 2000) extends beyond the recovery zone identified in the Recovery Plan. Range expansion is particularly evident in the southern portion of the ecosystem in Wyoming. A comparison of our results from the 1990s to previously published distribution maps show an approximate increase in occupied habitat of 48% and 34% from the 1970s and 1980s, respectively.
- Keating et al. (2002) reported: Previous approaches underestimate the total number of females with COY, thereby underestimating population size and sustainable mortality. Estimated numbers of females with COY in the Yellowstone population ranged from 20 animals in 1987 and 1989 to 60 in 2000. The total number of unique females with COY actually observed ranged from 13 in 1987 to 42 in 2001. The number of unique females with COY detected through random sightings alone ranged from 12 in 1987 to 39 in 2001.
- Mattson and Merrill (2002) reported: With respect to current conservation, grizzly bears survived from 1920 to 1970 most often where ranges at the beginning of this period were either larger than 20,000 km^2 or larger than 7,000 km^2 but with a ratio of perimeter to area of <2. Without reductions in human lethality after 1970, there would have been no chance that core grizzly bear range would be as extensive as it is now. Although grizzly bear range in the Yellowstone region is currently the most robust of any to potential future increases in human lethality, bears in this region are threatened by the loss of whitebark pine.
- Pyare et al. (2004) reported: Expansion in the southern end of the ecosystem was exponential and the area occupied by grizzly bears doubled approximately every 20 years. A complementary analysis of bear occurrence in Grand Teton National Park also suggests an unprecedented period of rapid expansion during the last 20 to 30 years. The grizzly bear

> population currently has reoccupied about 50% of the southern GYA. Based on assumptions of continued protection and ecological stasis, our model suggests total occupancy in 25 years.

In summary, current information indicates that this population of grizzly bears is growing at approximately 3 to 4% or more annually. In addition, the grizzly bear has increased its distribution in the GYA by almost 50% since the 1970s; this expansion is expected to continue. While there is some debate related to the actual level of population increase since the bear was listed in 1975, all of the current information (i.e. number of unduplicated females, distribution of reproducing females, distribution of bears, informal sightings by agency personnel, and areas where nuisance bears are being managed) indicates this population has increased in both numbers of bears and the geographic area they occupy (Interagency Conservation Strategy Team 2003). The geographic extent of the grizzly bear population in 2000 is displayed in Figure 24 (Schwartz et al. 2002).

Figure 24. The geographic extent of the grizzly bear population, as of 2001.



3.3.4 Effects on Grizzly Bear Habitat

Effects on Secure Habitat

Research has shown that secure habitat (areas that are free of motorized access) is an important component of grizzly bear habitat (IGBC 1998). Secure habitat is defined as areas more than 500 meters from an open or gated motorized access route or recurring helicopter flight line, and greater than or equal to 10 acres in size. All alternatives provide secure habitat for the grizzly bear both inside and outside the PCA. Alternative 4 provides the most secure habitat with no allowance for management activities that would decrease the secure habitat. Existing secure habitat in Alternatives 1, 2, and 3 is at 88%, 88%, and 90%, respectively, of Alternative 4 amounts. However, Alternatives 1, 2, and 3 would allow varying amounts of management activities within portions of the existing secure habitat that could temporarily or permanently decrease the amount of secure habitat. Details on how secure habitat varies by alternative within the PCA and outside the PCA are described below.

Within the PCA

There are 2,849,000 acres of secure habitat on National Forest System lands within the PCA, with 87% considered long-term secure and 13% allowing for management activities that may temporarily or permanently reduce the amount of secure habitat. Alternative 2 increases the amount of long-term secure habitat, but allows changes in the secure habitat according to the 1% rule as described in chapter 2. Alternatives 3 and 4 increase the amount of long-term secure habitat with no allowance for management activities that would change the amount or location of the secure habitat (Figure 25). Appendix A displays information for each BMU subunit.

Figure 25. Secure habitat acres (in thousands) on each national forest within the PCA for each alternative [5].

National forest	Alternative 1		Alternative 2		Alternative 3[1]	Alternative 4[1]
	Secure habitat long term[2]	Secure habitat short term[3]	Secure habitat long term	1 % rule	Secure habitat long term	Secure habitat long term
Beaverhead	66	0	66	0	66	66
Bridger-Teton	631	28	659	[4]	671	671
Custer	110	1	111	[4]	112	112
Gallatin	554	33	587	[4]	701	701
Shoshone	929	207	1,137	[4]	1,159	1,159
Targhee	181	109	290	[4]	332	332
Total Acres	2,471	379	2,849	29.5[4]	3,039	3,039

[1] In Alternatives 3 and 4, all existing secure habitat would be maintained, motorized access routes within inventoried roadless areas would be closed, and secure habitat would be increased to 70% secure in all BMU subunits that are below 70% secure. (See Appendix A for data on individual BMU subunits.)
[2] Long term = secure habitat acres within Management Area Categories 1, 2, and 3.
[3] Short term = secure habitat acres within Management Area Categories 4, 5, 6, and 8.
[4] 1% Rule: a) large lakes were not included when calculating the 1% rule, b) acres are only those BMUs with National Forest System land included within the BMU. Because of overlap between national forests and national parks, it is not possible to display accurately the acres in the 1% rule for each national forest.
[5] Non-Forest Service inholdings are excluded except for the Bridger-Teton and Custer National Forests. See Figure 11.

Beaverhead National Forest

Within the PCA, there would be no change in existing secure habitat with any of the alternatives. There is no motorized access to the Beaverhead National Forest portion of the PCA. Currently, 96% of the National Forest System land within the PCA is secure habitat (Figure 25). The vast majority of this area is designated wilderness, and the relatively small non-wilderness portion of the PCA was closed to motorized use year round by Amendment 10 of the Beaverhead Forest Plan. The amount of secure habitat in the Beaverhead National Forest portion of Hilgard BMU subunit 1 has not changed over the last 10 years.

Bridger-Teton National Forest

For Alternative 1, management area prescriptions in the Bridger-Teton Forest Plan emphasize motorized use on approximately 7% of the PCA within the Forest. In Alternative 1, there are 28,000 acres of secure habitat (4% of the total secure habitat) within those areas that could allow motorized use (Figure 25). Motorized use is prohibited or discouraged on the remaining 93% of the PCA. Currently, 91% of the National System Land within the PCA is secure habitat (Figure 25). Therefore, the amount of secure habitat within the PCA could be reduced from 91% to 87% under the existing Forest Plan. The Bridger-Teton Forest Plan does not contain any Forestwide standard addressing open or total motorized access density or secure habitat areas. Access prescriptions and standards of individual management areas are variable, with some suggesting that motorized route density may exceed one mile per square mile of the management area. However, there is nothing in the Forest Plan that compels the creation of new motorized routes in excess of the conditions in 1998, or the reduction in the amount of secure habitat from 1998 levels. Over the last five years, the amount of secure habitat has remained unchanged.

For Alternative 2, the existing secure habitat (659,000 acres, 91% of the National Forest System land within the PCA) would be maintained, with the allowance of the 1% rule to accomplish various management objectives.

For Alternatives 3 and 4, secure habitat would be increased to 671,000 acres (93% of the National Forest System land within the PCA) to meet requirements of Standard 1. This secure habitat would be maintained, with no rules for variance or deviation (Figure 25).

Custer National Forest

For Alternative 1, most of the PCA (98.6%) is designated wilderness or a management category that emphasizes wildlife habitat protection and discourages permanent road construction. Currently, 97% of the National Forest System land within the PCA is secure habitat (Figure 25). Management Area E (1.4% of the PCA) emphasizes the exploration, development, and production of energy and mineral resources, but no activity has occurred. In Alternative 1, less than 1,000 acres of existing secure habitat (less than 1% of the total secure habitat) could allow motorized use. Secure habitat has remained the same over the last five to 10 years.

For Alternative 2, the existing secure habitat (111,000 acres, 97% of the National Forest System land within the PCA) would be maintained, with the allowance of the 1% rule to accomplish various management objectives (Figure 25).

For Alternatives 3 and 4, secure habitat would be increased to 112,000 acres (97% of the National Forest System land within the PCA) to meet requirements of Standard 1. This secure habitat would be maintained, with no rules for variance or deviation.

Gallatin National Forest

Past actions have affected secure habitat. The Gallatin National Forest has closed or obliterated more than 100 miles of road within BMU subunits, which increased the amount of secure habitat. The road closures occurred mainly on the Hebgen Lake Ranger District in the Taylor Fork (Hilgard 1 and 2) and in the Madison 1 and 2 and Henrys Lake 2 BMU subunits. Currently, 73% of the National Forest System land within the PCA is secure habitat (Figure 25). In Alternative 1,

33,000 acres of existing secure habitat (5.6% of the total secure habitat) could allow motorized use (Figure 25).

For Alternative 2, the existing secure habitat (587,000 acres, 73% of the National Forest System land within the PCA) would be maintained, with the allowance of the 1% rule to accomplish various management objectives.

For Alternatives 3 and 4, secure habitat would be increased to 701,000 acres (87% of the National Forest System land within the PCA) to meet requirements of Standard 1. This secure habitat would be maintained, with no rules for variance or deviation.

Shoshone National Forest

The Shoshone Forest Plan, as amended, has a standard for no net increase in roads. The activity levels associated with Plan objectives are relatively low. In practice, secure habitat is being maintained or increased. The amount of secure habitat has increased in Shoshone BMU subunits 3 and 4 due to recent road closures in the North Fork Shoshone River corridor. The amount of secure habitat has stayed the same in all other BMU subunits. Currently, 93% of the National Forest System land within the PCA is secure habitat (Figure 25).

In Alternative 1, the standard for no net increase in roads would result in stable amounts of secure habitat. However, the location of secure habitat could change over time when roads are constructed in some areas and closed in other areas to meet the standard of no net increase.

For Alternative 2, the existing secure habitat (1,137,000 acres, 93% of the National Forest System land within the PCA) would be maintained, with the allowance of the 1% rule to accomplish various management objectives (Figure 25).

For Alternatives 3 and 4, secure habitat would be increased to 1,159,000 acres (95% of the National Forest System land within the PCA) to meet requirements of Standard 1. This secure habitat would be maintained, with no rules for variance or deviation.

Targhee National Forest

In Alternative 1, there are 290,000 acres of existing secure habitat, with 181,000 acres (62.3%) within management prescriptions that maintain the secure habitat long term (Figure 25). The remaining secure habitat (109,000 acres, or 37.7%) is within management prescriptions that allow project work and potential motorized access that could affect a portion of this secure habitat. Forest Plan standards for open motorized access route density (0.6 miles per square mile) and total motorized access route density (1.0 miles per square mile) limit the amount of secure habitat that could be affected. In addition, there are guidelines for maintaining large areas (no less than 7,000 acres in size) without project activities adjacent to the areas with project activities, which limits the amount of secure habitat that could be affected.

For Alternative 2, the existing secure habitat (290,000 acres, 61% of the National Forest System land within the PCA) would be maintained, with the allowance of the 1% rule to accomplish various management objectives.

For Alternatives 3 and 4, secure habitat would be increased to 332,000 acres (70% of the National Forest System land within the PCA) to meet requirements of Standard 1. This secure habitat would be maintained, with no rules for variance for deviation.

Outside the PCA

There are 4,307,000 acres of secure habitat on National Forest System lands outside the PCA, with 73% considered long-term secure and 27% allowing for management activities that may temporarily or permanently reduce the amount of secure habitat. Alternatives 1, 2, and 3 do not change existing management direction in forest plans, so there is no change in secure habitat among these alternatives. Alternative 4 increases the amount of long-term secure habitat to 5,087,000 acres, with no allowance for management activities that would change the amount or location of the secure habitat (Figure 26).

Figure 26. Secure habitat acres (in thousands) on each national forest outside the PCA for each alternative [4].

National forest	Alternative 1		Alternative 2		Alternative 3		Alternative 4
	Secure habitat long term[1]	Secure habitat short term[2]	Secure habitat long term[1]	Secure habitat short term[2]	Secure habitat long term[1]	Secure habitat short term[2]	Secure habitat long term[3]
Beaverhead	705	289	705	289	705	289	1,266
Bridger-Teton	891	94	891	94	891	94	1,129
Custer	250	57	250	57	250	57	314
Gallatin	474	145	474	145	474	145	660
Shoshone	478	375	478	375	478	375	949
Targhee	336	214	336	214	336	214	768
Total acres	3,134	1,173	3,134	1,173	3,134	1,173	5,087

[1] Long term = secure habitat acres within Management Area Categories 1, 2, and 3.
[2] Short term = secure habitat acres within Management Area Categories 4, 5, 6, and 8.
[3] In Alternative 4, all existing secure habitat would be maintained, motorized access routes within inventoried roadless areas would be closed, and secure habitat would be increased to 70% secure in all analysis units that are below 70% secure. (See Appendix A for data on individual analysis units.)
[4] Non-Forest Service inholdings are excluded except for the Bridger-Teton and Custer National Forests.

Beaverhead National Forest

There are 994,000 acres of secure habitat within the analysis area outside the PCA (64% of the National Forest System land within the analysis area). For Alternatives 1, 2, and 3 there are 705,000 acres (71%) of existing secure habitat that are in management area prescriptions that provide for long-term security (Figure 26). There are 289,000 acres (29%) of existing secure habitat in management area prescriptions that may allow motorized access for management activities, and this would result in a decrease or change in location of the secure habitat.

For Alternative 4, all of the existing secure habitat (994,000 acres) would be maintained for long-term security. An additional 273,000 acres of new secure habitat would be added to existing secure habitat in eight analysis units to meet requirements of Standard 1. To create this new secure habitat, a minimum of 275 miles of open motorized access would need to be closed—this would bring the total secure habitat to 1,266,000 acres (81% of the National Forest System land within the analysis area).

Bridger-Teton National Forest

There are 985,000 acres of secure habitat within the analysis area outside the PCA (76% of the National Forest System land within the analysis area). For Alternatives 1, 2, and 3 there are 891,000 acres (90%) of existing secure habitat that are in management area prescriptions that provide for long-term security (Figure 26). There are 94,000 acres (10%) of existing secure habitat in management area prescriptions that may allow motorized access for management activities, and this would result in a decrease or change in location of the secure habitat.

For Alternative 4, all of the existing secure habitat (985,000 acres) would be maintained for long-term security. An additional 144,000 acres of new secure habitat would be added to existing secure habitat in six analysis units to meet requirements of Standard 1. To create this new secure habitat, a minimum of 299 miles of open motorized access would need to be closed, or some areas currently open to cross-country OHV (off-highway vehicle) use would need to be closed.

This would bring the total secure habitat to 1,129,000 acres (87% of the National Forest System land within the analysis area).

Custer National Forest

There are 307,000 acres of secure habitat within the analysis area outside the PCA (90% of the National Forest System land within the analysis area). For Alternatives 1, 2, and 3 there are 250,000 acres (82%) of existing secure habitat that are in management area prescriptions that provide for long-term security (Figure 26). There are 57,000 acres (18%) of existing secure habitat in management area prescriptions that may allow motorized access for management activities, and this would result in a decrease or change in location of the secure habitat.

For Alternative 4, all of the existing secure habitat (307,000 acres) would be maintained for long-term security. An additional 7,500 acres of new secure habitat would be added to existing secure habitat in two analysis units to meet requirements of Standard 1.To create this new secure habitat, a minimum of 10 miles of open motorized access would need to be closed. This would bring the total secure habitat to 314,000 acres (92% of the National Forest System land within the analysis area).

Gallatin National Forest

There are 619,000 acres of secure habitat within the analysis area outside the PCA (79% of the National Forest System land within the analysis area). For Alternatives 1, 2, and 3 there are 474,000 acres (77%) of existing secure habitat that are in management area prescriptions that provide for long-term security (Figure 26). There are 145,000 acres (23%) of existing secure habitat in management area prescriptions that may allow motorized access for management activities, and this would result in a decrease or change in location of the secure habitat.

For Alternative 4, all of the existing secure habitat (619,000 acres) would be maintained for long-term security. An additional 41,000 acres of new secure habitat would be added to existing secure habitat in six analysis units to meet requirements of Standard 1. To create this new secure habitat, a minimum of 86 miles of open motorized access would need to be closed. This would bring the total secure habitat to 660,000 acres (84% of the National Forest System land within the analysis area).

Shoshone National Forest

There are 852,000 acres of secure habitat within the analysis area outside the PCA (79% of the National Forest System land within the analysis area). For Alternatives 1, 2, and 3, there are 478,000 acres (56%) of existing secure habitat that are in management area prescriptions that provide for long-term security (Figure 26). There are 375,000 acres (44%) of existing secure habitat in management area prescriptions that may allow motorized access for management activities, and this would result in a decrease or change in location of the secure habitat.

For Alternative 4, all of the existing secure habitat (852,000 acres) would be maintained for long-term security. An additional 97,000 acres of new secure habitat would be added to existing secure habitat in eight analysis units to meet requirements of Standard 1. To create this new secure habitat, a minimum of 210 miles of open motorized access would need to be closed. This would bring the total secure habitat to 949,000 acres (88% of the National Forest System land within the analysis area).

Targhee National Forest

There are 550,000 acres of secure habitat within the analysis area outside the PCA (59% of the National Forest System land within the analysis area). For Alternatives 1, 2, and 3 there are 336,000 acres (61%) of existing secure habitat that are in management area prescriptions that provide for long-term security (Figure 26). There are 214,000 acres (39%) of existing secure habitat in management area prescriptions that may allow motorized access for management activities, and this would result in a decrease or change in location of the secure habitat.

For Alternative 4, all of the existing secure habitat (550,000 acres) would be maintained for long-term security. An additional 218,000 acres of new secure habitat would be added to existing secure habitat in six analysis units to meet requirement of Standard 1. To create this new secure habitat, a minimum of 534 miles of open motorized access would need to be closed, or some areas currently open to cross-country OHV use would need to be closed. This would bring the total secure habitat to 768,000 acres (82% of the National Forest System land within the analysis area).

Effects on Denning Habitat

Within the PCA, there are over two million acres of grizzly bear denning habitat (Figure 28). Outside of the PCA, in the area defined by Alternative 4, there are also over two million acres of grizzly bear denning habitat (Figure 29). Distribution of grizzly bear denning habitat on the six national forests is displayed in Figure 27 (Podruzny et al. 2002).

Within the PCA, 68% of the grizzly bear denning habitat would be closed to snow machine use in Alternatives 1 and 2. In Alternatives 3 and 4, 100% of the grizzly bear denning habitat would be closed to snow machine use (Figure 28).

Outside the PCA in the area defined by Alternative 4, 35% of the grizzly bear denning habitat would be closed to snow machine use in Alternatives 1, 2 and 3. In Alternative 4, 100% of the grizzly bear denning habitat would be closed to snow machine use (Figure 29).

The current information on effects of snow machining on grizzly bears as outlined in section 3.3.2 shows that the disturbance/incidental take effects on grizzly bears will be low in Alternatives 1, 2 and 3, and potentially nonexistent in Alternative 4 (if all snow machine use could be effectively stopped).

Figure 27. Grizzly bear denning habitat.

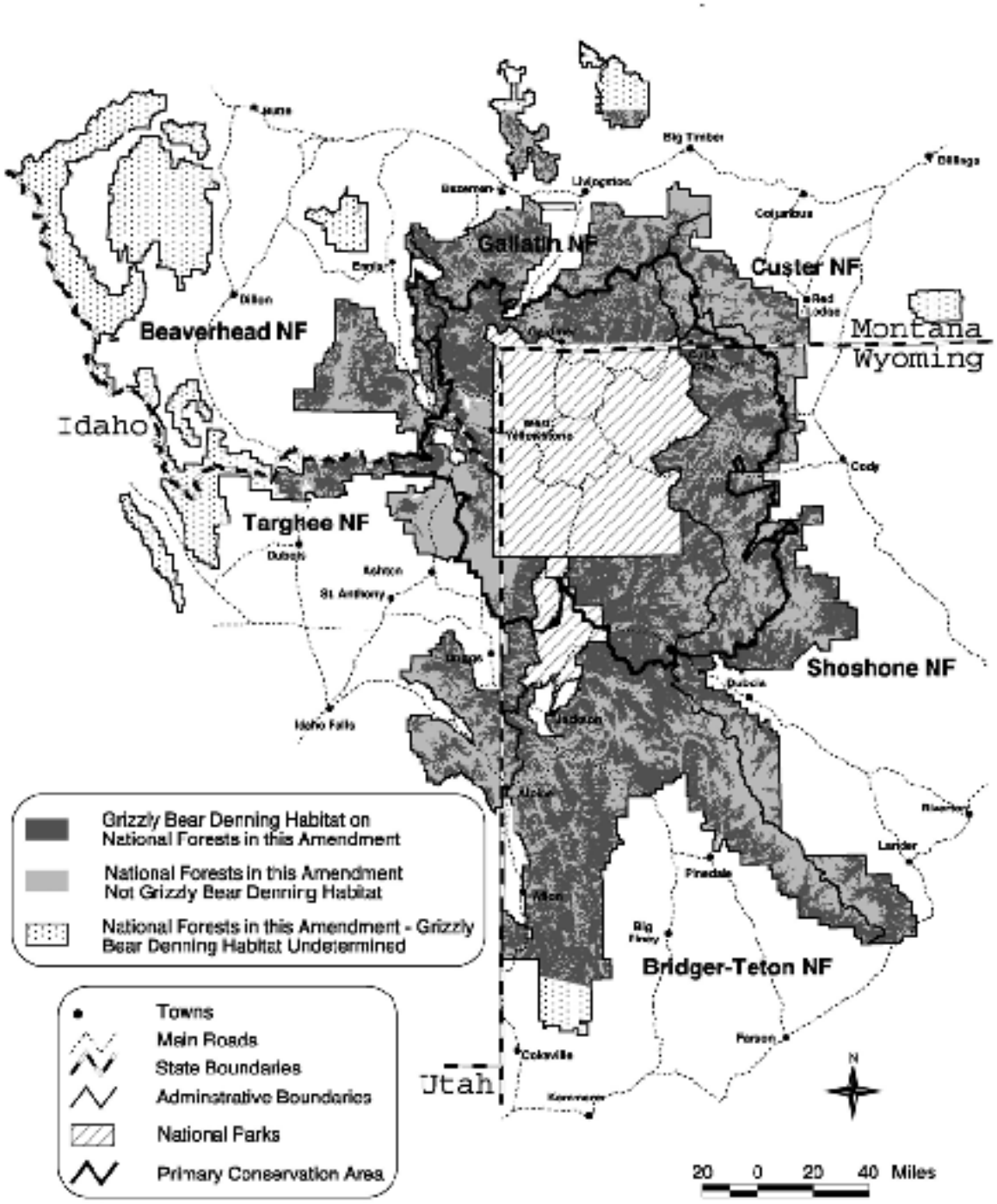


Figure 28. Grizzly bear denning habitat[1], in thousands of acres, closed to snow machine use within the PCA.

National forest	Acres of denning habitat	Alternative 1 acres (%) closed to snow machine use	Alternative 2 acres (%) closed to snow machine use	Alternative 3 acres (%) closed to snow machine use	Alternative 4 acres (%) closed to snow machine use
Beaverhead	51	49 (96%)[2]	49 (96%)	51 (100%)	51 (100%)
Bridger-Teton	560	467 (83%)[2]	467 (83%)	560 (100%)	560 (100%)
Custer	35	28 (80%)[2]	28 (80%)	35 (100%)	35 (100%)
Gallatin	644	369 (57%)[2]	369 (57%)	644 (100%)	644 (100%)
Shoshone	731	567 (78%)[2]	567 (78%)	731 (100%)	731 (100%)
Targhee	220	49 (22%)[3]	49 (22%)[2]	220 (100%)	220 (100%)
Total acres	2,241	1,529 (68%)	1,529 (68%)	2,241 (100%)	2,241 (100%)

[1] Podruzny et al. 2002

[2]These forests are required to confer with the USFWS when there is a known den site to evaluate if snow machine use needs to be curtailed in the immediate denning area.

[3] For Alternatives 1 and 2, the 1997 Revised Forest Plan has a standard to curtail snow machine use in areas with documented conflicts with denning grizzly bears.

Figure 29. Grizzly bear denning habitat[1], in thousands of acres, closed to snow machine use outside the PCA for the area defined by Alternative 4.

National forest	Acres of denning habitat	Alternative 1 acres (%) closed to snow machine use	Alternative 2 acres (%) closed to snow machine use	Alternative 3 acres (%) closed to snow machine use	Alternative 4 acres (%) closed to snow machine use
Beaverhead	283	41 (14%)	41 (14%)	41 (14%)	283 (100%)
Bridger-Teton	698	335 (48%)	335 (48%)	335 (48%)	698 (100%)
Custer	117	50 (43%)	50 (43%)	50 (43%)	117 (100%)
Gallatin	450	184 (41%)	184 (41%)	184 (41%)	450 (100%)
Shoshone	510	178 (35%)	178 (35%)	178 (35%)	510 (100%)
Targhee	358	58 (16%)	58 (16%)	58 (16%)	358 (100%)
Total acres	2,416	846 (35%)	846 (35%)	846 (35%)	2,416 (100%)

[1] Podruzny et al. 2002

3.3.5 Effects on Grizzly Bear/Human Interactions

Effects on Grizzly Bear/ Human Conflicts and Displacement Associated with Developed Sites

Developed sites in grizzly bear habitat increase the potential for conflict with humans primarily due to the potential availability of human foods. Developments also reduce the effectiveness of the natural habitat near these sites. Dominant bears sometimes displace subordinate bears into less desirable habitat, resulting in increased conflicts compared to bears using habitats further away from developed sites. The larger the developed site and the more people using the site, the greater the potential for conflicts and reduction in the effectiveness of the adjacent habitat for bears (Mattson et al.1987).

Inside the PCA

There are 371 developed sites on the six national forests inside the PCA (Appendix A). Forest Service food storage regulations minimize the potential for grizzly bear/ human conflicts independent of the alternatives. Minerals development under the 1872 General Mining Law would be permitted and mitigated as possible.

Alternative 1. Conflicts with grizzly bears and people would likely continue at existing levels in association with the current number of developed sites. Changes in the number and capacity of developed sites would be managed under the Guidelines and increases minimized in MS 1. However, in most cases, increases in capacity and number of sites could occur in MS 2 and 3. Oil and gas development could occur on lands open to surface occupancy in MS 2 and 3; mitigation would be guided by the Guidelines. Grizzly bear/human conflicts would increase and the effectiveness of habitats adjacent to these sites would be reduced.

Alternative 2. Increases in capacity and the number of developed sites would occur only if it were determined that there were no impacts to grizzly bears or the impacts could be mitigated. Conflicts at developed sites would likely remain at current levels, or decrease, and the acreage of impacted habitat would remain at 1998 levels. The few existing oil and gas leases on the Gallatin National Forest would be honored. Impacts would be mitigated where possible according to the Application Rules for Standard 2, but increases in conflicts and displacement of grizzly bears would occur if those leases were developed on the Gallatin National Forest.

Alternatives 3 and 4. No increases in the number and capacity of developed sites would be allowed. Sites with recurring conflicts would be eliminated and there would be no new oil and gas leases. Grizzly bear/human conflicts would be reduced over current levels if developed sites with recurring conflicts were removed and associated habitat restored. The potential for any increase in conflicts and displacement of grizzly bears would be minimized, as no increases in capacity or number of sites would be allowed. Effects from the existing oil and gas leases on the Gallatin National Forest are the same as Alternative 2.

Outside the PCA

There are 598 developed sites on the six national forests in the area identified for Alternative 4 outside the PCA (Appendix A). Existing Forest Service food storage regulations outside the PCA would continue to minimize the potential for grizzly bear/human conflicts independent of the alternatives. Minerals development under the 1872 General Mining Law would be permitted and mitigated as possible.

Alternatives 1, 2, and 3. The number and capacity of developed sites would be subject to management direction in existing forest plans. Recreation use and associated demand for developed sites is expected to increase (section 3.9.3) and there are numerous existing oil and gas leases outside the PCA (Figure 80) with the potential for additional leases. Consultation with the USFWS would be required under Alternative 1 for projects that may affect the grizzly bear. The number and capacity of developed sites would likely increase outside the PCA under Alternatives 1, 2, and 3. Grizzly bear/human conflicts would increase outside the PCA as bears expand their range even with the existing level of developed sites. An increase in number and capacity of developed sites would further increase the potential for conflicts and displacement.

Alternative 4. There would be no new developed sites or increases in capacity of existing sites outside the PCA in the area identified for Alternative 4. New oil and gas leases would not be allowed. Existing leases would be honored and mitigated as possible according to the Application Rules for Standard 2. Food storage orders would be extended to include all of the six national forests. The potential for grizzly bear/human conflicts and displacement would be reduced over that identified for Alternatives 1, 2, and 3. Outside the Alternative 4 areas, conflicts and displacement would increase with increases in the number and capacity of developed sites in areas occupied by bears. Food storage orders in these areas would help minimize conflicts.

Effects on Grizzly Bear/Livestock Conflicts

Inside the PCA

In 2003, there were 70 active cattle allotments and seven active sheep allotments (Figure 49) inside the PCA. There were 17 cattle allotments active in 2003 (24%) with documented grizzly bear conflicts between 1992 and 2003 and two sheep allotments (40% of the allotments active in 2003) with documented grizzly bear conflicts. Several additional sheep allotments that experienced conflicts during this period have been closed. Four cattle allotments active in 2003 have experienced recurring conflicts (Figure 50). One of these cattle allotments with recurring conflicts was closed after the 2003 grazing season. Recurring conflicts for this analysis are defined as three or more years of recorded conflicts during the most recent five-year period.

Alternative 1. The two remaining sheep allotments on the Targhee National Forest (three of the five active sheep allotments in 2003 were closed in early 2004) would be phased out and the two sheep allotments in MS 1 on the Gallatin National Forest would be managed under the Guidelines. However, conflicts with bears and sheep would likely continue. If management actions were unable to resolve the problem, these allotments could potentially be closed.

Grizzly bear conflicts with cattle would also be managed under the Guidelines. Cattle allotments in MS 1 would be closed if conflicts could not be resolved. Cattle allotments in MS 2 would remain; conflicts with cattle are anticipated to occur.

Sheep and cattle allotments could be created inside the PCA and numbers of sheep could increase, particularly in MS 2. This is highly unlikely, based on past trends; however, Alternative 1 does not preclude these actions. Increased numbers of livestock would increase the potential for conflicts. The past management of grizzly bear livestock conflicts under the Guidelines has not precluded achieving recovery of the grizzly bear.

Alternative 2. Sheep AMs would remain at or below1998 levels until all the sheep allotments inside the PCA were phased out with willing permittees. Conflicts with grizzly bears and sheep would continue until all sheep allotments were closed. No new allotments would be created in the PCA and numbers of cattle would likely remain close to 1998 levels in existing allotments. Conflicts with cattle would likely continue at current levels and any potential for increase in conflicts would not be a result of new allotments. However, similar to Alternative 1, the past level of conflicts and grizzly bear mortalities has not precluded achieving recovery of the grizzly bear and, in addition, sheep conflicts would eventually be eliminated.

Alternatives 3 and 4. Conflicts with grizzly bears and livestock are expected to continue in the PCA, but would eventually be reduced below existing levels. All sheep allotments would be closed within three years and those portions of cattle allotments with recurring conflicts would be closed. Only those allotments that do not experience recurring conflicts would remain.

Outside the PCA

Outside the PCA, within the area defined by Alternative 4, there are currently 280 active cattle allotments and 75 active sheep allotments (Figure 49). During the years 1992 through 2003, there were 11 cattle allotments (4% of the active allotments) and six sheep allotments (8% of the active allotments) with documented grizzly bear conflicts. Two cattle allotments on the Bridger-Teton National Forest have experienced recurring conflicts (Figure 50). Recurring conflicts for this analysis are defined as three or more years of recorded conflicts during the most recent five-year period.

Alternatives 1, 2, and 3. The existing sheep allotments would be maintained. Grizzly bear conflicts are expected on the six sheep allotments that have had previous conflicts, and are anticipated on the other sheep allotments if the grizzly bear population expands into these areas. Grizzly bear conflicts are also expected on the 11 cattle allotments outside the PCA that have had previous conflicts, and are anticipated on some but not all of the other cattle allotments if the grizzly bear population expands into these areas. Both cattle and sheep conflicts would be handled under state

nuisance grizzly bear guidelines. These nuisance grizzly bear guidelines allow a variety of management actions, depending on site-specific conditions and situations. Conflicts would likely increase under all three alternatives outside the PCA as bears continue to expand their range. Consultation with the USFWS would be required under Alternative 1.

Alternative 4. All existing sheep allotments would be closed within three years, and conflicts with grizzly bears and sheep would eventually be eliminated within the Alternative 4 boundary. Those portions of cattle allotments with recurring grizzly bear conflicts would be closed. Conflicts between grizzly bears and livestock would be minimal, as only those portions of cattle allotments that do not experience recurring conflicts would remain. Both cattle and sheep conflicts would be handled under state nuisance grizzly bear guidelines.

As bears effectively occupy more of the area defined by Alternative 4, conflicts with sheep and cattle outside of the Alternative 4 boundary would likely increase.

3.3.6 Effects on the Grizzly Bear Population

Effects Common to All Alternatives

All alternatives provide some level of protection to grizzly bear habitat; however, the quantity and quality of available habitat are only two of the factors that influence total population numbers. Controlling human-caused mortality has been key to increases in bear numbers over the last 25 years. Human-caused mortality, coupled with the amount of effective habitat, would be the ultimate limiting factors for grizzly bear populations in the GYA.

Coordinated management of nuisance bears, food storage orders, information and education efforts, and the availability of Forest Service facilities to store food unavailable to bears would minimize conflicts and grizzly bear mortalities under all alternatives.

Grizzly bear numbers are expected to be stable or increase inside the PCA and bears would likely increase occupation and use of habitats outside the PCA under all alternatives. Recreational use of National Forest System lands is expected to increase over the next decade as the human population in the counties in the GYA continues to grow (Figure 90).

Grizzly bear/human conflicts and human-caused mortalities would likely increase with increased contact between bears and humans on the six national forests. Many of the grizzly bear/human conflicts occur on private lands in the GYA, where the Forest Service has no authority to require food storage (Figure 22).

Weather conditions play a key role in the yearly availability of foods for bears, which in turn affects female fecundity and cub survival (Schwartz et al. in press). In poor food years, bears often seek non-traditional foods and end up in trouble with humans, which increases the risk of mortality. Regardless of the amount of habitat protection, weather conditions would still influence the basic productivity of the land and the foods available to bears and ultimately the carrying capacity of the landscape for grizzly bears.

Minerals development could impact grizzly bears but would be minimized by mitigation efforts.

Effects of Alternative 1 on the Grizzly Bear Population

The grizzly bear population has increased in numbers and expanded its range with the current habitat protections under Alternative 1. Project level direction contained in the Guidelines emphasizes minimizing grizzly bear/human conflicts and disturbance to grizzly bears during project activities. This direction would continue to minimize conflicts and mortalities associated with land management activities inside the PCA. Current management area designations identify about 2.5 million acres as long-term secure habitat inside the PCA (Figure 25); however, current standards for habitat management on the remaining acres provide no specific direction for maintaining secure habitat. Activities requiring new roads, such as timber sales or oil and gas development, could occur, particularly in MS 2 and 3, without mitigating for any permanent loss

of secure habitat. Incremental loss of secure habitat could occur over time to a point where less security could affect bear numbers. In addition, connectivity options could be reduced, impacting the ability of bears to move effectively between key habitats in the PCA.

The number and capacity of developed sites inside the PCA could increase under Alternative 1. Consultation with the USFWS would continue and mitigation would result. The Guidelines provide direction on management of developed sites inside the PCA. However, new developed sites would be permitted if proposed, especially in MS 2, and the potential for grizzly bear/human conflicts, displacement, and mortalities associated with developed sites could increase over time.

Conflicts with existing sheep allotments could result in grizzly bear mortalities before existing allotments on the Targhee National Forest are phased out. The two sheep allotments on the Gallatin National Forest could remain and pose a mortality risk to bears. These allotments are in MS 1 where management to resolve conflicts with livestock rarely results in the removal of grizzly bears. However, if the bear is determined to be a nuisance, according to the Guidelines, the bear could be removed. Herders have been known to kill grizzly bears in defense of livestock. The potential for increased numbers of livestock, especially sheep, even though unlikely, would increase grizzly bear/livestock conflicts and associated mortality. The past management of grizzly bear/livestock conflicts under the Guidelines has not precluded achieving recovery of the grizzly bear.

Alternative 1 provides no specific direction for grizzly bear habitat management outside the PCA. However, Management Category 1, 2, and 3 areas provide about 3.1 million acres of secure habitat outside the PCA (Figure 26).

These management area designations would continue. Consultation with the USFWS is required for all land management activities outside the PCA that may affect the grizzly bear. This situation outside the PCA should allow bears to continue to occupy existing habitat and to expand into new suitable areas not currently occupied. However, even with consultation, existing road densities, land management activities, and proximity to private land developments would preclude many areas from being effectively occupied by grizzly bears.

Human-caused bear mortality has been within identified limits since at least 1998. Bear numbers continue to increase at 3 to 4% or more annually (Eberhardt et al. 1994, Boyce 1995, Boyce et al. 2001, Interagency Conservation Strategy Team 2003).

Monitoring of grizzly bear population parameters and the abundance of the four major foods would continue under the auspices of the YES and the IGBST. Monitoring of grizzly bear habitats under current forest plans would continue. Results from these efforts would provide managers with the base information needed to evaluate the status of the habitat and the grizzly bear population and the need for changes in management direction. However, as habitat-monitoring requirements differ among forests, the full picture on the status of the habitat for grizzly bears in the GYA may not be obvious. Coordinated, consistent monitoring efforts identified for the action alternatives may be more effective in evaluating the habitat conditions for the grizzly bear on a larger scale.

Effects of Alternative 2 on the Grizzly Bear Population

Long-term maintenance of secure habitat, developed sites, and numbers of livestock allotments at 1998 levels inside the PCA would likely allow bear numbers to continue to increase at current rates and occupy new habitats outside the PCA. Numbers inside the PCA would likely remain stable, as it appears most habitats inside the PCA are at carrying capacity.

Phasing out the remaining sheep allotments inside the PCA would eliminate conflicts with bears and sheep and associated mortality risk. Cattle conflicts could increase slightly without the Guidelines that favor the bear over cattle in MS 1. The nuisance grizzly bear standard in the Conservation Strategy does not allow the state wildlife management agencies to remove a female grizzly bear for livestock depredation. All livestock depredating male bears would be relocated at

least once and the removal of grizzly bears that kill sheep on the sheep allotments on the Gallatin National Forest would not be allowed. Only two cattle allotments with recurring conflicts remain in MS 1 (Figure 50). Livestock-related grizzly bear mortalities account for only 12 % of the known human-caused grizzly bear mortalities since 1975 (Figure 19).

While this alternative would allow a temporary 1% deviation in secure habitat within the PCA, this level of secure habitat modification is consistent with land management practices over the last decade, which resulted in an increase in bear numbers. Population numbers would more likely be limited by human-caused mortality and the carrying capacity of the habitat, rather than temporary habitat loss inside the PCA.

Project-level direction in the Guidelines would no longer apply. In many cases, management activities could occur without regard to seasonal timing restrictions, project duration limits, and other site-specific standards for grizzly bears. Individual projects could have a greater potential for displacing bears from important seasonal habitats than under Alternative 1. However, under Alternative 2, projects would be limited in size and only one project could occur at a time in a subunit. Most of the subunit would remain secure, providing refuge from ongoing projects. Large projects requiring extensive roading and/or site development would not occur under the 1% rule unless additional roads were closed for mitigation, whereas under Alternative 1 they would be allowed in most MS 2 and 3 areas. Alternative 2 would preclude any permanent large-scale changes to the existing level of secure habitat and developed sites, and would be more effective in providing long-term protections to the habitat and the grizzly bear population than Alternative 1. Connectivity between key habitats in the PCA is more likely to be maintained with Alternative 2 than Alternative 1.

Outside the PCA, the effects are similar to Alternative 1 with the exception that consultation with USFWS would not occur with the grizzly bear delisted. The grizzly bear would, however, be listed as a Forest Service sensitive species throughout its range in the GYA. Land management activities would be managed so as not to contribute to a trend for listing or loss of viability for the grizzly bear. There must be no impacts to sensitive species without an analysis of the significance of adverse effects on the populations, its habitat and on the viability of the species. The Forest Service would cooperate with state wildlife agencies in attaining population goals for grizzly bears. Existing long-term secure habitat (Management Category 1 areas) would remain, but existing road densities and land management activities would preclude many areas from being effectively occupied by grizzly bears.

The Conservation Strategy, which would apply when the bear is delisted, sets a GYA-wide mortality limit of no more than 4% of the total population estimate. This level of mortality, managed by the state wildlife agencies and national parks, is expected to facilitate population increase and expansion. Allowable mortality would likely be increased when bears occupy all the areas where the states have agreed to manage for grizzly bears. Hunting would likely be used as a tool by the state wildlife agencies to keep bears at desired population levels.

Each forest would monitor adherence to the secure habitat, developed site and livestock standards. Habitat effectiveness would be monitored collectively on a regular basis to track any changes to the habitat from fire, insects and disease, and other human activities not measured by the habitat standard monitoring efforts. Results of habitat monitoring along with the demographic and foods monitoring required under the Conservation Strategy would be reviewed annually by the Yellowstone Grizzly Coordinating Committee. The Conservation Strategy requires a management review if population or habitat standards are not met. This coordinated approach would better ensure that potential threats to the grizzly bear or its habitat were evaluated quickly and efficiently.

The long-term common protections to the habitat provided by Alternative 2 and the consistent coordinated monitoring efforts would improve the potential for long-term sustainability of the grizzly bear population in the GYA over that provided by Alternative 1.

Effects of Alternative 3 on the Grizzly Bear Population

Under Alternative 3 inside the PCA, existing secure habitat would remain with few exceptions and additional secure habitat would be created through closure of motorized routes in inventoried roadless areas or in areas below 70% habitat security, or both. This increase in security would improve the connectivity between key habitats inside the PCA over that provided by Alternatives 1 and 2. Many of the areas where security would be improved are not currently effective grizzly bear habitat and may be barriers to movement. Motorized use would be limited to designated routes and snow machining would be eliminated in denning habitat. Developed sites would be maintained at 1998 levels with few exceptions for mitigation, or eliminated if conflicts could not be resolved. Dispersed sites and outfitter camps with a trend of recurring conflicts would be removed and human use of backcountry trails would be limited or restricted in areas of conflict. Area closures would be used to ensure adequate security to bears in critical foraging areas. Sheep allotments and those portions of cattle allotments that experience recurring conflicts with grizzly bears would be closed. Overall, human use inside the PCA would be reduced from existing levels and the potential for grizzly bear/human conflicts reduced. Any potential for impacts to denning bears from snow machines would be eliminated.

Similar to Alternative 2, project level direction provided by the Guidelines would no longer apply. However, no projects would be allowed in secure habitat inside the PCA. Grizzly bears would not be displaced temporarily or permanently due to project activities. Potential increases in grizzly bear mortality or decreases in female fecundity due to displacement from project activities would be eliminated. Habitat management projects in secure habitat would be limited primarily to prescribed fire or fuels treatments, and maintaining and restoring critical food sources.

In general, grizzly bear habitat and security would be improved above 1998 levels inside the PCA. These high levels of habitat protection would provide additional assurances above Alternative 2 that habitat loss or displacement inside the PCA would not limit bear population numbers. Activities on National Forest System lands would always be managed in favor of the bear and the potential for conflicts and human-caused mortalities would be even further reduced over that in Alternatives 1 or 2.

Monitoring under Alternative 3 would be the same as that identified for Alternative 2 and would improve the ability of managers to identify threats to the habitat and population over the monitoring in Alternative 1.

Effects of Alternative 3 on areas outside the PCA would be similar to Alternatives 1 and 2. Existing long-term secure habitat (Management Category 1 areas) would remain. Potentially higher bear numbers inside the PCA could result in even greater expansion of bears into marginal habitats outside the PCA. Road densities and land management activities would preclude many areas outside the PCA from being effectively occupied by grizzly bears, and conflicts could increase both on public and private lands.

Similar to Alternative 2, the grizzly bear would be managed as a Forest Service sensitive species both inside and outside the PCA and the states would adhere to the 4% mortality limit identified in the Conservation Strategy, until state occupancy goals were reached. Habitats desirable for grizzly bear occupancy by the states would likely become occupied sooner under Alternative 3. Hunting would likely be used as management tool by the state wildlife agencies to limit total bear numbers in the GYA.

Effects of Alternative 4 on the Grizzly Bear Population

Inside the PCA, the effects of Alternative 4 are the same as those identified for Alternative 3.

Outside the PCA, the same restrictions on human activities identified for Alternative 3 would be applied to the larger area identified for Alternative 4. Critical food sources would be restored where needed both inside and outside the PCA and food storage regulations would be implemented forestwide on all six national forests. Grizzly bears would be managed as a Forest Service sensitive species. Existing long-term secure habitat (Management Category 1 areas) would remain and additional secure habitat would be created through closure of motorized routes in inventoried roadless areas or in areas below 70% habitat security, or both.

The Forest Service would coordinate with the states of Idaho and Wyoming to close black bear baiting in the area defined for Alternative 4 outside the PCA. Some of these areas are currently closed in Wyoming. Further restrictions on black bear baiting in this area would serve to preclude the potential for grizzly bears becoming habituated to human foods and killed over baits because of misidentification.

The improvement in the existing levels of secure habitat and restrictions on human activities, in the area defined for Alternative 4, would significantly enhance the effectiveness of habitats for bears outside the PCA. Grizzly bear populations could likely be sustained at a higher level than what could be maintained under the other alternatives. A higher level of secure habitat for grizzly bears may provide additional assurances against catastrophic changes in food availability for bears in the GYA. Connectivity between key habitats in the six GYA forests would be improved even above that identified for Alternative 3. Habitats that provide little opportunity for occupancy by bears under the other alternatives outside the PCA would be improved to at least 70% security.

Monitoring under Alternative 4 would be the same as that identified for Alternatives 2 and 3 inside the PCA, but would extend habitat monitoring outside the PCA into the Alternative 4 areas. None of the other alternatives monitor habitats outside the PCA for grizzly bears. In addition to monitoring adherence to the habitat standards, habitat effectiveness would be monitored outside the PCA. Threats to the habitat would be more easily identified on a larger scale than under the other alternatives, providing more information to assist in modifying management direction as necessary to protect the grizzly bear population.

The high level of occupancy by bears outside the PCA could result in bears expanding even further into marginal habitats and increasing conflicts with humans. Food storage regulations throughout the six national forests would minimize conflicts with recreational users, even outside the area defined for Alternative 4. Livestock conflicts would likely expand into adjacent areas, conflicts on private lands could increase, and grizzly bear mortality would be high in these areas. However, the larger population of bears likely to occur under this alternative could sustain more human-caused mortality. Hunting would likely be used a management tool by the state wildlife agencies to significantly limit bear numbers in marginal habitats.

3.4 Other Wildlife Species

Introduction

Analysis for other wildlife species in the six GYA national forests includes the following groups:

Endangered, threatened, proposed, and candidate species listed under authority of the ESA. This group includes 13 wildlife and fish species. These species, their listed status, and their distribution among the six national forests are displayed in Appendix D. All of these species will be discussed in section 3.4.1, except the grizzly bear, which is discussed in previous sections.

Forest Service sensitive wildlife and fish species. This group includes 51 wildlife and fish species that are designated Forest Service sensitive species on the six GYA national forests. These 51 species and their distribution among the six national forests are displayed in Appendix D. A sensitive species is one designated by the regional forester because of concern about the viability of its population as evidenced by significant current or predicted downward trends in population numbers or density, and in habitat capability that may reduce an existing species' distribution.

Management direction is provided by Forest Service policy in Forest Service Manual 2600 Wildlife, Fish, and Sensitive Plant Management. These species will be discussed in section 3.4.2.

Management indicator species. Sixty-one species within the six national forests are designated Forest Service management indicator species (MIS). These 61 species and their distribution among the six national forests are displayed in Appendix D. MIS can include species listed under the authority of the ESA, and Forest Service sensitive species. MIS are managed under the authority of the National Forest Management Act and are identified in existing forest plans. MIS were selected because their population changes are believed to indicate the effects of management activities. These species will be discussed in section 3.4.3.

In this analysis for other wildlife species, comparisons of effects between the alternatives are all made in relation to Alternative 1. Figure 30 displays a summary of the habitat changes and/or management/activity changes associated with the standards and guidelines for each of the alternatives.

Figure 30. Comparison of habitat changes and/or management/activity changes associated with standards and guidelines for each of the alternatives.

Standard or Guideline	Indicator or Measure of Change	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Standard 1 Secure Habitat	Percent of National Forest System land inside PCA in long-term secure habitat	72%	83%	89%	89%
	Percent of National Forest System land inside PCA in short-term secure habitat	11%	1%	0%	0%
	Estimated miles of open motorized access routes to be closed on National Forest System land within the PCA to provide for increased secure habitat[1]	0	0	487	487
	Percent of National Forest System land in Alternative 4 areas outside PCA in long-term secure habitat	52%	52%	52%	85%
	Percent of National Forest System land in Alternative 4 areas outside the PCA in short-term secure habitat	20%	20%	20%	0%
	Estimated miles of open motorized access routes to be closed on National Forest System land in Alternative 4 areas outside the PCA to provide for increased secure habitat[1]	0	0	0	1,414

Standard or Guideline	Indicator or Measure of Change	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Standard 2 Developed Sites	Number of sites on National Forest System land within the PCA and potential trend	371 with potential increases in capacity or number of sites	371 any increases in capacity or number of sites must be mitigated	371 with potential for some decreases (see Standards 8 and 9)	371 with potential for some decreases (see Standards 8 and 9)
	Number of sites on National Forest System land in Alternative 4 areas outside the PCA and potential trend	598 with potential increases in capacity or number of sites	598 with potential increases in capacity or number of sites	598 with potential for some decreases (see Standards 8 and 9)	598 with potential for some decreases (see Standards 8 and 9)
Standard 3 Livestock Grazing	Number of cattle allotments inside the PCA and potential trend	70 with potential for increases in the number of allotments	70 no increases in the number of allotments	70 with potential for decreases if recurring conflicts occur	70 with potential for decreases if recurring conflicts occur
	Number of sheep allotments inside the PCA and potential trend	4 with 2 designated for phase out	4 with all 4 designated for phase out	0 close 4 allotments within 3 years	0 close 4 allotments within 3 years
	Number of cattle allotments in Alternative 4 areas outside the PCA and potential trend	280 with potential for increases in the number of allotments	280 with potential for increases in the number of allotments	280 with potential for increases in the number of allotments	280 with potential for decreases if recurring conflicts occur
	Number of sheep allotments in Alternative 4 areas outside the PCA and potential trend	75 estimate a 2 to 3% decline in number of allotments	75 estimate a 2 to 3% decline in number of allotments	75 estimate a 2 to 3% decline in number of allotments	0 close 75 allotments within 3 years

Standard or Guideline	Indicator or Measure of Change	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Guideline 1/Standard 7	Percent of National Forest System land inside PCA open to cross-country OHV use	2%	2%	0%	0%
	Percent of National Forest System land in Alternative 4 areas outside PCA open to cross-country OHV use	3%	3%	0%	0%
	Percent of denning habitat on National Forest System land inside PCA closed to snow machine use	68%	68%	100%	100%
	Percent of denning habitat on National Forest System land in Alternative 4 areas outside PCA closed to snow machine use	35%	35%	35%	100%
Standard 8 Oil and Gas Leasing	Percent of National Forest System land inside PCA legally withdrawn or not available or not authorized for use	78%	78% operations could be allowed in the PCA with mitigation to meet Standards 1 and 2	100% no new oil and gas leases would be permitted	100% no new oil and gas leases would be permitted
	Percent of National Forest System land in Alternative 4 areas outside PCA legally withdrawn or not available or not authorized for use	47%	47%	47%	100% no new oil and gas leases would be permitted

Standard or Guideline	Indicator or Measure of Change	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Standard 9 Recreation Conflicts	Management direction inside the PCA	Existing Guidelines and nuisance bear guidelines	Conservation Strategy nuisance bear guidelines	Conservation Strategy nuisance bear guidelines plus close sites and uses if recurring conflicts occur	Conservation Strategy nuisance bear guidelines plus close sites and uses if recurring conflicts occur
	Management direction in Alternative 4 areas outside the PCA	Existing forest plans	Conservation Strategy nuisance bear guidelines including state grizzly bear plans	Conservation Strategy nuisance bear guidelines including state grizzly bear plans plus close sites and uses if recurring conflicts occur	Conservation Strategy nuisance bear guidelines including state grizzly bear plans plus close sites and uses if recurring conflicts occur
Standard 10 Food Sources	Management direction inside the PCA	Existing Guidelines and forest plans	Conservation Strategy	Maintain and restore food sources; close areas to human uses if needed	Maintain and restore food sources; close areas to human uses if needed
	Management direction in Alternative 4 areas outside the PCA	Forest plans	Conservation Strategy including state grizzly bear plans	Maintain and restore food sources; close areas to human uses if needed	Maintain and restore food sources; close areas to human uses if needed

[1] These miles of motorized access routes to be closed are in addition to any miles that are already required in existing forest plans.

3.4.1 Endangered, Threatened, Proposed, and Candidate Species

As required by the ESA, when each forest plan was completed, forests consulted with the USFWS for the species that were listed at that time. All of the forest plans were given a “no jeopardy opinion” by the USFWS.

Since completion of forest plans, additional consultations have occurred for project level work, forest plan amendments, new species listings such as the Canada lynx, and other activities as required by the ESA.

Alternative 1 meets existing requirements for listed species (except Canada lynx) as defined in consultations, biological opinions, and recovery plans for these species. For Canada lynx, the Forest Service is currently in the process of amending 18 forest plans in the northern Rockies (Northern Rockies Lynx Amendment) (USDA Forest Service and USDI Bureau of Land Management 2004) to incorporate management direction needed for lynx conservation that was not included in the existing plans.

Proposed direction in this DEIS does not change existing forest plan management direction that maintains or improves habitat or otherwise benefits these species. For example, forest plan direction to protect bald eagle nest sites still applies and would not be affected by this proposal. This proposal does not change or conflict with the Northern Rockies Lynx Amendment that is currently in progress. Comparisons of effects between the alternatives are all made in relation to Alternative 1.

Figure 31 displays which standards and guidelines and alternatives may have complementary or additive beneficial effects on endangered, threatened, proposed and candidate species when compared to Alternative 1. All of the beneficial effects are considered potential indirect effects because of the programmatic nature of this analysis (we do not know the exact location of on-the-ground actions that implement the standards and guidelines). For example, increasing secure habitat may be beneficial to gray wolves if the increased secure habitat were located within the range of a wolf pack. If the secure habitat were located outside the range of any wolf pack, then the benefit would not occur.

To understand the relative differences between the alternatives, Figure 31 needs to be compared to Figure 30. Following Figure 31, there is additional information about each of the species to further describe the differences between the effects of the alternatives.

Figure 31. Potential indirect beneficial effects of standards, guidelines, and alternatives on listed species[1].

Species Name	Standard 1 Secure Habitat	Standard 2 Developed Sites	Standard 3 Livestock Grazing	Guideline 1 Standard 7 OHV and Winter Access	Standard 8 Oil and Gas Leasing	Standard 9 Recreation Conflicts	Standard 10 Food Sources
Mammals							
Black-footed ferret							
Canada lynx	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		
Gray wolf	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4		Alternative 4 Alternative 3 Alternative 2
Birds							
Bald eagle	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2			Alternative 4	Alternative 4 Alternative 3	Alternative 4 Alternative 3
Yellow-billed cuckoo							
Fish							
Bonytail chub	Alternative 4		Alternative 4	Alternative 4	Alternative 4		
Bull trout	Alternative 4		Alternative 4	Alternative 4	Alternative 4		
Colorado pikeminnow	Alternative 4		Alternative 4	Alternative 4	Alternative 4		
Humpback chub	Alternative 4		Alternative 4	Alternative 4	Alternative 4		
Kendall Warm Springs dace							
Pallid sturgeon	Alternative 4		Alternative 4	Alternative 4	Alternative 4		
Razorback sucker	Alternative 4		Alternative 4	Alternative 4	Alternative 4		

[1] This table displays the alternatives and associated standards and guidelines that may have complementary or additive beneficial effects when compared to Alternative 1. Alternative 1 meets all requirements for listed species. Within each cell, alternatives are listed in order of potential indirect beneficial effect (highest is listed first, and lowest is listed last; refer to Figure 30 to see relative differences between the alternatives for each standard). A blank cell indicates a neutral effect for that particular standard. As stated in the text, Alternative 1 is used as the baseline for comparisons between the other alternatives. For a description of each standard and guideline, see chapter 2 and Figure 8. Standards 4 and 5 would have no effect on any species.

Gray Wolf

Gray wolves were reintroduced into the GYA in late winter 1995. Gray wolves east of Interstate 15 are part of the Yellowstone Nonessential Experimental Population Area, and gray wolves west of Interstate 15 are part of the Central Idaho Nonessential Experimental Population Area (USDI FWS 1994a and b). When gray wolves were reintroduced, the USFWS stated that the reintroduction would not conflict with existing or anticipated federal agency actions or traditional public uses of park land, wilderness areas, or surrounding lands (USDI FWS 1994b). The intent of the experimental rule is that land-use restriction not be routinely used solely to enhance wolf recovery. However, 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 FWS 1994a). At the end of 2003 in the Yellowstone Nonessential Experimental Population Area, there was a minimum wolf population of 301, with 39 wolf packs and 21 breeding pairs. At the end of 2003 in the Central Idaho Nonessential Experimental Population Area, there was a minimum wolf population of 368, with 37 wolf packs and 26 breeding pairs (USDI FWS et al. 2004).

Alternative 1 has provided habitat that has allowed wolf populations to meet or exceed the recovery parameters established by the USFWS for the nonessential experimental population areas (USDI FWS 1994a, 1994b, 2003a, USDI FWS et al. 2004). Alternatives 2, 3, and 4, to different degrees, could beneficially affect gray wolves compared to Alternative 1, primarily by increasing secure habitat, reducing motorized access during summer and winter, not increasing and possibly reducing livestock grazing, and improving ungulate wintering habitat.

The amount of motorized access in the Yellowstone and Central Idaho nonessential experimental population areas was evaluated prior to wolves being released. This evaluation concluded with the following summary: “Open road densities outside of national parks and USDA Forest Service wilderness areas in the Yellowstone (up to 0.90 miles open road per sq. mi.) and central Idaho (up to 0.98 miles open road per sq. mi.) areas were close to but below the theoretical threshold of 1 mile of open road per sq. mi. of habitat. Based upon 1) current open road information, 2) the success of wolf packs in highly roaded habitats in Montana, and 3) that these roaded areas of public land being proposed for wolf recovery are adjacent to large (about 4 to 5 million acres) roadless areas, it appears unlikely that road density guidelines must be employed as a wide-spread land management strategy to support wolf recovery” (USDI FWS 1994a).

Reducing domestic livestock grazing on National Forest System lands has the potential to reduce opportunities for wolves to prey on domestic livestock—this could potentially reduce the number of wolves being trapped and relocated or removed from the wolf population. In 2003 in the GYA, 45 cattle and 90 sheep were confirmed wolf kills, with about 66% of the kills occurring on public lands and 34% of the kills occurring on private property (USDI FWS et al. 2004). Thirty-eight wolves were removed as the result of livestock depredations.

Restricting winter motorized access has the potential to reduce human uses in habitats used by wolves, thus reducing the potential for disturbance or displacement caused by human presence and associated activities. This effect would be of greatest benefit to wolves in areas where big game animals winter, since big game animals are the primary prey for wolves. The alternatives consider restricting winter motorized access in grizzly bear denning habitat. Usually, grizzly bear denning habitat is at higher elevations and in deep snow areas. These denning areas are usually not the important winter areas for big game animal; therefore, potential benefit to wolves may be slight.

Canada Lynx

Due to lack of guidance for conservation of lynx and snowshoe hare habitat in existing forest plans, Canada lynx were listed as a threatened species in 2000. At this time, no recovery plan has been developed for the Canada lynx. The Forest Service is in the process of amending 18 forest

plans in the northern Rockies (Northern Rockies Lynx Amendment) (USDA Forest Service and USDI Bureau of Land Management 2004) to incorporate recommended management direction needed for lynx conservation that was not included in the existing plans. Recommended management direction for lynx was developed by an interagency team of government biologists and was written into the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000). The recommended management direction focuses on managing vegetation within the historic range of variability, maintaining dense understory conditions for prey (primarily snowshoe hares), minimizing snow compaction, and identifying and maintaining connectivity within and between habitat areas.

Alternatives 2, 3, and 4, to different degrees, are complementary to the Northern Rockies Lynx Amendment that is in progress. Increasing amounts of secure habitat, limiting creation or expansion of developed sites, and limiting oil and gas leasing or development would contribute toward maintaining connectivity within and between habitat areas for lynx. Restricting or eliminating winter over-the-snow use in habitats used by lynx (i.e. grizzly bear denning habitat), thus reducing the potential for disturbance or displacement caused by human presence, and reducing potential competition from other predators would complement the recommended management direction in the Northern Rockies Lynx Amendment for minimizing snow compaction in habitats used by lynx.

However, the actual benefits from these standards and guidelines may be limited for the following reasons:

- There is no information to indicate that mining and grazing pose threats to lynx (USDI FWS 2003c).
- There is no information demonstrating that forest roads negatively impact lynx (USDI FWS 2003c).
- There continues to be no data on the role of competition between lynx and other species, therefore we do not consider competition to be a threat to lynx (USDI FWS 2003c).
- There is no evidence that packed snowtrails facilitate competition to a level that negatively affects lynx; packed snowtrails are not considered a threat to lynx at this time (USDI FWS 2003c).

At the present time, the best scientific information suggests that historically only a few areas in the contiguous United States had lynx habitat of high enough quality and quantity to support resident populations and these are areas where resident populations currently continue to persist—northern Maine, northeastern Minnesota, western Montana, and north-central and northeastern Washington (USDI FWS 2003c). Northern New Hampshire and northern Idaho currently have habitat conditions presumed capable of supporting lynx and are directly adjacent to resident populations; therefore, we expect lynx [to] occupy these areas (USDI FWS 2003c). In the remainder of the lynx range where some boreal forest exists in smaller patches, is of marginal quality, or is relatively isolated from source lynx populations, lynx occur as dispersers (USDI FWS 2003c).

Black-footed Ferret

Potential black-footed ferret habitat (prairie dog towns) is present only on the Custer and Shoshone National Forests, outside of the PCA. At present, there are no known populations of black-footed ferrets on these forests. The existing forest plans for the Custer and Shoshone National Forests have direction to protect and retain suitable habitat. None of the alternatives would have an effect on the existing management direction for black-footed ferret habitat. Because there is no change to existing management direction, and no known populations of black-footed ferrets exist on these forests, there are no effects to this species in any of the alternatives.

Bald Eagle

The six national forests are within the area covered by the Pacific Bald Eagle Recovery Plan (USDI FWS 1986). The Bald Eagle Recovery Plan population goal for the six GYA national forests is 71 breeding pairs. Currently, the number of breeding pairs for this area is more than double the Bald Eagle Recovery Plan population goal (Day et al. 2000, State of Wyoming 2003, State of Idaho 2003, Whitfield et al. 2003).

Alternatives 2, 3, and 4, to different degrees, beneficially affect bald eagles compared to Alternative 1. Standards 1, 2, 8, and 9 have the potential to restrict or reduce human uses in habitats used by bald eagles, thus reducing the potential for disturbance or displacement caused by human presence and associated activities. Standard 10 has the potential to improve habitats and food sources potentially used by bald eagles.

Yellow-billed Cuckoo

This species is listed as a candidate species for the Targhee National Forest, and a sensitive species for the Shoshone National Forest (Appendix B). This species is associated with riparian deciduous forests along rivers. For the Targhee National Forest, the historic and current range of this species is only adjacent to the Targhee, and the range is outside of the PCA and Alternative 4 area (TREC, Inc. 2003, NatureServe 2004). On the Shoshone National Forest, habitat for this species can be found both inside and outside the PCA. None of the alternatives has an effect on the riparian deciduous forests along rivers. Therefore, there are no effects to this species or its habitat in any of the alternatives.

Bull Trout

This fish species is present on the Beaverhead National Forest and only outside of the PCA (Appendix D). Therefore, only Alternative 4 would have potential effects compared to Alternative 1. With the application of road closures and increased secure habitat, reduced livestock grazing, reduced OHV travel, and reduced oil and gas leasing and development, some water quality improvements may occur for this species in Alternative 4 areas, depending on site specific conditions,

Kendall Warm Springs Dace

This fish species is present only on the Bridger-Teton National Forest, outside of the PCA (Appendix D). None of the alternatives would have any effect on this species or its habitat.

Humpback Chub, Bonytail Chub, Colorado Pikeminnow, Razorback Sucker, Pallid Sturgeon

These fish are usually associated with larger streams and rivers, and are present only on the Bridger-Teton National Forest outside of the PCA (Appendix D). Therefore, only Alternative 4 would have potential effects compared to Alternative 1. Water depletions are usually mentioned as the major concern for these species. None of the standards and guidelines in any of the alternatives would effect water depletions. With the application of road closures and increased secure habitat, reduced livestock grazing, reduced OHV travel, and reduced oil and gas leasing and development, some water quality improvements may occur for these species in Alternative 4 areas, depending on site specific conditions,

3.4.2 Forest Service Sensitive Wildlife Species

When each forest plan was completed, biological evaluations of the effects on sensitive species were completed. The effects of forest plans on sensitive species ranged from “beneficial impact” to “no impact” to “may impact individuals or habitat, but will not likely contribute to a trend towards federal listing or loss of viability to the population or species.” Since completion of forest plans, additional biological evaluations have occurred for project level work, forest plan amendments, and other activities as required by Forest Service policy.

Alternative 1 meets all requirements for sensitive species as defined by Forest Service policy.

Proposed direction in this DEIS does not change existing forest plan direction that maintains or improves habitat or otherwise benefits these species. For example, forest plan direction to protect

northern goshawk nest sites still applies and would not be affected by this proposal. Comparisons of effects between the alternatives are all made in relation to Alternative 1.

Figure 32 displays which standards and guidelines and alternatives may have complementary or additive beneficial effects on sensitive wildlife species when compared to Alternative 1. All of the beneficial effects are considered potential indirect effects because of the programmatic nature of this analysis (we do not know the exact location of on-the-ground actions that implement the standards and guidelines). For example, increasing secure habitat may be beneficial to bighorn sheep if the increased secure habitat were located within the range of bighorn sheep. If the secure habitat were located outside the range of bighorn sheep, then the benefit would not occur.

To understand the relative differences between the alternatives, Figure 32 needs to be compared to Figure 30. Following Figure 32, there is additional information about each of the species to further describe the differences in effects between the alternatives.

Figure 32. Potential indirect beneficial effects of standards, guidelines, and alternatives on Forest Service sensitive species[1].

Species Name	Standard 1 Secure Habitat	Standard 2 Developed Sites	Standard 3 Livestock Grazing	Guideline 1 Standard 7 OHV and Winter Access	Standard 8 Oil and Gas Leasing	Standard 9 Recreation Conflicts
Mammals						
American (pine) marten	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3	Alternative 4 Alternative 3 Alternative 2
Black-tailed prairie dog						
Fisher	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3	Alternative 4 Alternative 3 Alternative 2
Fringe-tailed myotis	Alternative 4 Alternative 3 Alternative 2					
North American wolverine	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3	Alternative 4 Alternative 3 Alternative 2
Northern bog lemming	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2			
Pallid bat	Alternative 4 Alternative 3 Alternative 2					
Pygmy rabbit	Alternative 4		Alternative 4		Alternative 4	
River otter	Alternative 4 Alternative 3 Alternative 2					
Rocky Mountain bighorn sheep	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3	Alternative 4 Alternative 3

Species Name	Standard 1 Secure Habitat	Standard 2 Developed Sites	Standard 3 Livestock Grazing	Guideline 1 Standard 7 OHV and Winter Access	Standard 8 Oil and Gas Leasing	Standard 9 Recreation Conflicts
Spotted bat	Alternative 4 Alternative 3 Alternative 2					
Water vole	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2			
Western (Townsend's) big-eared bat	Alternative 4 Alternative 3 Alternative 2					
White-tailed prairie dog						
Birds						
Baird's sparrow						
Black tern	Alternative 4					
Black-backed woodpecker	Alternative 4 Alternative 3 Alternative 2					
Boreal owl	Alternative 4 Alternative 3 Alternative 2					
Brewer's sparrow	Alternative 4 Alternative 3 Alternative 2				Alternative 4 Alternative 3	
Burrowing owl	Alternative 4				Alternative 4	
Columbian sharp-tailed grouse	Alternative 4		Alternative 4		Alternative 4	
Common loon	Alternative 4 Alternative 3 Alternative 2					

Species Name	Standard 1 Secure Habitat	Standard 2 Developed Sites	Standard 3 Livestock Grazing	Guideline 1 Standard 7 OHV and Winter Access	Standard 8 Oil and Gas Leasing	Standard 9 Recreation Conflicts
Ferruginous hawk	Alternative 4				Alternative 4	
Flammulated owl	Alternative 4 Alternative 3 Alternative 2					
Grasshopper sparrow						
Great gray owl	Alternative 4 Alternative 3 Alternative 2					
Harlequin duck	Alternative 4 Alternative 3 Alternative 2					
Lewis's woodpecker	Alternative 4					
Loggerhead shrike						
Long-billed curlew						
Mountain plover						
Northern goshawk	Alternative 4 Alternative 3 Alternative 2					
Northern harrier	Alternative 4				Alternative 4	
Olive-sided flycatcher						
Peregrine falcon						
Sage grouse	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3	
Short-eared owl	Alternative 4				Alternative 4	
Sprague's pipit						

Species Name	Standard 1 Secure Habitat	Standard 2 Developed Sites	Standard 3 Livestock Grazing	Guideline 1 Standard 7 OHV and Winter Access	Standard 8 Oil and Gas Leasing	Standard 9 Recreation Conflicts
Three-toed woodpecker	Alternative 4 Alternative 3 Alternative 2					
Trumpeter swan	Alternative 4 Alternative 3 Alternative 2					
Yellow-billed cuckoo						
Amphibians						
Boreal (western) toad	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3	
Columbia spotted frog	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3	
Northern leopard frog	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3	
Fish						
Bonneville cutthroat trout	Alternative 4		Alternative 4		Alternative 4	
Colorado River cutthroat trout	Alternative 4		Alternative 4		Alternative 4	
Lake chub	Alternative 4 Alternative 3 Alternative 2				Alternative 4 Alternative 3	
Mountain sucker	Alternative 4				Alternative 4	

Species Name	Standard 1 Secure Habitat	Standard 2 Developed Sites	Standard 3 Livestock Grazing	Guideline 1 Standard 7 OHV and Winter Access	Standard 8 Oil and Gas Leasing	Standard 9 Recreation Conflicts
Snake River fine spotted cutthroat trout	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3	
Westslope cutthroat trout	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3	
Yellowstone cutthroat trout	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3	

[1] This table displays the alternatives and associated standards and guidelines that may have complementary or additive beneficial effects when compared to Alternative 1. Alternative 1 meets all requirements for sensitive species. Within each cell, alternatives are listed in order of potential indirect beneficial effect (highest is listed first, and lowest is listed last; refer to Figure 30 to see relative differences between the alternatives for each standard). A blank cell indicates a neutral effect for that particular standard. As stated in the text, Alternative 1 is used as the baseline for comparisons between the other alternatives. For a description of each standard and guideline, see chapter 2 and Figure 8. Standards 4, 5, and 10 would have no effect on any species.

Rocky Mountain Bighorn Sheep

Rocky Mountain bighorn sheep are present on all six GYA national forests, but are designated a sensitive species only on the Custer National Forest (Appendix D). Alternatives 2, 3, and 4, to different degrees, beneficially affect bighorn sheep compared to Alternative 1. Increasing secure habitat and restricting or reducing human uses in habitats used by bighorn sheep reduces the potential for disturbance or displacement caused by human presence and associated activities. Reduction or elimination of some domestic livestock grazing reduces the potential for forage competition with domestic livestock during the grazing season on National Forest System lands. Reduction or elimination of domestic sheep grazing reduces the potential for disease transfer from domestic sheep to bighorn sheep.

Spotted Bat, Western (Townsend's) Big-eared Bat, Pallid Bat, Fringed Myotis

These four bat species can be found in a variety of habitats ranging from low desert to forest. All are found both inside and outside the PCA, except for the pallid bat, which occurs only outside the PCA. Roost sites include caves, mines, buildings, rock crevices in cliffs, and occasionally cavities in trees. Protection of roost sites is the highest management priority. None of the standards and guidelines in the alternatives has a direct effect on these species. There is a potential beneficial indirect effect in Alternatives 2, 3, and 4 with increasing amounts of secure habitat (Standard 1). This indirect effect would depend upon specific roost sites being located within the secure habitat.

North American Wolverine, Fisher, and American (Pine) Marten

Alternatives 2, 3 and 4, to different degrees, beneficially affect these small forest carnivores compared to Alternative 1. Increasing secure habitat, and restricting or reducing human uses in habitats used by these species, reduces the potential for disturbance or displacement caused by human presence and associated activities. Restricting or eliminating winter over-the-snow use in habitats used by these species reduces the potential for disturbance or displacement during the winter season.

Black-tailed Prairie Dog, White-tailed Prairie Dog

These two species are present on the Custer and Shoshone National Forests, and are found only outside the PCA. Prairie dogs are associated with grassland and shrub grassland habitats. Major threats to prairie dogs and their habitat include disease, poisoning on private lands, recreational shooting in localized areas, and agricultural land conversions. The existing forest plans for the Custer and Shoshone National Forests have direction to protect and retain suitable habitat. None of the alternatives would have direct or indirect effects on prairie dogs or their habitat.

Northern Bog Lemming, Water Vole

The northern bog lemming is listed as sensitive on the Beaverhead and Custer National Forests, and the water vole is listed as sensitive on the Shoshone National Forest (Appendix D). Habitat for these two species occurs inside and outside the PCA. These species are associated with wetland and riparian habitats and adjacent upland habitats including meadows and wet/moist forests (NatureServe 2004). For the northern bog lemming, sphagnum mats and mossy streamsides are important habitat components (NatureServe 2004). Alternatives 2, 3, and 4 may have beneficial indirect effects on these species, compared to Alternative 1, by increasing secure habitat and reducing livestock grazing. These effects would depend on site specific locations and conditions.

Northern Goshawk, Flammulated Owl, Boreal Owl, Great Gray Owl,

These four species are present on all six GYA national forests, and are inside and outside the PCA. These species are associated with forested habitats and require mature and older forests to meet some of their habitat needs. Alternatives 2, 3, and 4 may have beneficial indirect effects on these species, compared to Alternative 1, by increasing secure habitat that could reduce or alter timber harvesting, and depending on site specific conditions, this could provide additional mature and older forest habitat and less disturbance from human activity.

Three-toed Woodpecker, Black-backed Woodpecker, Lewis's Woodpecker

These three species are present on all six GYA national forests, and are inside and outside the PCA. These species are associated with forested habitats and require mature and older forests to meet some of their habitat needs. They also require snags and defective trees in which to build their nest cavities. Fires and insect and disease agents are the primary actions that create snags in forested environments. Alternatives 2, 3, and 4 may have beneficial indirect effects on these species, compared to Alternative 1, by increasing secure habitat that could reduce or alter timber harvesting; depending on site specific conditions, this could provide additional mature and older forest habitat and less disturbance from human activity. None of the alternatives would change fires and insect and disease agents when compared with Alternative 1.

Ferruginous Hawk, Northern Harrier, Burrowing Owl, Short-eared Owl

These four species occur only outside the PCA. Alternative 4 may have beneficial indirect effects on these species, compared to Alternative 1, by increasing secure habitat and reducing oil and gas leasing and development that could provide less disturbance from human activities depending on site specific conditions.

Trumpeter Swan, Common Loon, Harlequin Duck, River Otter

These four species occur both inside and outside the PCA. Their habitats include streams, ponds, lakes, rivers, and adjacent riparian habitats. Alternatives 2, 3, and 4 may have beneficial indirect effects on these species, compared to Alternative 1, by increasing secure habitat that could provide less disturbance from human activities depending on site specific locations and conditions.

Sage Grouse, Columbian Sharp-tailed Grouse, Pygmy Rabbit, Brewer's Sparrow

These species are associated with sagebrush, grassland, and mountain brush habitats (Janson 1940, Green and Flinders 1980a and b, White et al. 1982, Giesen and Connelly 1993, Connelly et al. 2000, Gabler et al. 2000, Gabler et al. 2001, Roberts 2003, NatureServe 2004). The Columbian sharp-tailed grouse and pygmy rabbit are identified as a sensitive species on the Beaverhead and Targhee National Forests (Appendix D). The Brewer's sparrow is identified as a sensitive species on the Shoshone National Forest (Appendix D). Loss of sagebrush habitats from fire and agricultural developments, invasion of noxious weeds, and modifications that can occur from livestock grazing have been identified as major concerns for these species and their habitats. Alternatives 2, 3, and 4 may have beneficial indirect effects on these species, compared to Alternative 1, by increasing secure habitat, reducing possible future developments, and reducing livestock grazing. These potential benefits would all depend on site specific locations and conditions.

Baird's Sparrow, Grasshopper Sparrow, Mountain Plover, Long-billed Curlew, Sprague's Pipit, Loggerhead Shrike

These species are identified as sensitive species on the Custer and Shoshone National Forests, and their habitats occur outside of the PCA (Appendix D). Most of these species ranges are outside the areas affected by the alternatives (NatureServe 2004). They use open habitats, such as short-grass prairies, shrub/grasslands, grassy meadows, and for Sprague's pipit, wetlands. They are present only during the spring and summer seasons. Major threats include loss of native habitat due to agricultural developments, urban sprawl, heavy grazing, drought, drainage of wetlands, predation, and parasitism. None of the alternatives is likely to have any measurable effects on these species, because the alternatives do not reduce the major threats for these species and the majority of these species' ranges are outside of the areas affected by the alternatives.

Olive-sided Flycatcher

This species is only identified as a sensitive species on the Shoshone NF (but its range occurs throughout all six National Forests), and its habitat occurs inside and outside the PCA (Appendix D). It is only present during the spring and summer seasons. It prefers openings with some standing trees; therefore, burns and some types of logging are beneficial for this species

(NatureServe 2004). None of the alternatives is likely to have any measurable effects on this species.

Black Tern

The black tern is listed as a sensitive species on the Shoshone National Forest and occurs only outside the PCA (Appendix D). It is present during the spring and summer seasons. Major identified threats include loss of fresh water marsh habitat, human disturbance of nesting sites, pesticide use, and problems along migration routes or in winter range (NatureServe 2004). Increasing secure habitat in Alternative 4 may have indirect benefits if the secure habitat included specific fresh water marsh habitats used by this species.

Peregrine Falcon

The peregrine falcon is listed as a sensitive species on four GYA national forests and occurs inside and outside the PCA (Appendix D). Peregrine falcon populations are now increasing, with the most significant event in the recovery of the peregrine falcon being the restriction placed on the use of organochlorine pesticides (USDI FWS 1995). Other known factors, such as illegal shooting and collisions with wires, fences, cars, and buildings, are much less significant to the western peregrine falcon (USDI FWS 1995). None of the alternatives is likely to have any measurable effects on this species.

Columbia Spotted Frog, Northern Leopard Frog, Boreal (Western) Toad

Collectively, the range of these three amphibian species occurs across all six GYA national forests (Appendix D). These species are associated with wetland and riparian habitats, although at times they can be found various distances in upland habitats. Threats to these species include loss of wetland habitat due to drought or drainage, human disturbances in habitats such as livestock grazing, chemicals that can cause death and deformities, predation, and other factors. Alternatives 2, 3, and 4, to different degrees, may beneficially affect sensitive amphibian species compared to Alternative 1. Standards 1, 3, and 8 have the potential to restrict or reduce human uses in habitats used by these species, thus reducing the potential for disturbance or displacement caused by human presence and associated activities. The degree of benefit would depend on site specific locations and conditions.

Colorado River Cutthroat Trout, Bonneville Cutthroat Trout

These fish species are listed as sensitive on the Bridger-Teton National Forest and occur only outside the PCA (Appendix D). With the application of road closures and increased secure habitat, reduced livestock grazing, reduced OHV travel, and reduced oil and gas leasing and development, some water quality improvements may occur for these species in Alternative 4 areas, compared to Alternative 1, depending on site specific conditions,

Mountain Sucker, Lake Chub

These species are listed as sensitive on the Shoshone National Forest. The lake chub occurs both inside and outside the PCA, but the mountain sucker occurs only outside the PCA (Appendix D). With the application of road closures and increased secure habitat, reduced livestock grazing, reduced OHV travel, and reduced oil and gas leasing and development, some water quality improvements may occur for these species, compared to Alternative 1, depending on site specific conditions,

Yellowstone Cutthroat Trout, Snake River Fine Spotted Cutthroat Trout, Westslope Cutthroat Trout

Collectively, the range of these three fish species occurs across all six GYA national forests, and they occur inside and outside the PCA (Appendix D). With the application of road closures and increased secure habitat, reduced livestock grazing, reduced OHV travel, and reduced oil and gas leasing and development, some water quality improvements may occur for these species, compared to Alternative 1, depending on site specific conditions,.

3.4.3 Management Indicator Species

For the 61 MIS, 34 species are uniquely MIS (that is, they are not already covered by endangered, threatened, proposed, candidate, or sensitive species discussed previously). Those species that have been discussed previously will not be discussed here.

Direction proposed in this DEIS does not change management direction in existing forest plans that maintains or improves habitat or otherwise benefits these species. For example, forest plan direction to protect old growth or nest sites still applies; old growth and nest sites would not be affected by this proposal. Comparisons of effects between the alternatives are all made in relation to Alternative 1.

Figure 33 displays standards and guidelines and alternatives and the complementary or additive beneficial effects on MIS when compared to Alternative 1. All of the beneficial effects are considered potential indirect effects because of the programmatic nature of this analysis (we do not know the exact location of on-the-ground actions that implement the standards and guidelines). For example, increasing secure habitat may be beneficial to the red squirrel if the increased secure habitat were located within the range of the red squirrel. If the secure habitat were located outside the range of the red squirrel, then the benefit would not occur.

To understand the relative differences between the alternatives, Figure 33 needs to be compared to Figure 30. Following Figure 33, there is additional information about each of the species to further describe the differences in effects between the alternatives.

Figure 33. Potential indirect beneficial effects of standards, guidelines, and alternatives on management indicator species (MIS)[1].

Species Name	Standard 1 Secure Habitat	Standard 2 Developed Sites	Standard 3 Livestock Grazing	Guideline 1 Standard 7 OHV and Winter Access	Standard 8 Oil and Gas Leasing	Standard 9 Recreation Conflicts	Standard 10 Food Sources
Mammals							
Beaver	Alternative 4 Alternative 3 Alternative 2				Alternative 4 Alternative 3 Alternative 2		
Elk and deer winter range	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2
Mountain goat	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2				Alternative 4 Alternative 3 Alternative 2	
Mule deer	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2
Pronghorn antelope	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		
Red squirrel	Alternative 4 Alternative 3 Alternative 2				Alternative 4 Alternative 3 Alternative 2		
Rocky Mountain elk	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2
Shiras moose	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2

Species Name	Standard 1 Secure Habitat	Standard 2 Developed Sites	Standard 3 Livestock Grazing	Guideline 1 Standard 7 OHV and Winter Access	Standard 8 Oil and Gas Leasing	Standard 9 Recreation Conflicts	Standard 10 Food Sources
White-tailed deer	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2
Birds							
Blue grouse							
Bullock's oriole[2]							
Lark sparrow							
Ovenbird							
Primary cavity nesters[3]	Alternative 4 Alternative 3 Alternative 2						
Ruffed grouse							
Spotted (rufous-sided) towhee							
Western kingbird							
Whooping crane							
Yellow warbler							
Fish							
Arctic grayling	Alternative 4		Alternative 4	Alternative 4	Alternative 4		
Largemouth bass	Alternative 4		Alternative 4	Alternative 4	Alternative 4		
Mountain whitefish	Alternative 4		Alternative 4	Alternative 4	Alternative 4		

Species Name	Standard 1 Secure Habitat	Standard 2 Developed Sites	Standard 3 Livestock Grazing	Guideline 1 Standard 7 OHV and Winter Access	Standard 8 Oil and Gas Leasing	Standard 9 Recreation Conflicts	Standard 10 Food Sources
Rainbow trout	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		
Splake	Alternative 4		Alternative 4	Alternative 4	Alternative 4		
Wild trout and game trout[4]	Alternative 4 Alternative 3 Alternative 2		Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2	Alternative 4 Alternative 3 Alternative 2		
Plants[5]							
Boreal draba							
Payson's milkvetch							
Shultz milkvetch			Alternative 4 Alternative 3				
Sweet-flowered rock jasmine							
Weber's saw-wort							
Wyoming tansymustard							

[1] This table displays the alternatives and associated standards and guidelines that may have complementary or additive beneficial effects when compared to Alternative 1. Alternative 1 meets all existing requirements for MIS. Within each cell, alternatives are listed in order of potential indirect beneficial effect (highest is listed first, and lowest is listed last; refer to Figure 30 to see relative differences between the alternatives for each standard). A blank cell indicates a neutral effect for that particular standard. As stated in the text, Alternative 1 is used as the baseline for comparisons between the other alternatives. For a description of each standard and guideline, see chapter 2 and Figure 8. Standards 4 and 5 would have no effect on any species.

[2] Bullock's oriole was formerly called the northern oriole. In 1995, the AOU split the species, making Bullock's oriole a separate species.

[3]Primary cavity nesters includes 8 species of woodpeckers: Lewis's woodpecker, red-napped sapsucker, Williamson's sapsucker, downy woodpecker, hairy woodpecker, three-toed woodpecker, black-backed woodpecker, and northern flicker.

[4] Wild trout are identified as MIS in the Gallatin Forest Plan. Game trout are identified as MIS in the Shoshone Forest Plan. Game trout includes all trout species present on the Shoshone National Forest, such as cutthroat trout, rainbow trout, brook trout, brown trout, lake trout, golden trout.

[5] MIS plants are discussed in section 3.6.6.

Rocky Mountain Elk, Mule Deer, White-tailed Deer, Shiras Moose, Mountain Goat, and Pronghorn Antelope

Alternatives 2, 3, and 4, to different degrees, beneficially affect these species compared to Alternative 1 (Figure 33). Standards 1, 2, 7, 8, and 9 have the potential to restrict or reduce human uses in habitats used by these species, thus reducing the potential for disturbance or displacement caused by human presence and associated activities. Standard 3 reduces or eliminates some domestic livestock grazing, thus reducing disturbance from domestic livestock and associated human activities during the grazing season on National Forest System lands. Standard 10 has the potential to improve some big game habitats.

Beaver and Red Squirrel

These two species would primarily be benefited by Standards 1 and 8 that have the potential to restrict or reduce human uses in habitats used by these species, reducing the potential for disturbance or displacement caused by human presence and associated activities.

Whooping Crane

Whooping cranes are listed as an MIS on the Bridger-Teton National Forest (Appendix D). An experiment to reintroduce whooping cranes to their historic range in the Rocky Mountains began in 1975, testing the cross-fostering technique of placing whooping crane eggs in nests of greater sandhill cranes. In 1978, whooping crane critical habitat was designated in four areas to benefit the whooping cranes being reintroduced into the Rocky Mountains (USDI FWS 1997). The reintroduction effort was not successful, and in 1997 the USFWS removed all four critical habitat designations and designated all remaining whooping cranes in the Rocky Mountain population as an experimental nonessential population (USDI FWS 1997). By 2002, no whooping cranes were known to exist in the Rocky Mountain population, and the USFWS considered this population to be extinct (Stehn personal communication 2002). Because there are no whooping cranes on the six GYA national forests, and no designated critical habitat, there are no effects to this species in any of the alternatives.

Ruffed Grouse, Blue Grouse

These species are present on all six GYA national forests, and are inside and outside the PCA. These species are associated with forested habitats and use a variety of forest stages and conditions to meet their habitat needs. None of the alternatives would change habitat conditions that would measurably affect these species compared to Alternative 1.

Primary Cavity Nesting Species

Primary cavity nesting species are present on all six GYA national forests, and are inside and outside the PCA. These species are associated with forested habitats and require mature and older forests to meet some of their habitat needs. They also require snags and defective trees in which to build their nest cavities. Fires and insect and disease agents are the primary actions that create snags in forested environments. Alternatives 2, 3, and 4 may have beneficial indirect effects on these species, compared to Alternative 1, by increasing secure habitat that could reduce or alter timber harvesting; depending on site specific conditions, this could provide additional mature and older forest habitat and less disturbance from human activity. None of the alternatives would change fires and insect and disease agents when compared with Alternative 1.

Western Kingbird, Lark Sparrow, Bullock's Oriole(formerly northern oriole) , Yellow Warbler, Ovenbird, Spotted (Rufous-sided) Towhee

These six bird species are listed as MIS on the Custer National Forest (but their ranges cover all six GYA national forests) and their habitats are outside the PCA. Habitat for the western kingbird and lark sparrow includes desert grasslands and shrub lands to open woodlands (NatureServe 2004). Habitat for the Bullock's oriole includes open woodland, deciduous woodland, and forest edges (NatureServe 2004). Habitat for the yellow warbler includes riparian shrubs and riparian deciduous woodlands and thickets (NatureServe 2004). Habitat for the ovenbird includes mid-to-late seral forests and second growth forests with a dense canopy, deep leaf litter, and limited understory (NatureServe 2004). Habitat for the spotted towhee includes forest interiors, forest

edges, and riparian areas, all with shrubby understories (NatureServe 2004). In the three-state area, all of these species are considered secure (NatureServe 2004). None of the alternatives would measurably affect habitat for these species, compared with Alternative 1.

Rainbow Trout, Wild Tout, Game Trout, Arctic Grayling, Largemouth Bass, Mountain Whitefish, Splake

All of the trout are found inside and outside the PCA (Appendix D). Arctic grayling are a MIS on the Beaverhead and Shoshone National Forests (outside of the PCA), largemouth bass are a MIS on the Custer National Forest (outside of the PCA), and mountain whitefish and splake are MIS on the Shoshone National Forest (outside of the PCA) (Appendix D). With the application of road closures and increased secure habitat, reduced livestock grazing, reduced OHV travel, and reduced oil and gas leasing and development, some water quality improvements may occur for these species, compared to Alternative 1, depending on site specific conditions,.

3.5 Soil, Water, and Air

Affected Environment

Overall direction for management of the soil, water, and air resources is provided in forest plans, Forest Service Manual 2500 Watershed and Air Management, and related Forest Service Handbooks. All forests incorporate water conservation practices or best management practices, which meet or exceed state best management practices. All six forests participate in the Greater Yellowstone Hydrology Group that is comprised of hydrologists from each of the forests. This group focuses on management of soil and water resources in the GYA.

In the past 17 years, there has been a net reduction of approximately 1,000 miles of roads (section 3.10). Those roads that were decommissioned were in excess of what was needed to manage recreational activities, or were difficult or expensive to maintain. Roads were also decommissioned to benefit wildlife and improve riparian areas. In the past, roads have been a primary cause in a reduction of water quality due to sedimentation from roads that were connected to streams. Decommissioning has disconnected many of these roads as a sediment source; roads constructed in the last decade meet standards for water conservation practices. Much of the road decommissioning has taken place inside the PCA, with little accompanying road construction.

The proposed action and other action alternatives would not add management direction that would change the effects on air quality when compared to existing plans. The main activity that affects air quality, use of fire, would occur as described under existing plans. Future treatments would analyze the effects on air quality based on current laws and regulations.

Effects of Alternatives 1 and 2 on Soil and Water

The effects on soil and water resources from the various alternatives for GYA grizzly bear conservation are in direct proportion to the amount of activity that is allowed. In general, there would be no adverse effects. Alternative 1 would allow the present levels of activities to continue, and would maintain the current condition of soil and water resources. There are additional opportunities for road decommissioning outside the PCA as forests address excess roads from past logging or tie hacking activities, or heavily roaded National Forest System lands recently acquired through land exchanges. Some additional road construction may be needed to address access needs for fuel hazard reduction, especially within 1½ miles of structures.

Alternative 2 would not have any greater impacts than Alternative 1 because activities that would cause disturbance (road building, developed sites) would remain at the 1998 baseline. The secure habitat standard and the developed site standard would limit these activities.

Effects of Alternative 3 on Soil and Water

Alternative 3 would reduce activities inside the PCA, and would likely lead to long-term improvements in soil and water resources due to decommissioning of roads to achieve 70% secure habitat. Nearly 500 miles of road would need to be decommissioned in the next 10 years to

achieve 70% secure habitat inside the PCA and to increase secure habitat in inventoried roadless areas. The types of management standards proposed (limiting developed sites, reducing grazing allotments, reducing road densities) would generally lead to less activity in riparian areas, and hence fewer opportunities for disturbance to stream channels. Consequently, where current conditions are less than desired, reduction of disturbance levels would provide an opportunity for recovery. Where current conditions reflect desired conditions, there would be no effect.

Effects of Alternative 4 on Soil and Water

Alternative 4 would further reduce activities, and would likely lead to long-term improvements in soil and water resources due to decommissioning of roads to achieve 70% secure habitat. About 1,900 miles of road would need to be decommissioned in the next 10 years to achieve 70% secure habitat inside and outside the PCA, and to increase secure habitat in roadless areas. The types of management standards proposed (limiting developed sites, reducing grazing allotments, reducing road densities) would generally lead to less activity in riparian areas, and hence fewer opportunities for disturbance to stream channels. Consequently, where current conditions are less than desired, reduction of disturbance levels would provide an opportunity for recovery. Where current conditions reflect desired conditions, there would be no effect.

3.6 Vegetation

3.6.1 Vegetation

Affected Environment

This section presents the existing condition of the forest vegetation and the timber resource within the PCA and surrounding areas within National Forest System lands for the Beaverhead, Bridger-Teton, Custer, Gallatin, Shoshone, and Targhee National Forests. The section addresses the issue of potential effects on activities such as timber harvest and treatment of fuels, and effects on composition and structure of forest types. A summary of suitable timberlands affected by the proposal is included. The analysis reflects changes in the ability to manage lands identified as suitable for timber production on those portions of the forests affected by any of the action alternatives.

Vegetation Description

At low elevations on National Forest System lands in the GYA, various species of sagebrush dominate, including Great Basin big sagebrush, Wyoming big sagebrush, and mountain big sagebrush. Grasses are dominated by bluebunch wheatgrass, Idaho fescue, and needle-and-thread grass. Riparian species found along waterways include willow species, red osier dogwood, wild rose, and chokeberry. Trees include one of three species of cottonwood, plus spruce in some parts of the southern end of the ecosystem including the upper Gros Ventre, Hoback, and upper Wind River Range.

Depending on the location, either ponderosa pine, Douglas-fir, or Rocky Mountain juniper is the first tree species that typically delineates the lower tree line. Ponderosa pine is relatively scarce in the region and tends to be found where summer precipitation is highest (Knight 1994 cited in Noss et al. 2001). Ponderosa pine is found in the northeast section of the ecosystem along the Yellowstone River from Big Timber, Montana eastward. Juniper is found in some parts of southeast Idaho, east of the Beartooth Mountains along the Clarks Fork drainage, and scattered in small pockets elsewhere in the ecosystem, such as the Gardiner, Montana area. Throughout most of the ecosystem, Douglas-fir is the dominant low elevation tree species and is even common in those areas where juniper or ponderosa pine also occurs (Knight 1994 cited in Noss et al. 2001). Limber pine occurs throughout the ecosystem on dry windy sites; it is found both at the lower timberline and at the high elevations on the mountains.

At higher elevation, Douglas-fir is intermixed with aspen. Aspen is most abundant in the southern end of the ecosystem and relatively uncommon in the northern reaches of the area, most likely

because of greater summer precipitation that characterizes the southern mountains of the ecosystem.

Engelmann spruce, subalpine fir, and lodgepole pine dominate mid-elevation forests. The spruce-fir forest tends to be the climax association and would dominate more of the area were it not for recurring stand-replacement fires that favor lodgepole pine. Most of the forests became established between 1450 and 1860 and show past evidence of extensive fires (USDA Forest Service and USDI National Park Service 1991). At the highest elevations, whitebark pine is a dominant tree species. This pine is most common in the eastern parts of the ecosystem, particularly on the Shoshone National Forest.

Beyond timberline, extensive tracts of alpine tundra occur at elevations above 10,000 feet. Over half of the Absaroka Beartooth Mountains consists of tundra, the most extensive continuous occurrence of alpine tundra in the lower 48 states. Extensive tracts of alpine tundra are common in the Wind River Range, Absaroka Mountains, Madison Range, and other higher mountains of the ecosystem (Noss et al. 2001)

Conditions are changing for many of the vegetation types in the GYA. Information in Figure 34 and Figure 35 is from a Northern Region Overview for the Montana and Idaho national forests. Although it covers only portions of the GYA, it is assumed to be applicable to all national forests in the GYA because of the similarity in vegetation and trends.

Figure 34. Trends for key vegetation types in Montana and Idaho.

Vegetation type	Trend	Cause
Aspen	50 to 70 % loss in extent	Fire suppression and grazing by ungulates and livestock
Whitebark pine	39% loss in extent (loss in extent is less in the drier sites in the GYA)	Wildland fire, mountain pine beetle, and blister rust
Ponderosa pine	26% loss in extent	Fire suppression and past harvest Tied with wildland urban interface and fire risk
Lodgepole pine	Loss of age structure (landscape patterns becoming more uniform and susceptible to insect, disease, and widespread fire)	Fire suppression
Dry Douglas-fir	Change in density and increase in extent with an accompanying reduction in rangelands	Fire exclusion
Upland grass and shrublands	Loss of extent and age structure	Fire exclusion, conifer encroachment, and noxious weeds
Sagebrush/ Grasslands	Loss of extent and age structure	Fire exclusion and noxious weeds

Whitebark Pine Nuts

Whitebark pine nuts (seeds) are recognized as a major food source for the grizzly bear. Over 95% of all the whitebark in the GYA is found on public lands, with a significant portion in Yellowstone National Park (Keane 2000). Whitebark pine has potential for decline due to the presence of blister rust. However, blister rust has been in the GYA since the 1940s and no major die-offs of whitebark pine have been noted.

Because it is a high elevation species, management actions to improve or restore whitebark are limited to prescribed burning and hand planting of rust resistant whitebark pine for remote areas, but a wide variety of silvicultural and prescribed burning techniques are available if restoration sites are near roads. Keane and Arno (2001) have been researching methods of restoring declining whitebark pine stands for 10 years and their results show great promise. Wildland fire use appears

to be the most practical tool for whitebark pine restoration in the GYA because of its roadless setting. It appears that the single greatest process for ensuring the continued presence of whitebark pine on the landscape is to maintain the flow of propagules (seeds) across the landscape and this is only possible if the Clark's nutcrackers (the only dispersal agent) can cache these seeds in disturbed areas. Planting burned areas with apparent rust-resistant seedlings would accelerate the restoration process. Additional research may identify other opportunities to maintain or improve whitebark pine stands.

Effects of All Alternatives on Forest Vegetation

Across the national forests in the GYA, the overall composition and structure of the different forest types would not be expected to change much in any alternative due to motorized access restrictions affecting potential vegetation treatments. Vegetation treatments would affect only about 0.1% of the National Forest System lands in Alternatives 1 and 2. However, within the suitable timber base and based on historical harvest rates in the past 17 years, about 6% of the area would be treated in one decade (about 98,000 acres out of the 1,500,000 acres in the suitable timber base). This can help improve conditions for some of the key forest types, such as aspen and lodgepole pine within the suitable timber base. Because of restrictions to access to the suitable timber areas, Alternatives 3 and 4 would likely treat fewer acres and there would be less opportunity to improve conditions for some of the key forest types, such as aspen, ponderosa pine, and lodgepole pine. These restrictions under Alternative 4 would result in about 33% fewer acres being potentially treated than Alternatives 1 and 2; Alternative 3 would be potentially about 10% less.

Figure 35. Summary of the possible actions for maintaining or improving key vegetation types in the GYA.

Forest Type	Possible Actions
Aspen	Timber harvest to reduce fuels, followed by prescribed fire to achieve regeneration
Whitebark pine	Identify rust-resistant trees and propagation, continue whitebark pine research, use of prescribed fire, harvest/removal of Douglas-fir, and reduce mortality from mountain pine beetle
Ponderosa pine	Harvest of Douglas-fir and other species and prescribed burning
Lodgepole pine	Harvest of lodgepole pine and other species and prescribed burning
Dry Douglas-fir	Coordinate with restoring aspen and upland grassland types
Upland grass and shrublands	Prescribed fire and noxious weed treatment and prevention
Sagebrush/ Grasslands	Prescribed fire and noxious weed treatment and prevention

Prescribed fire and fire use would be the most significant methods to improve or maintain composition and structure in the GYA. About 170,000 acres, or a little over 1%, of the GYA forests and Yellowstone National Park are affected each year through fire use or wildland fire. This number is quite variable, depending on drought and other factors. None of the standards for grizzly bear habitat management in any of the alternatives would directly affect vegetation by restricting prescribed fire or fire use (section 3.6.3).

Effects on Whitebark Pine

Alternative 1 emphasizes whitebark pine management as described in the Guidelines and through current efforts with the GYA whitebark pine committee. These efforts include selection of rust-resistant whitebark pine and the monitoring of whitebark pine blister rust, as well as identifying those areas where whitebark pine is in the greatest danger of decline.

In Alternative 2, the efforts described for Alternative 1 could continue through agreements or cooperative action with other agencies; however, no assurances are stated in the proposed action.

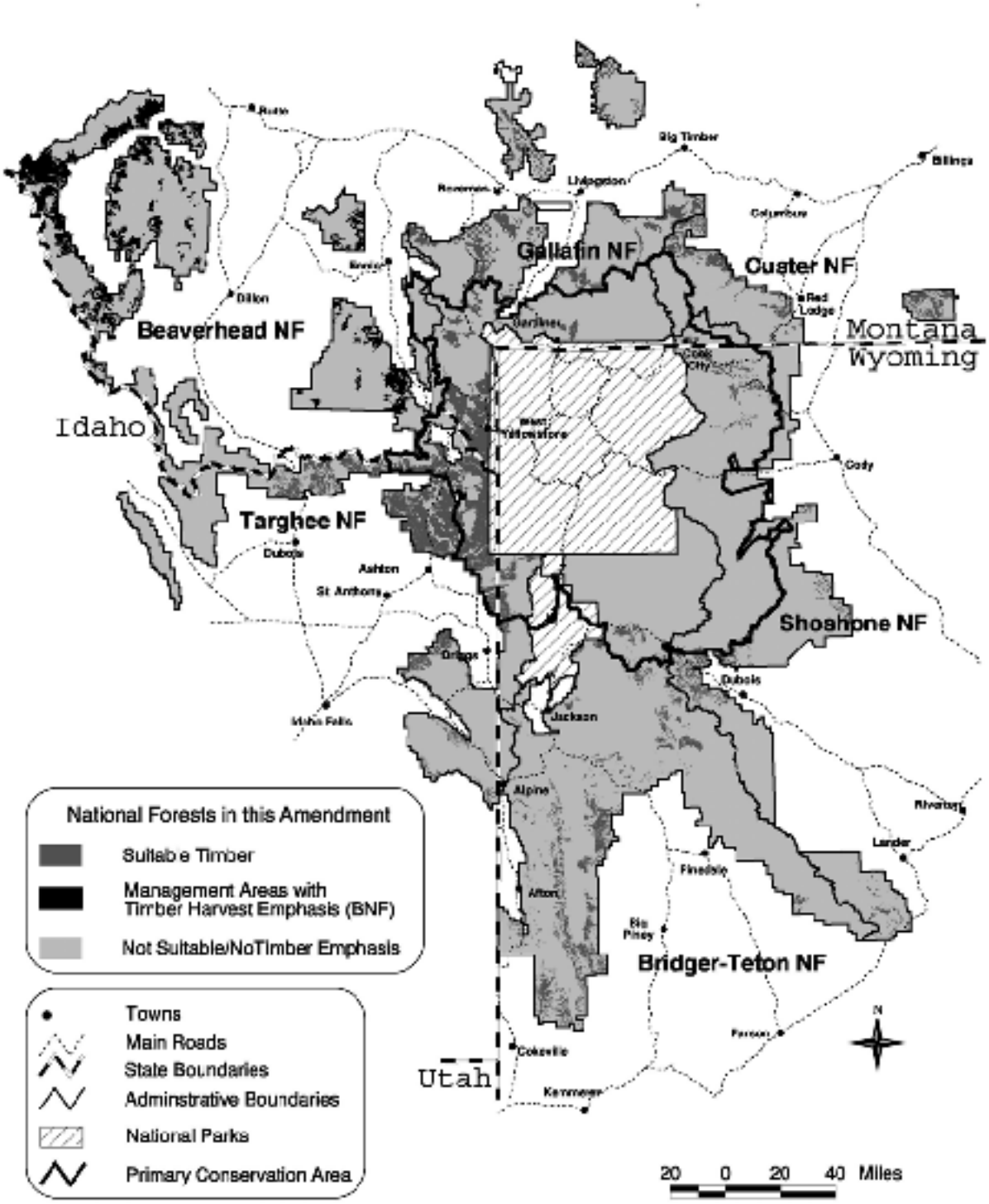
Alternatives 3 and 4 emphasize management of whitebark pine through additional formalized standards and guidelines and may lead to improved conditions for whitebark pine if additional funds are available for research or restoration activities.

3.6.2 Timber Management

Timber management provides one of the tools (the others are prescribed fire and fire use) to restore vegetative conditions, reduce hazardous fuels, and treat insect and disease infestations, as well as provide wood products for local communities. Since the existing forest plans were approved, two forests have revised the ASQ (allowable sale quantity) through either amendments or revisions (Shoshone and Targhee National Forests). Harvesting is not allowed in about 78% of the National Forest System lands in the PCA—it is either unavailable, through wilderness designations (64%), or in a management area that does not emphasize timber harvesting. For lands outside the PCA and within Alternative 4, timber harvesting is not allowed in 61% of those areas. Of that, 43% is wilderness.

Timber management goals, objectives, and standards were identified for each forest along with a numerical upper limit for timber harvest, or ASQ. Timber quantities were expressed either by board feet or by acres treated. This number is considered a “ceiling” of the maximum amount of timber to be harvested.

Figure 36. Suitable timber lands in five of the GYA national forests, and management areas that emphasize timber harvest for the Beaverhead National Forest.



Forest Plan Direction Related to Timber Management inside the PCA

Beaverhead National Forest

The Beaverhead National Forest does not have any acres suitable for timber management and does not treat or harvest any lands inside the PCA.

Bridger-Teton National Forest

Approximately 90% of the Bridger-Teton National Forest within the PCA is designated as wilderness or is in a management area that does not allow timber harvesting. Since implementation of the Guidelines, the Forest has averaged less than 100 acres treated per year.

Custer National Forest

Approximately 96% of the Custer National Forest within the PCA is designated wilderness. The non-wilderness portion discourages road development. No timber harvesting has occurred inside the PCA in the last 17 years.

Gallatin National Forest

The Gallatin Forest Plan includes a standard for the recovery zone that states: "within Bear Management Subunits (unless allowed through consultation with the USFWS): 1) do not increase open motorized access route density from the current [1995] level, 2) do not increase total motorized access route density from the current level, and 3) do not decrease the amount of core area(s) from the current level." Treatment levels have been around 1,000 acres per year since the implementation of the Guidelines. From 2000 to 2002, the Gallatin National Forest has averaged about 200 acres per year inside the PCA with this standard in place.

Shoshone National Forest

Approximately 76% of the PCA is designated wilderness on the Shoshone National Forest. Inside the PCA, the Forest averaged about 50 acres treated per year from 2000 to 2002, and about 400 acres treated per year since the Guidelines were implemented. The Forest had several large sales after the 1988 fire season. In 1994, the Shoshone Forest Plan implemented a standard for no net increase in roads, which is similar to the requirement for mitigation if secure habitat is changed.

Targhee National Forest

The Targhee National Forest has the most land suitable for timber harvest in the PCA of any GYA national forest. About 53% is in a management category that would allow timber harvest. During the 1980s, harvest levels were high to address the mountain pine beetle epidemic. The Forest is harvesting much less timber in recent years than the past decade—from 1,600 acres per year down to around 100 acres per year inside the PCA. It should be noted that the timber is in the suitable base, but has extensive grizzly bear habitat coordination requirements. Timber harvest is allowed only under conditions that maintain the grizzly habitat as first priority. Grizzly bear coordination requirements may not make it feasible to remove the timber.

Figure 37. Management categories and timber harvest emphasis, inside and outside the PCA (as defined by Alternative 4)[1].

Management categories inside the PCA	BNF	BTNF	CNF	GNF	SNF	TNF	Total
Categories 1, 2, and 3 (no timber harvesting emphasis)	100.00%	91.1%	98.6%	81.8%	76.4%	46.1%	77.8%
Categories 4, 5, 6, and 8 (timber harvesting may be allowed or emphasized)	0.0%	8.9%	1.4%	18.2%	23.6%	53.9%	22.2%
Management categories outside the PCA and in Alternative 4							
Categories 1, 2, and 3 (no timber harvesting emphasis)	57.3%	80.5%	77.4%	65.0%	44.4%	49.2%	60.9%
Categories 4, 5, 6, and 8 (timber harvesting may be allowed or emphasized)	42.7%	19.5%	22.6%	35.0%	55.6%	50.8%	39.1%

[1]Management Categories 4 and 5 emphasize timber harvest.

Suitable timberlands are those lands that are capable and available for timber harvest, and are in a management category that would emphasize timber harvesting. Suitable areas for timber harvesting would occur in Management Categories 4 and 5. Categories 6 and 8 include rangelands and campgrounds where timber harvesting does not occur except for salvage or other reasons.

Figure 38. Acres suitable for timber harvesting inside and outside the PCA by secure habitat and forest.

Suitable acres inside the PCA	BNF[1]	BTNF	CNF	GNF	SNF	TNF	Total
Secure habitat	0	6,800	400	38,700	13,600	96,900	156,000
Not secure habitat	0	6,900	700	105,800	13,800	125,300	252,000
Total	0	13,700	1,000	144,600	27,400	222,000	408,800
Suitable acres outside the PCA							
Secure habitat	83,300	85,800	56,000	81,600	12,300	108,000	427,000
Not secure habitat	142,200	126,400	33,700	130,300	46,200	171,200	649,800
Total	225,500	212,200	89,700	211,800	58,500	279,300	1,077,000

[1]Suitables acres for the Beaverhead National Forest are estimated.

Historical Harvest of Timber

Figure 39 displays acres harvested from 1986 through 2002, followed by a display of acres harvested within the PCA. The period 2000 through 2002 is also displayed. The number of acres annually treated through timber harvesting has been variable in recent years, with a downward trend.

Figure 39. Average acres treated per year by timber harvesting 1986 through 2002 and 2000 through 2002 for both inside and outside the PCA.

Average acres treated per year inside the PCA	BNF	BTNF	CNF	GNF	SNF	TNF	Total
1986 through 2002	0	100	0	370	400	1,600	2,510
2000 through 2002	0	30	0	40	50	110	230
Average acres treated per year outside the PCA							
1986 through 2002	1,520	1,400	70	1,070	480	2,840	7,340
2000 through 2002	300	410	130	200	0	200	1,230

Effects on Timber Management

Each alternative would have varying effects on land managers' abilities to treat forest vegetation using timber harvest. As stated elsewhere in this document, this is a programmatic decision that does not identify site-specific actions. Therefore, the comparison of alternatives described here is based on generalized effects associated with the secure habitat standard. Effects are analyzed in terms of differences from the no action alternative.

Each alternative would provide varying amounts of secure habitat that would affect land managers' abilities to access suitable timberlands and respond to needs created by fire, windthrow, and insect and disease. Each alternative would have indirect effects on vegetation and the timber resource. Access is necessary to respond to forest health needs, to manage vegetation to achieve restoration goals, and to provide commodity outputs. The programmatic effects on vegetation and the timber resource were measured as a loss of administrative access to suitable acres. See section 3.13.3 for a discussion of the potential impacts to the communities within the analysis area.

The tables below used changes in suitable acres to indicate the degree of change in access for vegetation and timber management. The percent of acres treated is in comparison to Alternative 1.

Figure 40. Average acres treated under Alternative 1, and the percent of acres potentially treated in each action alternative, in comparison to Alternative 1, by national forest.

	BNF	BTNF	CNF	GNF	SNF	TNF	Total
Alternative 1 (1986 through 2002)	1,520 acres	1,490 acres	70 acres	1,430 acres	880 acres	4,480 acres	9,870 acres
Alternative 2	100%	100%	100%	100%	100%	100%	100%
Alternative 3	100%	97%	100%	90%	74%	84%	88%
Alternative 4	74%	84%	72%	62%	64%	61%	67%

Figure 41. Average acres treated under Alternative 1, and the percent of acres potentially treated in each action alternative, in comparison to Alternative 1, inside and outside the PCA.

	Inside PCA	Outside PCA and inside Alternative 4	Outside PCA and outside Alternative 4	Total
Alternative 1 (1986 through 2002)	2,510 acres	4,610 acres	2,760 acres	9,870 acres
Alternative 2	100%	100%	100%	100%
Alternative 3	54%	100%	100%	88%
Alternative 4	54%	54%	100%	67%

Effects of Alternatives 1 and 2 on Timber Management

Alternative 1 represents vegetation management under the Guidelines and establishes the baseline for comparing alternatives. Since implementation of the Guidelines, vegetation management has been limited to those activities that did not adversely affect grizzly bears. For all six GYA national forests, nearly 10,000 acres have been treated each year through timber harvesting since 1986; although in the three-year period from 2000 through 2002, only 1,400 acres were treated annually. This does not include treatments of vegetation through prescribed fire. The 10,000 acres represents 0.1% of the area of National Forest System lands in the GYA, and 1% of the suitable acres. A review of five-year vegetation treatment plans indicates that this number may increase from the past three years, but is expected to be within the 17-year average, with vegetation treatment expected to be around 5,000 to 10,000 acres per year in order to address insect, disease, and fuel hazard concerns.

Alternative 1 allows timber harvesting to occur at a time and season only when the area is of little or no importance to grizzly bears, and restricts harvesting when the areas are important to the bears. This usually implies a limit on the duration of the activity or the timing of that activity. These restrictions may not change the amount of acres harvested, but may increase the cost of operations.

Alternative 2 would implement the standards for the Conservation Strategy. It would provide about the same amount of flexibility in treating vegetation as Alternative 1. Because the secure habitat standard allows a 1% temporary reduction in secure habitat, timber harvesting activities that take place under the Guidelines could take place in this alternative. The Shoshone National Forest had several large sales after the 1988 fire season—all sales could have been implemented under the Application Rules for Alternative 2. Temporary reductions in secure habitat could occur if all of the following conditions are met:

- Only one project would be active per grizzly subunit at any one time.
- Total acreage of active projects within a given BMU would not exceed 1% of the acreage in the largest subunit within that BMU (Appendix A). The acreage of a project that counts against the 1% limit is the acreage associated with the 500-meter buffer around any motorized access route that extends into secure habitat.
- Secure habitat would be restored within one year after completion of the project

A 1% change in secure habitat means, on average, that about 2,000 acres of secure habitat could be temporarily changed in a BMU subunit since BMU subunits average around 200,000 acres. Most timber sale and mechanical treatment activities are temporary in nature and would fit within this standard. Additionally, road decommissioning would occur within one year after project completion. Harvesting activities, other than road construction, do not affect secure habitat. Road construction and motorized access routes affect secure habitat at the rate of 500 meters either side of an access route. This means that up to five miles of temporary road could be constructed to access areas for vegetation management.

Almost all harvesting activities that have taken place in the last 15 years could still take place within this standard. A condition is that the roads would be decommissioned after construction, and not just gated and closed. During the last decade, the rate of road decommissioning has been greater than the rate of road construction both inside and outside the PCA, indicating that the past level of harvesting activities would be consistent with the 1% temporary change in secure habitat.

The Application Rules also allow changes in secure habitat on a permanent basis if habitat is appropriately mitigated.

- A project may permanently change secure habitat provided that replacement secure habitat of equivalent habitat quality is provided in the same grizzly subunit.
- Mitigation for loss of secure habitat due to road construction would likely be available because of the amount of road decommissioning that has been accomplished since 1998 and could be used to mitigate future road construction. Additional road decommissioning is expected in order to address soil and water concerns. Mitigation would be needed only to access areas with more than five miles of road construction.
- Vegetation activities and road construction in habitat that was not secure would not be affected by this standard.

In the long term, a reduction in access to suitable acres could occur in Alternative 2 if managers needed permanent access to an area and mitigation were not available. Projects could potentially be limited in size if needed temporary access exceeded the 1% rule and no roads were available to decommission for permanent mitigation. Treating multiple areas within a subunit for insect infestations could be limited, as only one project at a time is allowed in a subunit.

Under Alternative 2, more flexibility would be allowed in the timing and duration of timber sale activities than Alternative 1 because limits on project length and timing of activities in important bear habitat would not apply. These timing restrictions are part of the 1986 Guidelines but not a guideline in Alternative 2. Alternative 2 would provide slightly more flexibility in treating vegetation as Alternative 1, but would likely have no effect on changes in outputs when compared with Alternative 1.

For Alternative 1, the standards and guidelines in the 1997 Revised Targhee Forest Plan meet the intent of maintaining secure habitat levels. Alternative 2 is generally consistent with Alternative 1, except Alternative 2 would provide some additional flexibility in treating vegetation due to fewer timing restrictions on timber harvest. Alternative 2 would have no effect on timber outputs when compared with Alternative 1.

Effects of Alternative 3 on Timber Management

Alternative 3 would not allow any temporary changes in secure habitat inside the PCA. Without the 1% temporary change allowed in Alternative 2, land managers' abilities to access suitable timberlands and respond to needs created by fire, windthrow, and insect and disease would be reduced by nearly half of the 2,500 acres treated per year (46%) inside the PCA. Overall, this would result in a 12% reduction, or 1,200 acres, in treatment of lands for all six GYA national forests. Timing restrictions on timber harvesting in important bear habitat would apply.

Timber stands on these forests typically yield about 10 thousand board feet (MBF) per acre. Loss of about 1,200 acres per year would result in 12 million board feet (MMBF) per year. The recent trend in harvesting has been down in the last three years—about one-tenth of that total. Effects could range from one to 12 MMBF per year. Forest expectations are that harvest may increase to address fuel loadings, especially those areas that are near structures in the PCA. Economic effects of this loss are discussed in section 3.14.

Even though nearly half the acres would no longer be accessible, a significant portion of the treatment of acres would take place on suitable acres that are not secure either outside the PCA or inside the PCA. This alternative would not affect treatment of acres on lands that are not secure inside the PCA, unless those lands are inventoried roadless areas.

Suitable timberlands in inventoried roadless areas, regardless of whether they are secure, are assumed not to allow timber harvesting.

Beaverhead, Bridger-Teton, and Custer National Forests. Because timber harvest is not permitted or is at a low level inside the PCA, Alternative 3 would have little or no effect when compared with Alternative 1 for these three national forests.

Gallatin, Shoshone, and Targhee National Forests. A 10 to 25% loss in treatment of acres would be expected in Alternative 3, with the most potential loss of acres on the Shoshone National Forest.

Effects of Alternative 4 on Timber Management

Alternative 4 would not allow any temporary changes in secure habitat inside the PCA as well as additional areas bound by Alternative 4. Without the 1% temporary change, land managers' abilities to access suitable timberlands and respond to needs created by fire, windthrow, and insect and disease would be reduced by nearly half of the 6,000 acres treated per year (46%) for those areas inside Alternative 4. Some suitable acres outside Alternative 4 would not be affected. Overall, this would result in a one-third reduction, or 3,300 acres, in treatment of lands for all six GYA national forests. Timing restrictions on timber harvesting in important bear habitat would apply.

Timber stands on these forests typically yield about 10 thousand board feet (MBF) per acre. Loss of about 3,300 acres per year would result 33 million board feet (MMBF) per year. The recent downward trend in harvesting has resulted in less than 20% of the past 17 years' annual average harvest. Effects could range from six to 33 MMBF per year. Forest expectations are that harvest may increase to address fuel loadings, especially in those areas that are near structures in the PCA. Economic effects of this loss are discussed in section 3.14.

This alternative would not affect treatment of acres on lands that are not secure, unless those lands are in an inventoried roadless area. Suitable timberlands in inventoried roadless areas are assumed not to allow timber harvesting, regardless of whether they are secure for areas defined by Alternative 4. About 20% of the suitable acres would be in an inventoried roadless areas that is also not secure habitat.

For all six GYA national forests, a 16 to nearly 40% loss in treatment of acres would be expected in Alternative 4. The Bridger-Teton would be least affected by this alternative because a large portion of the suitable acres for the Forest is not in areas covered by Alternative 4. The Gallatin, Shoshone, and Targhee National Forests would be most affected, with Alternative 4 reducing acres treated by nearly 40%. Much of the suitable timberlands for these forests are included in Alternative 4. The Beaverhead and Custer would anticipate a one-fourth reduction in acres treated.

3.6.3 Fire and Fuels

Affected Environment

This section presents the existing conditions of the fire regime and condition class as they relate to fire management. For a general vegetation description in the GYA, see section 3.6. Nearly all of the vegetation in the GYA has burned at one time or another. All of the major plant communities have adaptations to fire, although some plant communities ignite and carry fire more readily than others. Conditions under which any given vegetation community will burn vary, depending on a wide variety of parameters including temperature, humidity, and vegetation type.

Although only a small portion of National Forest System lands could be treated for fuels in any alternative, strategic placement of fuels treatments can affect the intensity and pattern of wildland fires. Treatment of areas in the wildland urban interface is of particular concern because of communities at risk from destruction of wildland fire, such as Cooke City or West Yellowstone, Montana. National Forest System lands within 1½ miles of structures are defined as areas in the wildland urban interface, or WUI (Healthy Forests Restoration Act 2003).

Within the GYA, three natural (historical) fire regimes are classified based on the average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation[10].

- Fire regime I—0 to 35 year frequency
- Fire regime II—35 to 100+ year frequency
- Fire regime III—200+ year fire frequency

Condition class (CC) is a classification of the amount of departure from the natural regime (Hann and Bunnell 2001). The classification is based on a relative measure describing the degree of departure from the historical natural fire regime. The three classes are based on low (CC1), moderate (CC2), and high (CC3) departure from the central tendency of the natural (historical) regime. Low departure is considered to be within the historical range of variability, while moderate and high departures are outside. An analysis of the national fire regime and condition class data sets provided the following results[11]:

Figure 42. Fire regime and condition class within the PCA (including Yellowstone National Park).

Fire regime	Condition Class 1		Condition Class 2		Condition Class 3	
	Acres	Percent	Acres	Percent	Acres	Percent
I	46,000	1	180,000	3	84,000	1
II	1,581,000	27	2,110,000	37	141,000	2
III	1,359,000	24	0	0	0	0
Total	2,986,000	52	2,290,000	40	225,000	3

The remaining 4% of the area is agricultural or non-vegetated lands. Not all combinations are present in the GYA. Of concern to resource managers is that 43% of the area is in CCs 2 and 3 (moderate to high departure from historic fire regimes).

Figure 43. Fire regime and condition class for Alternative 4 (including the PCA and Yellowstone National Park)[1].

Fire Regime	Condition Class 1		Condition Class 2		Condition Class 3	
	Acres	Percent	Acres	Percent	Acres	Percent
I	122,000	1	481,000	4	206,000	2
II	3,414,000	28	3,686,000	31	470,000	4
III	2,958,000	25	0	0	0	0
Total	6,494,000	54	4,167,000	35	882,000	6

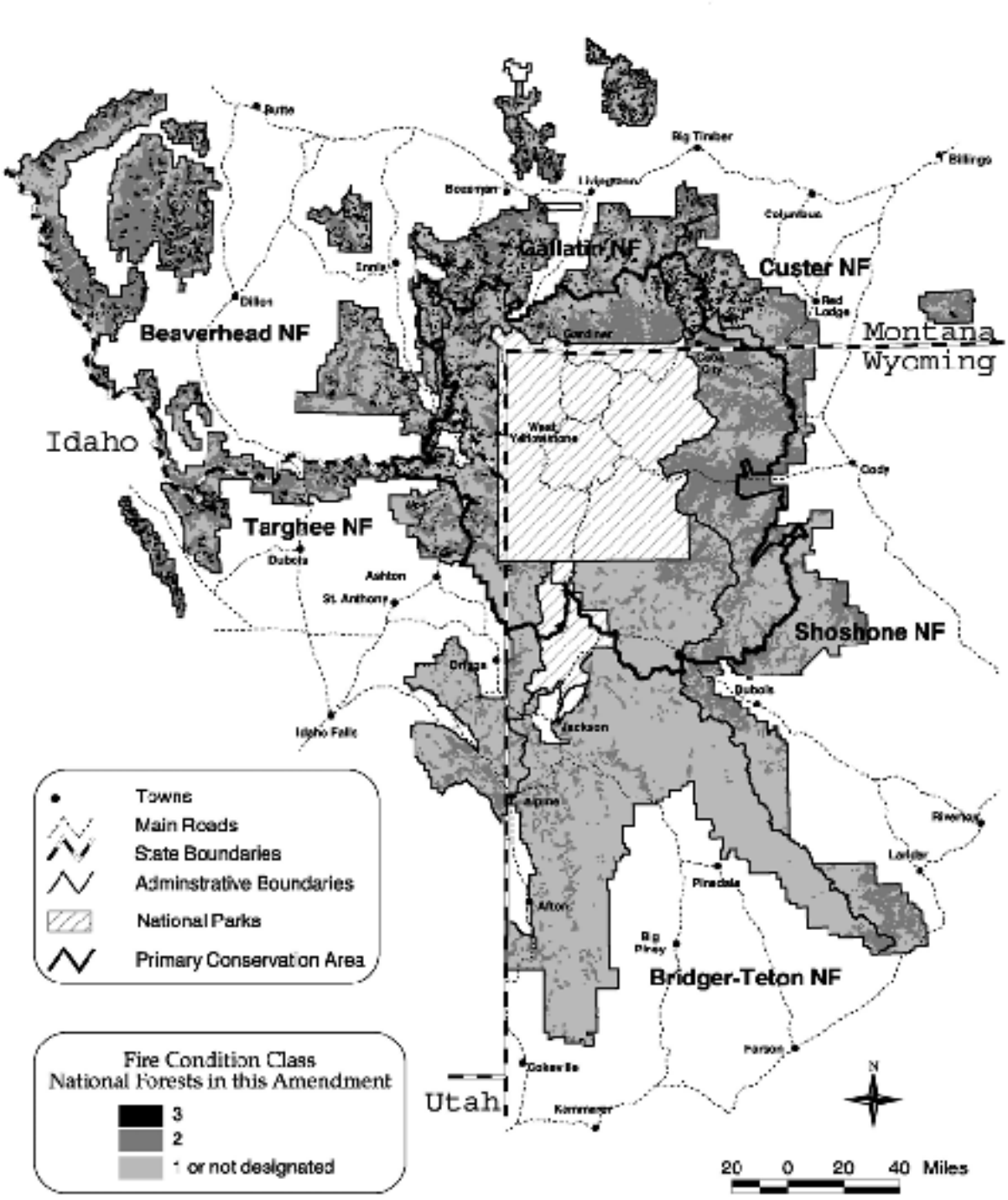
[1]These results are a general representation of the situation in the GYA. The data was compiled for national planning and analysis.

CCs 2 and 3 are the primary concern. The potential concerns are departure of fire behavior, effects, and other associated disturbances; composition and structure of fuel and fire; and risk to key ecosystem components.

Approximately 2.9 million acres of the PCA are in CC 1, 2.3 million acres are in CC 2, and 0.23 million acres are in CC 3. The majority of CCs 2 and 3 are within Yellowstone National Park or wilderness areas. The areas that do extend into general forest or to the edge of national forest ownership are mostly rural in nature. Approximately 6.5 million acres of Alternative 4 (including the PCA) are in CC 1, 4.1 million acres are in CC 2, and 0.68 million acres are in CC 3. This additional acreage is adjacent to private lands and WUI (Figure 44).

[10] For more information about fire regimes and condition classes see http://www.frcc.gov/
[11]Available on the Web at http://www.fs.fed.us/fire/fuelman/

Figure 44. Fire condition class in the six GYA national forests.



Lightning is the most frequent cause of fire and burns the most acres (Figure 45). Fire history information was analyzed for the period 1986 to 1996[12].

Figure 45. Fire occurrence (1986 through 1996).

Within the PCA (including Yellowstone National Park)				
Cause	**Acreage**	**Percent**	**Number of fires**	**Percent**
Lightning	1,033,117	56	451	58
All other	807,595	44	325	42
Alternative 4 (excluding the PCA)				
Lightning	25,630	70	536	55
All other	11,143	30	429	45

Effects on Fire and Fuels

Effects of Alternatives 1 and 2 on Fire and Fuels

Alternatives 1 and 2 are consistent with current wildland fire management, prescribed fire, or fuels management activities. As demonstrated in Figure 45, the majority of wildfires are started by lightning and those fires burn the most acreage. The objectives, standards, and guidelines proposed in Alternative 2 would have little effect on fire starts or acreages burned. Roads currently available would remain available for use. Wildland fire management activities do not create roads and thus would have no impact on secure habitat. Dozer lines that may be created as part of wildland fire activities are rehabilitated as part of normal fireline operations and thus would not reduce secure habitat.

Because the same number of acres can be treated under these two alternatives, Alternative 2 would have no effects on mechanical treatment of fuels when compared to Alternative 1. For Alternative 2, the Application Rule would allow up to nearly five miles of road to be temporarily built for fuels treatment in a subunit at one time. This would be more than adequate to treat fuels within 1½ miles of structures or communities. The current efforts to return CCs 2 and 3 to CC 1 would not be impacted based on the ability to utilize the 1% change in secure habitat to facilitate project accomplishment.

Effects of Alternative 3 on Fire and Fuels

Alternative 3 would have limited effect on wildland fire management activities in those units that would close roads to meet the secure habitat standard, as described in Alternative 3. The closure of about 500 miles of road could lead to longer response times and larger fires in several BMU subunits. Wildland fire management activities do not create roads and thus would have no impact on secure habitat. Dozer lines that may be created as part of wildland fire activities are rehabilitated as part of normal fireline operations and would not reduce secure habitat.

Alternative 3 would allow 10% fewer acres to be mechanically treated than Alternatives 1 or 2. Mechanically treated acres within the PCA, however, would be reduced by nearly 50% because no temporary reduction in secure habitat would be allowed. Mechanical treatment (with heavy equipment) of fuels more than 500 meters from a road would not be allowed. Some structures and communities occur within the PCA, such as the North Fork of the Shoshone River and Crandall in Wyoming, and Cooke City and West Yellowstone in Montana. These areas are also considered to be in or surrounded (completely or in part) by CC 2. Alternative 3 would limit the ability to mechanically treat, with heavy equipment, hazardous fuels in these areas if secure habitat is present and treatment is needed more than 500 meters from a road. Use of prescribed fire and

[12] See http://www.fs.fed.us/fire/fuelman/

mechanical treatment (without heavy equipment) would be permitted inside and outside the 500-meter buffer.

The road closures required to implement the secure habitat standard may require projects be dropped or delayed because of the lost access. Prescribed fires and mechanical fuels treatments are typically conducted without the creation of roads, but often require road access. Activities related to preparing a site for burning such as fire line construction or fuelbed modification are consistent with the requirement to maintain secure habitat.

Implementing treatments in those subunits that do not meet the 70% secure habitat standards may see an increased cost when roads are closed to meet the secure habitat standard. For example, areas that might have been ignited by drip torch or terra torch may have to be ignited with a helitorch, which is significantly more expensive. In the PCA, increased fuel loadings and larger, more intense fires may be expected as an effect of implementing Alternative 3.

Effects of Alternative 4 on Fire and Fuels

Alternative 4 would have the greatest effect on wildland fire management activities in those units that would close roads to meet the secure habitat standard. The estimated number of roads closed to meet this standard in Alternative 4 is over 1,900 miles. The closure of these roads could lead to longer response times and larger fires across the GYA based on current fire management capabilities. Wildland fire management activities do not create roads and thus would have no impact on secure habitat. Dozer lines that may be created as part of wildland fire activities are rehabilitated as part of normal fireline operations and thus would not reduce secure habitat.

Because of access needs, road closures would likely not take place around communities; therefore, wildland fire management activities around communities would not be affected.

This alternative has the greatest impact of all alternatives on the ability to utilize prescribed fire or mechanical fuels treatments to manage vegetation. As demonstrated in Figure 43, in Alternative 4 approximately one-third of the area is in CCs 2 and 3. Alternative 4 also has the most national forest boundary common to private lands.

Alternative 4 would allow one-third fewer acres to be mechanically treated (with heavy equipment) than Alternatives 1 or 2. Within Alternative 4 boundaries, acres mechanically treated (with heavy equipment) would be reduced by nearly 50% because no temporary reduction in secure habitat would be allowed and an estimated 1,900 miles of roads would be closed. Many structures and communities occur within Alternative 4. In addition to those communities described in Alternative 3, Jackson, Wyoming would be another community adjacent to the Alternative 4 boundary. These areas are considered in or adjacent to CC 2 or 3. Alternative 4 would limit the ability to mechanically treat (with heavy equipment) hazardous fuels in these areas if secure habitat is present and treatment is needed more than 500 meters from a road. Use of prescribed fire and mechanical treatment (without heavy equipment) would be permitted inside and outside the 500-meter buffer.

The road closures required to implement the secure habitat standard as described in Alternative 4 would impact the ability to utilize mechanical treatment with heavy equipment, and would increase project costs for prescribed fire and other mechanical treatments. For example, areas that might have been ignited by drip torch or terra torch may have to be ignited with a helitorch, which is significantly more expensive. Road closures affect all six GYA national forests in Alternative 4.

The current efforts to return CCs 2 and 3 to CC 1 would be impacted based upon the loss of road access. The nature of the loss would depend upon the timing of both fuels treatment projects and road closures that would be determined at the project level. Overall, in Alternative 4, increased fuel loadings and larger, more intense fires may be expected as an effect of implementing Alternative 4.

3.6.4 Noxious Weeds

Affected Environment

Forest Service direction for management of noxious weeds is provided in Forest Service Manual 2080 Noxious Weed Management, in Executive Order 13112 of February 3, 1999—Invasive Species, in noxious weed control programs unique to each forest, and within forest plans. All six forests participate in the GYA Weed Committee that is comprised of a diverse group of weed specialists; managers working for counties, states, and federal agencies; as well as private individuals and non-governmental groups with an interest in weed management. The focus of the Weed Committee is management of noxious weeds in the GYA.

Cooperative Weed Management Areas cover nearly all the GYA—these Areas serve the region as one of the most effective avenues through which the private sector, counties, and all partners can cooperate in noxious weed management.

Noxious weeds threaten the Greater Yellowstone Area's native biological diversity. Noxious weeds can disrupt grazing patterns, reduce palatable forage on big game winter ranges, increase the intensity and frequency of natural fires, lower water tables, and increase soil erosion rates.

Effects of All Alternatives on Noxious Weeds

The proposed action and alternatives represent programmatic decisions; therefore, they will have no direct effects on invasive plant species. Any direct effects would occur later at the project level when site-specific decisions are made about road and trail use restrictions. Most of the effects identified in this analysis would be indirect effects in that they would occur later in time because of this programmatic decision.

Current direction in the forest plans and other weed control documents for the site-specific application of weed management guidelines would not be changed under any alternative.

Implementation of any one of the alternatives could result in changes in noxious weed management approaches on a case-by-case basis. Depending on the site, effects could be

- Positive (closing areas without noxious weeds to access would slow the advance of vehicle and domestic animal spread of seeds)
- Negative (areas presently infested could become more difficult to access and treat)
- Self-canceling (decreased potential for infestation and decreased ability to access and treat)

Figure 46. A qualitative assessment of each alternative for weed spread and treatment access.

Alternative 1	Negligible change in potential for change in weed spread. Maintains existing access for treatment of weed infestations.
Alternative 2	Maintains existing access for treatment of weed infestations. Remaining sheep allotments within the PCA would be phased out.
Alternative 3	Motorized access (roads or motorized trails) would be closed on over 500 miles of road with proportionate potential for changes in weed spread and treatment of infestations. All sheep allotments within the PCA would be closed. Cattle allotments with recurring conflicts would be closed.
Alternative 4	Motorized access (roads or motorized trails) would be closed on over 1,900 miles of road with proportionate potential for changes in weed spread and treatment of infestations. All sheep allotments within the PCA would be closed immediately. Cattle allotments with recurring conflicts would be closed.

None of the alternatives would alter current programmatic direction for noxious weeds.

Costs of monitoring and treating existing weed infestations along roads and trails could increase if the areas are no longer accessible by motorized vehicles. For example, if smaller spray rigs or backpack sprayers must be used in an area that was formerly accessible by larger spray rigs or pickup trucks, efficiency would be reduced. Either the overall cost of treating the infestation would be higher, or fewer acres could be treated, depending on the availability of funding.

Conversely, restricting motorized access and reducing domestic livestock grazing would reduce the potential for spreading weed seeds and expanding existing infestations or for bringing seeds into areas that have been relatively weed free.

3.6.5 Threatened, Endangered, and Sensitive Plants

Affected Environment

There are no plant species listed as endangered that are known or suspected to occur within the national forests of the Greater Yellowstone Area. One federally listed threatened species, Ute ladies'-tresses (*Spiranthes diluvialis*), is known to occur in eight states: Nevada, Utah, Colorado, Idaho, Washington, Nebraska, Wyoming, and Montana. Habitat is primarily restricted to relatively low elevations within old river meanders, meadows, and river margins that are inundated and remain moist throughout the growing season. The plant is adapted to relatively sparse vegetation, because of disturbances such as flooding and grazing. There are no known populations within the PCA.

A sensitive species is a species, subspecies, or variety of plant for which a regional forester has determined a concern for population viability due to current or predicted downward habitat or population trends. Provisions for sensitive plant protection are contained in Forest Service Manual 2600 Wildlife, Fish, and Sensitive Plan Habitat Management, and in forest plans. Sensitive plants occur throughout the analysis area and habitats are identified and avoided on a site-by-site basis.

Appendix D includes a list of threatened, endangered, and sensitive plant species identified on the GYA national forests and identifies which species are within the established PCA.

Effects of All Alternatives on Sensitive Plants

The proposed action and alternatives represent programmatic decisions, and therefore would have no direct effects on threatened, endangered, or sensitive plant species. None of the alternatives would alter current forest plan direction for threatened, endangered, or sensitive plant species. Because populations of these plants are infrequent and generally have a localized distribution, and current Forest Service policy and direction require site-specific analyses before implementing site-specific projects, none of the alternatives would have any direct or indirect effects on these plant species.

Because threatened, endangered, and sensitive plant species habitats and populations are consistently identified through site-specific surveys and protected from impacts by ground-disturbing activities through avoidance and/or site-specific design criteria and mitigation, the proposal would not contribute to any cumulative negative effects on threatened, endangered, or sensitive plant species or their habitats. Along with other restrictive measures such as existing closures and management area direction, the proposal may contribute to a positive cumulative effect in limiting development and disturbance in close proximity to threatened, endangered, or sensitive plant populations and habitats.

3.6.6 Management Indicator Species Plants

Only the Bridger-Teton National Forest has plants listed as MIS. All of the MIS plants are listed as sensitive species except for Shultz milkvetch, which was found to be more common than originally believed. Shultz milkvetch is endemic to Wyoming in the Teton, Salt River, and Wind River ranges within subalpine forb communities on shallow, rocky, calcareous soils.

Sheep grazing may be a potential threat to the species, indicating that Standard 3 in Alternatives 3 and 4 may indirectly benefit the species. For all other MIS plants, the effects would be the same as discussed for sensitive plants in section 3.6.5. The beneficial effects of standards, guidelines, and alternatives on MIS plants are displayed in Figure 33.

3.7 Grazing

Affected Environment

This section presents information on the commercial livestock grazing programs for the six national forests.

Figure 47. The number of active commercial livestock grazing allotments within the PCA for 1998 and 2003.

Year	Active sheep allotments	Active cattle allotments[1]	Total livestock allotments
1998	11	68	79
2003	7	70	77
Difference	-4	+2	-2

[1]Includes horse grazing.

The livestock grazing standard in the proposed action identifies 1998 as the baseline year for monitoring changes in livestock grazing. Since 1998 and before 2003, several changes occurred in the grazing program. Four sheep allotments, two on the Shoshone National Forest and two of seven on the Targhee National Forest, were closed between 1998 and 2003. Additionally, three sheep allotments on the Targhee National Forest included in the above totals were closed in early 2004. The increase in numbers of cattle allotments and AMs between 1998 and 2003 is primarily the result of restocking vacant cattle allotments during the five-year period with some sheep allotments converted to cattle use.

Since 1998, and earlier in some cases, all grazing allotments that were entirely or partially within MS 1 or 2, and many allotments outside the PCA, have had Allotment Management Plans, Annual Operating Instructions, and/or Livestock Grazing Permits that allow an authorized Forest Service officer to order the immediate removal of livestock in the event of or to prevent grizzly bear/human conflicts. In addition, measures specifying the timely removal of livestock carcasses, food storage requirements, and protection of important grizzly bear food sources were included.

Figure 48. The number of active commercial livestock grazing allotments and associated permitted AMs[1] within the six national forests for 1998 and 2003.

	Active sheep		Active cattle[2]		Total	
Year	Allotments	AMs	Allotments	AMs	Allotments	AMs
1998	143	412,929	419	358,699	562	772,628
2003	138	414,291	462	422,129	600	836,420
Difference	-5	+1,362	+43	+63,430	+38	63,792

[1] One AM is one sheep, cow, or horse with or without young grazing on the allotment for one month.
[2] Includes horse grazing and horse AMs are included in these totals.

Although numbers of sheep on the six national forests has increased slightly from 1998 to 2003, there were five fewer active allotments and six fewer vacant sheep allotments in 2003.

Figure 49. Number of active commercial livestock grazing allotments in 2003 inside and outside the PCA (within the area defined by Alternative 4) for each of the six national forests.

National forest	Allotments inside the PCA		Allotments outside the PCA in Alternative 4	
	Cattle[1]	Sheep	Cattle[1]	Sheep
Beaverhead	3	0	108	10
Bridger-Teton	9	0	35	24
Custer	0	0	13	0
Gallatin	23	2	47	0
Shoshone	25	0	33	0
Targhee[2]	10	5[2]	44	41
Total	70	7	280	75

[1] Includes horse grazing.
[2] Three of the sheep allotments shown as active in 2003 were closed in early 2004.

Conflicts between livestock and grizzly bears have resulted in the relocation or removal of grizzly bears or the permitted livestock, depending on the location of the incident and the associated management situation designation. While there have been recent increases in bear conflicts with livestock in the Greater Yellowstone Area, the number of allotments, stocking rate, and distribution of livestock inside the PCA in 1998 has not precluded achieving recovery of the grizzly bear. Most of the conflicts with grizzly bears and sheep have been resolved inside the PCA due to the closure of many of the affected allotments. Increases in conflicts with bears and livestock are primarily outside the PCA in areas where the grizzly bear is expanding its range. Conflicts with cattle and grizzly bears often occur sporadically, sometimes going years between incidents. However, several cattle allotments have a history of recurring conflicts (Figure 50). Recurring livestock/grizzly bear conflicts for this analysis are defined as three or more years of recorded conflicts during the most recent five-year period.

Figure 50. Number of active livestock allotments in 2003 inside and outside the PCA (within the area defined by Alternative 4) with grizzly bear/livestock conflicts, 1992 through 2003[1].

National forest	Allotments inside PCA		Allotments outside PCA (within the area defined by Alternative 4)	
	Cattle[2]	Sheep	Cattle[2]	Sheep
Beaverhead	0	0	0	1
Bridger-Teton	3	0	2	4
Custer	0	0	0	0
Gallatin	0	1	0	0
Shoshone	12	0	9	0
Targhee	2	1	0	1
Total	17	2	11	6

[1] Four cattle allotments on the Bridger-Teton National Forest (two in the PCA) and two cattle allotments in the PCA on the Shoshone National Forest have experienced recurring conflicts between 1992 and 2003. One of the allotments with recurring conflicts on the Bridger-Teton National Forest inside the PCA was closed after the 2003 grazing season.
[2] Includes horse grazing.

During the years 1992 through 2003, grizzly bear conflicts were documented on 17 of the 70 (24%) cattle allotments active in 2003 inside the PCA. Two of the seven sheep allotments active in 2003 (40%) inside the PCA. had documented grizzly bear conflicts during this time. Several

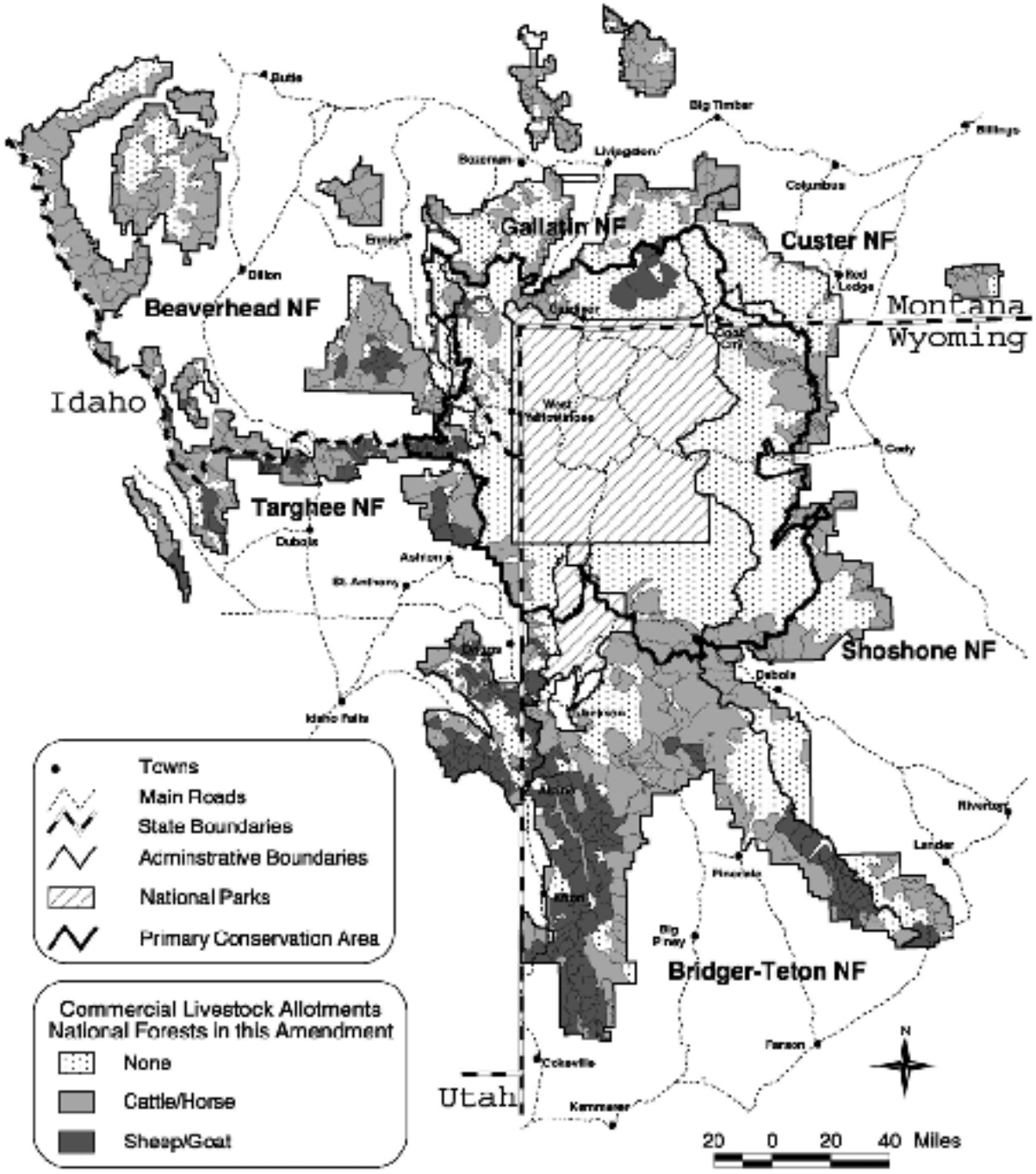
additional sheep allotments that had experienced conflicts with grizzly bears were closed between 1992 and 2003.

In 2003, outside the PCA, in the area defined by Alternative 4, there were 280 active cattle allotments (Figure 49). During the years 1992 through 2003, there were 11 cattle allotments active in 2003 (4%) with documented grizzly bear conflicts. Six of the 75 sheep allotments active in 2003 (8%) outside the PCA, in the area defined by Alternative 4, had documented grizzly bear conflicts during this period. At least two cattle allotments that had conflicts with grizzly bears between 1992 and 2003 are currently vacant. The Custer, Gallatin, and Shoshone National Forests do not have any sheep allotments in Alternative 4 areas outside the PCA.

As shown in Figure 48, Figure 49, and Figure 50, for the period of 1998 through 2003, there has been a general trend to reduce sheep allotments over the past 20 years, both inside and outside the PCA. In some cases, this has been in response to grizzly bear/livestock conflicts, but more commonly to address other resource management concerns such as disease transmission between bighorn sheep and domestic sheep, achieving a desired rangeland condition, or a decreased demand for grazing from the sheep industry.

Livestock grazing can be used as a resource management tool to manipulate the range resource toward a desired condition. Livestock grazing, in addition to providing forage for livestock, can be used to change the seral stage of the plant community, remove decadent plant growth to rejuvenate forage species, reduce fine fire fuels, or improve the quality of forage for wildlife.

Figure 51. Livestock grazing allotments in the six national forests.



Effects on Grazing

This section discloses the effects to commercial livestock grazing resulting from implementation of the alternatives described in chapter 2. Effects are analyzed in relation to the no action alternative. Each alternative would have varying effects on the rangeland resource. This is a programmatic decision that does not identify site-specific actions; therefore, the comparison of alternatives described here is based on generalized effects associated with grazing. Additional discussion of the social and economic impacts to permitted livestock operators can be found in the social and economic sections.

Figure 52 and Figure 53 summarize changes in livestock grazing for all alternatives. For Alternatives 1 and 2, these sheep allotments would be monitored, evaluated, and phased out as the opportunity arises with willing permittees. Alternatives 3 and 4 would require the termination of sheep grazing within three years within the boundaries of the respective alternative; those portions of cattle allotments that have a trend of recurring conflicts with grizzly bears would be closed.

Figure 52. Reduction in sheep AMs for each of the six national forests by alternative.

National forest	Alternative 1	Alternative 2	Alternative 3	Alternative 4
	Allotments/AMs	Allotments/AMs	Allotments/AMs	Allotments/AMs
Beaverhead	0/0	0/0	0/0	10/24,885
Bridger-Teton	0/0	0/0	0/0	24/84,802
Custer	0/0	0/0	0/0	0/0
Gallatin	0/0	2/3,540	2/3,540	2/3,540
Shoshone	0/0	0/0	0/0	0/0
Targhee[1]	2/3,590	2/3,590	2/3,590	43/119,032
Total	2/3,590	4/7,130	4/7,130	79/232,260

[1] Three of the sheep allotments shown as active in 2003 were closed in early 2004 and are not included.

Figure 53. Estimated reduction in cattle AMs[1] for allotments with recurring conflicts on each of the six national forests by alternative[2].

National forest	Alternatives 1 and 2	Alternative 3	Alternative 4
	Allotments/AMs	Allotments/AMs	Allotments/AMs
Beaverhead	0/0	0/0	0/0
Bridger-Teton	0/0	1/165	3/16,900
Custer	0/0	0/0	0/0
Gallatin	0/0	0/0	0/0
Shoshone	0/0	2/1,450	2/1,450
Targhee	0/0	0/0	0/0
Total	0/0	3/1,615	5/18,350

[1] Includes horse AMs.

[2] Estimated reduction based on 50% of the AMs for those allotments known to have recurring conflicts. One of the allotments on the Bridger-Teton National Forest with recurring conflicts in the PCA was closed after the 2003 grazing season and is not included in these estimates.

Effects of Alternative 1 on Grazing

All forests would continue to follow the Guidelines, which require management of grizzly bear habitat by MS 1, 2, or 3.

- In MS 1, grizzly bear/human conflicts would be resolved in favor of grizzlies unless the bear is determined to be a nuisance.
- In MS 2, managers would accommodate demonstrated grizzly populations and/or grizzly habitat use in other land use activities if feasible, but not to the extent of exclusion of other uses.
- In MS 3, any grizzly involved in a grizzly bear/human conflict would be controlled.

Implementation of MS 1 and 2 requirements could have negative impacts on commercial livestock grazing, particularly those allotments located wholly or partially in MS 1. These management requirements result in additional labor and expense to the livestock operator and limit the resource management options of the agency.

On the Gallatin National Forest, the existing sheep allotments would be maintained unless conflicts continue and cannot be resolved or the permittee willingly vacates the allotments. The two remaining active sheep allotments (one which has experienced grizzly bear conflicts) would be phased out (three of the five sheep allotments present in 2003 were closed in early 2004), as required by the 1997 Revised Targhee Forest Plan. Until the remaining allotments are phased out, conflicts would be handled under nuisance grizzly bear guidelines (Appendix E). Grizzly bear conflicts with sheep would likely continue to occur. These conflicts would be handled under nuisance grizzly bear guidelines, allowing a variety of management actions, with emphasis on favoring the grizzly bear.

The existing cattle allotments would be maintained and grizzly bear conflicts are anticipated to occur. These grizzly bear/livestock conflicts would be handled under nuisance grizzly bear guidelines.

Effects of Alternative 2 on Grazing

Inside the PCA, no new active commercial livestock grazing allotments would be created and there would be no increases in permitted sheep AMs from the 1998 baseline. Existing sheep allotments would be monitored, evaluated, and phased out as opportunities arise with willing permittees.

Combining or dividing existing allotments to improve commercial livestock management and/or achieve desired resource conditions could occur as long as the total acreage of the allotments does not increase. Prior to the issuance of any grazing permits authorizing commercial livestock of vacant cattle allotments, an analysis by the action agency to evaluate impacts on grizzly bears would be completed. Where chronic conflicts occur on cattle allotments inside the PCA, the conflict may be resolved by permanently removing the livestock, if done in cooperation with and approval from the existing permit holder.

The significant differences between Alternative 1 and Alternative 2 are 1) there would no longer be management situations that either automatically favor the grizzly bear (MS 1) or result in immediate removal or relocation of the grizzly bear in cases of conflict (outside MS 1), and 2) within the PCA, management of nuisance bears would be addressed according to the nuisance bear standards in the Conservation Strategy.

Bears preying on lawfully present commercial livestock inside the PCA would be managed according to the following criteria from the Conservation Strategy Nuisance Bear Standards (Appendix E).

- No grizzly bear involved in livestock depredations inside the PCA shall be removed (from the population) unless it has been relocated at least one time and continues to cause livestock depredations.

- Grizzly bears would not be removed or relocated from sheep allotments on federal land inside the PCA in areas that were designated MS 1 under the Guidelines (Figure 5 and Figure 51).
- Before any removal, except in cases of human safety, management authorities would consult with each other by telephone or in person to judge the adequacy of the reason for removal.
- Bears displaying natural aggression are not to be removed, even if the aggression results in human injury or death, unless it is the judgment of management authorities that the particular circumstances warrant removal.
- Bears displaying unnatural aggression would be removed from the population.

The effects of implementing this alternative could result in fewer impacts than Alternative 1 to the commercial livestock grazing program, particularly those cattle allotments wholly or partially within MS 1. Under MS 1 guidelines, livestock should be removed in situations where the conflict cannot be resolved. The greatest impacts would occur to the existing sheep operations in the PCA, which would be phased out with the cooperation of existing permittees. Allotments that are closed with the cooperation and approval of existing permit holders would likely have little negative impact to the existing operator.

The existing cattle allotments would be maintained and grizzly bear conflicts are anticipated to occur. These grizzly bear/livestock conflicts would be handled under nuisance grizzly bear guidelines.

The two active sheep allotments on the Gallatin National Forest and the two remaining (three of the active sheep allotments in 2003 were closed in early 2004) active sheep allotments on the Targhee National Forest inside the PCA would be phased out with willing permittees. Some of these sheep allotments have had grizzly bear conflicts. Grizzly bear conflicts would likely continue to occur until all of the allotments were closed. These conflicts would be handled under nuisance grizzly bear guidelines as described for Alternative 2. Grizzly bears would not be removed or relocated from those sheep allotments on the Gallatin National Forest.

Where closure of a commercial livestock allotment occurs, livestock grazing and their physical impacts would no longer influence the rangeland resource. Forage previously allocated to and consumed by livestock would be available for wildlife use; however, current stocking levels provide adequate forage for both existing wildlife populations and livestock numbers. Livestock, as a resource management tool, would no longer be available to manipulate the range resource toward a desired condition (change of seral stage), remove decadent plant growth to rejuvenate forage species, reduce fine fire fuels, or improve the quality of forage for wildlife.

Effects of Alternative 3 on Grazing

Inside the PCA, no new commercial livestock grazing allotments would be created and permitted sheep grazing would be phased out within three years, starting with those allotments with recurring conflicts with grizzly bears. Those portions of cattle allotments that have a trend of recurring conflicts with grizzly bears would be closed. For the years 1992 through 2003, 17 cattle allotments active in 2003 were documented with grizzly bear conflicts inside the PCA. The three remaining cattle allotments with recurring grizzly bear conflicts would be closed resulting in a reduction of about 1,600 AMs. Portions of cattle allotments that experience future recurring grizzly bear conflicts would be closed. The four existing sheep allotments inside the PCA would be closed, with the loss of about 7,100 sheep AMs.

The allotment closures and removals would result in a reduction in either livestock numbers or season of use, equivalent to the capacity of the affected pasture. The loss of this grazing capacity may require that the remainder of an affected allotment be combined with an adjacent allotment to maintain an economically viable livestock operation. Closure of the entire allotment could result if the remainder of an affected allotment is not large enough to be economically viable on its own and it is not possible to combine it with an adjacent allotment. For the purposes of this analysis, a reduction of 50% of the permitted AMs is expected to occur in those affected allotments. An estimate of the number of allotments that would be removed, and the associated

loss of AMs by alternative, is based on those allotments currently identified as having recurring conflicts (Figure 53). Additional allotments may experience recurring conflicts as bears expand in range and numbers and the effects would be greater than that noted in the following analysis.

Effects on the rangeland resource from closure of commercial livestock allotments would be similar to Alternative 2.

Effects of Alternative 4 on Grazing

Within the boundaries of Alternative 4, no new active commercial livestock grazing allotments would be created and permitted sheep grazing would be phased out within three years, starting with those allotments with recurring conflicts with grizzly bears. Those portions of cattle allotments that have a trend of recurring conflicts with grizzly bears would also be closed. Implementation of this alternative would result in the closure of 79 sheep allotments inside and outside the PCA for a total reduction of over 232,000 sheep AMs, and the closure of five cattle allotments inside and outside the PCA for a total reduction of about 18,000 AMs (Figure 52 and Figure 53). Cattle allotments that experience future recurring grizzly bear conflicts would be closed.

The difference between Alternative 4 and Alternative 3 is the extent of the impact. Alternative 3 applies only to those allotments or parts of allotments within the PCA. Alternative 4 applies to an expanded area and would have much greater impacts on the livestock grazing program than Alternative 3, and would affect livestock operations similarly to Alternative 3. Additional allotments may experience recurring conflicts as bears expand in range and numbers and the effects would be greater than that noted above.

Effects on the rangeland resource from closure of commercial livestock allotments would be similar to Alternative 2, but would apply to a much larger area.

3.8 Heritage Resources

Heritage resources include areas, sites, traditional cultural properties, buildings, art, architecture, memorials, and objects that have scientific, historic, or cultural value. They link people to their cultural history, provide insight into how people lived in the past, and reveal past and ongoing relationships between people and the natural world.

The NHPA (National Historic Preservation Act) and its implementing regulations require that federal agencies consider the effects of their undertakings on historic properties. The term historic properties refer to cultural properties that have been determined eligible for the NRHP (National Register of Historic Places).

Heritage resource objectives are outlined in the GYA forest plans. All of the forests' heritage programs are committed to the identification and protection of cultural and historic resources. Objectives outlined in the forest plans have been designed to increase the understanding of cultural resources into forest management through consultation with state and federal agencies and tribal governments.

The Forest Service is required to protect and manage identified sites in the United States under several statutes. The following laws provide direction to all federal agencies and were considered in this proposal.

- National Historic Preservation Act of 1966
- American Indian Religious Freedom Act
- National Forest Management Act
- Native American Graves Protection and Repatriation Act of 1990
- Archaeological Resources Protection Act of 1979
- Interior Secretarial Order 3175
- Executive Orders 12866, 13007, 13084
- Religious Freedom Restoration Act

Treaty and trust responsibilities with tribes are discussed in more detail in section 3.13.1.

In accordance with Section 106 of the NHPA, forest plans require integration of cultural resource management into the overall multiple resource management effort. Site-specific cultural surveys or inventories to locate and identify sites with heritage values are required before implementation of ground-disturbing activities. Such surveys would be conducted during the NEPA analyses for site-specific projects. In addition, national forests must work closely with the appropriate scientific community and American Indian Tribes concerning cultural resources. The laws and policies that govern cultural resource protection on federal lands are coordinated with the State Historic Preservation Offices (SHPOs) of Idaho, Montana, and Wyoming, that serve in an advisory capacity.

Effects on Heritage

Most of the effects identified in this analysis would be indirect effects in that they would occur later in time because of this programmatic decision.

Natural weathering, management practices, looting, and vandalism can impact heritage sites. Limited access provides a measure of site protection and unlimited access can exacerbate problems if they exist. Any further restrictions to road access provide an additional measure of protection for heritage sites by reducing the potential of looting and vandalism to sites, although decommissioning activities could impact heritage sites.

Effects of Alternatives 1 and 2 on Heritage Resources

Alternative 1 allows the present levels of activities to continue, and would maintain the current condition of the heritage resource. Both road decommissioning and road construction would remain at present levels.

Alternative 2 would not have any greater impacts than Alternative 1 because activities that would cause disturbance (road building, developed sites) would remain at the 1998 baseline. The secure habitat standard and the developed site standard would limit these activities.

Effects of Alternatives 3 and 4 on Heritage Resources

Alternative 3 would reduce activities inside the PCA, and would likely lead to some protection of heritage resources due to decommissioning nearly 500 miles of road inside the PCA in the next 10 years.

Alternative 4 would further reduce activities, and would likely lead to some additional protection of heritage resources due to decommissioning of about 1,900 miles of roads inside and outside the PCA in the next 10 years.

3.9 Recreation

Introduction

Recreation activities and grizzly bear/human interactions have been monitored and evaluated over the last 25 years by the various land managing agencies, research scientists, the IGBC, and non-governmental organizations. Particular efforts that are deemed effective in managing grizzly bear/human interactions are:

- Information and education about recreating and living in bear country
- Ensuring that unnatural food sources are secure from bear use
- Limiting human development and access within bear areas
- Managers being responsive to grizzly bear/human conflicts

In this section, the current recreation setting is compared with current uses and trends to address the overall impacts of limiting recreational opportunities. The analysis area includes the six national forests. It is recognized that this area attracts many visitors from outside the area: regionally, nationally, and internationally, and the impacts to recreation users includes all people who may visit the area.

The recreation environment is described in the following manner:

Recreation Setting[13]

- Primitive
- Semi-primitive nonmotorized
- Semi-primitive motorized
- Roaded (natural of modified)
- Rural or urban

Recreation Infrastructure

- Travel routes
- Developed recreation sites

Recreation Use

- Current use and trends

Comparison of Recreation Use Trends with Capacity

- Spring, summer, fall recreation
- Winter recreation

3.9.1 Recreation Setting

The six GYA national forests span more than 12 million acres surrounding Yellowstone and Grand Teton National Parks. The abundant and diverse wildlife within this large, intact ecosystem, the unique geology and geothermal resources, and the historical legacy make this area not only a local and regional treasure, but one that attracts several million national and international visitors each year.

The recreation setting within the national forests is largely undeveloped (primitive and semiprimitive nonmotorized and semiprimitive motorized) and yet interspersed with roads that provide for driving and viewing scenery and wildlife among other uses. Figure 54 and Figure 55 depict the recreation setting by five different categories that reflect the least developed (primitive) to the most developed (rural or urban). Figure 56 provides a graph of the recreation setting within and outside the PCA. Eleven wildernesses contribute more than four million acres to a primitive recreation setting that provides for the recreation experiences of solitude, the challenges of survival, the viewing of scenery, and a full complement of wildlife and fish species. Nearly 50% of the primitive setting is within the PCA, so recreating among grizzly bears is a key part of the experience. The PCA includes far less of the more developed recreational settings, ranging from 17% of the semiprimitive nonmotorized setting to approximately 9% of the roaded setting. Figure 57 provides a spatial display of the recreation setting.

[13] Forest Service Manual 2300 Recreation, Wilderness, and Related Resource Management, 11.1 describes the Recreation Opportunity Spectrum (ROS)—a system that defines six recreation opportunity classes that range from natural, undisturbed, and undeveloped (e.g. primitive) to heavily used, modified and developed areas (e.g. rural or urban).

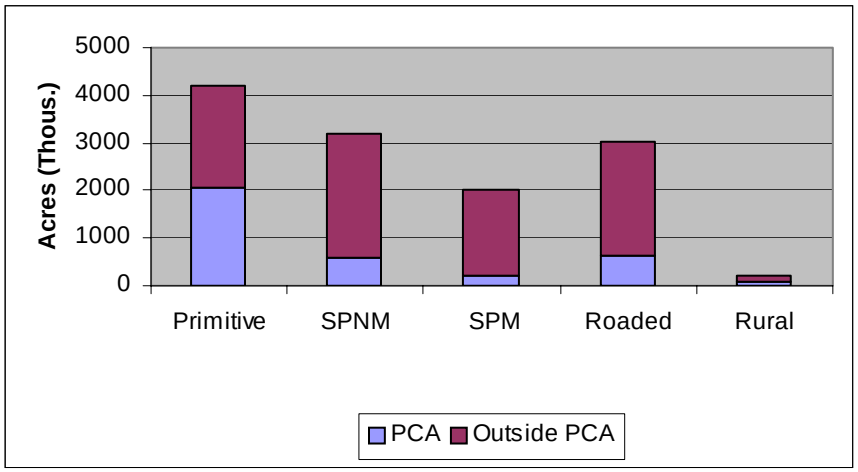
Figure 54. Recreation setting for the six national forests (thousands of acres)[14].

National forest	Primitive	Semiprimitive nonmotorized	Semiprimitive motorized	Roaded	Rural/ urban
Beaverhead	139	777	642	620	16
Bridger-Teton	1,418	849	294	892	13
Custer	324	143	21	103	13
Gallatin	719	466	366	458	104
Shoshone	1,366	573	294	209	1
Targhee	222	380	417	764	80
Total	4,188	3,188	2,034	3,046	227

Figure 55. Recreation setting within the PCA (thousands of acres).

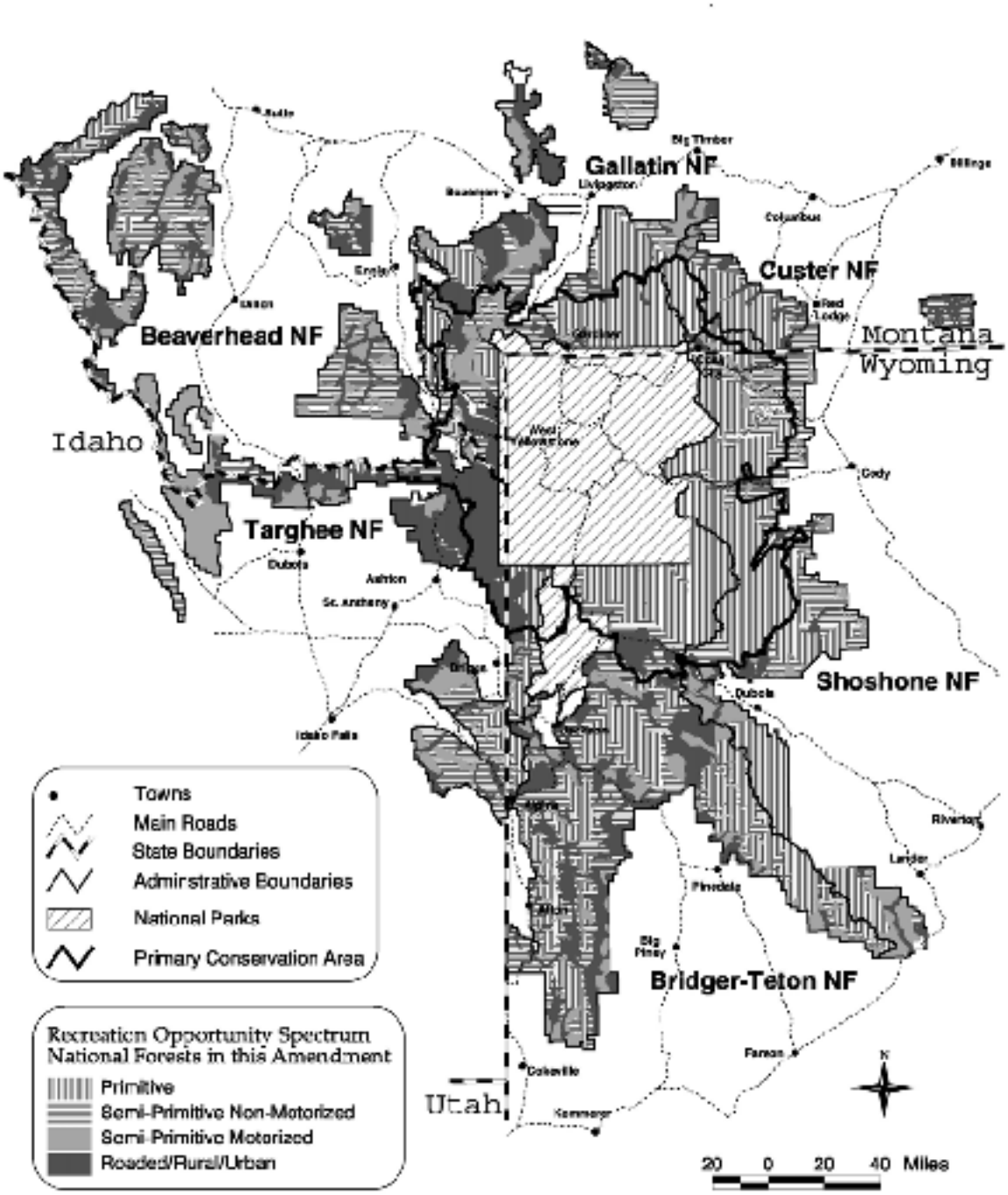
National forest	Primitive	Semiprimitive nonmotorized	Semiprimitive motorized	Roaded	Rural/ urban
Beaverhead	48	19	3	1	0
Bridger-Teton	514	114	0	96	0
Custer	106	5	2	2	0
Gallatin	412	176	131	124	53
Shoshone	893	226	49	56	0
Targhee	77	32	18	346	13
Total	2,050	572	203	625	66

Figure 56. Recreation settings within and outside the PCA.



[14] The recreation setting reflects the existing situation (as it was last inventoried). The acres were estimated using GIS maps and include some interspersed private and state lands. The general proportions among the settings are the intent of the display.

Figure 57. ROS map, including the PCA boundary.



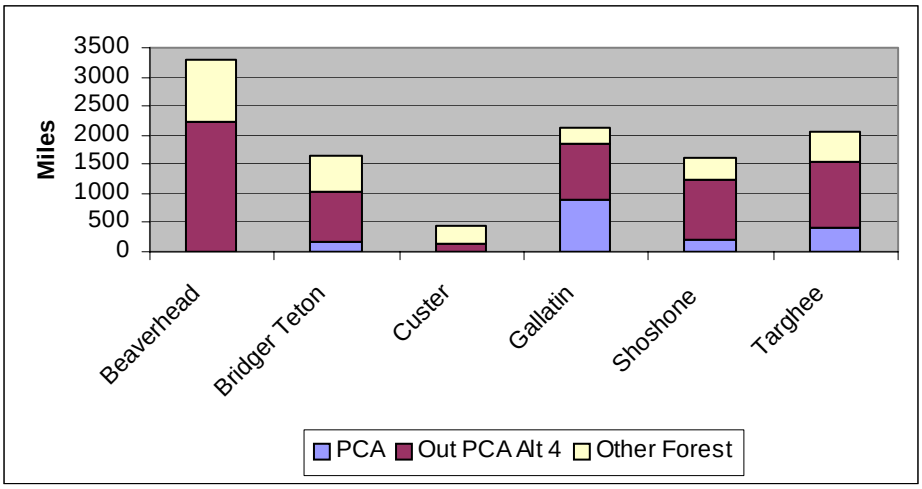
3.9.2 Recreation Infrastructure

Travel Routes

Travel routes include the roads and trails within the six GYA national forests. For spring, summer, and fall use, forest plans or subsequent amendments restrict motorized use to existing roads and trails except for small portions on the Bridger-Teton and the Targhee National Forests.

Figure 58 provides the miles of motorized access routes (OMAR) open for travel (year-around or seasonally) by forest. Within a forest, open motorized access routes are further distinguished by the miles within the PCA, the miles outside the PCA but within Alternative 4, and other miles on the forest that are not within an alternative (other forest). Forest plan direction for roads and trails is discussed in the transportation section.

Figure 58. Miles of open motorized access routes (OMAR) within the six GYA national forests.



Developed Recreation Sites

Developed recreation sites provide much of the infrastructure necessary for the enjoyment of a wide variety of recreation activities in the analysis area. Figure 59 through Figure 62 identify the categories of developed recreations sites and the numbers of sites by forest. In addition to specific categories such as campgrounds or trailheads, the "other developed recreation" category includes boat and fishing facilities, snow parks, ski areas, picnic areas, wildlife viewing, organization or outfitter developed sites, and interpretive, observation, or information sites.

More than 200 campgrounds offer rural or remote locations from which to stay overnight and experience the great outdoors or to gain closer access to day hikes or other recreation pursuits within the national forests or parks. More than 300 trailheads provide access into the national forests; slightly more than 100 of these trailheads are within the PCA. Major developed sites and lodges, similar to campgrounds, offer closer access and experiences within the core of the Yellowstone ecosystem. These lodges, resorts, dude ranches, or hotels serve a largely regional and national clientele. Nineteen (44% of the six national forest total) of these major developments are within the PCA. Summer home complexes are recreation residences that were established long ago and are a permitted use from the national forests. Thirty-two of these summer home complexes (59% of forest total) are within the PCA.

Each developed recreation site has an estimated capacity, for some sites, calculated as a PAOT (persons at one time). These data are documented in the project record, and are available from the Forest Service INFRA database. Exceptions to the use of PAOTs and estimations of capacity are recreation residences that are counted by permit or complex, or where the site has not been fully inventoried since the corporate data system, INFRA, is relatively new. The proposed action

proposes a standard to maintain the capacities of these sites at or below 1998 levels, with exceptions as explained in chapter 2. Other action alternatives propose variations.

Figure 59. Developed recreation sites on the six GYA national forests (numbers of sites).

National forest	Developed campgrounds	Trailheads	Major developed sites and lodges	Permitted summer home complexes	Other developed recreation	Total recreation Sites
Beaverhead	35	29	3	2	17	86
Bridger-Teton	45	60	4	1	55	165
Custer	23	34	1	3	18	79
Gallatin	42	132	5	22	65	266
Shoshone	35	51	19	17	52	174
Targhee	31	22	11	9	73	146
Total	211	328	43	54	280	916

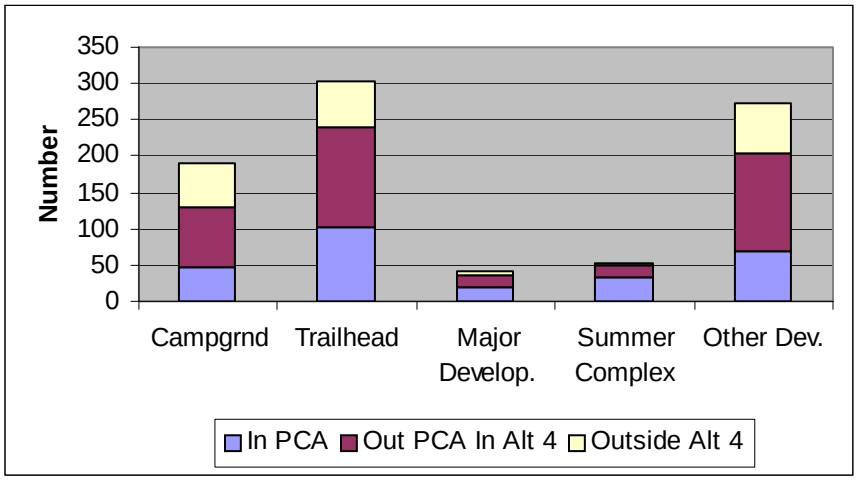
Figure 60. Developed recreation sites within the PCA (numbers of sites).

National forest	Developed campgrounds	Trailheads	Major developed sites and lodges	Permitted summer home complexes	Other developed recreation	Total recreation sites
Beaverhead	0	0	0	0	0	0
Bridger-Teton	6	8	3	1	6	24
Custer	0	2	0	0	0	2
Gallatin	18	64	3	19	19	123
Shoshone	17	21	11	9	22	80
Targhee	5	8	2	3	20	38
Total	46	103	19	32	67	267

Figure 61. Developed recreation sites within the area defined by Alternative 4.

National forest	Developed campgrounds	Trailheads	Major developed sites and lodges	Permitted summer home complexes	Other developed recreation	Total recreation Sites
Beaverhead	23	16	3	2	7	51
Bridger-Teton	22	33	3	1	27	86
Custer	13	27	0	3	10	53
Gallatin	39	121	5	22	63	250
Shoshone	31	47	18	16	46	158
Targhee	24	22	11	8	58	123
Total	152	266	40	52	211	721

Figure 62. Developed recreation within the PCA, Alternative 4, and remaining National Forest System lands.



Forest Plan Direction and Changes in Developed Site Capacity in the PCA

Beaverhead National Forest

There are no developed recreation sites within the Beaverhead National Forest portion of the PCA. This has not changed over the last 10 years.

Bridger-Teton National Forest

Forestwide access objectives include "retain, improve, and add developed [recreation] sites." The Forestwide standard for developed recreation facilities states, "appropriate facilities will be provided at developed sites to prevent resource damage, protect public health and safety, and meet the desires of people who use developed sites." Plan objectives and standards are applied in an integrated way and with consideration of grizzly bear habitat needs. Over the last five to 10 years, the number and capacity of developed sites within the PCA has remained the same.

Custer National Forest

Inside the PCA, most of the area is managed as part of the Absaroka/Beartooth Wilderness. Direction outside wilderness includes the goal of maintaining or improving existing wildlife habitat. Standards for both these management areas preclude the establishment or maintenance of dispersed campsites. Some capacity has been added to a campground outside the PCA, and a capital investment is in progress to add a campground outside the PCA (ten miles south of Red Lodge adjacent to the Beartooth All American Highway). This effort will meet some of the increased demand for developed site camp units, reduce the impacts of dispersed camping, and improve sanitation.

Gallatin National Forest

Appendix G of the Gallatin Forest Plan provides a detailed set of standards and guidelines for recreation related sites and facilities. These standards and guidelines focus on actions to avoid or minimize habituation of bears to human food sources, grizzly bear/human conflicts, and human-caused grizzly bear mortality. The Gallatin Forest Plan Forestwide recreation objectives state that recreation "activities will be managed to avoid displacement of threatened and endangered wildlife species and to provide for user safety, resolution of user conflict, and resource protection. … Areas of possible overuse will be evaluated and measures (such as educating users, providing more facilities, or limiting use) will be taken to reduce the effects of overuse." Plan objectives and standards are applied in an integrated way and with consideration of grizzly bear habitat needs.

The capacity of developed sites has not changed and the number of sites has remained the same. Larger developed sites are in the West Yellowstone area—these are heavily used and managed,

but there has been no change over the last five to 10 years. In the Cooke City area, a new site was opened, but another was closed (with the concurrence of the USFWS, informal consultation).

Shoshone National Forest

The Shoshone's Forest Plan emphasizes that developed sites for recreation "be appropriate for the surrounding forest setting and not compete with the private sector or unnecessarily duplicate other public land facilities and services." For the most part, existing development within the PCA is low. A Biological Opinion related to projects along the North Fork Highway specified no net gain in developed sites. BMU subunits have stayed at the same capacity or lower.

Targhee National Forest

The Targhee's Forest Plan includes a goal to "maintain or slightly increase the Forest's developed site capacity in accordance with the CIP (Capital Improvement Projects) Implementation Schedule." However, this goal is not focused on the PCA, and could be achieved on the more than one million acres of the Targhee National Forest outside the PCA.

There is nothing in the Forest Plan that encourages an increase in the number or capacity of developed sites beyond 1998 levels. Plan objectives and standards are applied in an integrated way and with consideration of grizzly bear habitat needs. During the last 10 years, the number and capacity of developed sites within the PCA has remained the same.

3.9.3 Recreation Use and Trends

In the 1990s, Yellowstone National Park attracted nearly three million local, regional, national, and international visitors annually. Many of these visitors also recreate on adjoining national forests. Overall visitor use will continue to increase over the next decade as the national and international attraction of Yellowstone National Park continues, and regional and local populations increase. Visitor use for Yellowstone National Park has been monitored since the 1930s and shows an approximate 15% increase in visits per decade (Figure 63) (Gunther 1999).

Figure 63. Visitor trends in the national parks.

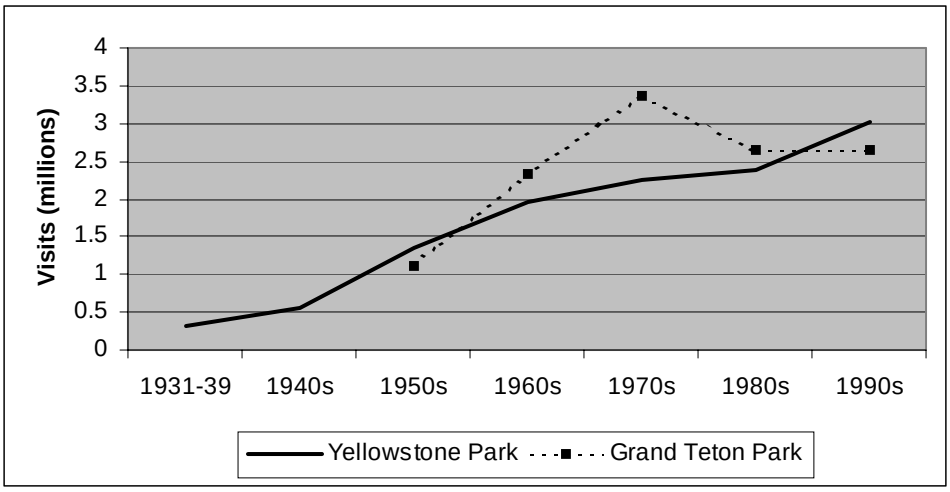


Figure 64 and Figure 65 provide estimated recreation use levels in the parks and national forests (English et al. 2001). On the southern and western flanks of Yellowstone and Grand Teton National Parks, the Bridger-Teton and Caribou-Targhee National Forests estimated more than two million visits in 2002 and 2000, respectively. The Gallatin National Forest to the north and west of Yellowstone National Park reported nearly two million visits in 2003. A small proportion of these visits, 1 to 3% of total visits, reflect backcountry use of the existing wildernesses (primitive recreation setting) as shown in Figure 65.

Figure 64. Estimated current visits to parks and forests.

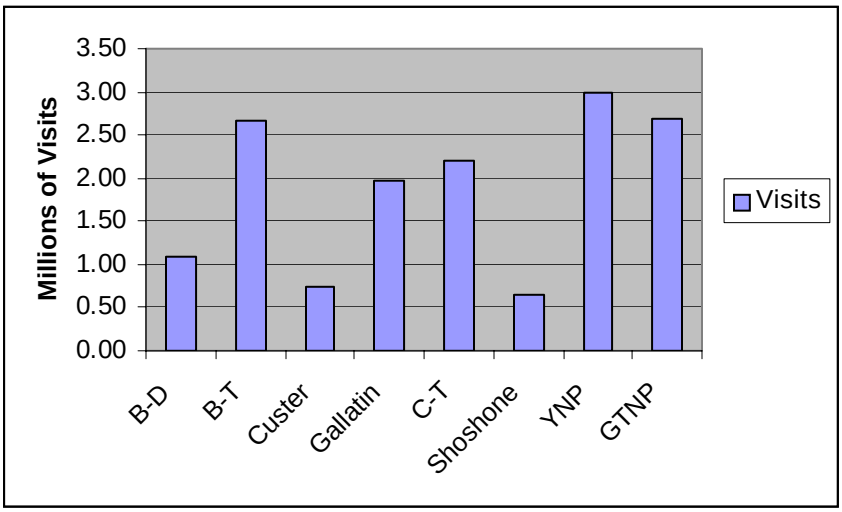


Figure 65. Estimated recreation use.

National Forest System lands	Year sampled	Recreation visits (millions)	Wilderness visits (millions)
National level	2001	209.0	14.3
Northern Region (R1)	2001	13.2	0.3
Rocky Mountain Region (R2)	NA	NA	NA
Intermountain Region (R4)	2001	21.5	1.3
Analysis area forests			
Beaverhead (including Deerlodge)	2000	1.10	0.016
Bridger-Teton	2002	2.67	0.052
Custer	2002	0.74	0.023
Gallatin	2003	1.98	0.058
Shoshone	2003	0.65	0.027
Targhee (including Caribou)	2000	2.20	0.021

National forests vary in their landscapes and attractions for recreational pursuits. Figure 66 indicates the top recreational activities that visitors claimed were their primary activities while recreating on a particular national forest. The Bridger-Teton National Forest reflects a year-around attraction—from skiing or snow machining in the winter to hiking/walking and viewing scenery and wildlife in the spring-to-fall months. Hunting is popular on the Beaverhead-Deerlodge, Custer, Gallatin, Shoshone, and Caribou-Targhee National Forests. Snow machine use is an important activity on the Caribou-Targhee with 26% of visitors coming primarily for that use.

Figure 66. Primary recreation activity participation (top four activities per forest).

Recreation activity	National forests					
	Beaverhead -Deerlodge	Bridger-Teton	Custer	Gallatin	Shoshone	Caribou-Targhee
General relaxing	8%			11%	15%	
Viewing scenery or wildlife	16%	10%			11%	8%
Developed camping					21%	
Picnic or day use	13%					
Hiking or walking		13%	18%	29%	11%	
Hunting	24%		19%	9%		16%
Fishing			14%			8%
OHV use						8%
Skiing		24%	16%	8%		
Snow machining		11%		8%		26%

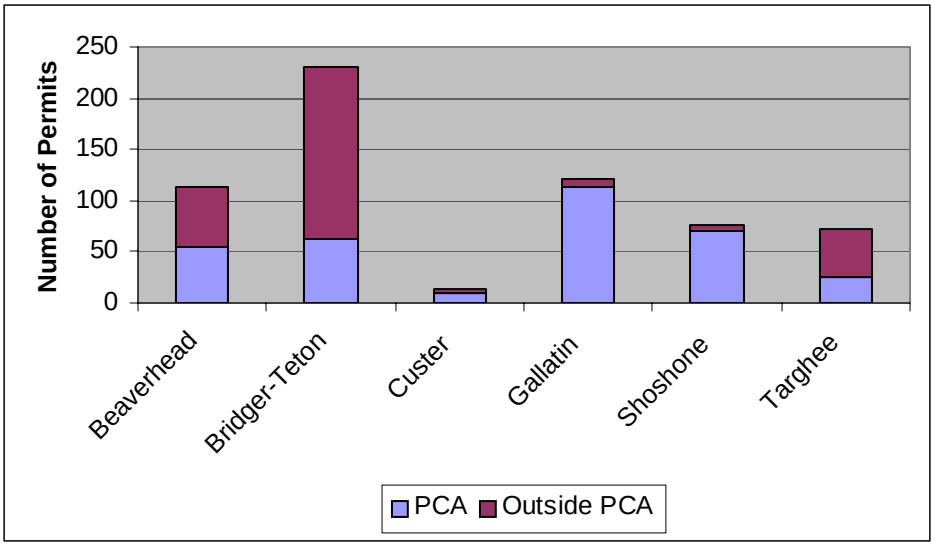
Specific Uses

Outfitting and Guiding

Many visitors to the GYA choose guided trips provided by national park interpretive services, local tourism businesses, or national forest outfitted and guided services. Approximately 629 outfitters and guides are under permit for operations on the six national forests. These services provide a range of experiences including whitewater rafting, fishing, hunting, horseback riding, and other recreational experiences. Figure 67 shows the current situation.

The proposed action and other action alternatives could potentially affect outfitters and guides with regard to adherence to food storage orders and possible changes in camps and use with recurring grizzly bear/human conflicts. The proposal does not affect the number of days permitted or user days.

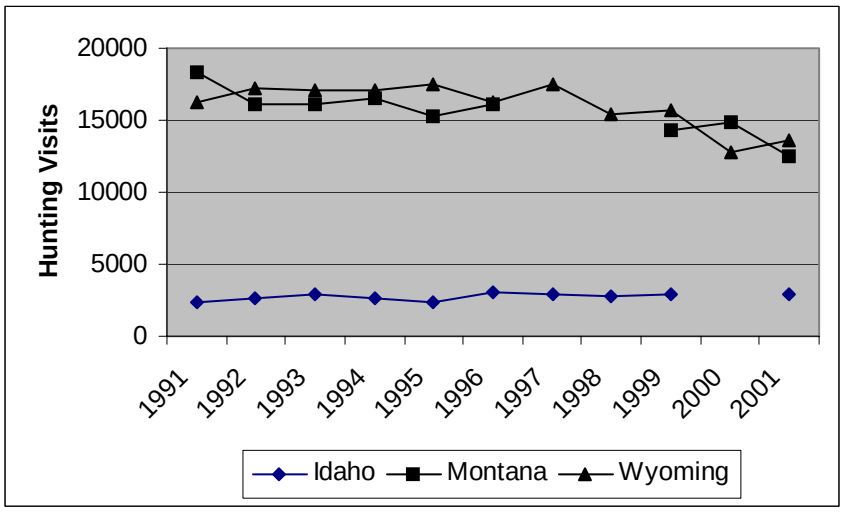
Figure 67. Outfitter and guides under permit, by national forest.



Hunting

Elk hunting is a key use in the GYA and holds high potential for grizzly bear/human conflicts since bears are attracted to the elk kills and gut piles. For five forests—Beaverhead, Custer, Gallatin, Shoshone, and Targhee—hunting is one of the top four primary recreation activities. For a period of years, the IGBC monitored hunting use trends within the PCA. Hunting levels were shown to be static in Idaho, but overall, hunting within the PCA has declined 26% from more than 36,000 hunter visits in 1991 to 29,000 visits in 2001 (Figure 68). The proposed action and other action alternatives could affect hunting through food storage orders and in the event of recurring grizzly bear/human conflicts, the closure of some areas (Haroldson et al. 2004).

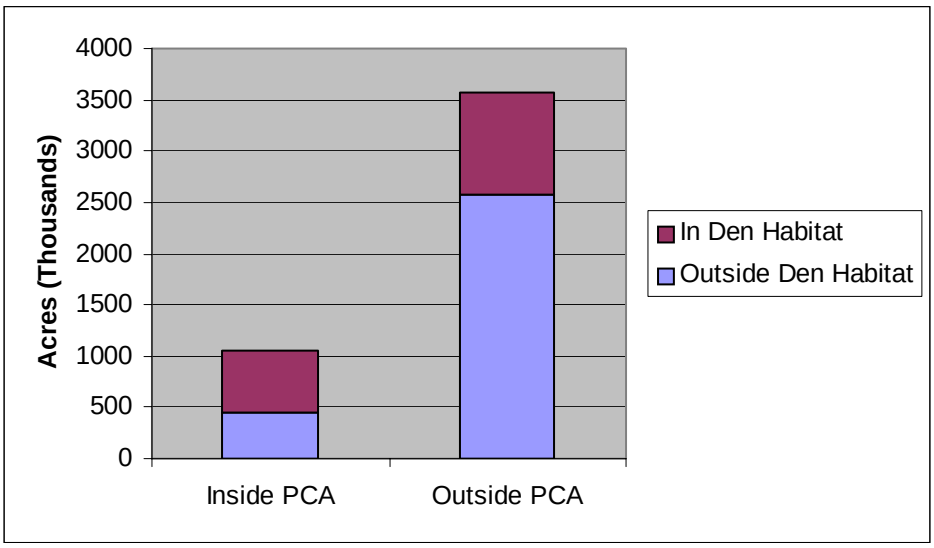
Figure 68. Estimated numbers of elk hunters within the PCA plus a 10-mile perimeter in Idaho, Montana, and Wyoming for the years 1991 through 2001 (Conservation Strategy 2003).



Winter Recreation Use

Winter recreational use of the parks and national forests in the analysis area has increased significantly in the past 15 years. This is exemplified in Yellowstone National Park, when the 1990 Winter Use Plan's 10-year visitation threshold of 140,000 people was achieved in two years, by 1992 (USDA Forest Service 2003a). Visitors identified snow machining as a primary activity on the Targhee, Gallatin, and Bridger-Teton National Forests. Some action alternatives could affect snow machining by closing areas to this recreational use where the activity overlaps with bear denning habitat. Figure 69 provides an estimation of snow machine acres and the overlap with denning habitat.

Figure 69. Potential snow machine acres, and overlap with grizzly bear denning habitat.



The six GYA national forests include five permitted downhill ski areas, and at least three ski areas operate on private lands (unaffected by this proposed action). Downhill skiing is one of the top four primary recreation activities on the Bridger Teton, Custer, and Gallatin National Forests. One area on the Shoshone National Forest is within the PCA and another area on the Targhee National Forest is within Alternative 4. Generally, national forest permitted ski areas have approved master development plans that specify the capacity for use, SAOT (skiers at one time). Capacity can also include lodging and mountain facilities. Potential effects to ski areas due to the developed site standard and motorized access related to denning habitat are discussed in the effects section.

Comparison of Recreation Use Trends and Capacity

For the purpose of this DEIS, recreation use and the available settings are organized into six categories based on season of use (winter or summer), mode of access (motorized or nonmotorized), and amount of development (developed or dispersed). These classes of uses are compared to the capacities within the GYA to provide for these uses and trends.

Spring, Summer, and Fall Recreation - Developed

Use is estimated to increase 16 to 18% in this decade (by 2010) for developed camping and picnicking for the Rocky Mountain Region[15] (Cordell et al.1999).

Greater Yellowstone Area. Forest managers suggest that most developed sites are currently not used to capacity, i.e. some individual units are not occupied during seasonal use periods. The exception to this generalization is that the more popular sites are usually filled to capacity on weekends. As uses increase, all forests will experience increasing pressure on developed sites and as more developed sites are filled to capacity, dispersed sites may also receive more use. As an example, the Custer National Forest Beartooth Ranger District has noted increasing pressure on dispersed campsites because of continually full campgrounds during the peak summer months. The Custer National Forest has planned for capital investments to increase capacity at several sites outside the PCA.

Major developed sites and lodges. See trends for nonmotorized, dispersed uses. Major developed sites include national forest permitted hotels, resorts, and dude ranches. The analysis area includes 43 of these sites; about one-half are on the Shoshone National Forest. These operations would generally aim to operate at capacity. No plans exist to increase capacity.

[15] The Rocky Mountain Region includes the interior west states, and is not the same as Region 2, the Rocky Mountain Region, of the Forest Service.

Permitted summer home complexes. Since summer homes are permitted recreation residences, the use of these residences is not directly affected by the increasing public recreation use.

Spring, Summer, and Fall Recreation - Nonmotorized, Dispersed

Use is estimated to increase 11 to 16% by 2010 for horseback riding, hiking, fishing, and backpacking in the Rocky Mountain Region, while hunting is projected to increase 5% by 2010 for the same Region (Cordell et al.1999).

Greater Yellowstone Area. Hiking, backpacking, and horseback riding will remain popular. Local residents desire day use or weekend opportunities, while the regional, national, and international visitors come for extended stays. More popular with non-local clientele are guided trips and multiple experiences (hiking, floating, horseback riding, wildlife viewing) within a stay. The recreation settings to serve these uses are plentiful; monitoring has not shown crowding from dispersed use.

Elk hunting is a key activity for the six national forests, attracting a regional and national clientele as well as local residents. However, elk hunting as monitored within the PCA has declined 26% from 1991 to 2001 (Figure 68). The recreation settings to serve elk hunting uses are plentiful; the primary tension will be accommodating increasing populations of wolves and bears that regard elk as a key food source and can be attracted to recreational hunting sites.

Spring, Summer, and Fall Recreation - Motorized

By 2010, OHV use is estimated to increase 9%, sightseeing is estimated to increase by 20%, and dispersed camping is estimated to increase by 12% in the Rocky Mountain Region (Cordell et al. 1999).

Greater Yellowstone Area. Driving and viewing scenery and wildlife are some of the most popular activities in the GYA and will increase in use over the next decade. This type of use influences major travel routes in the analysis area, and in some cases, requires improvements and reconstruction. Three highway reconstruction projects in Wyoming are beginning in the summer of 2004: Sylvan Pass (Yellowstone National Park), Togwotee Pass (Bridger-Teton and Shoshone National Forests), and the Beartooth Highway (Shoshone National Forest).

OHV use is popular where the terrain accommodates this use. Managers estimate that this motorized use has increased at faster rates in the past than what are projected for the larger Rocky Mountain Region (Klinger personal communication 2004). This is a primary activity on the Caribou-Targhee National Forest (Kocis 2001a and b, 2003a and b, 2004a and b). In addition, the semiprimitive motorized and roaded recreation settings that serve this use have been reduced over the last decade as areas and routes have been closed to provide for wildlife security and reduce resource damage (1997 Revised Forest Plan—Targhee National Forest). Current recreation settings allowing for motorized use may not meet the estimated future use levels.

Dispersed camping has become more popular as RVs and campers have become more fully equipped and as campgrounds become full in peak seasons. The roaded and semiprimitive motorized settings offer the opportunity for this use. Because dispersed sites are not inventoried or designated, it is unknown as to the capacity of the land to handle increased uses.

Winter Recreation - Developed

Downhill skiing is estimated to increase 14% by 2010 in the Rocky Mountain Region (Cordell et al. 1999). Trends for other uses that rely upon parking areas, travel routes, etc. are noted below.

Greater Yellowstone Area. Downhill skiing in the GYA is popular with at least eight ski areas within the area (three are on private lands). It is assumed that increasing uses can be accommodated by the existing facilities.

Trailhead parking for snow machining is currently estimated to be adequate except on the Gallatin National Forest where managers are considering additional plowed parking and access through their travel planning process. In addition, snow machine use could increase on the

national forests when Yellowstone National Park managers implement new regulations for Park use. The impacts of these changes are not yet fully known.

Winter Recreation - Nonmotorized, Dispersed

Cross-country skiing use is estimated to increase 31% by 2010 in the Rocky Mountain Region (Cordell et al. 1999).

Greater Yellowstone Area. Cross country skiing is popular in the analysis area. Current settings available for this use are plentiful and could accommodate increasing use, although if use increases as projected, then the more popular areas near GYA communities could experience some crowding. This activity would be affected indirectly by the proposed action if trailhead parking becomes limited.

Winter Recreation - Motorized

Snow machine use is estimated to increase 6% by 2010 in the Rocky Mountain Region (Cordell et al. 1999). Snow machine use in the GYA has increased at faster rates than the Region due to the GYA's becoming a popular destination use area.

Greater Yellowstone Area. Snow machine use on the GYA forests may increase at a faster rate than the regional projections because the area is a destination winter recreation area and past trends indicate greater increases. Additionally, Yellowstone National Park managers are taking steps to restrict and limit snow machine use—use may shift to outlying areas around the Park. The capacity for the GYA forests to handle increased use is yet to be determined. Currently, the Gallatin National Forest acknowledges the need to provide more plowed parking, as is being evaluated in their travel planning.

3.9.4 Effects on Recreation

Effects Common to All Alternatives

Recreation uses are expected to increase in the analysis area. Uses would be affected by bear use of the area, grizzly bear/human conflicts, and information and education about recreating in bear country. Grizzly bear populations are expected to be stable or increase within the PCA and have increased their occupation and use of habitats outside the PCA.

A Wyoming resident survey reported that 44% of those surveyed said they think they would discontinue using outdoor areas where they currently recreate if those areas were occupied by grizzly bears (Duda et al. 2001). Recreation shifts are likely regardless of any alternative, and are somewhat dependent on people's awareness of bear use and comfort recreating in bear country. People may shift their uses to areas not occupied by grizzlies or rely upon uses where they have an increased sense of security such as hard-sided camping, developed campsites, day hiking on heavily used trails, or relying upon guided services. For some, recreating in bear country would be an added attraction and an allure of wild country. As people gain the knowledge and skill of recreating in bear country, uses could increase. Information and education would remain an important component under any alternative to minimize grizzly bear/human conflicts.

People would adapt as recreation sites are filled to capacity. There are varieties of ways in which use can change, and thus, the effects of an alternative are not definite. Potential outcomes with restricting developed site capacity are:

- People may shift their uses to dispersed sites, e.g. camping in undesignated areas or accessing trails or waterways in other than the designated area. This kind of shift could put increased pressure on dispersed sites and through dispersing use, could increase the potential for grizzly bear/human interactions or less security for bear habitat. People also adapt by purchasing self-contained units such as campers and RVs that enable them to stay at a broader spectrum of sites.
- People would still use an area, but shift the timing of use to off-seasons, e.g. spring or fall.
- People may shift their uses to other areas on the six national forests or elsewhere.

- People may not be able to use the area as they desired or traditionally have used it. They are displaced.
- People may perceive the areas as crowded as developed sites are fully used. The experience could change from the feeling of a remote, outdoor experience to one that is noisier and busier.
- The national reservation system may be used to manage recreation uses once demand exceeds capacity. This ensures the opportunity to use an area, but requires planning by the recreation user.
- Developed site accommodations could be created on private lands and within communities, particularly the gateway communities to the national parks.
- People may choose not to comply with restrictions and will use or camp in prohibited areas.

Implementation and enforcement efforts would be an important component (similar to information and education about bears) under any alternative.

Effects of Alternative 1 on Recreation

Spring, Summer, and Fall Recreation

Developed. Within the PCA, developed recreation use and the existing infrastructure would continue to serve recreation users within the existing capacity for some time (perhaps a decade) (Figure 64). As some activities such as camping, picnicking, fishing access ramps, or trailhead parking increase at more popular sites, the capacity of the site could not be expanded if the site is part of MS 1. If these sites are within MS 2 or 3, then the capacity could be increased to accommodate the increased use (with evaluation under NEPA and consultation with USFWS). When recreation uses reach capacity, refer to the potential shifts in recreation use as described in the effects common to all alternatives

New sites, including interpretive or observation sites, could be added (with additional NEPA evaluation and consultation with USFWS) as public interest or demand occurs. Existing permitted lodges, resorts, hotels, ranches, or recreation residences would also be able to increase their capacities (with approval of operating plans or special use permits) as public demand increases.

Nonmotorized dispersed. Within the PCA, hiking, backpacking, and horseback riding would continue much as they have and increases in use are likely to occur and be accommodated over the decade. Plan direction would not affect this use. Hunting use would continue to be a major fall activity and would not be limited or affected by Alternative 1.

Motorized. Within the PCA, motorized access routes would not be changed by this alternative. Approximately 15% of the motorized access routes on the six national forests are within the PCA with the largest amounts being available from the Gallatin (889 miles) and the Targhee (404 miles) National Forests. Motorized use is projected to increase about 9% by 2010 for the Rocky Mountain Region, however, greater increases in recent years have been observed by some managers in the GYA (Klinger personal communication 2004). As motorized uses continue to be popular, the quality of the experience may be altered as uses increase on the lands available. Crowding and sharing backcountry motorized routes with different users such as horse travel, hiking, or biking would occur with increasing uses and would negatively affect those motorized users who enjoy accessing the backcountry and viewing wildlife and scenery.

In addition, past, present, and reasonably foreseeable actions can also affect motorized use and are considered as cumulative effects. Within the last five years, approximately 400 miles of road have been decommissioned on the Targhee National Forest to comply with the road density direction in the 1997 Revised Forest Plan. The Gallatin National Forest is currently updating a travel plan that will amend their 1987 Forest Plan, and other forests are currently revising or scheduled for revisions in the near future (Figure 3). It is likely that the revised plans will further define and possibly limit motorized access to address wildlife security needs, better manage conflicting recreation uses, and protect areas from resource damages. Motorized use within the

PCA will most likely reach the capacity of the lands available for that use, and further demand will need to be accommodated outside the PCA.

Winter Recreation

Developed. The ski area on the Shoshone National Forest within the PCA would operate under its master plan and would not be limited by this alternative. Trailheads and parking areas for snow use would continue under their existing capacities or could be increased (with project level evaluation) to accommodate increasing use.

Nonmotorized dispersed. Within the PCA, cross-country skiing and snowshoeing would continue much as they have and increases in use are likely to occur over the decade. This alternative would not affect this use.

Motorized. Within the PCA, motorized use by snow machines would not be affected by this alternative.

Effects of Alternative 2 on Recreation

Spring, Summer, and Fall Recreation

Developed. Within the PCA, developed recreation use and the existing infrastructure would continue to serve recreation users within the existing capacity for some time (perhaps a decade) (Figure 64). As some activities such as camping, picnicking, fishing access ramps, or trailhead parking increase at more popular sites, this increased demand would not be accommodated by increasing capacities unless capacities are reduced in other locations and shifted within a subunit, i.e. mitigation from the Application Rules. The Application Rules offer the opportunity to concentrate uses with the tradeoff of limiting developed or dispersed sites in other areas. The Application Rules also allow for flexibility in shifting recreation uses to lessen impacts to grizzly bear habitat and bear uses. When recreation uses reach capacity, people would be displaced and would need to shift their use. Refer to the potential shifts in recreation use as described in the effects common to all alternatives. In addition, new sites, including interpretive or observation sites, would not be allowed unless mitigated through reductions elsewhere within the PCA on the forest or through an exception where an evaluation demonstrates no effect on the bear or bear habitat. See chapter 2 for a further description of exceptions.

Nineteen lodges, resorts, hotels, and dude ranches operate under Forest Service permits within the PCA. They would continue to operate under their current capacities but would not be able to increase accommodations as public demand increases, unless reductions of capacities are incurred elsewhere within the PCA on the forest, i.e. mitigation from the Application Rules. The limitation of current capacities could contribute to ensuring that these permitted services are used fully and support the businesses economically. Fees could increase as the market warrants, providing greater economic return; however, capacity increases that could also serve more people and resulting increased economic return would not be allowed.

Permitted recreation residences would continue their use, but no increases in capacity would be allowed unless mitigated through the Application Rules.

Nonmotorized dispersed. Within the PCA, hiking, backpacking, hunting, and horseback riding would continue much as they have and increases in use are likely to occur over the decade. This alternative would affect these uses indirectly as trailhead sites reach capacity and parking is limited. Improvements to trailhead facilities, for example, could occur, but the capacity or amount of parking would be limited. Outfitting and guiding would continue much as they are now.

Motorized. Within the PCA, motorized access routes would not be changed by this alternative. Approximately 15% of the motorized access routes on the six national forests are within the PCA with the largest amounts being available from the Gallatin National Forest (889 miles) and the Targhee National Forest (404 miles). Motorized use is projected to increase about 9% by 2010 for the Rocky Mountain Region, however, greater increases in recent years have been observed by some managers in the GYA (Klinger personal communication 2004). As motorized uses continue to be popular, the quality of the experience may be altered as uses increase on the lands available.

Crowding and sharing backcountry motorized routes with different uses such as horse travel, hiking, or biking would occur with increasing uses and would negatively affect those motorized users who enjoy accessing the backcountry and viewing wildlife and scenery.

In addition, past, present, and reasonably foreseeable actions can also affect motorized use and are considered as cumulative effects. Within the last five years, approximately 400 miles of road have been decommissioned on the Targhee National Forest to comply with the road density direction in the 1997 Revised Forest Plan. The Gallatin National Forest is currently updating a travel plan that will amend their 1987 Forest Plan, and other Forests are currently revising or scheduled for revisions in the near future (Figure 3). It is likely that the revised plans will further define and possibly limit motorized access to address wildlife security needs, better manage conflicting recreation uses, and protect areas from resource damages. Motorized use within the PCA will most likely reach the capacity of the lands available for that use, and further demand will need to be accommodated outside the PCA.

Winter Recreation

Developed. The ski area on the Shoshone National Forest that is within the PCA would continue to operate under its master plan. Changes to the existing capacity would require additional evaluation as required by Alternative 2, Standard 2. Winter capacity could increase if there were no conflicts with denning grizzly bears or bear emergence in the spring.

Trailheads and parking areas for snow use would continue under their existing capacities. Approximately three snow parks are within the PCA (one on the Targhee National Forest and two on the Gallatin National Forest), although other trailhead parking areas serve dual winter and summer seasonal use. Increases to accommodate increasing use would not be allowed unless through the Application Rules or an evaluation under the exception. See chapter 2 for a further description of the Application Rules and exceptions.

Nonmotorized dispersed. Within the PCA, cross-country skiing and snowshoeing would continue much as they have; increases in use are likely to occur over the decade. Alternative 2 would not affect this use except parking at trailheads may be limited to existing capacities.

Motorized. Within the PCA, snow machine use could be closed temporarily in some areas if conflicts with denning areas are identified (Guideline 1).

Effects of Alternative 3 on Recreation

Spring, Summer, and Fall Recreation

Developed. Within the PCA, developed recreation use and the existing infrastructure would continue to serve recreation users within the existing capacity for some time (perhaps a decade) (Figure 64). As some campgrounds, picnic sites, trailheads, fishing access ramps, or other developed sites become full, capacities would not be increased to accommodate this increased demand. No flexibility would be allowed for increasing capacities in some areas while reducing capacities elsewhere on the forest. If recurring conflicts with bears at a developed site were identified, the site would be closed. This would further reduce recreation opportunities within the PCA. When recreation uses reach capacities, people would be displaced and would need to shift their use. Refer to the potential shifts in recreation use as described in the effects common to all alternatives. In addition, new sites, including interpretive or observation sites, would not be allowed.

Nineteen lodges, resorts, hotels, ranches operate under a Forest Service permit within the PCA. They would continue to operate under their current capacities, but would not be able to increase accommodations as public demands increase. The limitation of current capacities could contribute to ensuring that these permitted services are used fully and support the businesses economically. Fees could increase as the market warrants, providing greater economic return; however, capacity increases that could also serve more people and resulting increase economic return would not be allowed.

Permitted recreation residences would continue their use, but no increases in capacity would be allowed.

Nonmotorized dispersed. Within the PCA, hiking, backpacking, hunting, and horseback riding would have greater opportunities because of motorized access closures. If these activities in particular locations or circumstances develop a trend of recurring grizzly bear/human conflicts, use would be restricted. In those cases, dispersed sites could be closed or uses limited. High bear use of some areas also may warrant limiting use under this alternative. Thus, traditional recreation uses may change and people would not be able to use areas as they have in the past. Public safety could be improved where bears and humans are conflicting over use in specific locations. Alternative 3 could also affect these uses indirectly as trailhead sites reach capacity and parking is limited. Outfitting and guiding could also be affected where camps may be closed due to bear use or conflicts. If uses are limited to any large extent, these changes could diminish the economic livelihoods of particular affected operations.

Motorized. Alternative 3 proposes that all motorized access routes in inventoried roadless areas be closed within the PCA and any additional motorized access routes in six BMU subunits be closed to achieve 70% secure habitat in each BMU subunit within the PCA. This would require closing nearly 500 miles of motorized routes on all six GYA national forests (except the Beaverhead National Forest). The Gallatin National Forest would be reduced the most with approximately 350 miles closed (40% change within the PCA), and the Targhee National Forest with 84 miles closed (21% change within the PCA). The motorized access routes within the PCA would be reduced to 10% of the total motorized routes available for motorized use in the six GYA forests.

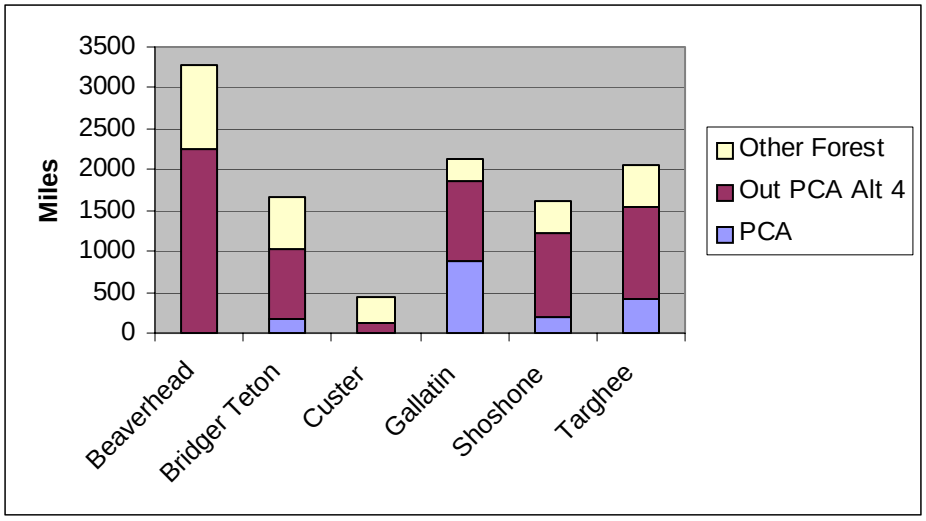
Closures would occur in areas near the communities of Gardiner and West Yellowstone in Montana, and Island Park in Idaho. The Idaho State Parks and Recreation mentioned several areas of concern for further impact to motorized uses and these included the “Madison Pitchstone, Island Park, Centennial, and Teton sub-units” (scoping comment). These areas are where some of the closures are proposed. Motorized route closures are provided in Figure 108 in Appendix A. Local recreation uses as well as visitors to those areas would be negatively impacted by those closures.

Motorized use is projected to increase about 9% by 2010 for the Rocky Mountain Region, however, greater increases in recent years have been observed by some managers in the GYA (Klinger personal communication 2004). As motorized uses continue to be popular, the quality of the experience may be altered as uses increase on the lands available. Crowding and sharing backcountry motorized routes with different uses such as horse travel, hiking, or biking would occur with increasing uses and would negatively affect those motorized users who enjoy accessing the backcountry and viewing wildlife and scenery.

In addition, past, present, and reasonably foreseeable actions can also affect motorized use and are considered as cumulative effects. Within the last five years, approximately 400 miles of road have been decommissioned on the Targhee National Forest to comply with the road density direction in the 1997 Revised Forest Plan. The Gallatin National Forest is currently updating a travel plan that will amend their 1987 Forest Plan, and other forests are currently revising or scheduled for revisions in the near future (Figure 3). It is likely that the revised plans will further define and possibly limit motorized access to address wildlife security needs, better manage conflicting recreation uses, and protect areas from resource damages.

It is likely that some of the existing motorized use within the PCA would be displaced and motorized users would need to find other opportunities outside the PCA. The PCA would not accommodate increasing demand for this use. Local and regional motorized users would be concerned with the closures, particularly having been affected by closures on the Targhee National Forest in recent years. See the social and economic section for more discussion.

Figure 70. Minimum miles of open motorized access routes (OMAR) to be closed within the PCA (Alternative 3) and outside the PCA (Alternative 4). The Other Forest category shows what would remain open.



Winter Recreation

Developed. The ski area on the Shoshone National Forest within the PCA would continue to operate under its existing master plan and any increases in capacity would not be allowed under this alternative. Trailheads and parking areas for snow use would continue under their existing capacities. Approximately three snow parks are within the PCA (one on the Targhee National Forest and two on the Gallatin National Forest) although other trailhead parking areas serve dual winter and summer seasonal use.

Nonmotorized Dispersed. Within the PCA, cross-country skiing and snowshoeing would continue much as they have and increases in use are likely to occur over the decade. Alternative 3 would not affect this use unless parking areas become full and cannot be extended.

Motorized. Within the PCA, motorized use that occurs near bear denning areas would be eliminated. While more site-specific evaluations would be needed beyond this proposal, potentially an estimated 600,000 acres of land available to snow machines (60% of total) could be closed, leaving approximately 400,000 acres of land available within the PCA. Snow machine use is one of the top four primary activities on the Bridger-Teton, Gallatin, and the Targhee National Forests. For the Targhee, at least 26% of the yearly recreation visits claim this as a primary activity. This effect would be in addition to recent changes to restrict snow machine use in Yellowstone National Park. People may be confused about the cumulative changes and traditional uses would be disrupted. Crowding and displacement of use would occur; people may continue to buy sleds and find that they do not have the areas in which to use them. Increased law enforcement would be needed to inform people of the open routes and ensure compliance with closures.

Effects of Alternative 4 on Recreation

Spring, Summer, and Fall Recreation

Developed. Within the PCA, effects are similar to Alternative 3.

Outside the PCA in Alternative 4, more than 450 additional developed recreation sites would be limited to their existing capacities (as of 2003) (Figure 64). These sites would continue to serve recreation users within the existing capacity for some time (perhaps a decade); however, with a majority of the six national forests sites limited to existing capacity, recreation uses will not as easily shift to adjacent lands when uses increase. The Beartooth Ranger District is already experiencing campgrounds that have reached capacities, and the overflow is negatively impacting dispersed sites. As the northeast entrance to Yellowstone National Park has become more

popular, existing sites have not kept pace with demand. Plans are underway for improvements to a couple of existing campgrounds that may not be allowed under this alternative.

Cumulatively, Alternative 4 does not enable as much use (as the other alternatives) to shift to areas outside the PCA (given limitations there), and still be within proximity to the GYA. As some campgrounds, picnic sites, trailheads, or other developed sites become full, increasing capacities would not be allowed in order to meet this increased demand. No flexibility would be allowed for increasing capacities in some areas while reducing capacities elsewhere on the forest. If recurring conflicts with bears at a developed site were identified, the site would be closed. This would further reduce recreation opportunities within and outside the PCA. When recreation uses reach capacity, people would be turned away from these areas. Refer to the potential shifts in recreation use as described in the effects common to all alternatives. In addition, new sites, including interpretive or observation sites, would not be allowed.

Twenty-one lodges, resorts, hotels, ranches operate under Forest Service permits outside the PCA within Alternative 4 (in addition to the 19 within the PCA). They would continue to operate under their current capacities, but would not be able to increase accommodations as public demands increase. The limitation of current capacities could contribute to ensuring that these permitted services are used fully and support the businesses economically. Fees could increase as the market warrants, providing greater economic return; however, capacity increases that could also serve more people and the resulting increased economic return would not be allowed.

Permitted recreation residences would continue their use, but no increases in capacity would be allowed.

Nonmotorized dispersed. Within the PCA and in Alternative 4 areas, hiking, backpacking, hunting, and horseback riding would have greater opportunities because of motorized access closures. If these activities develop a trend of recurring grizzly bear/human conflicts, use would be restricted. In those cases, dispersed sites could be closed or uses limited. High bear use of some areas also may warrant limiting use. Thus, traditional recreation uses may change and people would not be able to use areas as they have in the past. Public safety could be improved where bears and humans are conflicting over use in specific locations. Alternative 4 could also affect these uses indirectly as trailhead sites reach capacity and parking is limited. Outfitting and guiding could also be affected where camps may be closed due to bear use or conflicts. If uses are limited to any large extent, these changes could diminish the economic livelihoods of particular affected operations.

Motorized. Motorized routes would be closed to achieve 70% security within a BMU subunit or analysis area (outside the PCA), and routes in inventoried roadless areas would be closed to motorized use. Approximately 1,901 miles of road would be closed on the Targhee National Forest (618 miles), Beaverhead National Forest (275 miles), Gallatin National Forest (442 miles), Custer National Forest (11 miles), Bridger-Teton National Forest (320 miles), and Shoshone National Forest (235 miles).

Within the PCA, effects are similar to Alternative 3.

Outside the PCA, Alternative 4 extends security standards to a larger area beyond the PCA and would require closure of more than 1,400 additional miles of motorized routes, for a total of 1,900 miles closed within the GYA. This change would significantly affect people's current motorized recreational pursuits. The recreation setting of "semiprimitive motorized" amounts to approximately 16% of the six GYA national forests; this type of setting would be reduced further, given motorized route closures. Areas like the Teton Basin and Palisades Ranger Districts (Big Hole Mountains and Deadhorse Ridge) that receive a lot of motorized recreation from local as well as regional areas would have a reduced base to travel in the backcountry. Alternative 4 would displace this use, increasing crowding, and cause more resource impacts to areas receiving the increased uses. See Figure 115 in Appendix A for a map of the units that are within or outside the 70% security.

Motorized use is projected to increase about 9% by 2010 for the Rocky Mountain Region, however, greater increases in recent years have been observed by some managers in the GYA (Klinger personal communication 2004). As motorized uses continue to be popular, the quality of the experience may be altered as uses increase on the lands available. Crowding and sharing lands with different uses such as horse travel, hiking, or biking would occur with increasing uses and would negatively affect those who desire motorized access for the purpose of accessing the back country and viewing wildlife and scenery.

In addition, past, present, and reasonably foreseeable actions can also affect motorized use and are considered as cumulative effects. Within the last five years, approximately 500 miles of road have been decommissioned on the Targhee National Forest to comply with the road density direction in the 1997 Revised Forest Plan. The Gallatin National Forest is currently updating a travel plan that will amend their 1987 Forest Plan, and other forests are currently revising or scheduled for revisions in the near future (Figure 3). It is likely that the revised plans will further define and possibly limit motorized access to address wildlife security needs, better manage conflicting recreation uses, and protect areas from resource damages.

Existing motorized use within the GYA would be displaced and motorized users would need to find other opportunities outside the six GYA national forests. Finding other substitutes, especially for those who desire backcountry, may be difficult because beyond the perimeter of the GYA much of the land transitions to rangelands and is privately owned. The GYA could not accommodate increasing demand for this use. Local and regional motorized users would be concerned with the closures, particularly having been affected by closures on the Targhee National Forest in recent years.

It is likely that some of the existing motorized use within the PCA would be displaced and motorized users would need to find other opportunities outside the PCA. The PCA would not accommodate increasing demand for this use. See section 3.13 for discussion on the effects to the social environment.

Winter Recreation

Developed. Within the PCA, effects are similar to Alternative 3.

The ski area on the Targhee National Forest within Alternative 4 (outside the PCA) could continue to operate under existing capacity; any increases called for under the master development plan to the existing capacity or capacities of the facilities would not be allowed under this alternative. This lost opportunity would negatively affect this business, and could include economic losses if the current master development plan, which has already undergone public and agency review, is not viable.

Trailheads and parking areas for snow use would continue under their existing capacities. Approximately three snow parks are outside the PCA and within Alternative 4 (one on the Targhee National Forest and two on the Gallatin National Forest), although other trailhead parking areas serve dual winter and summer seasonal use. Increases in capacities would not be allowed.

Nonmotorized dispersed. Within the PCA, cross-country skiing and snowshoeing would continue much as they have and increases in use are likely to occur over the decade. Alternative 4 would not affect this use unless parking areas become full and could not be extended.

Motorized. Within the PCA, effects are similar to Alternative 3.

Outside the PCA within Alternative 4, motorized use that occurs in grizzly bear denning areas would be eliminated. While more site-specific evaluations would be needed beyond this proposal, potentially an estimated one million acres of land currently available to snow machines (28% of total) could be closed, leaving approximately 2.6 million acres of land available for snow machine use. Snow machine use is one of the top four primary activities on the Bridger-Teton, Gallatin, and Targhee National Forests. For the Targhee, at least 26% of the yearly recreation visits claim this as a primary activity. This effect would be in addition to recent changes to restrict

snow machine use in Yellowstone National Park. People would be concerned over the cumulative changes and traditional uses would be disrupted. Crowding and displacement of use would occur. Increased law enforcement would be needed to inform people of the open routes and ensure compliance with closures.

3.10 Transportation Management

Affected Environment

In this transportation analysis, definitions of travel routes follow those described in the Interagency Grizzly Bear Committee Taskforce Report: Grizzly Bear/Motorized Access Management (IGBC 1998). It was the IGBC's intent to establish definitions and procedures that would allow for consistency among the various land management units in describing effects of human access routes on grizzly bear habitat use. The following recommended definitions were adopted in this analysis:

Roads are all created or evolved routes that are greater than 500 feet long (minimum inventory standard for the Forest Service Route Management System), which are reasonably and prudently drivable with a conventional passenger car or pickup.

Restricted roads are legally restricted roads, typically with gates. Administrative motorized use may occur on gated roads. Permanently restricted roads are roads legally restricted with barriers, typically berms or rocks, and no administrative use is permitted.

Open roads are roads open to motorized use during any portion of the active bear season

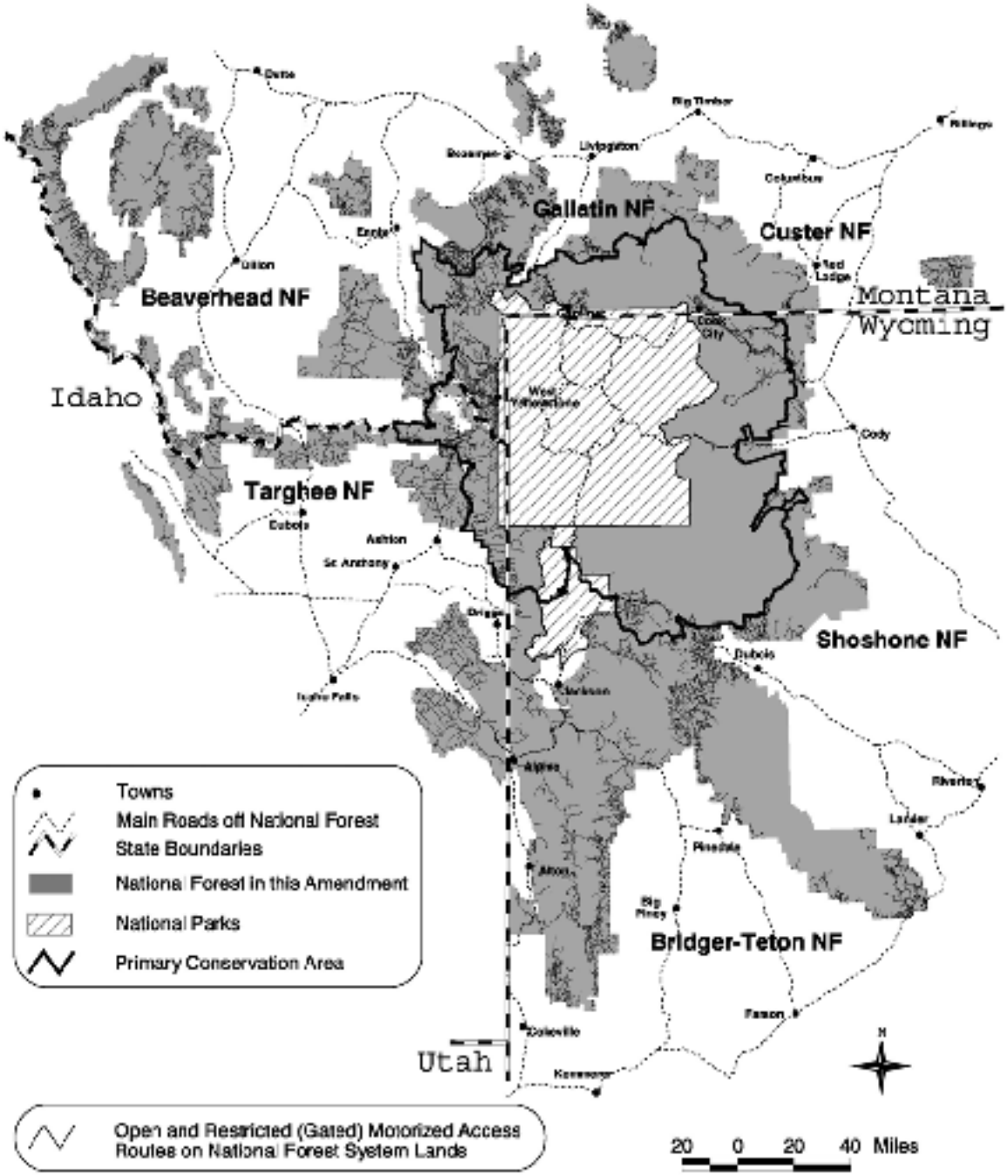
A ***decommissioned road*** is a route that is managed with the long-term intent for no motorized use, and has been treated in such a manner to no longer function as a road. An effective means to accomplish this is through one or a combination of several means including recontouring to original slope, placement of logging or forest debris, planting of shrubs or trees, or obliterating or barriering the entrance, etc.

Trails are created or evolved access routes that do not qualify as roads. They are not reasonably and prudently drivable with a conventional passenger car or pickup. Some trails are open to motorized use, such as motorcycles or all-terrain vehicles, and others are legally restricted to non-motorized use.

Figure 71. Miles of motorized access routes open to travel year round or seasonally, within the six GYA national forests.

National forest	PCA	Outside PCA in Alternative 4	Remaining forest	Total forest
Beaverhead	2	2,244	1,032	3,278
Bridger-Teton	160	874	629	1,663
Custer	11	121	311	443
Gallatin	889	975	264	2,128
Shoshone	202	1,022	394	1,618
Targhee	404	1,130	514	2,048
Total	1,668	6,366	3,144	11,178

Figure 72. Open and restricted (gated) motorized access routes on National Forest System lands.



Past Road Construction and Decommissioning

In the past 17 years, over 1,400 miles of road have been decommissioned in the GYA national forests, with less than 400 miles of road being constructed—a net reduction of over 1,000 miles of road. These tended to be roads that were in excess of what was needed for management or recreational activities, or were difficult or expensive to maintain, or both. Much of the road decommissioning has taken place inside the PCA with little accompanying road construction for a net reduction of 630 miles of road.

The trend for road decommissioning inside the PCA has slowed, with only 13 miles decommissioned from 2000 to 2002. Most roads that could be decommissioned have been decommissioned inside the PCA. Outside the PCA, opportunities still exist for road decommissioning. Road construction has been limited, especially with road construction and reconstruction being limited by the roadless policies in place from 2000 to 2003.

Figure 73. Summary of average miles of road constructed or decommissioned per year inside and outside the PCA for the last 17 years and for the last three years.

Road constructed	Inside PCA	Outside PCA	Total (average per year)	Total for time period
1986 to 2002	5.5	15.3	20.8	353.6
2000 to 2002	0.3	2.1	2.3	6.9
Road decommissioned				
1986 to 2002	42.7	40.5	83.2	1,414.4
2000 to 2002	4.4	61.1	65.5	196.5

Figure 74. Average miles of road constructed or decommissioned per year inside the PCA, by forest, for the last 17 years and for the last three years.

Road constructed	BNF	BTNF	CNF	GNF	SNF	TNF	Total
1986 to 2002	0	1.5	0	0.1	1.3	2.6	5.5
2000 to 2002	0	0	0	0.3	0	0	0.3
Road decommissioned							
1986 to 2002	0	0	0	7.4	2.1	33.1	42.7
2000 to 2002	0	0	0	2.3	0.7	1.4	4.4

Figure 75. Average miles of road constructed or decommissioned per year outside the PCA, by forest, for the last 17 years and for the last three years.

Road constructed	BNF	BTNF	CNF	GNF	SNF	TNF	Total
1986 to 2002	4.1	2.6	0	3.9	1.2	3.5	15.3
2000 to 2002	0.8	0	0	1.0	0.3	0	2.1
Road decommissioned							
1986 to 2002	4.9	11.1	0.2	6.1	4.3	14.0	40.6
2000 to 2002	14.7	10.0	0.9	6.1	0.7	28.8	61.2

Roads Analysis Requirements and Findings

Roads analysis requirements are described in Forest Service Manual 7700 Transportation System. These requirements, adopted in 1999, ensure that decisions to construct, reconstruct, or decommission roads will be better informed by using science-based roads analysis. All forests in the GYA have completed a roads analysis.

Forest Plan Direction for Transportation Management in the PCA

Beaverhead National Forest. Motorized use is prohibited year-round within the PCA because nearly all the area is in designated wilderness.

Bridger-Teton National Forest. The Bridger-Teton Forest Plan does not contain a specific forestwide or PCA access standard. Outside designated wilderness, most management prescriptions within the PCA would permit open road densities of 0.25 to 1.25 mile per square mile of standard or equivalent road. The three management prescriptions with the fewest acres within the PCA contain no road density standard.

Custer National Forest. Approximately 96% of the Custer National Forest within the PCA is designated wilderness. The non-wilderness portion of the PCA is allocated to management areas that discourage road development (6,691 acres) or emphasize mineral management (1,595 acres). The mineral management area includes a standard that states: "road densities will average about two miles per square mile during initial development. Secondary and tertiary recovery could increase this mileage to a total of five to six miles per square mile."

Gallatin National Forest. The Gallatin Forest Plan includes a forestwide standard that states: "within Bear Management Subunits (unless allowed through consultation with the USFWS) 1) do not increase open motorized access route density from the current [1995] level, 2) do not increase total motorized access route density from the current level, and 3) do not decrease the amount of core area(s) from the current level." Motorized access concerns identified in the Conservation Strategy in several BMU subunits will be addressed through the Forest's travel management plan, which is being updated.

Shoshone National Forest. The Shoshone Forest Plan has a Forestwide standard for no net increase in roads. The Plan does not contain specific direction for secure habitat or motorized access within BMU subunits.

Targhee National Forest. The Targhee Forest Plan contains a forestwide goal to increase grizzly bear security. Forestwide standards for grizzly bear habitat require that the Forest "achieve the road density standards in the Bear Management Units (BMUs) within three years of the implementation of the Record of Decision in coordination with USFWS and State Wildlife agencies." Management Area prescriptions and forestwide direction establish standards for open road and open motorized trail access density, and total motorized access route density within the PCA. The Forest Plan identifies numerous management prescriptions within the PCA that meet the definition of core areas from the 1994 IGBC Access Task Force. The Conservation Strategy recognizes that the Targhee Forest Plan is consistent with the secure habitat standards. The Conservation Strategy states: "When fully adopted and implemented the Standards and Guidelines of the 1997 revised Targhee Forest Plan met the intent of maintaining secure habitat levels."

Effects on Transportation Management

The proposed action and alternatives represent programmatic decisions and would have no direct effects on the transportation system. Any direct effects would occur later at the project level when site-specific decisions are made about road and trail use restrictions. Most of the effects identified in this analysis would be indirect effects in that they would occur later in time because of this programmatic decision. Changes in transportation management affect recreation opportunities, access for timber harvesting and minerals extraction, and the social environment. These effects are discussed in their respective sections in chapter 3.

The indirect effects identified in this section are the projected impacts of the project-level implementation of the proposed standards. The following section discloses the estimated mileage of road status changes expected with implementation of each alternative.

Figure 76. Miles of road decommissioned to meet Standard 1.

Miles of road decommissioned	BNF	BTNF	CNF	GNF	SNF	TNF	Total
Alternative 1	0	0	0	0	0	0	0
Alternative 2	0	0	0	0	0	0	0
Alternative 3	0	21	1	356	25	84	487
Alternative 4	275	320	11	442	235	618	1,901

Standard 1 varies in Alternatives 2, 3, and 4. Standard 1 in Alternative 2 would require that secure habitat within each BMU subunit would be maintained at or above levels that existed in 1998. Temporary and permanent changes would be allowed under specific conditions identified below. No road closures would occur in Alternative 2.

In Alternatives 3 and 4, Standard 1 would require secure habitat within each BMU subunit to be maintained at or above levels that existed in 1998 or 2003, with no permanent or temporary changes allowed. Existing motorized routes in inventoried roadless areas would be removed within five years and secure habitat below 70% would be increased to 70% within five years through removal of existing motorized routes. Alternatives 3 and 4 would require road decommissioning to meet this standard, with more miles of road decommissioned in Alternative 4 because of the larger area to which Standard 1 applies.

Effects of Alternative 1 on Transportation Management

Alternative 1 would not require decommissioning of any roads. Because there is no standard requiring maintenance of secure habitat, some road construction could take place that would reduce secure habitat below 1998 levels. Consultation with USFWS would be required for all access decisions.

Effects of Alternative 2 on Transportation Management

Alternative 2 would not change access, current use, traffic patterns, and road standards when compared with Alternative 1. The secure habitat standard requires that secure habitat be maintained at 1998 levels, which would allow access and use to continue at those levels. Proposals to increase permanently the transportation system would not occur unless mitigation is met, as described in the Application Rules.

Effects of Alternative 3 on Transportation Management

Alternative 3 would require nearly 500 miles of road decommissioning in order to meet a minimum of 70% secure habitat for all BMU subunits inside the PCA and removing existing routes in inventoried roadless areas. Decommissioning can be accomplished through one or a combination of several means including recontouring to original slope, placement of logging or forest debris, planting of shrubs or trees, or obliterating or barriering the entrance.

For the purposes of this analysis, it is assumed roads would initially be restricted by barriers, with recontouring and obliterating to occur later. Most road decommissioning would occur on the Gallatin National Forest, with some additional closures on the Targhee, Bridger-Teton, and Shoshone National Forests.

On the Targhee National Forest, the majority of the road decommissioning would occur in two BMU subunits in the Henrys Lake area. Access and use would be changed in that area, which would limit recreational opportunities and access for vegetation treatment. Even if these roads were decommissioned in the Henrys Lake area, some roads would remain open, including county

roads, a U.S. highway, a road to a Federal Aviation Administration site on Sawtell Peak, a road to an authorized mining claim, and roads providing access to private lands. Not enough roads can be legally decommissioned to achieve 70% secure habitat.

Effects of Alternative 4 on Transportation Management

Alternative 4 would require over 1,900 miles of road decommissioning in order to meet a minimum of 70% secure habitat for all BMU subunits and also meet decommissioning of existing routes in inventoried roadless areas. This would occur within Alternative 4 boundaries. It is assumed roads would initially be restricted by barriers, with recontouring and obliterating to occur at a later date. All national forests would require road decommissioning of over 200 miles in each forest, except for the Custer National Forest, which would require only 11 miles of road decommissioning. The 1,900 miles of road decommissioning would include 500 miles of road decommissioning in the PCA, as described in Alternative 3, and another 1,500 miles of road decommissioning outside the PCA within Alternative 4 boundaries.

Decommissioning of 1,900 miles of road would change access and current and projected use for nearly all the national forests in the GYA. Roads in inventoried roadless areas would be decommissioned first. Effects of decommissioning are further discussed in the timber, recreation, social, and minerals sections.

3.11 Landownership

Affected Environment

Landownership for the national forests in the GYA varies inside National Forest System lands boundaries, and includes parcels of lands owned by private entities, states, and other federal agencies.

In the GYA, National Forest System lands are generally well connected, providing a good opportunity to maintain habitat connectivity. The national forests are adjacent to Yellowstone National Park, which is continuous public land not subject to development or exchange, adding to the ability to maintain habitat connectivity. Private lands are generally not managed for grizzly bear habitat. Recent land exchanges on the Gallatin National Forest have improved land patterns for management of grizzly bear habitat (these exchanges occurred on Gallatin 3 and Hilgard 1 subunits). Further improvements in secure habitat will likely result through current travel management planning efforts on the Gallatin National Forest.

For the Forest Service, landownership changes come about through land exchanges, direct purchases, and conservation easements. The federal real estate program is active throughout the six GYA national forests. Its purpose is to manage and conserve the public's real property for the purposes for which it was reserved from the public domain. One of its primary goals is to consolidate landownership patterns to help manage federal lands more effectively and efficiently.

Effects of All Alternatives on Landownership

There are no objectives, standards, or guidelines in any alternative related to the lands program, and no effects are expected. Landownership adjustments would continue, but may not be a priority because of limited funding. In some areas, grizzly bear habitat may be exchanged, and in others, it may be acquired. Private lands within the PCA may be a priority for acquisition, exchange, or purchase of a conservation easement.

An active real estate program could enhance and protect grizzly bear habitat connectivity by retaining public lands and acquiring non-federal lands. Some grizzly bear habitat could be enhanced and protected by acquiring conservation easements.

3.12 Minerals and Oil and Gas

Introduction

A wide variety of mineral and energy resources occur on the six GYA national forests. The authority of the Forest Service to manage mineral activities depends on the commodity and the legal status of the lands on which they occur.

Surface-disturbing activities associated with mineral and energy resources typically include:

Exploration is physically searching for minerals. It could include building roads, drill pads, underground workings, trenching, and reclamation. The length of time depends on the complexity and size of the project but usually takes several weeks to one year.

Development is the work required to prepare a mineral deposit for production. It may include driving underground workings, stripping the overburden from deposits that will be open pit, building waste dumps, and constructing milling and transporting facilities. Oil and gas development includes drilling a series of production wells and building access roads. Mineral development projects can last several years.

Production is removing a mineral from the ground and making it available for final processing and consumption. The production phase varies with the size and quality of the deposit, but can last a short time or a decade or more.

Reclamation is the final phase of mineral operations on federal lands. Reclamation returns sites to natural landforms and vegetation. It can take less than a year to several years depending on the complexity of the site.

Land status affects the legal authorities that apply to management and disposal of minerals. Land is in one of the following status categories:

- Lands reserved from the public domain (the majority of lands within the GYA forests are in this category of public domain lands)
- Acquired lands
- Lands with federally owned surface and outstanding or reserved mineral rights
- Privately owned surface with federally owned minerals

The combination of land status and the type of mineral resource defines the agency's management authority.

The Bureau of Land Management and Forest Service classify mineral resources into three categories: locatable minerals, leasable minerals, and mineral materials.

Locatable minerals. Locatable minerals such as gold, silver, copper, and other metals are subject to the 1872 General Mining Law, as amended. The Mining Law grants a statutory right to explore for and develop these minerals, unless the land has been formally withdrawn from mineral entry.

The Forest Service manages impacts to other resources related to the exploration, development, and production of locatable minerals on its land via regulations at 36 CFR 228, Subpart A. Forest Service authority is directed at using the surface of National Forest System lands (30 USC 21-54). The Forest Service may not deny proposed operations or make them impossible by imposing unreasonably restrictive management requirements or conditions. However, the Forest Service may require mitigation and requirements to minimize adverse effects.

Forest Service regulations, 36 CFR, 228 Subpart A 228.8, state that mining operations should minimize adverse environmental impacts to surface resources. The regulations include "taking all practicable measures" to maintain and protect wildlife habitat, and to reclaim surface disturbances, including rehabilitating wildlife habitat.

Leasable hardrock minerals. Hardrock minerals, such as gold or silver, which are locatable on public domain lands, are leasable on lands acquired by the Forest Service or BLM (1917 Weeks Law). On lands where the agencies acquired mineral as well as surface rights, the BLM issues the prospecting permits and leases for hardrock minerals. On national forest acquired lands, the BLM

must first obtain the consent of the Forest Service. On lands with private surface and federal minerals, the BLM can make decisions about the leasable minerals and does not need the consent of the Forest Service, though they often seek recommendations. There are very few leasable hardrock mineral operations on the GYA forests.

Leasable minerals. Leasable minerals are federally owned fossil fuels (oil, gas, coal, oil shale, etc.), geothermal resources, sulfur, phosphates, and uranium that are subject to exploration and development under leases, permits, or licenses issued by the Secretary of the Interior, with Forest Service input on National Forest System lands. The BLM is the agency responsible for issuing the leases. The 1920 Mineral Leasing Act, as amended, together with the 1989 Federal Onshore Oil and Gas Leasing Reform Act, provide the authority and management direction for federal leasable minerals on federal lands. In 1970, the Geothermal Steam Act added steam to the list of minerals that could be leased on National Forest System lands.

The most common leases in the six national forests are oil and gas leases, which are issued for 10-year terms. Oil and gas leasing and development decisions are made in three stages:

1. The BLM receives a nomination to lease lands for a specific mineral. The BLM forwards the request to the Forest Service.
2. The Forest Service makes a lease decision about which lands will be open for leasing, based on an analysis of the potential impacts of exploration and development. This decision identifies which areas will be open to development subject to standard lease terms, which areas will be open to development subject to constraints (lease stipulations), and which will be closed to leasing. The Forest Service informs the BLM of the results. The BLM is responsible for conducting the lease sale and issuing the lease.
3. After a lease is issued, the lessee has legal rights to explore and develop, subject to the terms of the lease and other applicable state and federal laws. The lessee must obtain approval from the BLM and the Forest Service for ground disturbing activities on the lease. This is when site-specific resource protection measures developed through NEPA are applied as conditions of approval for the surface use plan of operations. Such measures must be within the scope of the rights granted under the terms of the lease.

Regulations at 36 CFR 228, Subpart E, require oil and gas operators to comply with the ESA during operations. The regulations also require that roads be built and maintained to minimize or eliminate damage to other resources, including wildlife. Unless otherwise authorized, roads that are no longer needed are to be closed, bridges and culverts removed, and the roads surface shaped to a natural contour and stabilized. Operators are required to post bonds to ensure reclamation occurs. The National Energy Policy, issued May 18, 2002, says, “Agencies shall expedite their review of permits or take other actions as necessary to accelerate the completion of such projects, while maintaining safety, public health, and environmental protection.”

Similarly to oil and gas, operators of coal, geothermal and solid non-energy leasable materials must obtain a lease prior to any ground disturbance. The BLM issues leases for coal, geothermal, and solid non-energy leasables, taking into account the Forest Service’s consent authority and/or recommendations. Operators proposing to mine leasable minerals are obliged to post reclamation bonds to make sure reclamation takes place. Most land and resource management plans include standards and guidelines for reclaiming mining and other leasable operations.

Mineral materials/salable minerals. Mineral materials or salable minerals are common materials such as stone, sand, gravel, clay, cinders, and decorative rock, whose disposal is authorized under the Materials Act of 1947. This Act provides for disposing of mineral materials on public lands through bidding, negotiated contracts, or free use.

The Forest Service may sell these mineral materials or issue free-use permits to state and county governments for public projects such as highway construction and maintenance. All contracts contain requirements for reclaiming sites to pre-mining conditions as much as possible. In

addition, the Forest Service uses mineral materials from its lands for building and surfacing forest system roads.

The Forest Service has full authority to make decisions about disposing of mineral materials on lands of all status categories where the surface is federally owned.

3.12.1 Locatable Minerals

Affected Environment

The six GYA national forests have a long history of locatable hardrock minerals activity. Mining activities in and around the Beaverhead and Gallatin National Forests were instrumental in the settlement of early Montana. Geology is favorable for the occurrence of mineral deposits within the six national forests for a wide variety of minerals such as gold, silver, copper, and other metals including platinum and palladium.

Mining has waned since the late 1800s; only a fraction of the historic sites operates today. The majority of the locatable mineral activity is on the Beaverhead and Gallatin National Forests. Current activity includes several existing operations and some new exploration and production sites. One important area of exploration and mine development is the Stillwater Complex on the Gallatin and Custer National Forests. Two mines, currently in production on this complex, are the only sources of domestically produced platinum and palladium (Figure 77).

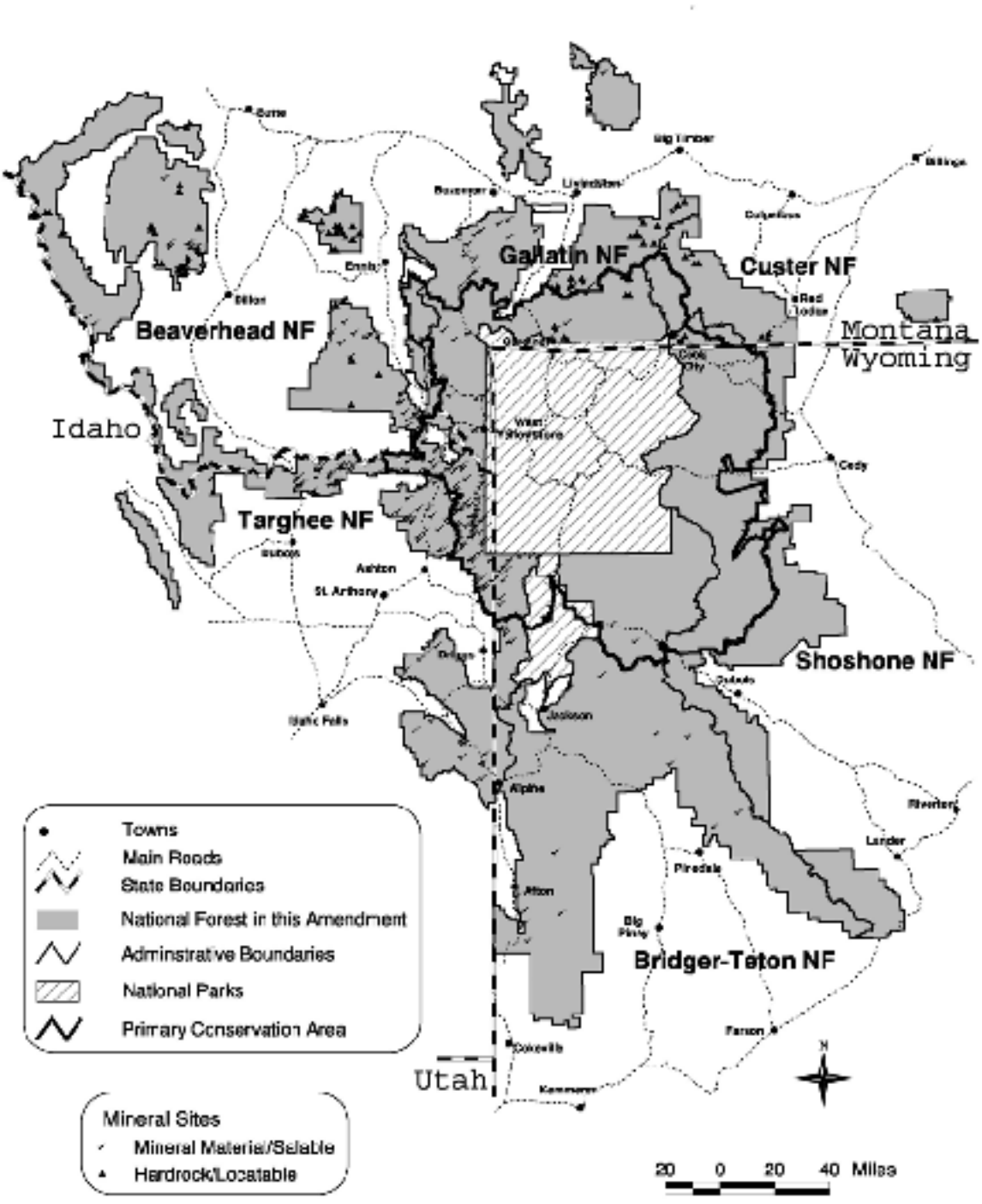
Figure 77. Hardrock/locatable minerals sites with plans of operation[1].

National forest	Inside the PCA	Alternative 4 lands	Forest remainder	Total
Beaverhead	0	31	21	52
Bridger-Teton	0	0	0	0
Custer	3	6	5	14
Gallatin	7	16	2	25
Shoshone	0	0	0	0
Targhee	1	2	0	3
Total	11	55	28	94

[1]Data from the Shoshone, Bridger-Teton and Targhee National Forests. For the Beaverhead, Custer, and Gallatin National Forests, the Region 1 Mineral Database.

Future locatable mineral activity is likely to occur in or near areas of known discoveries and where the geology is favorable for economically viable mines. Within the PCA, significant future exploration or development will most likely occur in the areas closest to the Stillwater Complex. In other PCA areas, the potential for future mineral discoveries and development is considered probable but low due to the costs associated with operating in the area.

Figure 78. Hardrock and mineral materials sites on the six GYA national forests.



Effects on Locatable Minerals

Effects of Alternative 1 on Locatable Minerals

Management direction about locatable minerals would not be changed under the no action alternative, so there would be no effect. Proposals would be permitted according to the requirements of the 1872 General Mining Law. Existing requirements for wildlife protection are provided in 36 CFR 228, Subpart A, which requires operators to comply with the ESA. Protection or mitigation measures for species are identified in project analysis before decisions are made about disturbance in a case-by-case manner.

New discoveries usually take place in historic mining areas, but can occur where more recent interpretations of the geology lead to the discovery and production of economically valuable deposits. New operations have more stringent environmental protection measures than their historical predecessors. New access requires project-specific analysis and approval of designated routes.

Effects of Alternatives 2, 3, and 4 on Locatable Minerals

Alternatives 2, 3, and 4 add management direction outlining certain mitigations in Standards 1 and 2 per the Application Rules. Alternative 4 applies the management direction to a larger area. The direction in all three action alternatives requires minimizing effects on grizzly bear habitat during hardrock mineral exploration and development on hardrock operations large enough to require a plan of operation. The action alternatives do not preclude developing locatable minerals because the Forest Service does not have the authority to deny the development of hardrock mineral deposits. The alternatives do not affect small activities permitted under a Notice of Intention to Operate (NOI) where no road is needed and minimal surface disturbance occurs. These small operations are not considered developed sites.

To the fullest extent of its regulatory authority, the Forest Service would minimize effects on grizzly bear habitat from activities based in statutory rights, such as the 1872 General Mining Law. Mitigation for Mining Law site impacts would follow standard developed site mitigation to offset any increases in human capacity, habitat loss, and increased access to surrounding habitats. Developed site mitigation should be equivalent to the type and extent of impact from the proposed operation. Impacts relating to Mining Law activities would be mitigated per the Application Rules for changes in secure habitat and developed sites. Mitigation may include decommissioning roads, closing out another developed site, combining or eliminating some dispersed uses, or reducing the capacity of a developed site. In cases where the mitigated effects would result in exceeding the 1998 baseline that cannot be compensated for within that subunit, compensation, in the PCA, to levels at or below the 1998 baseline would be accomplished in adjacent subunits where possible, or the closest subunit if this is not possible, or in areas outside the PCA adjacent to the subunit impacted.

While the above standards and Application Rules do not preclude development, they do require grizzly bear needs be considered and addressed in the prescribed manner. This would require additional mitigation and conditions to minimize effects on grizzly bears, and is likely to increase the costs of operation.

3.12.2 Leasable Minerals

Affected Environment

Coal, Geothermal, and other Leasable Mineral Potential

Coal potential exists on most of the GYA forests. Its quality and quantity have not resulted in much public demand for leases or development. There have been coal mines on the Beaverhead and Targhee National Forests, and adjacent to the Gallatin and Custer National Forests over the last century. There are currently no active coal operations or requests for lease on any of the forests.

Geothermal is similar to coal—there is potential but little interest in leasing. There is a large Known Geothermal Resource Area (KGRA) established by the U.S. Geological Survey on the Targhee National Forest. Portions of this area are within the PCA. This area has been withdrawn from geothermal leasing due to concerns about the geothermal features and resources of Yellowstone National Park.

Three phosphate leases on the Targhee National Forest are located in and near the PCA. There has been some exploration (trenching) and minor production work done on the leases. There are no current plans for development though the right for development exists.

There have been infrequent requests to lease other hardrock minerals on acquired lands or for other leasable minerals on the GYA forests. There are no active hardrock mineral leases on any of the GYA forests.

Because of the low interest in leasable minerals other than oil and gas and, for some minerals, low potential, future proposals for development sites are expected to be few and far between. Therefore, this analysis does not provide a more detailed evaluation of the effects on leasable minerals other than oil and gas.

Oil and Gas Occurrence Potential

Occurrence potential is a predictor of whether the parameters that govern the potential accumulation of oil and gas are present in a certain area. Those parameters include 1) is there potential source rock, 2) is there a thermal history suitable for the formation of oil or gas, 3) is there the potential for porous and permeable reservoir rock, 4) are there geologic structures or stratigraphy present that would trap accumulations of petroleum, and 5) are there geologic seals for the traps. The six national forests include a spectrum of oil and gas potential occurrence ranging from high on the south end of the Bridger-Teton National Forest where large volume gas wells exist, to low potential on the Targhee National Forest. The oil and gas occurrence potential varies across the area due to very distinct geologic histories (Interagency Reference Guide).

The following information about oil and gas potential for occurrence in the GYA national forests is based on Reasonable Foreseeable Development (RFD) scenarios prepared for the forests' oil and gas leasing decisions and assessments by the U.S. Geological Survey. It is also based on assessments of the oil and gas potential in southern and southwestern Montana by the BLM, Montana State Office.

Beaverhead and Targhee National Forests

To the west of Yellowstone National Park, the Beaverhead and Targhee National Forests have primarily moderate to very low occurrence potential. The area contains the leading edge of the Northern Disturbed (overthrust) Belt. The overthrust belt has been the source of world class petroleum production in Canada and Wyoming. The areas on the Beaverhead and Targhee National Forests have been lightly explored.

The Oil and Gas Potential Report in the Final Environmental Impact Statement for the Targhee National Forest's Oil and Gas Leasing Analysis (USDA Forest Service and USDI BLM 2000) found that the area north of Alpine, Wyoming and within the Palisades Ranger District east of the Snake River has high oil and gas potential because the area possesses geologic characteristics similar to producing areas in southwestern Wyoming and northern Utah. Wells drilled on the Targhee National Forest in this area have found shows of oil, possible reservoir rock, and possible trapping structures. No productive wells have been discovered. Flanking areas to the northwest and south of the Palisades are rated as having moderate potential. A few wells have been drilled. There is coal under the area northwest of Palisades and west of Driggs, Idaho, and there may be some potential for gas from the coal. The rest of the Targhee National Forest ranks as low or very low due to formations from igneous intrusions or unfavorable thermal history, which may have degraded potential oil and gas.

The RFD for the Beaverhead National Forest Oil and Gas Leasing FEIS (USDA Forest Service and USDI BLM 1995) documented that at least one non-productive well drilled in the southern

portion of the Forest to explore the overthrust belt near the Tendoy Mountains had shows of oil and gas and found prospective thicknesses of sedimentary formations. This area has been assigned a moderate occurrence potential. The central portion of the Gravelly/Snowcrest Range was assigned a moderate potential because of the thickness of the sedimentary rocks. Only a couple of wells have been drilled in this area. Possible source rocks and possible reservoir rocks were found in the wells. The majority of the Forest ranks low or very low occurrence potential because of igneous intrusions or lack of sedimentary rock sequences greater than 2,500 feet.

Bridger-Teton National Forest

The majority of the Bridger-Teton National Forest is rated as high potential for occurrence. The Bridger-Teton includes portions of the Wyoming Thrust Belt, the northern portion of the Hoback Basin, and the Mt. Leidy Highlands area. These areas contain thousands of feet thicknesses of sedimentary formations with the potential to contain petroleum resources.

The southern and central portions of the Forest are located on the Thrust Belt. Gas production has been discovered on the southern portion of the Forest in the Riley Ridge Field. The complex geology makes exploration difficult but provides the potential for many different types of traps and accumulations. Approximately 150 wells have been drilled on the Forest. The majority of wells have explored the Thrust Belt. Only two wells have been commercial discoveries and resulted in fields.

The potential in the northern and central portion of the Bridger-Teton has had fewer wells drilled. There are some areas of high potential and there have been some non-commercial discoveries. Other areas, while having promise for oil or gas accumulations, have been lightly explored and not enough is known to rank the area as high potential.

Custer National Forest

The occurrence potential on the Beartooth Ranger District runs the gamut from very low in the southwest to high along the eastern edge. The western and southwestern portions of the Beartooth Ranger District are highly mineralized Precambrian igneous and metamorphic rocks, resulting in very low potential for oil and gas occurrence.

The Forest’s eastern edge is an overthrust area with limestone, sandstone, and shale sedimentary units. Very few wells have been drilled on the Forest to explore the overthrust potential, but there have been producing wells drilled adjacent to the Forest at the Dean Dome Field. Areas near production or near off-Forest wells that had shows have been assigned a high potential for oil and gas occurrence. The majority of the Beartooth Ranger District outside of wilderness has been assigned moderate potential based on the sedimentary layers, the overthrust layers, and the offsetting production (USDA Forest Service and USDI BLM 1993).

Gallatin National Forest

To the northwest and north of Yellowstone National Park, the Gallatin National Forest has low to very low potential. Rocks of volcanic origin, tectonic activity especially around Hebgen Lake, layers of sedimentary rocks less than 3,000 feet thick and sedimentary rocks that have been metamorphosed, all contribute to the low and very low rankings.

The area has been very lightly explored. Less than 10 wells have been drilled near the Gallatin National Forest. Those wells have primarily explored the areas of valley fill that have the potential for thicker layers of sedimentary rock. Two wells were drilled in the Paradise Valley, neither encountering shows of oil or gas.

More sedimentary sequences occur around the Crazy Mountains and the eastern portion of the Bridger Mountains. Two wells in this area, but off-Forest, did encounter shows of gas; therefore, portions of the Bridger and Crazy Mountains are classified as moderate occurrence potential. There is also a potential for coal bed natural gas in the coal seams that occur in the Bozeman Pass area (Long 1990).

Shoshone National Forest

To the east of Yellowstone National Park, the Shoshone National Forest borders on some of the major producing basins in Wyoming. The majority (55%) of the Forest outside of legally unavailable lands such as wilderness is classified as high or moderate potential for the occurrence of oil and gas. The U.S. Geological Survey identified three known oil and gas plays that extended under the Shoshone National Forest: the Basin-Margin Anticlinal Play, the Basin-Margin Subthrust Play, and the Sub-Absaroka Play (U.S. Geological Survey 1996).

The Basin-Margin Subthrust Play is a continuation of the overthrust potential described for the southeast corner of the Beartooth Ranger District on the Custer National Forest. Very few wells have been drilled, so the extent of this play is inferred. No production has been discovered on the Forest in this play.

A major portion of the northern half of the Shoshone National Forest is over the Sub-Absaroka Play. Very few wells have been drilled to test this play because the potential targets in the play are covered by thick layers of volcanic rock. A few discoveries have been made off-Forest.

The major play of interest is the Basin-Margin Anticlinal Play. This play was formed along the margins of the Big Horn and Wind River Basins and includes the Big Horn Basin. Over 50 fields that have the ability to produce over a million barrels of oil have been discovered in this play area. This play includes most of the Big Horn Basin. The western portion of this play is under the Shoshone National Forest.

Twenty oil and gas fields have been discovered within 10 miles of the Forest boundary on the northern portion of the Shoshone. Twenty-eight wells have been drilled in the northern Shoshone between 1956 and 1986. One field (Line Creek) was discovered on the Forest but has since been abandoned. Eleven wells have been drilled on the southern portion of the Shoshone National Forest. None of these wells has discovered producing amounts of oil or gas (Ogaard 1992).

The northwest portion of the Forest has low to very low potential where the Forest sits on the volcanic rocks associated with the Absaroka Plateau and Beartooth Mountains. The very southeast portion of the Forest has low potential where the Precambrian igneous formations exist.

Oil and Gas Development Potential of the GYA National Forests

The potential for occurrence is the first indicator used to predict potential activity. The second is the potential for development. The prediction for the development potential takes into account factors such as legal status (wilderness withdrawals), economic (price predictions for oil and gas), proximity to markets (pipelines), cost of development, and technology needed to develop possible oil and gas resources. The unconstrained development potential does not take into account management decisions affecting access to federal minerals. The unconstrained development potential is predicted using the assumption that all legally available lands are open for development with standard lease terms. It is a baseline against which various management proposals are weighed.

The potential for occurrence and the potential for development may be different. For example, an area may have a high potential for occurrence but a low potential for development because the prospective oil and gas reservoirs have complex geology and are deep. The development potential could be low because the wells would be expensive and technologically complex to drill and produce.

The six GYA national forests contain oil and gas development occurrences ranging from high on the south end of the Bridger-Teton National Forest to very low on portions of the other forests. The various RFDs predicted that some drilling would be likely under the unconstrained scenario.

Figure 79. Number of predicted oil and gas wells for the six GYA national forests

	Beaverhead	Bridger-Teton	Custer	Gallatin	Shoshone	Targhee
Unconstrained number of RFD wells	14	50	4	Not analyzed	27	15

The level of wells predicted in the unconstrained RFDs has not been realized. The unconstrained well predictions were primarily made during the late 1980s and early 1990s. Since then, some forest leasing decisions made conservative leasing decisions that would preclude a portion of the predicted wells. Also, the price of oil fell during the 1990s to a level that much of the drilling in the United States was curtailed (USDOE/EIA 2004). The level of controversy that accompanies wells proposed in the GYA may have also reduced the number of well permits submitted.

Existing Leasing Decisions and Leases

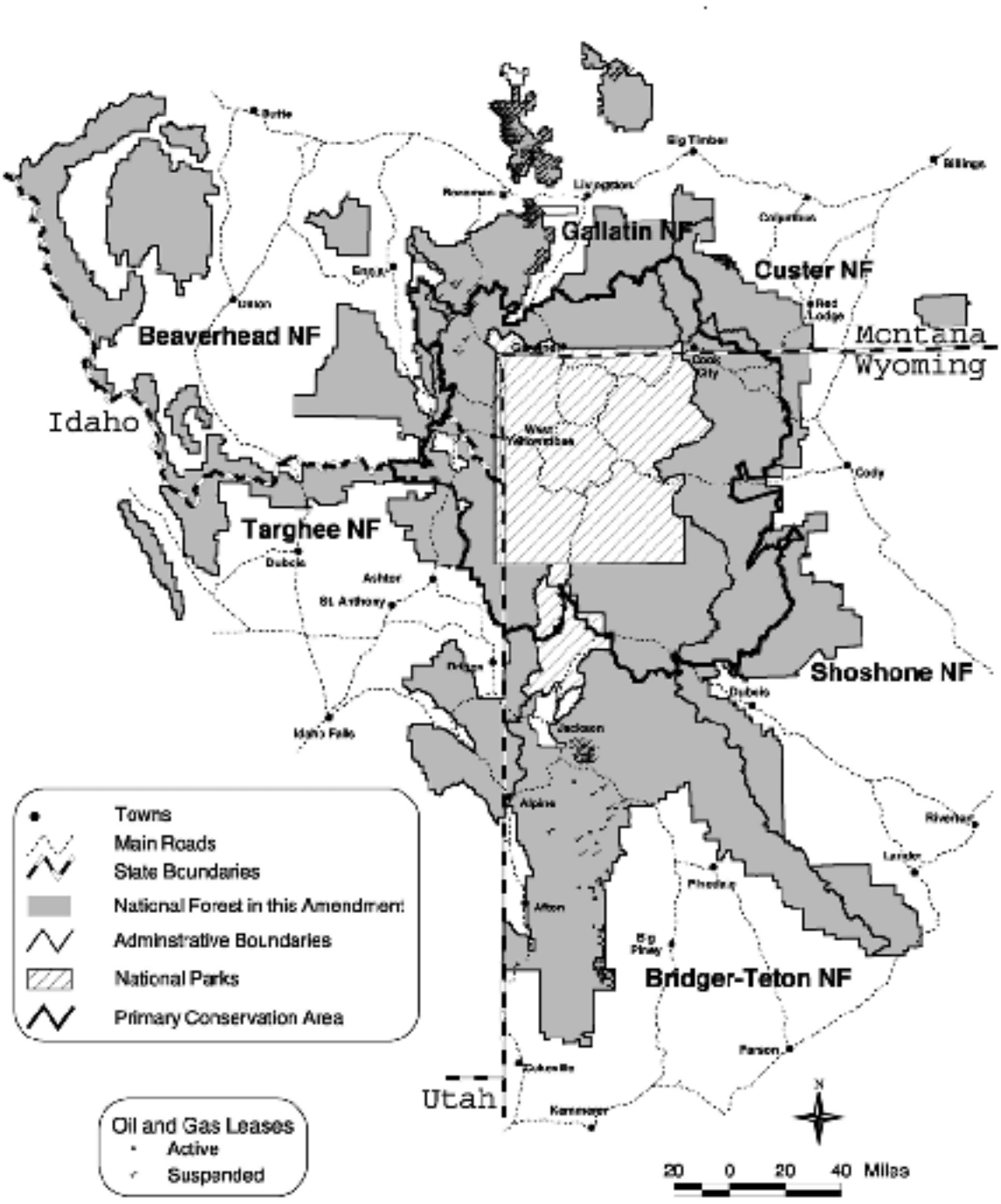
Much of the land in the PCA (62%) is legally not available for oil and gas leasing, i.e. wilderness areas. Four forests in the analysis area have leasing decisions that decided additional lands (13% of the PCA) are not available or not authorized for lease. The Gallatin and portions of the Bridger-Teton and Custer National Forests do not have current leasing decisions and cannot issue leases until the appropriate NEPA analysis is completed (13% of the PCA). Most of the PCA lands on the Custer and Targhee National Forests are in wilderness, which has no leasing. The Custer National Forest made a decision not to offer the area around Cooke City for lease. The PCA land on the Targhee National Forest outside of wilderness has a decision not to lease. Four percent of the PCA has private lands or minerals or falls into miscellaneous categories (Figure 81).

Several forests have made lease-availability decisions for oil and gas. There is limited availability for oil and gas leasing with occupancy in the PCA on the Bridger-Teton and Shoshone National Forests (3%). Some PCA lands are authorized for lease but surface occupancy is not allowed (5%) on the Beaverhead, Bridger-Teton, Custer, and Shoshone National Forests. The Gallatin National Forest has suspended leases that cannot be developed until the Forest completes an environmental impact statement.

Currently, there are about eight suspended leases inside the PCA for oil and gas on the Gallatin National Forest. There are no leases in the PCA for the other national forests (Figure 80).

All leases specify that before any disturbance may occur, surveys or studies may be needed to determine the extent of impacts on resources and whether mitigation would be required. If threatened or endangered species are observed during operations, the lease requires operations that would result in destruction of the species to stop.

Figure 80. Oil and gas leases on the six GYA national forests.



Effects on Oil and Gas Leasing and Development

Effects Common to All Alternatives

The Forest Service does not have leasing authority on two types of land. First, the Forest Service cannot make leasing decisions on lands legally withdrawn from leasing such as wilderness and some wildness study areas. Second, the Forest Service cannot preclude leasing and subsequent development on minerals not owned by the United States. These areas will not change between the various alternatives.

All alternatives would honor existing leases in the PCA. If Applications for Permit to Drill (APDs) were proposed on these leases, the Forest Service would strive to meet Standards 1 and 2 to the extent consistent with the rights granted in the lease.

Effects of Alternative 1 on Oil and Gas Leasing and Development

Management direction about leasable minerals would not be changed under the no action alternative, so there would be no added effects. Requirements for wildlife protection are provided in 36 CFR 228.108(f), which requires operators to comply with the ESA. Impacts to and protection or mitigation measures for species are identified in project analysis before decisions are made about disturbances. In addition to protections provided in the standard lease terms, leasing decisions on several forests have required extra stipulations that would minimize the effects on grizzly bears. Some of the stipulations directly address the bear or its habitat. Other stipulations, while addressing other resources, result in constraints on the oil industry that reduce the effects on the bear.

Under Alternative 1, oil and gas development could occur on limited Forest Service managed lands in the PCA. A portion of the Shoshone National Forest is available for leasing and development. Leasing decisions have yet to be made for the Gallatin and portions of the Bridger-Teton and Custer National Forests for lands in the PCA. The Beaverhead, Custer, and Targhee National Forests' oil and gas leasing decisions chose not available, no lease, or no surface occupancy for lands in the PCA. An array of oil and gas developments is possible on areas outside the PCA. While there are lands open for leasing, the trend over the last 10 years indicates that several wells may be proposed and drilled over the next 10 years in and out of the PCA.

Figure 81. Areas available for oil and gas surface occupancy on the six GYA national forests.

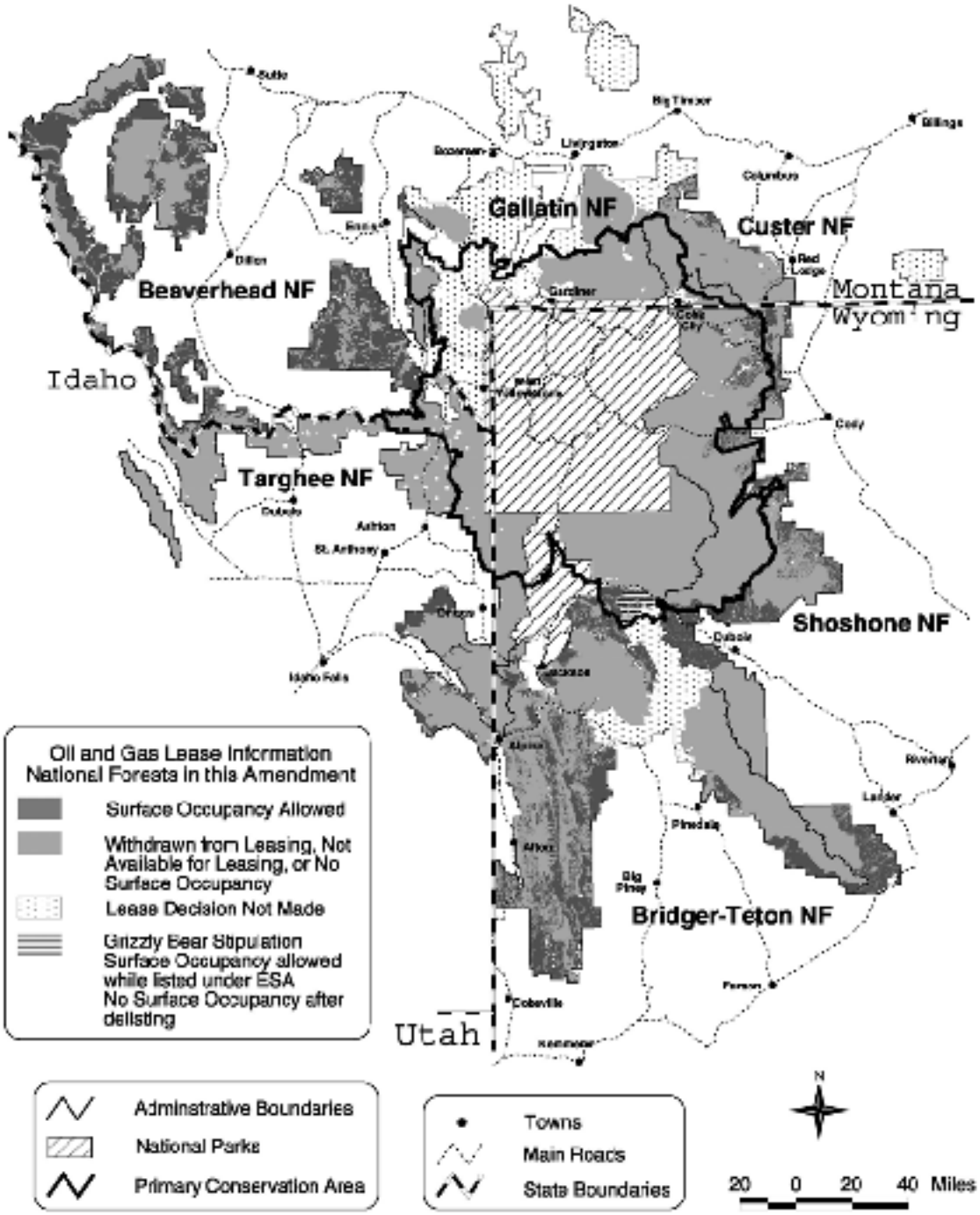


Figure 82. Current leasing status (Alternative 1) for lands not open to oil and gas leasing, lands open with no surface occupancy, and lands open with occupancy allowed. Shown by PCA, Alternative 4, and outside Alternative 4 areas (thousands of acres).

National forest		Lands legally withdrawn from leasing	Not available or not authorized for leasing	Leasing allowed - no surface occupancy	Leasing allowed occupancy allowed[1]	Decision not made[2]	Private, state, or other lands[3]
Beaverhead	Inside PCA	66	0	1	1	0	2
	Alternative 4 acres not in PCA	108	254	366	822	0	26
	Outside Alternative 4	0	86	113	335	0	12
	Forest total	175	340	479	1158	0	40
Bridger-Teton	Inside PCA	617	5	18	24	16	3
	Alternative 4 acres not in PCA	710	23	142	141	264	14
	Outside Alternative 4	45	75	641	567	107	13
	Forest total	1,372	102	800	732	386	30
Custer	Inside PCA	106	6	2	0	0	1
	Alternative 4 acres not in PCA	227	53	48	12	0	3
	Outside Alternative 4	0	0	38	20	74	8
	Forest total	333	59	88	32	74	11
Gallatin	Inside PCA	411	0	0	0	436	62
	Alternative 4 acres not in PCA	305	0	0	0	555	144
	Outside Alternative 4	2	0	0	0	141	71
	Forest total	717	0	0	0	1,131	277

National forest		Lands legally withdrawn from leasing	Not available or not authorized for leasing	Leasing allowed - no surface occupancy	Leasing allowed occupancy allowed[1]	Decision not made[2]	Private, state, or other lands[3]
Shoshone	Inside PCA	933	47	166	77	0	9
	Alternative 4 acres not in PCA	480	4	247	350	0	18
	Outside Alternative 4	0	2	25	105	0	6
	Forest Total	1,414	53	438	531	0	32
Targhee	Inside PCA	85	390	0	0	0	46
	Alternative 4 acres not in PCA	187	463	253	51	0	32
	Outside Alternative 4	85	204	43	54	0	10
	Forest total	357	1058	295	105	0	88
All forests total	Inside PCA	2,218	448	186	101	451	122
	Alternative 4 acres not in PCA	2,017	797	1,055	1,375	818	237
	Outside Alternative 4	132	367	859	1,081	322	119
	Forest total	4,368	1612	2,100	2,557	1,591	478

[1]Standard lease terms are applied to these lands and timing or controlled surface use stipulations may apply.
[2]Appropriate NEPA analysis has not been completed.
[3] Lands on which the Forest Service does not make the leasing or development decisions

Effects of Alternative 2 on Oil and Gas Leasing and Development

Alternative 2, while not directly prohibiting the development of oil and gas in the PCA, would increase the amount of mitigation needed. If operations were proposed in secure habitat, other sites and roads would have to be closed so that the level of secure habitat or the number of sites does not change from 1998 levels. New proposals in non-secure habitat inside the PCA would have to be mitigated by closing out other types of developed sites so that the total number of sites in a BMU remained at or below the number and capacity of developed sites in 1998. Since there were no active oil and gas operations in the PCA in 1998, new operations would have to close out and reclaim some other site, such as another mineral operation or a recreation site. Depending on what type of site would be closed, the cost of the oil and gas operation could be greatly increased. Figure 83 shows the number of acres in secure and non-secure habitat that would have these additional mitigations added.

At the time that leases are proposed on the Shoshone National Forest, the Forest may have to re-evaluate the leasing decision to ensure the potential mitigations to meet Standards 1 and 2 are available in the BMU subunit. The Gallatin and the Bridger-Teton National Forests' future oil and gas decisions would be constrained by the direction included in this alternative.

The level of potential development is already low for oil and gas in the PCA per the reasons cited in Alternative 1. Alternative 2 could reduce that level by increasing costs and may preclude forests from allowing leasing in areas where there may be limited mitigation opportunities.

The Energy Policy and Conservation Act Amendments of 2000 require the Secretary of the Interior, in consultation with the Secretaries of Agriculture and Energy, to conduct an inventory of all onshore federal lands. The inventory shall identify reserve estimates and "the extent and nature of any restrictions or impediments to the development of such (oil and gas) resources." Alternative 2 would add additional impediments to the development of oil and gas resources. It could also add restrictions to development if mitigation opportunities are not available.

Figure 83. Alternative 2 areas with additional limitations on level of disturbance and number of sites for oil and gas related proposals (thousands of acres).[1]

National forest		Occupancy may be affected	Future decision may be limited
Beaverhead	Secure habitat	1	0
	Non-secure habitat	0	0
Bridger-Teton	Secure habitat	5	12
	Non-secure habitat	18	3
Custer	Secure habitat	0	0
	Non-secure habitat	0	0
Gallatin	Secure habitat	0	196
	Non-secure habitat	0	239
Shoshone	Secure habitat	54	0
	Non-secure habitat	23	0
Targhee	Secure habitat	0	0
	Non-secure habitat	0	0
All forests total	Secure habitat	60	208
	Non-secure habitat	41	243
	Total	101	451

[1] Acres where occupancy is currently allowed or where a leasing decision is not currently made may have limitations on the level of disturbance and the number of sites in secure habitat. The number of oil and gas sites may be limited in non-secure habitat.

Effects of Alternative 3 on Oil and Gas Leasing and Development

Alternative 3 would not allow new developed sites in the PCA and no increase in capacity above 1998 levels. There would be no new oil and gas leasing. The current leasing decisions would have to be changed in PCA lands. Approximately 1.6 million acres of nonwilderness lands are not open for lease under Alternative 1. Under Alternative 3, approximately 2.3 million acres would not be available for lease, an increase of 739,000 acres. Existing leases would remain in effect. If APDs were proposed on these leases, the Forest Service would strive to meet Standards 1 and 2 to the extent consistent with the rights granted in the lease.

The level of potential development is already low for oil and gas in the PCA per the reasons cited in Alternative 1. Alternative 3 would reduce that level by precluding forests from leasing in the PCA. This would result in no new leases or subsequent wells being proposed or allowed in the PCA.

In response to analysis required by the Energy Policy and Conservation Act Amendments of 2000, Alternative 3 would restrict the development of oil and gas resources inside the PCA boundary.

Figure 84. Lands (thousands of acres) allocated to various leasing status for Alternatives 3 and 4. Compare these numbers to forest totals in Figure 82[1].

National forest		Not available/ not authorized	Leasing allowed - no surface occupancy	Leasing allowed - occupancy allowed	Decision not made
Beaverhead	Alternative 3 effect on forest total	342	478	1,156	0
	Alternative 4 effect on forest total	1,529	113	335	0
Bridger-Teton	Alternative 3 effect on forest total	159	783	708	370
	Alternative 4 effect on forest total	705	641	567	107
Custer	Alternative 3 effect on forest total	61	86	32	74
	Alternative 4 effect on forest total	120	38	20	74
Gallatin	Alternative 3 effect on forest total	436	0	0	695
	Alternative 4 effect on forest total	990	0	0	141
Shoshone	Alternative 3 effect on forest total	296	272	455	0
	Alternative 4 effect on forest total	893	25	105	0
Targhee	Alternative 3 effect on forest total	1,058	295	105	0
	Alternative 4 effect on forest total	1,361	43	54	0
All forests total	Alternative 3 effect on forest total	2,351	1,915	2,456	1,140

[1]Legally withdrawn lands and private, state, and other lands are not included in this table because they do not change by alternative.

Effects of Alternative 4 on Oil and Gas Leasing and Development

Alternative 4 is similar to Alternative 3 but for a larger area of land. Alternative 4 covers approximately 10 million acres of land. Approximately 43% of these lands are legally withdrawn from oil and gas leasing. The current forest leasing decisions would make an additional 1.6 million acres (13%) of Alternative 4 lands not available for leasing. Under Alternative 4 there would be no new leasing. The current leasing decisions would have to be changed. This would result in approximately 4.0 million acres to be put off limits to leasing. Existing leases would remain in effect. If APDs were proposed on these leases, the Forest Service would strive to meet the standards to the extent consistent with the rights granted in the lease.

This would result in no new leases or subsequent wells being proposed or allowed in the Alternative 4 area. Alternative 4 represents approximately 77% of the National Forest System lands in the GYA. This alternative would more than triple the amount of land not available for leasing in the six forests in this analysis.

Development would be precluded on high occurrence potential lands on the Custer, Shoshone, Bridger-Teton, and Targhee National Forests. The Shoshone and the Targhee National Forests

would be most affected because all or almost all of the high potential for occurrence lands could not be leased and subsequent wells drilled. While the Beaverhead and Gallatin National Forests do not have lands in Alternative 4 ranked as high occurrence potential, they would be affected because their moderate potential lands would be put off limits. While it is difficult to predict the number of wells that would be drilled with and without the added grizzly bear protections, the trend would be a significantly reduced number of wells under Alternative 4. For example, 12 of the 14 of wells predicted in the Beaverhead National Forest's RFD could not be drilled under restrictions in Alternative 4.

According to analysis required by the Energy Policy and Conservation Act Amendments of 2000, Alternative 4 would restrict the development on oil and gas resources inside the Alternative 4 boundary. Acres affected are displayed in Figure 84.

3.12.3 Mineral Materials

Affected Environment

The source and availability of mineral materials on the six GYA forests vary widely. The sites and sales range from commercial pits to sales to individuals of a pickup load of decorative rock or a landscaping boulder. Small sales or free use permits for decorative rock, boulders, or aggregate may not result in any apparent disturbance in the landscape since the rocks are taken from existing talus areas or other rocky areas. The highest number of sites is on the Targhee National Forest and includes numerous small aggregate or gravel pits used for both local private use and forest road use. Typically, sites are small, less than five acres. Most are near or next to roads and do not require significant amounts of new road. Use of the pits is sporadic. No facilities are associated with these smaller rock source sites.

Larger sites require excavation, temporary storage, and access for transport associated with removing mineral materials. Facilities or equipment for sorting or loading the mineral materials may be located on the site. Reclamation plans are required for commercial and Forest Service use pits.

Figure 85 gives an overview of the number of sites and sales on the six GYA forests. It also shows how many sites and sales are within the PCA versus outside the PCA. Since this table includes small sales, which do not always result in a site being created, and small gravel or aggregate pits, which by definition are not counted as a developed site, the number shown in the table is greater than the number listed in the developed site listing (Appendix A).

Figure 85. Mineral material sites and sales [1].

National forest	Inside the PCA	Alternative 4 lands outside the PCA	Forest remainder	Total
Beaverhead	3	49	44	96
Bridger-Teton	3	5	11	19
Custer	3	6	0	9
Gallatin	13	22	2	37
Shoshone	1	0	0	1
Targhee	96	70	15	181
Total	119	152	72	343

[1]Table includes both sales with a plan of operation and small sales.

Effects on Mineral Materials

Effects of Alternative 1 on Mineral Materials

Management direction for mineral materials would not be changed under the no action alternative, so there would be no effects on current mineral material and salable mineral programs on the forests.

Effects of Alternative 2 on Mineral Materials

The effects of Alternative 2 would be minimal on small-scale sales or pits. Permits for use of small gravel pits or small sales are not considered developed sites; therefore, they would not be limited under the developed site cap. Since almost all of these small operations are adjacent or near roads, secure habitat should not change because of their use.

The effects of Alternative 2 on larger mineral material proposals is similar to oil and gas. While not directly prohibiting the development of mineral materials in the PCA, Alternative 2 would increase the amount of mitigation needed for new developments. New proposals would have to close and reclaim some other site, such as another mineral operation or recreation site. If operations were proposed in secure habitat, other sites and roads would have to be closed so that the level of secure habitat does not change from 1998 levels. Depending on what type of site would be closed, the cost of the mineral material operation could be greatly increased.

The complexity of permitting would increase. There may be more controversy over permitting if other popular developed sites are proposed for closure in order to mitigate the proposed mineral material site. Closing out another developed site could add to the cost of the operation. The permitting complexity and controversy, delays in permitting, and the actual cost of site mitigation would increase the cost of the operations.

The incremental cost and delay in starting operations while mitigations took place would make the PCA a less favorable area to develop mineral material sites. The Forest Service, National Park Service, state, or local residents may have to acquire gravel or aggregate from more distant sources, increasing the costs of maintaining roads and facilities.

Effects of Alternative 3 on Mineral Materials

Alternative 3 would allow no new developed sites in the PCA and no increase in capacity above 1998 levels. The alternative would not allow new mineral material sites that are large enough to be defined as developed sites on PCA lands. Existing sites could remain in place until reclamation occurs.

Based on the assumption that future sources of mineral materials are most likely to be in the areas where current operations exist, Alternative 3 could preclude a significant portion of a forest's future mineral material development. Currently, approximately 35% of the sites and sales are in the PCA.

The Forest Service and other users, state or local, would have to acquire gravel or aggregate from distant locations, increasing the costs of road or construction projects. The Forest Service may be forced to buy gravel or aggregate, adding additional costs.

Effects of Alternative 4 on Mineral Materials

Alternative 4 is similar to Alternative 3 but precludes development on a larger area. Because the location of many sales and operations are on Alternative 4 lands, this alternative could preclude the majority of future proposed sites on the forests. Currently, approximately 79% of the sites and sales are within the Alternative 4 boundary.

Effects would be similar to Alternative 3 but for a larger area. The larger area would increase the potential that road maintenance costs for the Forest Service would increase on the Targhee and Bridger-Teton National Forests.

3.12.4 Lands with Outstanding or Reserved Rights

Affected Environment

Private parties own some of the minerals on National Forest System lands. Most of the National Forest System lands in the northern Rockies were reserved from the public domain under the Forest Reserve Act of 1891. Since then, other lands have been acquired.

The titles to some of these lands are encumbered with reservations (sometimes the previous owner reserved the mineral rights). In other cases, mineral rights were separated from the surface estate before the federal government acquired the surface; these mineral rights are outstanding to third parties. A very small percentage of lands on the six national forests has reserved or outstanding rights.

These reserved and outstanding rights represent property interests in the land. Although the federal government owns and administers the surface, the mineral owner has certain rights as well. The most important of these is the right to access and develop the minerals. Other rights may be spelled out in individual deeds. The Forest Service must consider these property interests during planning and implementation.

Effects on Lands with Outstanding or Reserved Rights

Effects of Alternative 1 on Lands with Outstanding or Reserved Rights

Management direction about lands with outstanding or reserved rights would not be changed under the no action alternative, so there would be no effects.

Effects of Alternative 2, 3, and 4 on Lands with Outstanding or Reserved Rights

Alternatives 2, 3, and 4 may add reasonable mitigations. This direction requires considering grizzly bear habitat needs during mineral exploration and development, subject to existing rights.

The Forest Service is limited in its authority to deny developing outstanding and reserved rights. Resource protection measures must be reasonable and cannot foreclose exploration or development. Court cases have determined that mitigation measures cannot unreasonably increase costs or delay operations. Direction in this proposal may or may not be applied to the outstanding reserved mineral rights depending on the cost and reasonableness of the mitigation.

3.13 Social Environment

Introduction

The GYA is a common geographic reference that also includes the human residents, their communities, and the 20 counties of Idaho, Montana, and Wyoming that encompass this area. Studies recognize the relationship between these communities, their economies and social well being, and the natural environment of the Greater Yellowstone Ecosystem (GYE) (Johnson 1998, Hansen et al. 2002, Rasker and Alexander 2003).

This social and economic analysis focuses on 20 counties that encompass the GYA and one additional county affected by Alternative 4 (Figure 88). It is recognized that social and economic effects may extend beyond the analysis area. Regional and national attachments to the GYA are also considered in this discussion.

Grizzly bears and bear management affect people’s lifestyles, livelihoods, and values. Lifestyles are affected by the presence of the grizzly bear and the precautions that must be taken to secure foods and be prepared for chance encounters. Agricultural and ranching activities are altered to ensure removal of unnatural food sources and greater monitoring and management of livestock to prevent predation by bears. Livelihoods reliant upon tourism can benefit from grizzly bears, an attribute of the wildness and attraction to the area. With grizzly bears as an integral part of the GYA, most residents have some opinion about the bear, ranging from embracing the wildness and unpredictability of living with grizzlies to disdain over the bears’ impacts upon human lives.

Public uses of national forests for recreation, grazing, minerals, timber harvest, and other uses are discussed in other sections of this DEIS.

This social and economic environment section is organized as follows:

Social Setting

- Landownership, land settlement, and land uses
- Population trends

Government Coordination

- Coordination for GYA and bear management
- Tribal governments

Attitudes, Beliefs, and Values

- Perceptions of grizzly bears and bear management
- Environmental and grizzly bear interests
- Multiple use interests

Lifestyles

- Rural lifestyles
- Ranching

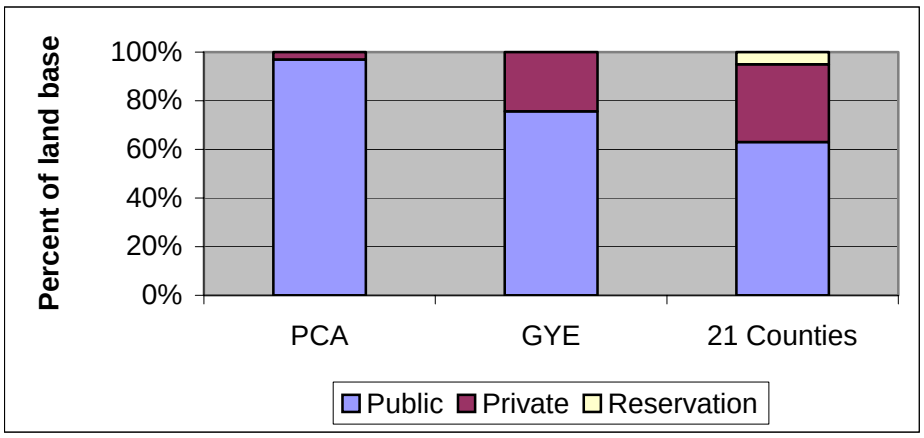
Environmental Justice (Executive Order 12898)

3.13.1 Social Setting

Twenty-one counties in Idaho, Montana, and Wyoming comprise the social and economic analysis area (Figure 88). These counties include more than 39 million acres, and approximately 32% are private lands (Figure 86 and Figure 88). Beaverhead County, Montana is also considered in this analysis because Alternative 4 examines expanding direction to cover additional lands on the Beaverhead National Forest.

The GYA, as commonly referred to by studies, lies within the 21-county area, and encompasses about 18 million acres of mostly public ownership (Hansen et al. 2002). Public lands account for approximately 76% of the area. The PCA designated for grizzly bear recovery is a smaller area within the GYA and includes 92% in public ownership. As grizzly bears extend their range beyond the PCA and the GYA, increasingly more private lands may be affected (Figure 86). These action alternatives apply direction for only National Forest System lands.

Figure 86. Landownership, in percent, for three increasingly larger land areas: PCA, GYA (GYE), and the social/economic analysis area (21 counties).



Landownership Patterns

The national parks, Yellowstone and Grand Teton, are relatively high in elevation and center on the Yellowstone Plateau. The headwaters of the Missouri-Mississippi, Snake-Columbia, and Green-Colorado river systems drain from the Plateau. Six national forests skirt the flanks of the Plateau, including 14 mountain ranges. As the mountain ranges give way to the plains and lower

elevations, these mountain valleys and lowlands are generally where human settlements are found today (Hansen et al. 2002).

Within these broader basins and valleys, farms and ranches and small rural communities reflect the historical settlement since Europeans moved westward after Lewis and Clark explored in the early 1800s. Some remnants of logging and mining and associated settlements are also interspersed throughout the area. Mining is still active in a few places. Many rural towns got their start and are still supported to some extent by the traditional uses of ranching, logging, mining, and western culture. Since Yellowstone National Park has a long history as a national treasure, large numbers of summer visitors brought tourism as an early economic base to many communities including the gateway towns such as West Yellowstone, Gardiner, Red Lodge, and Silver Gate/Cooke City in Montana; and Cody and Jackson in Wyoming. More recently, winter recreation, with snow machines and skiing, has become increasingly popular in Yellowstone National Park and the surrounding national forests.

Treaties and Tribal Uses

Many tribes used and inhabited areas in the Greater Yellowstone Area. These tribes—Shoshone-Bannock, Shoshone, Crow, Salish, and Northern Cheyenne—have treaty rights to use the GYA national forests for hunting and gathering. These tribes settled on reservations in the late 1870s and four reservations—Fort Hall, Wind River, Crow, and Northern Cheyenne—lie within or on the periphery of the GYA.

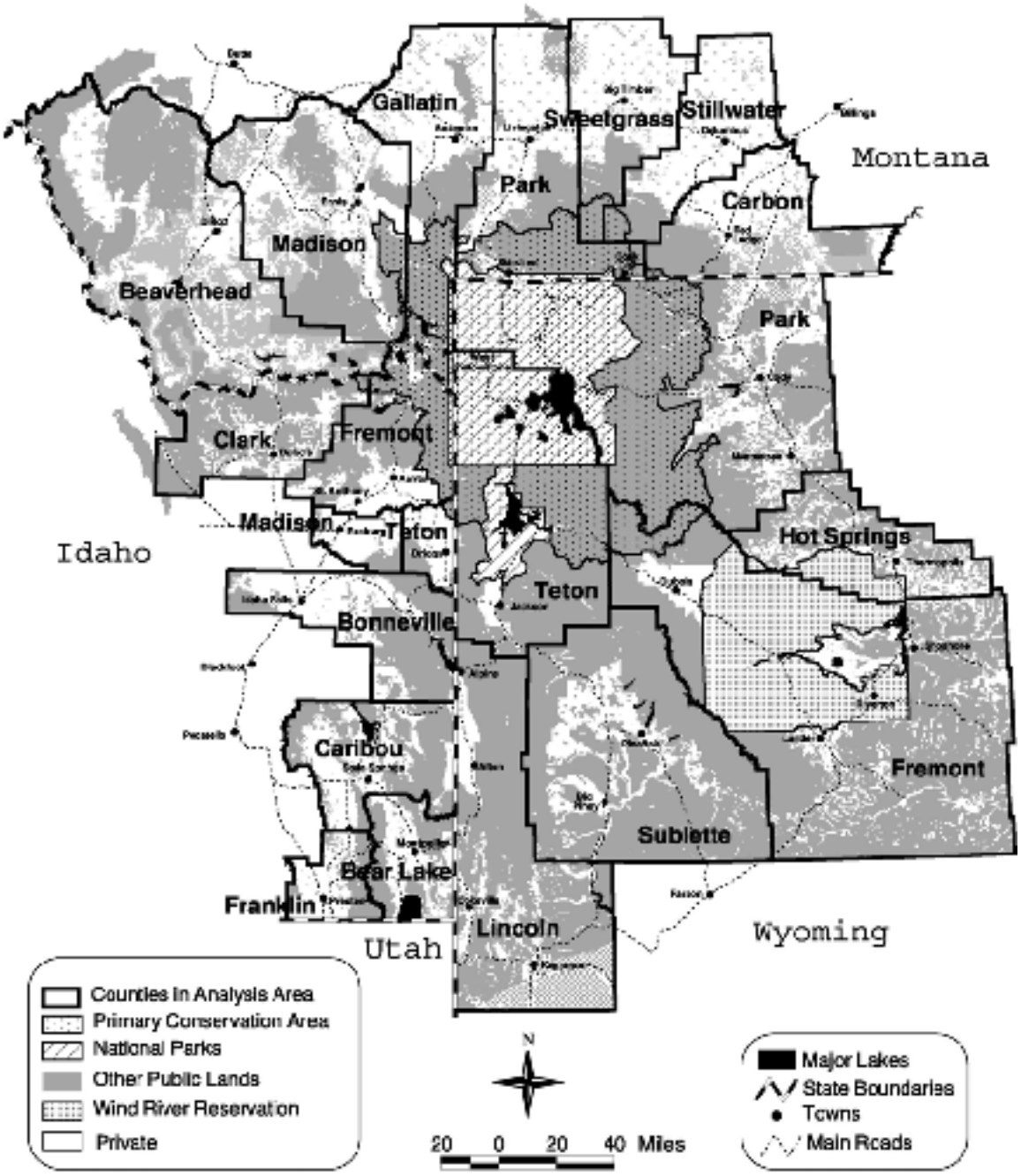
Community Land Uses under Forest Service Permits

The proposed action and action alternatives would affect some community facilities that are currently under permit from national forests. The proposed action and other action alternatives include Standard 2 that requires that developed sites stay at their capacities as of 1998 or 2003 levels. This means that proposals to increase a water treatment site, a dam's storage capacity, or increase a government facility, as examples, would not be allowed unless under an exception, i.e. an analysis shows that the changes or indirect increases in human presence do not to affect the bear or its habitat, or through mitigation as described in the Application Rules. The affected areas are in the Island Park area, e.g. Mack's Inn on the Targhee National Forest, the Cooke City area on the Gallatin National Forest, and the Crandall area on the Shoshone National Forest. In Alternative 4, the Grand Targhee sewer system could be affected.

Figure 87. Community infrastructure developed sites within the PCA and outside in Alternative 4 (shown in parentheses).

National forest	Water treatment sites	Substations	Dumps, burn piles, waste transfer sites, sewer systems	City, county, state facilities	Dams
Beaverhead	0	0	0	0	0
Bridger-Teton	0	0	0	0	0
Custer	0	0	0	0	0
Gallatin	0	0	3	0	1
Shoshone	0	0	1	1	0
Targhee	1	2	(1)	2	4
Total	1	2	4 (1)	3	5

Figure 88. Counties and states within the analysis area.



Population Trends and Changing Land Settlement and Land Uses

Currently, more than 375,000 people reside within the 21-county area. The population in the analysis area has increased 37% over a 30-year period, 1970 to 2000. The largest increase of more than 67,000 people occurred between 1970 and 1980. By 2010, the population is projected to increase from 6% (Wyoming analysis area counties) to 17% (Idaho analysis area counties).

Population changes vary by county, as shown in Figure 90. Similar to the Rocky Mountains and inland west region, people have been migrating to this area for its amenities (scenic beauty, outdoor recreational pursuits, and less crowding/congestion). The area has diversified from a historical dependency upon agriculture, mining, and logging to increases in service and other occupations. Greater economic and employment opportunities have allowed youth in the area to remain rather than migrating to jobs elsewhere, and these opportunities have also attracted newcomers. The residents of a rural subdivision might include recent arrivals from big east coast cities, midwestern farms, and the nearest small town. Among the in-migrants are retirees, wealthy young adults, and other professionals in computer technology, real estate, and other service industries (Nelson 1999 cited in Hansen et al. 2002, Hansen et al. 2002).

Many new residents desire to live in rural areas such as subdivisions or locations near forests, rivers, or streams. As the population grows and the rural settlement trend continues, the fragmenting of landscapes by human development are concerns to federal governments, county planning, and other non-governmental organizations. In part, these private lands are also important to many wildlife species (Johnson 1998, Rasker and Hansen 2000, Hansen et al. 2002, Pyare et al. 2004).

The kinds of settlement and land uses that occur on private lands affect grizzly bears. Managing sanitation (bear resistant garbage containers) and bear attractants (domestic animal foods, bird feeders) become common practices in rural areas and towns. In addition, the security of the bear and the bear's use of natural food sources can be compromised as rural lands are developed and even sparsely settled. These changes in land use are impacts on the bear regardless of this proposed action and are considered as cumulative impacts.

Figure 89 provides the population counts and predictions for the 40-year period, 1970 to 2010.

Figure 89. Population counts and projections for analysis area counties (summarized by state).

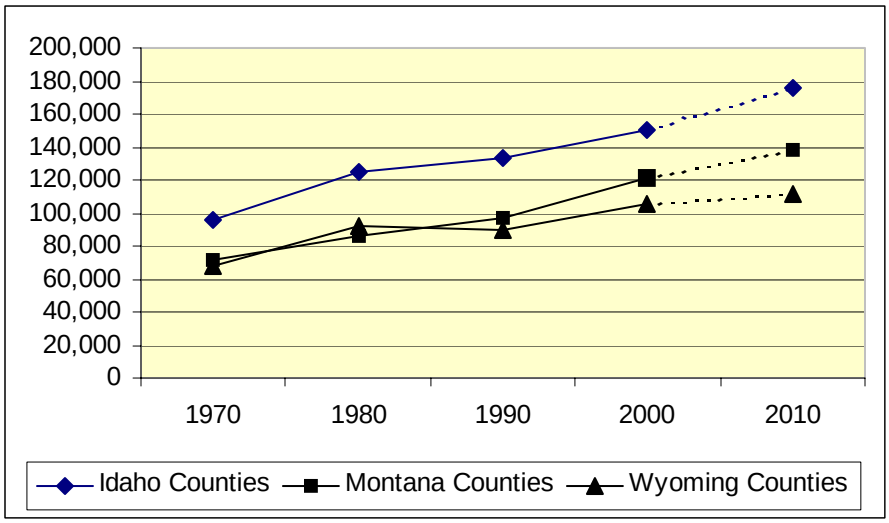


Figure 90. Population trends by county.

State/county	1990	2000	% Change 1990-2000	Projected 2010	% Change 2000-2010
Idaho					
Bear Lake	6,084	6,530	7%	7,190	10%
Bonneville	72,207	81,820	13%	97,268	19%
Caribou	6,963	7,251	4%	7,843	8%
Clark	762	887	16%	993	12%
Franklin	9,232	11,416	24%	12,750	12%
Fremont	10,937	11,806	8%	13,736	16%
Madison	23,674	24,842	5%	29,320	18%
Teton	3,439	5,793	68%	6,576	14%
Idaho analysis area	133,298	150,344	13%	175,676	17%
Idaho total	1,006,749	1,273,855	27%	1,497,548	18%
Montana					
Beaverhead	8,424	9,202	9%	9,530	4%
Carbon	8,080	9,552	18%	10,540	10%
Gallatin	50,463	67,831	34%	79,780	18%
Madison	5,989	6,851	14%	7,560	10%
Park	14,562	15,694	8%	17,120	9%
Stillwater	6,536	8,195	25%	9,690	18%
Sweet Grass	3,154	3,609	14%	3,810	6%
Montana analysis area	97,208	120,934	24%	138,030	12%
Montana total	799,065	902,195	13%	984,430	9%
Wyoming					
Fremont	33,662	35,804	6%	37,370	4%
Hot Springs	4,809	4,882	2%	4,840	-1%
Lincoln	12,625	14,573	15%	15,520	6%
Park	23,178	25,786	11%	26,970	5%
Sublette	4,843	5,920	22%	6,690	13%
Teton	11,172	18,251	63%	20,570	13%
Wyoming analysis area	90,289	105,216	17%	111,960	6%
Wyoming total	453,589	493,782	9%	513,930	4%
Analysis area total	365,689	429,105	17%	498,636	13%

Government Coordination

How people govern themselves is an aspect of the social and economic environment that is important to mention in this DEIS since there are numerous federal and state agencies with particular responsibilities for grizzly bear management. Other governments such as counties, towns, and tribes also have a role helping with grizzly bear recovery and with public understanding and acceptance of grizzly bears. In addition, the governments' active engagement and positive working relations with citizens and non-governmental organizations (NGOs) can enhance the transition of living with grizzly bears and use of protective measures for the bear and human property and safety.

In contrast, unresolved conflicts among governments can make it difficult to execute policies, manage for the bear, and ensure public safety. Some county governments have expressed concerns over federal management for the bear or bear habitat. As an example, Fremont County, Wyoming, passed a resolution where they "oppose and prohibit the US Forest Service from implementing the proposed Occupancy and Use Restrictions of March 1, 2003 within the boundaries of Fremont County." This opposition was with regard to a Food Storage and Sanitation Order that the Forest Service issued for Shoshone and Bridger-Teton National Forests' lands within Fremont, Park, Sublette, and Teton Counties in Wyoming (USDA Forest Service 2003b). The Order was to ensure that unnatural bear attractants were unavailable to grizzly bears. The effort reflects concern about the expanding range of bears in these national forests and counties and the associated threats to human safety. Disagreements over the bear's occupation of lands and the management for the bears stress the importance of finding solutions that people can live with, while still providing for bear conservation. This proposal and alternatives to it can be evaluated as to their adherence to interagency agreements, e.g. the Conservation Strategy, as well as the rate and degree of change imposed upon local communities and counties.

Agency Coordination

In 1986, the National Park Service and the Forest Service formed the Greater Yellowstone Coordinating Committee (GYCC) to provide a higher level of public service than they could offer separately. Interagency groups bring together park, forest, and state employees to discuss resources of mutual interest such as recreation use, trumpeter swans, or grizzly bears. This group meets periodically, provides supplemental funding and action items to address common needs and issues, and supports an executive coordinator who tracks the issues and coordinates initiatives.

The Interagency Grizzly Bear Committee (IGBC), established in 1983, coordinates grizzly bear management among state wildlife agencies and national parks and forests. Interagency cooperation has helped to bring about widespread use of bear-resistant receptacles, better opportunities to relocate nuisance bears away from livestock grazing allotments, and more consistent public information and regulations. Much of what has been learned about Yellowstone grizzly bears since 1974 has come from research conducted or coordinated by the Interagency Grizzly Bear Study Team (IGBST). In cooperation with park, forest, and state wildlife managers in Idaho, Montana, and Wyoming, the IGBST has monitored bears throughout the PCA, estimated their population size and trends, and enhanced an understanding of grizzly life history, ecology, and behavior in relation to humans and to other wildlife species. Monitoring of the bear and its habitat is ongoing.

A subcommittee of the IGBC, the YES (Yellowstone Ecosystem Subcommittee), focuses on Yellowstone grizzly bear issues, research, and monitoring. Membership includes federal and state agencies as well as county representatives. Semi-annual meetings are held to coordinate among the governments, and these meetings are open to the public.

Through the development of the Conservation Strategy, the Governors of Idaho, Montana, and Wyoming appointed a 15-member citizen roundtable to review the Conservation Strategy (Governors' Roundtable 2000). The group provided unanimous recommendations to the governors for use in responding to the draft Conservation Strategy. These included support for the

PCA, the development of state plans, funding, citizen involvement, education, plan and process clarity, and clarifying the nuisance bear policy.

Tribal Governments

Federal agencies have trust responsibilities to Tribes under treaty and under law. The forests are required to consult with all federally recognized Tribes that had or continue to have traditional uses within the forests' boundaries. Consultations with the Tribes listed in Figure 91 (and the Nez Perce Tribe) have been initiated by the Forests and are ongoing.

Historically, many Tribes used the GYA. Indian people moved through and inhabited the GYA, often following buffalo and other game that provided the resources for their survival. Prior to 1600, the Tukuariaka, a Shoshone band, lived in the areas west of Yellowstone and into the Lemhi Valley. Southwest Montana was a crossroads for multiple Tribes, including the Nez Perce and the Sioux, who pursued bison and other game in the valleys and nearby mountain meadows. By the early 1700s, the Shoshone acquired horses that gave them greater mobility and allowed them to push their Flathead and Salish neighbors north and thereby expand their territory well into what is now central Montana (Northern Economics Inc. 2002). In the eastern part of the GYA, evidence indicates that the Shoshone Indians inhabited the area 6,000 to 7,000 years ago. Crow Indians used the area for their winter hunting camps and by the mid-1600s, Shoshone Indians again migrated into the area. As Arapahoe Indians acquired horses in the mid 1700s, they too migrated into the area (USDA Forest Service 1986b).

Today, tribal members continue to use the GYA for traditional cultural practices, hunting, fishing, and gathering.

Figure 91. Treaty and trust responsibilities of the GYA forests.

Forest	Tribe and Reservation	Treaty and Treaty Rights
Beaverhead	Shoshone-Bannock Fort Hall Reservation, Idaho	Treaty with the Eastern Band Shoshoni and Bannock, 1868 – Fort Bridger Treaty Hunt…so long as game may be found
	(West of Continental Divide) Confederated Salish and Kootenai Tribes Flathead Reservation, Montana	Hellgate Treaty of 1855
Bridger-Teton	Shoshone Wind River Reservation, Wyoming Shoshone-Bannock Fort Hall Reservation, Idaho	Treaty with the Eastern Band Shoshoni and Bannock, 1868 – Fort Bridger Treaty Hunt…so long as game may be found. Includes right to fish (State v. Tinno 1972) "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" (Targhee Forest Plan pg. III-87 refers to Hanes 1995).

Forest	Tribe and Reservation	Treaty and Treaty Rights
Custer (Beartooth Ranger District) And Shoshone	Crow Crow Reservation, Montana	Treaty with the Crows, 1868 - Fort Laramie Hunting (gathering implied)
	Arapaho Wind River Reservation, Wyoming	Treaty with the Northern Cheyenne and Northern Arapaho, 1868 - Fort Laramie Roam and hunt
	Northern Cheyenne Northern Cheyenne Reservation, Montana	Treaty with the Northern Cheyenne and Northern Arapaho, 1868 - Fort Laramie Roam and hunt
	Shoshone-Bannock Fort Hall Reservation, Idaho	Treaty with the Eastern Band Shoshoni and Bannock, 1868 – Fort Bridger Treaty Hunt…so long as game may be found
Gallatin	Crow Crow Reservation, Montana	Treaty with the Crows, 1868 - Fort Laramie Hunting (gathering implied)
Targhee	Shoshone-Bannock Fort Hall Reservation, Idaho	Treaty with the Eastern Band Shoshoni and Bannock, 1868 – Fort Bridger Treaty Hunt…so long as game may be found. Includes right to fish (State v. Tinno 1972) "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" (Targhee Forest Plan pg. III-87 refers to Hanes 1995).

3.13.2 Attitudes, Beliefs, and Values

Perceptions of Grizzly Bears and Bear Management

People's acceptance of changing bear demographics and bear management contributes to the ultimate success in perpetuating the bear's recovery, public safety, and ease to which agencies can effectively manage for the bear. Public views regarding the grizzly bear and grizzly bear management have been expressed through the development of the grizzly bear Conservation Strategy, the state grizzly bear management plans, scoping on this proposal, and many other local and GYA efforts. In general, public comments on grizzly bear management efforts diverge in their tolerance for increasing and expanding bear populations and with their acceptance of protection measures. These divergent views are further discussed as environmental views and as multiple use views later in this section. It is recognized that the broader segment of the public may be more moderate in its views; opinion surveys conducted with statistical reliability help with understanding overall public sentiment or with particular segments of the population.

Opinion surveys. Opinion surveys offer the opportunity to gauge the broader populace views. A survey of Wyoming residents, conducted for the Wyoming Game and Fish Department, examined attitudes toward grizzly bears and opinions on the possible removal of the grizzly bear from listing under the ESA (Duda et al. 2001). Several findings were:

- Large majorities of Wyoming residents felt that grizzly bears are a benefit to Wyoming and are an important component of the ecosystems that they occupy.
    - 74% of Wyoming residents agreed that grizzly bears are a benefit to Wyoming

  - 11% disagreed
  - 12% did not know if grizzly bears benefited Wyoming
- Opinions on efforts to increase the populations of grizzly bears in Wyoming were divided between support and opposition. Slightly more (42%) Wyoming residents supported efforts to increase the grizzly bear population than opposed (39%) such efforts. Support for efforts to increase the grizzly bear population increased considerably (from 42% to 61%) when efforts to increase the grizzly bear population were coupled with the idea that groups of wildlife managers would be stationed locally to help track bears, inform and educate people, and resolve conflicts.
- Two of the top three reasons given for opposing efforts to increase the grizzly bear population dealt with the danger grizzly bears can pose to humans (36%) and livestock (18%).
- There is almost an equal division between Wyoming residents who think they would continue to use (48%) and those residents who would discontinue using (44%) the outdoor areas where they currently recreate if those areas were occupied by grizzly bears.

Another survey conducted to examine the political and social viability of predator compensation programs in the west offers insights from ranchers and the public in Idaho, Montana, and Wyoming (Montag et al. 2003). Several findings are:

- With regard to views that grizzly bears "are an important part of the ecosystems they occupy":
  - Nineteen, 45%, and 25% of the livestock owners sampled from a 12 community zones in Idaho, Montana, and Wyoming, respectively, agreed with the statement.
  - Fifty-one, 63%, and 65% of the public randomly sampled from Idaho, Montana, and Wyoming, respectively, agreed with the statement.
- With regard to the statement, "I would like to see populations of grizzly bears increase in my area":
  - Ninety-two, 81%, and 91% of the livestock owners sampled from 12 community zones in Idaho, Montana, and Wyoming, respectively, resoundingly disagreed with the statement.
  - Sixty-six, 57%, and 60% of the public randomly sampled across Idaho, Montana, and Wyoming, respectively, disagreed with the statement.

The division between support of efforts to increase grizzly bear populations and opposition (as shown in the opinion polls) is also reflected in the differing viewpoints expressed in public involvement in this proposal. Key differences are summarized into two major groups. Again, it is recognized that the broader segment of the public may be more moderate in its views, i.e. supportive of grizzly bear populations and supportive of the human communities and residents affected by increasing grizzly bear populations. The purpose of this analysis is to provide an understanding of the opposing points of view with regard to grizzly bears and grizzly bear management.

Environmental Views

During the scoping process for this proposal, approximately 13 wildlife or ecology-based interest groups expressed their concern for the grizzly bear and future management. Several groups commented on the concept of no net loss: "While the aim of maintaining habitat conditions at 1998 levels is laudable, we do not believe the approach is workable, nor is it based on a complete assessment of grizzly habitat needs, current trends in human population or disease in key native foods" (Natural Resource Defense Council scoping comment). Most groups also requested that the agency consider grizzly bear management direction outside the PCA: "We have consistently asked land managers to 'think beyond the line,' and protect bear habitat where bears are….With mounting pressures on bear habitat related to loss of key food sources, accelerating private land development on the Forest boundary and resource issues like large-scale oil and gas development,

it is critical that the agencies take a hard look at protecting sufficient bear habitat while there is still time to do so" (Greater Yellowstone Coalition scoping comment).

In addition, many individuals expressed their concern that removal of the bear from the endangered species list would be to the detriment of the bear and continued strong federal protection is needed. Similar statements such as this one: "I am troubled to hear that the Yellowstone grizzly bear may be removed from the endangered species list and that its habitat may be opened to development" (scoping comment 2003). Although delisting is the responsibility of the USFWS (and not a decision in this proposal), some interest groups view this effort as part of the delisting process and voice objections to the proposal.

Multiple Use Views

During scoping, many individuals and several recreation and agricultural state agencies and organizations conveyed concern that recreational uses or economic reliance upon the national forests would be adversely affected by the proposed action and action alternatives. Some people view the proposed direction as increasing regulation and control over human uses and increased governmental costs for implementation. As one person expressed, "This sounds like it is going to be another attempt to close off any remaining roads in our national forests. All in the name of the grizzly bear. The grizzly bear has always been around even when all the logging and mining and cattle grazing was going on. Why should we now have to shut down all these resources and lock up entire forests? I think things should be left alone for awhile just to see how things work out. The grizzly bear will survive and the citizens should be allowed to use our 'Public Lands'" (scoping comment). As the Idaho State Snowmobile Association expressed, "We value our freedoms highly and every regulation removes a freedom to choose for ourselves. Sometimes regulations are the only choice, but they should always be the last choice" (Idaho State Snowmobile Association scoping comment).

Lifestyles

Lifestyles can be described as the activities, values, meanings, preferences, and ways of living in a particular place and time.

Rural Lifestyles

Numerous small towns and communities support the rural lifestyles that many residents highlight as a desired quality of their lives (Figure 92). A rural lifestyle can be described as including the attributes or values of low crime rates, high levels of interpersonal trust, slower pace of life, volunteerism rather than government as a basis for solving community problems, opportunities for community involvement, a sense of belonging, and a high value placed on the quality of nearby surroundings (Northern Economics Inc. 2002). Economically, most of these communities rely upon the national forests or national parks, primarily through the recreation and tourism. In addition, livestock grazing on forest lands during the summer months has been a long, traditional relationship, particularly on the Bridger-Teton, Targhee, and Beaverhead National Forests. For more discussion, see the discussion about the grazing program in this chapter.

Figure 92. Communities in the Greater Yellowstone Area.

Idaho	Montana	Wyoming
Ashton	Big Sky	Afton
Dayton	Big Timber	Alpine
Driggs	Bozeman	Big Piney
Dubois	Columbus	Buffalo Valley/Moran
Idaho Falls	Cooke City-Silver Gate	Cody
Island Park	Ennis	Crowheart
Kilgore	Gardiner	Dubois
Marysville	Joliet	Jackson
Montpelier	Livingston	Kemmerer
Rexburg	Red Lodge	Lander
Roberts	Sheridan	Meeteetse
Soda Springs	West Yellowstone	Opal
Spencer		Pinedale
Swan Valley		Riverton
Teton		Thermopolis
Tetonia		Wapiti
Victor		

In addition to economic reliance, most of these communities and residents have a close relationship with the forests through recreational pursuits, reliance upon products such as firewood and wild game, or as a part of living in a scenic, rural landscape. Many residents tend to use National Forest System lands in a variety of ways and support the multiple use concept of the forests. From a series of focus group meetings throughout rural communities near the Gallatin National Forest, people felt that there was the possibility for everyone to use the forest, even though not all users should or could use the same resources (Millikin and Walker 1999). Residents also value the small town nature in the sense of knowing everyone and the mutual support and community commitment that often provides a sense of belonging (Northern Economics Inc. 2002). Communities generally describe themselves as accepting people with a live-and-let-live approach. In light of this value, they are concerned about federal government policies and outside interest groups' influences over forest management that, to them, seems extreme and not open to compromise or tolerant of multiple uses (Northern Economics Inc. 2002, Millikin and Walker 1999). While many residents of local communities value their small town atmosphere and values, they are also aware of the pressures of change. Community and county planning have been more on the forefront in recent years although community members desire to maintain local control.

Ranching

Ranching is an important part of the history and culture of the lands in GYA and 21-county area. National Forest System lands have generally served as summer pastures (higher elevation lands) for cattle or sheep while ranchers grow grain or hay on their ranch lands in order to feed their livestock through winter. The ranching life tends to be all encompassing—all family members contribute long hours to year-round tasks. This way of life has often been a difficult one financially as livestock markets fluctuate. An intimate connection between history, family, and land instills a sense of belonging to the country that is not easily deterred by the hard work and financial difficulties (Northern Economics Inc. 2002). The family ranching life, while having been a mainstay to many of the rural areas in the GYA, is also one that is changing. Some

ranches are able to transition from one generation to the next or to sell to other similar ranching operations. Studies indicate that a smaller portion of these ranchlands is turning over to new owners such as amenity buyers, corporations, developers, and conservation organizations (Travis et al. undated).

Approximately 70 cattle and seven sheep allotments were actively used in 2003 within the PCA (Figure 49). Outside the PCA but within Alternative 4, approximately 280 cattle and 75 sheep allotments are actively used (Figure 49). Commenting on this proposed action, the Wyoming Farm Bureau, which represents agricultural producers throughout the state, expressed: "There are many producers who have been increasingly impacted by grizzly bears on their allotments. Some of these producers have incurred significant economic impacts from grizzly bears." They also added: "Producers find that many of the management techniques advocated to prevent grizzly bear depredations are ineffective, and are too expensive or both. Increasingly these producers have had to vacate their permits or underutilize them in order to avoid significant economic impacts" (Wyoming Farm Bureau scoping comment). The Wyoming Department of Agriculture also stated: "this project will definitely impact livestock grazing permittees, agriculture producers, landowners, and other citizens" and noted that "Grazing also represents an irreplaceable environmental and social value, contributing to the preservation of open spaces, the visual beauty of the area, and the traditional image of Wyoming and the West" (Wyoming Department of Agriculture scoping comment).

3.13.3 Effects to the Social Environment

Effects Common to All Alternatives

The human population in the analysis area will continue to grow and recreational uses of the forests will increase. All alternatives have some provisions to protect the bear and could limit human uses. Increasing rural settlement and subdivisions on private lands could impact the bear's use of habitat and movement between habitats. Regardless of this proposal, expanding bear populations will require public knowledge of how to recreate and live in bear-occupied areas. In addition, bear habituation to humans could become more prevalent with increasing human settlement; habituation poses risks to the bear and to public safety. Alternative 4 establishes security for the bear outside the PCA and ensures provisions for the bear on public lands as populations expand.

Landownership

As recreation visits increase and overnight stays are not accommodated through public campgrounds or permitted hotels or resorts, development of private lands for motels, campgrounds, and other services would be indirectly influenced to meet the public demands. This would be the case for all alternatives given the increasing use trends compared to the current trend of not increasing public campgrounds and the proposed provisions in the action alternatives to limit further development.

While there are many factors such as market conditions and land values that affect ranchlands, all alternatives require livestock owners with Forest Service permits to make accommodations for the grizzly bear. These efforts increase the costs of operations and may be one other factor that influences a change from ranchland to another land use.

Government Coordination

Government coordination would continue under all alternatives. The level of coordination between agencies and with the public is currently well organized at the federal and state levels. Information and education programs about living with grizzly bears would continue under all alternatives. Additional partnerships and county involvement could complement those efforts.

Consultation with the tribes and consideration of impacts on tribal members would occur under all alternatives. Road access restrictions would impact tribal members who use roads for gathering, hunting, and visiting traditional sites.

Effects of Alternative 1 on the Social Environment

Social Setting

Community land uses under Forest Service permits Alternative 1 would not affect developments that are under permit on National Forest System lands (Figure 87).

Government Coordination

Alternative 1 does not implement the Conservation Strategy. Federal and state agencies would not be assured that the Conservation Strategy would be implemented, and confusion may result from outdated direction in the forest plans. County governments may vary in how they are affected by this alternative because each forest may handle additional management requirements for the grizzly bear differently. Under this alternative, the bear would remain listed under ESA and require more government coordination.

Tribal members who use roads for gathering, hunting, and visiting traditional sites would maintain the current level of use.

Attitudes, Beliefs, and Values

Environmental views. Some interests would be negatively impacted because the current standards are viewed as not addressing expanding bear population needs and not providing an adequate area in case major bear foods diminish. However, these interests would be supported with the continued listing of the bear under the ESA.

Multiple use views. Alternative 1 reflects the existing situation and moderately supports multiple use interests. As grizzly bear/human conflicts occur, bears may be removed from areas not in MS 1, supporting the continuance of existing human uses. However, these interests would like to see the bear delisted and allow direct state management of bear populations.

Lifestyles

Rural lifestyles. Alternative 1 would not affect the rural way of life in that many outdoor pursuits on National Forest System lands would continue as they currently do. Existing regulations with MS 1, 2, and 3 are already being accommodated.

Ranching. Alternative 1 would continue to require grazing operations under existing allotments within the PCA to make accommodations for the grizzly bear. These accommodations include working with governmental agencies to adhere to the Guidelines, reporting conflicts, complying with paperwork and coordination to receive compensation where depredations are proven, removal of unnatural attractants, and increased herd monitoring and maintenance.

Effects of Alternative 2 on the Social Environment

Social Setting

Community land uses under Forest Service permits. Alternative 2 would maintain the capacity of permitted uses on National Forest System lands (Figure 87); however, this alternative requires that developed sites stay at their capacities as of 1998 levels. Proposals to increase a water treatment site, a dam's storage capacity, or increase a government facility, as examples, would not be allowed unless under an exception, i.e. an analysis shows that the changes or indirect increases in human presence do not affect the bear or its habitat, or mitigated according to the Application Rules. The affected areas are in the Island Park area, e.g. Mack's Inn on the Targhee National Forest, the Cooke City area on the Gallatin National Forest, and the Crandall area on the Shoshone National Forest. Communities or other permittees would have to look to private lands, perhaps, to meet their increasing needs. This may be difficult in some cases because the affected areas are largely public lands, and private lands are relatively scarce for the purposes needed. An indirect outcome could also be that land development would be curtailed if analysis showed that water treatment sites, dumps, or waste transfer sites could not expand or be mitigated.

Government Coordination

This alternative fully meets the intent of the Conservation Strategy by incorporating interagency agreed-upon direction into forest plans. Federal and state governments responsible for managing

the bear would be assured that this direction is an integral part of the management of national forests, and the direction would be consistent across forests. The direction would also be clear for county governments within the GYA. However, government relations with particular counties and towns that have permitted facilities on national forests could become strained if a community needs to increase capacity within the PCA and is unable to do so. See the discussion on community-related developments.

Tribal members who use roads for gathering, hunting, and visiting traditional sites would maintain the current level of use.

Attitudes, Beliefs, and Values

Environmental views. Alternative 2 addresses some environmental interests by ensuring consistent forest plan direction across the six GYA national forests. Environmental interests would feel that Alternative 2 does not fully address their concerns because the alternative allows for some flexibility in applying the standards (through the Application Rules). Additionally, they would feel that Alternative 2 does not meet expanding bear population needs outside the PCA.

Multiple use views. Alternative 2 alters the existing situation with further requirements and could impact multiple use interests in the long term when uses exceed the capacity of the developed site. Shifts among developed and dispersed sites (Standard 2) would be allowed under Alternative 2 and this flexibility could allow meeting multiple use needs. Since the direction applies to only the PCA, multiple uses would continue as they have outside the PCA.

Lifestyles

Rural lifestyles. Under Alternative 2, the rural way of life could continue, but in the long term as human uses of the national forests increase beyond the capacities of trailheads, campgrounds, boat launches, etc, uses would be restricted to 1998 levels. Uses could be accommodated outside the PCA and still be within the proximity of the GYA. Some adjustments and projects within the PCA could be allowed under the 1% rule (Standard 1) or mitigation (Standard 2) and thus provide some flexibility to meet needs.

Ranching. Alternative 2 would continue to require grazing operations under existing allotments to make accommodations for the grizzly bear. These accommodations include working with governmental agencies to report conflicts, complying with paperwork and coordination to receive compensation where livestock depredations are proven, removal of unnatural attractants, and increased herd monitoring and maintenance.

Effects of Alternative 3 on the Social Environment

Social Setting

Community land uses under Forest Service permits. Alternative 3 would maintain the capacity of permitted uses on National Forest System lands (Figure 87); however, this alternative requires that developed sites stay at their capacities as of 1998 levels. Proposals to increase a water treatment site, a dam's storage capacity, or increase a government facility, as examples, would not be allowed. The affected areas are in the Island Park area, e.g. Mack's Inn on the Targhee National Forest, the Cooke City area on the Gallatin National Forest, and the Crandall area on the Shoshone National Forest. Communities or other permittees would have to look to private lands, perhaps, to meet their increasing needs. This may be difficult in some cases because the affected areas are largely public lands, and private lands are relatively scarce for the purposes needed. An indirect outcome could also be that land development is curtailed because the water treatment sites, dumps, or waste transfer sites cannot expand.

Government Coordination

Alternative 3 proposes stricter standards within the PCA. Federal and state governments responsible for managing the bear would be assured that this direction is an integral part of the management of national forests by inclusion into forest plans and that the direction is consistent across forests. The direction would also be clear for county governments within the GYA,

although more conflict could occur without some flexibility in shifting or accommodating some uses. As an example, government relations with particular counties and towns that have permitted facilities on national forests could become strained if a community needs to alter the capacities of within the PCA and is unable to do so. See Figure 87 and the previous discussion on community-related developments.

Tribal members who use roads for gathering, hunting, and visiting traditional sites would be impacted by the lack of access to traditional sites.

Attitudes, Beliefs, and Values

Environmental views. Alternative 3 addresses some environmental interests by making no accommodations for additional human uses and projects, and would ensure no loss of bear habitat. Alternative 3 does not fully address the environmental interests because they feel the alternative does not meet expanding bear population needs outside the PCA and does not provide an adequate area in case major bear foods diminish.

Multiple use views. Alternative 3 is more restrictive within the PCA and could impact multiple use interests in the long term when use exceeds the capacity of the developed site under Standard 2. A more immediate effect would be the closure of almost 500 miles of motorized routes on five national forests. Current uses would be displaced. In addition, there would be no flexibility to make adjustments for projects under Standard 1. Since the direction applies only to the PCA, multiple uses would continue on lands outside the PCA.

Lifestyles

Rural lifestyles. Under Alternative 3, the rural way of life could continue. In the long term, as human uses of the national forests increase beyond the capacity of trailheads, campgrounds, boat launches, etc, uses would be restricted to 1998 capacities. Particular community areas and uses would be impacted by the closure of almost 500 miles of motorized routes on five national forests. Alternative 3 allows for no adjustments or projects within the PCA and does not provide flexibility to respond to community needs for expansion of infrastructure.

Rural communities and local governments in the areas where road closures are proposed, and within the GYA in general, may further question federal government controls and the validity of such closures. In some cases, this would negatively impact motorized users and in other cases, new opportunities for backpacking, horse packing, hiking, etc. would be created.

Ranching. Alternative 3 would continue to require grazing operations under existing allotments to make accommodations for the grizzly bear. These accommodations include working with governmental agencies to report conflicts, complying with paperwork and coordination to receive compensation where livestock depredations are proven, removal of unnatural attractants, and increased herd monitoring and maintenance. Seven sheep allotments would be closed out and this would adversely affect the sheep operations relying upon these permitted lands. Cattle allotments with recurring conflicts would be closed and this would adversely affect the ranching operations that use those permits.

Effects of Alternative 4 on the Social Environment

Social Setting

Community land uses under Forest Service permits. Alternative 4 would maintain the capacity of permitted uses on National Forest System lands (Figure 87); however, this Alternative requires that developed sites stay at their capacities as 1998 levels inside the PCA and 2003 levels outside the PCA in the area identified for Alternative 4. Proposals to increase a water treatment site, a dam's storage capacity, or increase a government facility, as examples, would not be allowed. The affected areas are in the Island Park area, e.g. Mack's Inn on the Targhee National Forest, the Cooke City area on the Gallatin National Forest, and the Crandall area on the Shoshone National Forest, and the Grand Targhee sewer system on the Targhee National Forest. Communities or other permittees would have to look to private lands, perhaps, to meet their increasing need. This may be difficult in some cases because the affected areas are largely public lands, and private

lands are relatively scarce for the purposes needed. An indirect outcome could be that land development is curtailed because the water treatment sites, dumps, or waste transfer sites cannot expand.

Government Coordination

Alternative 4 proposes stricter standards and increases the geographic area to which the standards and other direction apply. Federal and state governments responsible for managing the bear would be assured that this direction is an integral part of the management of national forests by inclusion into forest plans and that the direction is consistent across forests. The direction would also be clear for county governments within the GYA, although more conflict could occur without some flexibility in shifting or accommodating some uses. Effects of restrictions within the PCA would be similar to Alternative 3, but in addition, local communities and counties would be increasingly concerned about additional restrictions covering the public lands in their counties. Government relations with particular counties and towns that have permitted facilities on national forests could become strained if a community needs to alter the capacities of permitted structures within the PCA and is unable to do so.

Impacts would be the greatest in this alternative to tribal members who use roads for gathering, hunting, and visiting traditional sites.

Attitudes, Beliefs and Values

Environmental views. Alternative 4 would support environmental and wildlife interests because the direction is extended to include lands that have been suggested as important bear habitats. Within the PCA, no accommodations would be made for additional human uses and projects, and this would support environmental interests that want no loss of any habitat.

Multiple use views. Alternative 4 establishes habitat standards for a large share of the six national forests and would impact multiple use interests in the long term when use exceeds the capacity of the developed site. A more immediate effect would be the closure of approximately 1,900 miles of motorized routes on the six national forests. Current uses would be displaced. In addition, there would be no flexibility to make adjustments for projects under Standard 1. Uses would be affected on a large share of the six national forest area.

Lifestyles

Rural lifestyles. Under Alternative 4 the rural way of life would be largely impacted in the short term as motorized routes and snow machine areas are closed. Alternative 4 does not allow for adjustments or projects within the area and does not provide any flexibility to meet needs.

The actions by this alternative to close more roads and to include closures on a majority of the six national forests would be controversial. Rural communities and local governments within the GYA would question federal government controls and the validity of such closures. In some cases, this would negatively impact motorized users and in other cases, new opportunities for backpacking, horse packing, hiking, etc. would be created.

Ranching. Alternative 4 would increase the affected allotments to include approximately 82 sheep allotments and about 350 cattle allotments. While this alternative acknowledges bear movement outside the PCA, management direction would require that more livestock operations accommodate the bear. These accommodations include working with governmental agencies to report conflicts, complying with paperwork and coordination to receive compensation where livestock depredations are proven, removal of unnatural attractants, and increased herd monitoring and maintenance. Eighty-two sheep allotments would be closed out and this would adversely affect the sheep operations relying upon these permits. Economically, these operators and associated communities would be adversely affected to the extent that some permittees would need to sell their private lands or convert the land use to something other than livestock. As lands are sold to larger corporations or subdivided for amenity purposes, the rural ranching lifestyle and “custom and culture” of some of these western communities would be lost. See the economic section for more discussion. In addition, cattle allotments with recurring conflicts would be

closed and this would adversely affect the ranching operations that use these allotments. Similar effects to the closing of sheep allotments could occur. This alternative also addresses coordinating closure of bear baiting outside the PCA where conflicts could occur. This type of direction could ensure that fewer attractants are near allotments where conflicts between bear and livestock could potentially develop.

3.14 Economic Environment

Affected Environment

Economic analyses are conducted by the Forest Service to determine what effect the agency's management decisions might have on the local economic environment. Rural areas surrounding forests are often dependent upon forest resources for much of their economic well-being. This dependency can affect local economies, lifestyles, population, and the quality of life of the area.

Some sectors of the economy for the 21 counties in the GYA (Figure 88) are dependent upon the natural resources of the national forests. This study considers potential effects of the alternatives on economic variables such as local employment, income, and federal payments to the counties. Budget to implement is used to measure cost differences between alternatives. The 21-county area provides the basis for describing the GYA economy and analyzing the changes in income and employment.

Commodity and amenity benefits from National Forest System lands within the GYA have contributed to the social and economic base of neighboring communities. Economic dependency is an important feature that can assist managers in measuring the general health of the economy. The effects of change on economic dependency and other important variables are discussed in this section. Getting Ahead in Greater Yellowstone (Rasker and Alexander 2003) discussed the following trends:

Employment

- The economy in the GYA is growing rapidly, outpacing the states of Idaho, Montana, and Wyoming, as well as the nation as a whole. From 1970 to 2000, more than 143,000 new jobs were created.
- Employment growth in the GYA is concentrated in some industries over others. The largest industries are in the service and professional fields, which account for more than 71% of the new jobs.
- The largest employment sectors in 2000 were services (30%), retail trade (18%), government (12%), and construction (9%).
- Not all sectors of the regional economy are doing well. Mining grew 0.5% from 1970 to 2000, and accounted for 2% of all employment in 2000. Farming and ranching lost more than 1,300 jobs in the same period, and accounted for 6% of employment in 2000.

Income

- Total personal income has grown in recent years in the GYA, with more than $5,140 million in new income earned between 1970 and 2000.
- Non-labor income is a combination of dividends, interest and rent, and transfer payments. Growth in this category can be attributed to several factors, among them an increasing number of retirees. It was the fastest growing source of personal income.
- Service and professional industries grew by 39% and amounted to 37% of all income earned in 2000.
- Services alone accounted for 24% of all new income in the last 30 years; government accounted for 12%, construction 7%, and retail trade 6%.
- Growth in traditional industries (agriculture, mining, forestry, and oil and gas development) has been sluggish. In 2000, less than 10% of total income in the area was derived from these industries—less than half of what these same industries accounted for in 1970. Farm and ranch income fell by 67% since 1970.

Economic Dependency

Figure 93 displays total industry output, number of jobs, and average employee compensation generated by major industries in 2001 in the GYA. The industries listed in the table are composed of many sectors. The sum of components may not equal total due to independent rounding. Jobs in Figure 93 are annual average jobs that include part-time, temporary, and full-time employment. Employee compensation is the value of both wages and benefits.

Economic dependency can be measured by various indices and techniques. Income and employment (jobs) by economic sector are the usual units of measure. Economic dependency allows a manager to look at the relative magnitude of the industries affected by changes in national forest management. Economic dependency refers to the degree to which an economy might depend on a limited number of industries. The larger a particular industry's role, the more dependent the economy is on the industry. Economic dependency is estimated by determining the approximate percentage of the total economy of each county that can be attributed to a particular industry. Counties are used because the most reliable and accurate long-term data on the economy is reported at the county level. The findings for each county were then aggregated to the GYA in terms of income and employment.

Agriculture, forestry, cattle ranching, mining, and wood products directly account for about 8% of the employment in the GYA. Mining has some of the highest paying jobs in the GYA, while agriculture and forestry jobs offered comparatively low employee compensation. All of these industries have some degree of dependency on the GYA national forests. Employment from recreation and tourism, which is also an important component of the regional economy, is much more difficult to estimate, as food services, accommodations, arts, and retail trade all have employment resulting from recreation and tourism.

Figure 93.Total industry output, total employee compensation, total number of jobs, and average annual employee compensation by major industry for the 21 counties in the GYA[16].

Industry	Industry output (million dollars)	Employee compensation (million dollars)	Number of jobs	Average employee compensa-tion
Agriculture, forestry, fishing, and hunting	686.674	81.753	10,044	8,140
Cattle ranching and farming	605.916	53.964	6,336	8,517
Wood products	124.072	22.150	787	28,160
Mining	1,163.286	229.092	4,508	50,821
Utilities	360.075	41.341	1,165	35,473
Construction	2,288.411	673.485	28,845	23,348
Manufacturing	2,138.515	337.060	11,701	28,806
Wholesale trade	703.222	244.786	7,780	31,464
Transportation and warehousing	561.702	181.932	5,203	34,970
Retail trade	1,180.163	438.277	27,134	16,152
Food and beverage stores	218.064	81.816	4,486	18,238
Information	426.765	94.436	3,472	27,202
Finance and insurance	811.915	180.203	7,649	23,559

[16] Base economic data for the study area were estimated using IMPLAN Professional Version 2.0, Minnesota IMPLAN Group, Inc. The economic impact area was defined to include 21 counties in Idaho, Montana, and Wyoming.

Industry	Industry output (million dollars)	Employee compensation (million dollars)	Number of jobs	Average employee compensa-tion
Real estate and rental	1,066.918	69.590	10,048	6,926
Professional- scientific and tech services	1,034.211	512.461	17,543	29,212
Management of companies	32.930	19.263	376	51,185
Administrative and waste services	350.484	113.867	7,463	15,257
Educational services	147.951	73.992	3,520	21,022
Health and social services	1,053.492	422.761	17,338	24,383
Arts- entertainment and recreation	159.258	22.220	4,127	5,384
Other amusement- gambling- and recreation industries	213.883	56.784	3,363	16,883
Accommodation and food services	1,094.451	282.772	25,003	11,310
Other services	940.845	207.117	14,222	14,563
Government	2,420.619	1,254.307	35,785	35,051
Totals	19,783.819	5,695.431	257,898	22,084

The export of goods and services stimulates economic activity that would not otherwise exist because it cannot be supported by the local economy. In order to produce these extra goods and services, there is more employment and more purchases of local goods and services as inputs into the production process. In turn, the jobs in the exporting industry, and the jobs in the sectors providing the increased inputs, all represent an increase in disposable income, which may be spent locally, stimulating more economic activity. These effects of economic activity are defined as:

Direct effects are the effects felt by the original industry providing goods and services outside the area.

Indirect effects are the effects felt by the local sectors/industries providing inputs of goods and services to the directly affected industry in order to fulfill export demand.

An ***induced effect*** is the effect of an increase in local income from export-related jobs in the directly and indirectly affected industries.

Livestock Grazing

Some jobs and income in the GYA are either directly or indirectly attributable to livestock grazing on the national forests. Total employment for livestock varies between cattle grazing and sheep grazing. Income varies from $850,000 to $957,000 in labor income per 100,000 AMs. Jobs in the sheep grazing sector may include part-time jobs. Figure 94 displays income and employment per 100,000 AMs for the GYA.

Figure 94. Jobs and income per 100,000 AMs for the GYA[17].

Employment (jobs per 100,000 AMs				
Sector	**Direct**	**Indirect**	**Induced**	**Total**
Cattle	25	21	8	54
Sheep	19	5	1	28
Labor income (dollars per 100,000 AMs)				
Sector	**Direct**	**Indirect**	**Induced**	**Total**
Cattle	400,800	388,000	168,600	957,400
Sheep	81,260	58,200	29,960	169,540

About 414,000 AMs of sheep and 422,000 AMs of cattle were grazed on the six GYA national forests in 2003. This resulted in about 350 jobs and $4.7 million of labor income that is associated with grazing on the GYA national forests either directly or indirectly (including induced jobs). Relative to direct jobs in the cattle ranching and farming industries in Figure 93, about 183 jobs of the 6,336 jobs, or 3%, are attributed to livestock grazing on these national forests.

Wood Products

Some jobs and income are attributable to timber harvesting from the GYA national forests, which provides employment in the logging and sawmill sectors. About 24 jobs and over $700,000 of personal income are directly or indirectly generated for every million board feet of timber harvest through the logging and sawmill industries. These are averages for the 21-county area in the GYA.

Figure 95. Jobs and income per million board feet of timber harvest in the GYA[18].

Employment (jobs per MMBF)				
Sector	**Direct**	**Indirect**	**Induced**	**Total**
Logging	10	1	1	12
Sawmills	9	2	1	12
Labor income (dollars per MMBF)				
Sector	**Direct**	**Indirect**	**Induced**	**Total**
Logging	270,000	23,400	19,700	313,100
Sawmills	300,000	76,400	30,300	406,700

About 13 million board feet were harvested, on average, between 2000 to 2003 for the six GYA national forests. This resulted in about 310 jobs and $9.5 million of labor income that is associated with timber harvesting on the GYA national forests either directly or indirectly (including induced jobs). Relative to direct jobs in the wood product industries in Figure 93, about 240 jobs of the 787 jobs, or 30%, are attributed to timber harvesting on these national forests.

[17] Impacts were estimated using IMPLAN Professional Version 2.0, Minnesota IMPLAN Group, Inc. County level inventory, marketing, and income information were collected from the National Agricultural Statistical Service state Web sites at http://www.usda.gov/nass/. Data on Forest Service headmonths were collected from the Grazing Statistical Survey 2002 at http://www.fs.fed.us/rangelands/ftp/docs/grazing_summary_2002.pdf.

[18] Impacts were estimated using IMPLAN Professional Version 2.0, Minnesota IMPLAN Group, Inc. Direct response coefficients obtained from a primary data survey of the Rocky Mountain west done for the 2000 Strategic Plan (Alward et al. 2003). Indirect and induced effects were estimated using IMPLAN.

Oil, Gas, and Minerals

Jobs and income are also attributable to oil and gas leasing and mineral development. As noted previously, mining provides some of the highest paying jobs in the GYA. Figure 96 shows the income and employment resulting from a drilled oil and gas well in the GYA.

Figure 96. Jobs and income for a drilled well in the GYA[19].

	Direct	Indirect	Induced	Total
Jobs (number) per drilled well	6	3	3	12
Labor income (dollars) per drilled well	232,800	92,700	65,300	390,800

Recreation and Tourism

The national forests in the GYA provide a variety of recreational experiences, ranging from day visits to destination recreational trips. Lodging, food, services, outfitting and guiding, and retail trade all are dependent to varying degrees on people visiting and recreating on the national forests. Figure 97 describes employment response to 1,000 recreation visits for both wildlife and non-wildlife related activities. Overnight off-forest use in the 21-county area generates nearly double the number of total jobs when compared with overnight on-forest use.

Figure 97. Employment resulting from wildlife and non-wildlife related visits for 1,000 recreation trips on GYA national forests[20].

Wildlife related trips (hunting, fishing, viewing)					
Type of visitor	**Type of visit**	**Direct jobs**	**Indirect jobs**	**Induced jobs**	**Total**
Local	Day use	0.3	0	0	0.4
	Overnight off-forest	1.1	0.1	0.2	1.3
	Overnight on-forest	1.4	0.1	0.2	1.7
Non-local	Day use	0.4	0	0.1	0.5
	Overnight off-forest	3.2	0.3	0.5	4.0
	Overnight on-forest	2.1	0.2	0.3	2.6
Non-wildlife related visits (camping, hiking, etc.)					
Type of visitor	**Type of visit**	**Direct jobs**	**Indirect jobs**	**Induced jobs**	**Total**
Local	Day use	0.3	0	0	0.3
	Overnight off-forest	1.5	0.1	0.2	1.9
	Overnight on-forest	1.0	0.1	0.2	1.3
Non-local	Day use	0.5	0.1	0.1	0.7
	Overnight off-forest	3.2	0.3	0.5	4.0
	Overnight on-forest	1.8	0.2	0.3	2.2

[19] Impacts were estimated using IMPLAN Professional Version 2.0, Minnesota IMPLAN Group, Inc., and were based upon the 2001 U.S. average cost of drilling an oil and gas well of $943,200. Source: U.S. Department of Energy, Energy Information Administration, "Table 4.7 Costs of Crude Oil and Natural Gas Wells Drilled, 1960-2001" (http://www.eia.doe.gov/emeu/aer/resource.html) accessed April 27, 2004.

[20] Impacts were estimated using IMPLAN Professional Version 2.0, Minnesota IMPLAN Group, Inc. and were based on recreation visitor expenditure profiles from the National Visitor Use Monitoring Survey (NVUM). Impact estimates were generated on a per million local (resident) and non-local recreation visits. Source: Spending Profiles of National Forest Visitors, Years 2000 and 2001, Daniel J. Stynes, Eric M. White, and Larry Leefers. Expenditure profiles in the NVUM documentation are on a per party per trip basis. Average party size was used to convert the impact results into a per person (visits) basis.

Payments to Counties from Forest Programs

Counties containing National Forest System lands receive payments from the federal government to compensate for critical services they provide to both county residents and visitors to these federal lands. In 1908, Congress enacted the Twenty-Five Percent Fund Act that requires 25% of the revenues derived from National Forest System lands be paid to states for use by the counties in which the lands are situated for the benefit of public schools and roads. Since 1908, the affected counties have received these payments.

The Secure Rural Schools and Community Self-Determination Act was enacted in October 2000. The purpose of this act was to stabilize payments to counties. Under this law, for fiscal years 2001 through 2006, counties have the choice of receiving either 1) the 25% payment as under the Act of 1908, or 2) an amount equal to their proportion of the average of the state's three highest 25% payments from fiscal year 1986 through fiscal year 1999.

A reduction in timber harvest volume or livestock grazing under any of the alternatives would not have an effect on the 25% payments to counties. All counties in the study area have chosen to receive payment under the Secure Rural School and Community Self-Determination Act of 2000, which has locked in these payments for six years. Payments in lieu of taxes would not be affected.

Payments to States

Twelve and a half percent of the value of the oil and gas produced from federal lands is collected as royalties and paid to the respective state. Lease rental and lease bonus bids also provide income to the respective state. Of the money collected for oil and gas rent and for royalty or bonus payments for public domain lands, 50% is returned to the U.S. Treasury and 50% is given to the state in which the oil and gas is produced. Additionally, states or counties usually receive ad valorum and severance taxes from oil and gas activities.

Effects on the Economic Environment

Many factors influence and affect the local social and economic environment. Population growth, economic growth, and economic diversity of individual counties and communities all affect local economies, as well as management of national forest system lands within the counties. The tables below summarize employment and income changes for each alternative for livestock grazing and timber harvesting. Changes in employment and income related to oil and gas leasing, minerals, and recreation and tourism are discussed in a narrative.

Figure 98. Reduction in employment and income due to changes in livestock grazing for each alternative by forest.

	Employment (numbers of jobs)				Income (millions of dollars)			
National forest	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Beaverhead	0	0	0	7	0	0	0	0.04
Bridger-Teton	0	0	0	33	0	0	0	0.31
Custer	0	0	0	0	0	0	0	0
Gallatin	0	1	1	1	0	0.01	0.01	0.01
Shoshone	0	0	1	1	0	0	0.01	0.01
Targhee	1	1	1	33	0.01	0.01	0.01	0.21
Total	1	2	3	75	0.01	0.01	0.03	0.57

Figure 99. Reduction in employment and income due to changes in timber harvesting for each alternative by forest.

	Employment (jobs)				Income (millions of dollars)			
National forest	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Beaverhead	0	0	0	12 to 70	0	0	0	0.4 – 2.1
Bridger-Teton	0	0	1 to 8	7 to 42	0	0	0	0.2 – 1.3
Custer	0	0	0	1 to 3	0	0	0	0 - 0.1
Gallatin	0	0	4 to 25	16 to 96	0	0	0.1 - 0.8	0.5 – 2.9
Shoshone	0	0	7 to 40	9 to 56	0	0	0.2 – 1.2	0.3 – 1.7
Targhee	0	0	21 to 126	52 to 308	0	0	0.7 – 3.9	1.6 – 9.4
Total	0	0	34 to 200	98 to 575	0	0	1.0 – 6.1	3.0 – 17.6

Figure 100. Total reduction in employment and income due to changes in livestock grazing and timber harvesting for each alternative by forest.

	Employment (jobs)				Income (millions of dollars)			
National forest	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**	**Alt 1**	**Alt 2**	**Alt 3**	**Alt 4**
Beaverhead	0	0	0	19 to 77	0	0	0	0.44 – 2.14
Bridger-Teton	0	0	1 to 8	40 to 75	0	0	0	0.51 – 1.61
Custer	0	0	0	1 to 3	0	0	0	0 - 0.1
Gallatin	0	1	5 to 26	17 to 97	0	0.01	0.11 - 0.81	0.51 – 2.91
Shoshone	0	0	8 to 41	10 to 57	0	0	0.21 – 1.21	0.31 – 1.71
Targhee	1	1	22 to 127	85 to 341	0.01	0.01	0.71 – 3.91	1.81 – 9.61
Total	1	2	37 to 204	173 to 650	0.01	0.01	1.03 – 5.93	3.58 – 23.2

Effects of Alternatives 1 and 2 on the Economic Environment

The overall economic effects of Alternatives 1 and 2 are expected to be similar.

Related to sheep grazing, Alternative 1 would phase out two sheep allotments on the Targhee National Forest and Alternative 2 would phase out four remaining sheep allotments inside the PCA on the Targhee and Gallatin National Forests, resulting in the reduction of about one job in Alternative 1 and about three jobs in Alternative 2. This phase out of sheep grazing is not mandatory but based on willing permittees. Nonetheless, even with willing permittees, it is likely that sheep grazing on these allotments would be phased out by the end of the decade. Options include substitute pastures for the permittee, or buy-out or waiver of the permit. Removal of the entire sheep grazing permit may affect overall ranch viability and may result in the additional reduction of AMs if substitute grazing areas were not available—this could be up to five times the impact if the entire herd would need to be reduced (Taylor 2002). No change would be expected in income and employment effects related to cattle grazing.

Employment and income related to timber harvesting would likely be nearly the same in Alternatives 1 and 2. Alternative 2 may affect the ability to accomplish two or more projects in a subunit and may limit the size of projects.

Because of the protections by statutory rights and the 1872 General Mining Law, employment and income resulting from hardrock minerals programs are not expected to change, although Alternative 2 would add additional costs for mitigation. The additional costs may preclude some small miners from developing their claims.

Because the only leases in the PCA are suspended, no change is expected between Alternatives 1 and 2 in relation to income and employment associated with oil and gas leasing within the next

decade. There would be no change in gas leasing rental or bonus income within the next decade. Alternative 2, however, would likely result in reduced income and employment because of restrictions on full field development. If leasing would occur and full field development were requested, standards on developed site and secure habitat would apply. Permanent mitigation would be needed for full field development. If permanent mitigation were not available to meet the secure habitat and developed sites standards, full field development would be delayed until mitigation could occur. Seismic and exploratory wells could still occur because of the temporary nature of those activities, although exploratory wells would require mitigation if secure habitat were reduced.

Effects on employment and income related to recreation and tourism may vary between Alternatives 1 and Alternative 2. For Alternative 1, very little or no site development has occurred in the past decade within the recovery zone, even though site development could occur in MS 2 and MS 3. This would represent a trend for assuming that site development or expansion would be nearly the same in Alternative 1 as for Alternative 2, which would maintain the number and capacity of developed sites at or below 1998 levels. With no increase in developed sites allowed in Alternative 2 without mitigation and, based on past trends, little or no site expansion in Alternative 1, the effects of the these alternatives would be the nearly the same on income and employment related to recreation and tourism.

For Alternative 2, increased demand for recreation in developed sites would not be accommodated by increasing capacity unless capacity is reduced in other locations and shifted within a subunit. Private lands may be developed in response to increasing demand. Development on private land to support recreation and tourism activities would result in greater income and employment than if the development occurred on National Forest System lands. Currently, non-local overnight use results in nearly double the income and employment when compared with that same type of use on-forest (Figure 97).

Effects of Alternative 3 on the Economic Environment

Effects on income and employment are greater in Alternative 3 than in Alternatives 1 and 2, especially related to timber harvesting and oil and gas leasing activities.

Alternative 3 would have a direct and immediate impact to the existing sheep operators holding grazing permits within the PCA for four allotments, and the cattle operators that graze on allotments with historic recurring livestock/grizzly bear conflicts within the PCA (portions of three allotments). Alternative 3 would eliminate the four remaining sheep allotments and portions of three cattle allotments within three years, resulting in the loss of about three jobs and the associated incomes. Any loss of grazing AMs in excess of 10% could have a significant economic impact to the livestock operator, to the point of making use of the allotment or even the total operation unprofitable. Entire removal of the cattle grazing permit may affect overall ranch viability and may result in the additional reduction of AMs if substitute grazing areas were not available. This could be up to five times the impact if the entire herd would need to be reduced (Taylor 2002).

Income and employment related to timber harvesting would be reduced anywhere from 34 to 200 jobs due to about a 10% reduction in access to suitable acres for timber harvesting throughout all six GYA national forests. The economic effects from timber harvesting would be greatly affected by how much timber harvest substitution occurs on both National Forest System lands and corporate/private lands, and by what roadless policy is in place. Timber harvesting from 2000 to 2002 has been low relative to the past 15 years; those jobs may have already been lost due to roadless policies, use of imported lumber, and other factors that have resulted in less timber harvesting in the last few years, as evidenced by mill closures in areas adjacent to the GYA. The low end of effects could result in the loss of over 30 jobs; at the high end, up to 200 jobs could be lost or not created in Alternative 3.

Because of the protections by statutory rights and the 1872 General Mining Law, employment and income resulting from hardrock minerals programs are not expected to change. Alternative 3 may add some costs for mitigation, similar to Alternative 2.

Because Alternative 3 would preclude any new oil and gas leasing, any economic benefits from the new oil and gas leasing would be foregone. This includes rent from oil and gas leasing and income, employment, and returns to the U.S. Treasury if field development would occur. Existing leases would continue. Development proposed on existing leases may be delayed while mitigations were put in place. Because the only leases in the PCA are suspended, there would be no immediate economic effects; economic effects would occur through foregone oil and gas leasing and development opportunities.

Increased demand for recreation in developed sites would not be accommodated by increased capacity. Private lands may be developed in response to increasing demand. Development on private land to support recreation and tourism activities would result in greater income and employment than if the development occurred on National Forest System lands. Currently, non-local overnight use results in nearly double the income and employment when compared with that same type of use on-forest (Figure 97).

Effects of Alternative 4 on the Economic Environment

Effects on income and employment are the greatest in Alternative 4 for livestock, timber harvesting, oil and gas, and recreation activities.

For effects on livestock grazing, the difference between Alternative 4 and Alternative 3 is the extent of the impact. Alternative 3 applies only to those allotments or parts of allotments within the PCA. Alternative 4 would apply to an expanded area and would have a direct and immediate impact to the 79 existing sheep operators holding grazing permits within Alternative 4 and at least the five cattle operators that graze on allotments with historic recurring grizzly bear/livestock conflicts within Alternative 4. Alternative 4 would require the removal of cattle from those allotments with recurring grizzly bear/livestock conflicts. This removal would result in a reduction in either livestock numbers or season of use, equivalent to the capacity of the affected pasture. The loss of this grazing capacity may require that the remainder of an affected allotment be combined with an adjacent allotment to maintain an economically viable livestock operation. Closure of the allotment could result if the remainder of an affected allotment is not large enough to be economically viable and it is not possible to combine it with an adjacent allotment. Any loss of grazing AMs in excess of 10% could have a significant economic impact to the livestock operator, to the point of making use of the allotment or even the total operation unprofitable.

Related to all grazing, Alternative 4 would reduce employment by approximately 75 jobs due to closure of sheep allotments and elimination of cattle grazing allotments that have recurring conflicts. Entire removal of these allotments may affect overall ranch viability and may result in the additional reduction of AMs if substitute grazing areas were not available. This could be up to five times the impact if the entire herd would need to be reduced (Taylor 2002).

The implementation of the food storage orders forestwide may slightly increase livestock operation costs. Because this alternative allows for greater opportunity for grizzly bears to occupy habitats outside the PCA, operators may incur increased costs due to livestock depredation.

Income and employment related to timber harvesting would be reduced anywhere from 98 to 575 jobs due to about a one-third reduction in access to suitable acres for timber harvesting throughout all six GYA national forests. The economic effects from timber harvesting would be greatly affected by how much timber harvest substitution occurs on both National Forest System land and corporate/private land, by what roadless policies were in place, housing starts, the exchange rate on the dollar (for example, lumber imported from Canada accounted for one-third of the U.S. lumber market in 2002 [Buckles et al. 2002]), and other factors. Timber harvesting from 2000 to 2002 has been low relative to the past 15 years; those jobs may have already been lost due to roadless policies and other factors that have resulted in less timber harvesting in the

last few years, as evidenced by six mill closures in areas adjacent to the GYA, such as in Belgrade, MT; Newcastle and Saratoga, WY; and Rexburg, ID (Spelter 2002). The low end of effects could result in the loss of nearly 100 jobs; at the high end, up to 575 jobs could be lost or not created in Alternative 4.

Because of the protections by statutory rights and the 1872 General Mining Law, employment and income resulting from hardrock minerals programs are not expected to change. Alternative 4 may add some costs for mitigation, similar to Alternative 2.

Because Alternative 4 would preclude any oil and gas leases in a larger area, additional economic benefits from oil and gas leasing would be foregone, including rent from oil and gas leasing and income, employment, and returns to the U.S. treasury if field development would occur. Development would be precluded on approximately 1.5 million additional acres. While there are no full production oil and gas developments within Alternative 4, Alternative 4 does encompass some areas that have a high potential for oil and gas development. It is difficult to estimate a number of wells eliminated by Alternative 4 since a low number of wells have been drilled in the GYA, but several wells could be precluded by this alternative. This could be anywhere from no effects to up to several wells foregone, resulting in about 12 jobs and $390,841 in annual income per well.

For Alternative 4, increased demand for recreation in developed sites would not be accommodated by increasing capacity. This is a similar effect in Alternative 3, but Alternative 4 would affect a larger area. Private land may be developed to respond to the increased demand. Development on private land to support recreation and tourism activities may result in greater income and employment than if the development would occur on National Forest System lands. Currently, non-local overnight use results in nearly double the income and employment when compared with that same type of use on-forest (Figure 97). Lack of development to increase recreation capacity over a larger area than Alternatives 2 and 3, however, may result in reduced visitation in the next decade because the national forests could not accommodate the increased use projected for the GYA (section 3.9.3). Developed recreation sites unique to national forests, such as downhill skiing areas, would not expand, and likely could not be replaced by developments on private land. This lost opportunity for expansion would result in foregone opportunities for future income and employment.

Employment and income associated with dispersed recreation use may be affected if limits on parking and other developed sites used to support dispersed recreation are limited. These limits would not allow any increase in use if these areas were at capacity.

Overall, Alternative 4 would have the most economic impact of any alternative, either through the loss of jobs and income associated with the reduction in current production of outputs, or through the jobs and income foregone by precluding oil and gas development and limits on recreational site capacity. Anywhere from 38 to 204 jobs and from $8.6 million to $23.2 million in labor income would be reduced by reductions in the livestock grazing and timber harvesting programs. Jobs and income foregone from oil and gas leasing could be significant. Effects on recreation and tourism would vary.

Budget to Implement

Costs were developed for monitoring, implementation, restricting road access, law enforcement, and sanitation.

Additional implementation costs would occur for Alternatives 3 and 4, where roads are either permanently restricted or decommissioned to increase secure habitat to 70% and to improve secure habitat in inventoried roadless areas. Permanent road restrictions are less expensive to implement than road decommissioning. Complete road decommissioning, which includes recontouring and obliteration, costs $1,000 to $5,000 per mile. Permanent road closures cost $200 to $1,400 for installation of a barrier at the entrance to the road. For the purposes of this analysis, it is assumed that only barriers would be installed in order to meet the objective of road closures

implemented within five years to increase secure habitat. Road recontouring and obliteration could occur later; it should be noted that these actions would cause some temporary increases in sedimentation due to culvert removal and recontouring of roads. Costs would be much higher than installing a barrier, but maintenance costs would be reduced over time.

For road restrictions, the average segment length of road to be closed is estimated to be five miles. One barrier would be needed for each segment, with a one-time cost of $800 per barrier. The 487 miles of road to be closed in Alternative 3 would result in about 97 barriers; the 1,901 miles of road to be closed in Alternative 4 would result in 380 barriers.

Sanitation costs include installation and maintenance of such items as bear boxes, bear poles, and bear resistant dumpsters.

Monitoring costs are the same for all alternatives except Alternative 4. Alternative 4 would require additional costs for monitoring changes in motorized access route density and habitat effectiveness outside the PCA within the boundary for Alternative 4. GIS databases would have to be created to evaluate these criteria outside the PCA.

Figure 101 displays costs by alternative. Alternatives 1 and 2 would have the lowest annual cost and no initial cost of implementation; Alternative 4 would have the highest annual cost and cost of implementation due to the increased area of application of habitat standards and sanitation requirements.

Figure 101. Annual costs by alternative (thousands of dollars).

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Annual GIS updates	95	95	95	150
Habitat effectiveness modeling	23	23	23	300
Secure habitat and motorized access route monitoring	23	23	23	40
Monitoring of develop sites and livestock grazing	2	2	5	10
Spring carcass surveys	4	4	4	4
Whitebark pine cone transects	2	2	2	2
Human/bear conflict management and sanitation	650	650	650	1,000
Outreach and education	60	60	60	90
Annual costs	859	859	862	1,596

Figure 102. One-time implementation costs by alternative (thousands of dollars).

	Alternative 1	Alternative 2	Alternative 3	Alternative 4
Road restrictions (part of decommissioning)[1]	0	0	78	304
Sanitation (installation of poles, containers, bear boxes, signage, and garbage facilities)	0	0	0	300
Total one-time implementation cost	0	0	77	604

[1]It is assumed road recontouring and obliteration could occur later. Total costs for Alternatives 3 and 4 to complete road recontouring and obliteration would range from $1.22 million in Alternative 3 to $4.75 million in Alternative 4, assuming a cost of $2,500 per mile.

3.15 Civil Rights and Environmental Justice (Executive Order 12898)

Affected Environment

Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies (Presidential Executive Order 12898). Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, local, and tribal programs and policies. Meaningful involvement means that potentially affected community residents have an appropriate opportunity to participate in decisions about a proposed activity and that the concerns of the participants will be considered in the decision making process.

In particular, this DEIS examines:

- Consultation with tribes with treaty rights within the analysis area, and the impacts of this proposal upon tribal members
- Low-income populations and minority populations in the analysis area

See the discussions on treaty and trust responsibilities in the social 3.10. Tribes were notified of this proposal during the scoping process and will be consulted during the DEIS comment period.

The 2000 census for the 21-county analysis area was used to identify minority populations and populations below the poverty level (Environmental Justice Enviromapping). Most counties have less than 20% of their populations at or below the poverty level. Madison County, Idaho (Rexburg) is the exception with 30 to 40% of the population below the poverty level. Most counties have less than 10% as a minority population. Fremont and Hot Springs Counties in Wyoming have 10 to 30% of their population as a minority (these counties include the Wind River Reservation). In Idaho, Butte, Fremont, and Teton Counties are composed of 10 to 30% minorities with Clark County (less than 1,000 in population) showing a 30 to 40% minority population.

Effects on Civil Rights and Environmental Justice

Minority and low-income populations would not be disproportionately impacted under any alternative. The forest plans, inclusive of this proposal, would continue to honor treaty rights such as hunting, fishing, and gathering. Low-income populations would have the same access and opportunities for using the GYA national forests as other populations. Ample notice of this proposal was provided to local county populations through the 45-day scoping period in 2003. Tribes were provided with notice of the proposal, and consultation was conducted by the national forests.

No civil rights effects associated with age, race, creed, color, national origin, or gender have been identified. Public input from all persons and groups, regardless of age, race, income status or other social and economic characteristics have been considered.

3.16 Cumulative Effects

The following discussion of cumulative effects is a synopsis and continuation of the analysis of effects previously presented in this chapter. Cumulative effects are those effects that, when viewed with past, other present, and reasonably foreseeable actions, may have cumulative impacts and should be discussed in the same environmental analysis.

Cumulative Effects on the Grizzly Bear

Past, present, and reasonably foreseeable actions may affect grizzly bear habitat. Of concern are cumulative effects on grizzly bears due to the potential loss of important food sources.

Reduction in the availability of important foods for the bear, particularly whitebark pine, army cutworm moths, ungulates (primarily elk and bison), and spawning cutthroat trout could have

negative effects on the grizzly bear population. The long-term persistence of whitebark pine is potentially threatened from the white pine blister rust and the mountain pine beetle, however no major die offs have been noted. Lake trout in Yellowstone Lake pose a threat to cutthroat trout populations; however, recent research has suggested that female grizzly bears feed little on cutthroat trout and the potential effect of the loss of this major food may not be significant demographically (Schwartz personal communication 2004). Numbers of army cutworm moths could be affected by pesticide use in agricultural lands—there is no data to support the notion that moth numbers will decline in future years. The availability of elk and bison for grizzly bears is influenced by a number of factors, including population management strategies, wolf populations, habitat and weather conditions, and disease. Abundance of all these foods could be affected by global warming. While these foods are the most important to bears, annual availability fluctuates widely—bears have learned to utilize alternative foods during times when these foods are in short supply. During years of low availability of whitebark pine and army cutworm moths, bears often spend more time at lower elevations and have more conflicts with humans and experience a higher level of mortality. The potential threats to these important foods are speculative and the actual impacts to grizzly bears are debatable. Alternatives 3 and 4 include direction for enhancement of important foods for bears as necessary. Any long-term reductions in the availability of these foods could reduce the number of bears the habitat in the GYA could support.

The Conservation Strategy that is the basis for the proposed action is an adaptive document that is designed to deal with changed conditions. The potential loss of major foods is a concern and the abundance of these foods would be monitored as part of the Conservation Strategy. If problems should occur, management strategies would be modified through appropriate interagency cooperative efforts.

Weather conditions play a key role in the yearly availability of foods for bears, which in turn affects female fecundity and cub survival (Schwartz et al. in press). Regardless of the amount of habitat protection, weather conditions would still influence the basic productivity of the land and the foods available to bears and ultimately the carrying capacity of the landscape for grizzly bears.

Hunting of grizzly bears may occur when the bear is delisted. Harvest levels would follow state management plans and would adhere to limits on human-caused mortality identified in the Conservation Strategy, which are expected to sustain the recovered grizzly bear population. Hunting can have the indirect but cumulative effect of providing additional attractants and foods to the bear, particularly during the bears' urgent needs for food stores before hibernation. Risks to bears and hunters would continue as they use the same habitats. Restrictions on hunting in grizzly bear habitat would have both favorable and detrimental effects to the bear. Restrictions could result in fewer hunter-related grizzly bear mortalities, but also could reduce the availability of carcasses and gut piles for grizzly bears.

Bear baiting for black bear hunting outside the PCA could have detrimental impacts to grizzly bears, particularly as populations increase and expand outside the PCA. Grizzly bears attracted to black bear bait sites could be mistakenly killed. Depending on the bait used, some grizzly bears could learn to associate humans with food and become human food conditioned. Human food conditioned bears have a higher potential for conflicts with humans, often resulting in mortality for those bears. Alternative 4 would increase efforts to eliminate black bear baiting in areas occupied by grizzly bears.

Information and education programs designed to inform users of proper behavior in grizzly bear country can serve to minimize the potential for grizzly bear/human conflicts. Some of the efforts include the "Be Bear Aware" campaign, grizzly bear identification training through state wildlife management agency Web sites, and "Living in Bear Country" workshops, etc.

Increasing rural settlement and subdivisions on private lands would occur under any alternative. These changes would affect the bear's use of habitat and movement between habitats. Bear

habituation to humans could become more prevalent with increasing development on private lands; habituation poses risks to bears and to public safety. Private land development could also be influenced by national forest activities and conservation efforts on public lands. However, the national forests in the GYA and county governments are working together to improve sanitation and education on private lands.

Management practices on state, corporate, and small private lands may present barriers or pose risks to grizzly bear movements between the GYA and northern ecosystems. Changes in land settlement and increased highway developments will continue to affect the bear. The IGBC has established formal technical groups to address connectivity issues throughout the Northern Rockies.

Cumulatively, the lynx amendment, Gallatin National Forest Travel planning effort, Yellowstone National Park snowmobile study, and other related efforts described in section 1.5 would generally improve habitat conditions for the grizzly bear. Additionally, Yellowstone and Grand Teton National Parks provide large secure blocks of habitat; livestock grazing is not allowed in Yellowstone National Park and all snow machine use is restricted to designated routes.

From 2000 to 2003, the Forest Service has had some form of a roadless rule in place. These rules generally limited road construction, reconstruction, and timber harvesting in inventoried roadless areas, with some exemptions. These areas contain a high percentage of secure grizzly bear habitat. If a roadless rule were in place that was similar to previous roadless rules, the rule would provide additional protection to secure habitat. The Forest Service Roads Analysis process (USDA Forest Service 1999) requires that the Forest Service examine the road network and give priority to reconstructing and maintaining needed roads and decommissioning unneeded roads. This policy is complementary to access management objectives in grizzly bear habitat and will be a tool for implementing access management decisions.

Fuels treatments, under the National Fire Plan, could benefit grizzly bear habitat by creating young stands that could potentially provide spring foraging areas for grizzly bears. Treatments near developed areas could draw bears into these areas and increase the potential for grizzly bear/human conflicts.

Alternative 4 would provide protection and enhancement direction to more habitats for bears, increasing connectivity options between important habitats inside the GYA and possibly increasing the potential for connectivity to other ecosystems. Should the long-term availability of important foods be reduced, the carrying capacity of the GYA for grizzly bears would decline. The additional secure habitat under Alternative 4 might allow the GYA to support bears throughout a larger area than the other alternatives. Under all alternatives, there are wilderness areas, other management prescriptions, and inventoried roadless areas that would provide additional secure habitat outside the PCA. Existing food storage regulations would remain under all alternatives and be expanded forestwide under Alternative 4.

As discussed in the social environment, larger scale changes in land management such as the closure of 1,900 miles of motorized routes in Alternative 4 would have significant impacts upon rural communities and motorized users. These changes can stress the public's tolerance for accommodating grizzly bear expansion and occupation. Some of these management changes have the potential to trigger a backlash effect. The alternatives that result in the greatest restriction of public access may result in a higher risk of illegal shooting mortalities. Similarly, management of grizzly bears under the ESA generates a similar perception of "locking up public lands." Whether the increased risk of backlash outweighs the potential benefits to bears from the various alternatives is unknown, because this relationship has not been scientifically documented.

Cumulative Effects on Timber Management

From 2000 to 2003, the Forest Service has had some form of a roadless rule in place. These rules generally limited road construction, reconstruction, and timber harvesting in inventoried roadless areas, with some exemptions. These areas contain a high percentage of secure grizzly bear

habitat, and only a relatively small amount of that is suitable timberland. Of the 408,000 acres of suitable timber in the PCA, 42,000 acres, or around 10%, is secure habitat and suitable timberland in inventoried roadless areas. If a roadless rule were in place that is similar to previous roadless rules, an additional 10% of the suitable timberlands would be affected unless one of the exemptions is met.

The lynx amendment is considering alternatives that would defer precommercial thinning. This would have an effect on areas with lodgepole pine less than 40 years old in the suitable timber base and in important lynx habitat. All of the PCA is important lynx habitat, but only 12% of the area is suitable timber. The Targhee National Forest would be most affected by this standard, which may reduce timber yields on lodgepole pine stands in the future.

Other tools, such as prescribed fire, would be used to meet resource objectives in these areas. The proposed action and alternatives to the proposed action would have a limited cumulative effect on the timber program.

Cumulative Effects on Grazing

The lynx amendment may further restrict how grazing occurs if utilization guidelines were not being met in willow and aspen communities. Management of livestock within the PCA does have guidelines for grazing in these habitat types, so the lynx amendment is not expected to have any additional impacts on grazing.

Livestock operations are affected by wolves and wolf management as well as by the grizzly bear and bear management. Generally, some conservation measures can work for both species, but each may pose added impacts on ranching operations.

Other events may impact grazing, including the transmission of wildlife diseases, such as brucellosis, to domestic cattle. Wyoming currently does not have brucellosis-free status, and the costs of livestock operations would be expected to increase due to increased testing and monitoring of livestock herds.

Cumulative Effects on Recreation

Within the last five years, approximately 400 miles of road have been decommissioned on the Targhee National Forest to comply with the road density direction in the 1997 Revised Forest Plan. The Gallatin National Forest is currently updating a travel plan that will amend their 1987 Forest Plan, and other forests are currently revising or scheduled for revisions in the near future (Figure 3). It is likely that the revised plans will further define and possibly limit motorized access to address wildlife security needs, better manage conflicting recreation uses, and protect areas from resource damages. Motorized use within the PCA will most likely reach the capacity of the lands available for that use, and further demand will need to be accommodated outside the PCA.

The lynx amendment to forest plans may have additional effects on winter recreation such as limiting activity in lynx habitat. These habitats may also be near bear denning areas and would provide greater security to the bear as well.

Yellowstone National Park is implementing changes to winter use—National Forest System lands could be affected if snow machine use shifts outside the Park.

Cumulative Effects on Minerals

The past, present, and reasonably foreseeable actions have had a limited effect on minerals resources. Costs have likely increased due to the environmental protections required under INFISH and PACFISH[21]. If the Forest Service roadless policy is implemented, it could result in changes to the areas available for salable and leasable mineral development.

[21] INFISH is management direction to protect habitat and populations of resident native fish outside of anadromous fish habitat in eastern Oregon, eastern Washington, Idaho, western Montana, and portions of Nevada. PACFISH is management direction to protect habitat and populations of anadromous fish habitat in anadromous fish producing watersheds on federal lands in eastern Oregon and Washington, Idaho, and portions of California.

Cumulatively, the proposal, in addition to the past, present, and reasonably foreseeable future actions would add more environmental protections, potentially increasing costs to mineral developers.

Processing of mineral operations under the 1872 General Mining Law is not discretionary. If the number of developed sites are below the 1998 levels per bear subunit, mitigation needed for the proposed hardrock mineral operations may have to be permitted before discretionary projects proposed by the Forest Service, i.e. timber sales. If the number of developed sites is at the limit, companies proposing hardrock mineral exploration or development will have to be given the chance to remove other types of developed sites or remove access routes in order to mitigate their proposed operations. Mitigation can be requested but operators cannot be precluded from exercising their right to mineral exploration and development on their claim(s) under the 1872 General Mining Law.

Cumulatively, the action alternatives would add more environmental protections for the grizzly bear, potentially increasing costs for mineral development. A roadless policy, if one were in effect, could result in changes to the areas available for minerals and energy. For oil and gas leasing, these measures may prohibit full field development inside the PCA if mitigation is not possible. Hardrock mineral development could still occur as a statutory right.

Cumulative Effects on the Economic and Social Environment

Rural communities and economies are changing regardless of this proposal; changes in population, public land uses, and land settlement all have an impact upon public lands and the bears' use of habitat. Alternative 4 would have the largest cumulative effect on the social and economic environment due to the reductions in income and employment associated with livestock grazing, timber harvesting, and mineral development.

Some people feel that any further restrictions on grazing may affect the viability of livestock operations. If livestock operations were not economically viable, ranch owners may be forced to sell their ranches. Several factors beyond just the challenges of grazing permitted livestock on public lands could cumulatively affect agricultural operations. Sale of ranches may be more linked to efforts to stay competitive in a global market. The national livestock industry continues to consolidate operations—a trend that adds up to diminishing returns for remote, marginal, independent operations like those in the GYA (Travis et al. undated). Some ranchlands are being subdivided for residential use, while others are kept intact (or even enlarged) when purchased by non-traditional owners often more interested in their amenity values than livestock production.

A University of Wyoming study notes that the aging of agricultural operators and the lack of young people entering the industry could also affect retention of lands for agricultural purposes. Agricultural profitability and the decline of profitability is another factor noted. Finally, agricultural land prices are increasing as open spaces, the amenities, and potential development profits of other land uses attract buyers other than those in the agricultural industry (Taylor 2003).

3.17 Resource Commitments

Relationship between Short-term Uses of the Environment and Long-term Productivity

Short-term uses are those expected to occur on the forests over the next ten years. These uses include but are not limited to recreation use, grazing, mineral development, timber harvest, and prescribed burning. Long-term productivity refers to the capability of the land to provide resource outputs for a period of time beyond the next ten years. The minimum management requirement established by regulation (36 CFR 219.27) provides for the maintenance of long-term productivity of the land.

Management requirements prescribed by forestwide standards and guidelines would be met under all alternatives. Minimum requirements ensure that long-term productivity of the land would not be impaired by short-term uses.

All action alternatives propose protective measures for habitat for the grizzly bear through adoption of standards and guidelines. Because of this, no impairment of long-term productivity would be expected.

Monitoring applies to all alternatives. If monitoring and subsequent evaluation indicate that standards and guidelines are insufficient to protect long-term productivity, the plans will be amended. Although all alternatives were designed to maintain long-term productivity, there are differences between alternatives in the long-term availability or condition of resources. There may also be differences between alternatives in long-term expenditures necessary to maintain desired conditions. These types of differences between the alternatives are described in chapters 2 and 3.

Irreversible and Irretrievable Commitment of Resources

Irreversible and irretrievable commitment of resources is defined in Forest Service Handbook 1909.15 Environmental Policy and Procedures.

The irreversible commitment of resources means that nonrenewable resources are consumed or destroyed. Examples include mineral extraction, which removes nonrenewable minerals, and potential destruction of such things as heritage resources by other management activities.

The irretrievable commitment of resources is opportunities foregone—trade-offs in the use and management of forest resources. The irretrievable commitment of resources can include the expenditure of funds, loss of production, or restrictions on resource use. Decisions made in a forest plan do not represent actual irreversible or irretrievable commitment of resources. A forest plan determines what kind and levels of activities are appropriate on the forest; it does not make site-specific or project decisions. The decision to irreversibly or irretrievable commit resources occurs

- When the Forest Service makes a project or site-specific decision
- When Congress acts on a recommendation to establish a new wilderness or to include a river in the Wild and Scenic River System

All action alternatives propose protective measures for habitat for the grizzly bear through adoption of standards and guidelines. No changes are made in suitability decisions, management area allocations, or recommendations for wilderness or other special areas. Because of this, no irreversible or irretrievable commitment of resources are anticipated in any of the alternatives.

3.18 Other Required Disclosures

NEPA at 40 CFR 1502.25(a) directs “to the fullest extent possible, agencies shall prepare draft environmental impact statements concurrently with and integrated with …other environmental review laws and executive orders.”

The alternatives are programmatic in nature, consisting of direction that would be applied to future management activities. They do not prescribe site-specific activities on the ground. Standards in the alternatives do not allow more actions that could affect the environment than do existing plans.

American Indian Religious Freedom Act and Tribal Treaty Rights

No effects on American Indian social, economic, or subsistence rights are anticipated.

Prime Farmland, Rangeland, or Forestland

None of the alternatives would adversely affect prime farmland or rangeland. National Forest System lands are not considered prime farmland.

Effects on Floodplains or Wetlands

None of the alternatives would adversely affect floodplains or wetlands. Existing management direction for these resources would be maintained.

Effects on Heritage Resources

The alternatives do not propose management direction that affects heritage resources. When site-specific projects are proposed, a cultural inventory of some degree would be conducted to prevent damage, mitigate unforeseen damage, or prevent impacts to sites in compliance with applicable requirements.

Effects on Water Quality

Section 303(d) of the Clean Water Act requires states to evaluate water quality in light of state water quality standards, report those stream segments that are impaired, and require development of total maximum daily load of pollutants. The states of Idaho, Montana, and Wyoming have identified impaired stream segments on National Forest System lands and are working with the agencies to determine how to reduce pollutants impacts and meet total maximum daily load requirements.

The alternatives could result in either the same or fewer ground-disturbing activities, such as less timber harvesting or commercial grazing. Therefore, the alternatives would not indirectly result in further degradation of 303(d) listed waters.

Effects on Special Areas

Special areas include wilderness areas, proposed wilderness, Special Interest Areas, Research Natural Areas, and Wild, Scenic, and Recreational River Corridors. These areas are generally to be managed to maintain their existing character. The alternatives do not change the overall management direction of these areas.

3.19 Analysis of Significance under NFMA

The purpose of this proposed action is to incorporate management direction into plans to ensure conservation of habitat to support continued recovery of the grizzly bear population in the GYA.

The NFMA significance determination is based on a review of the degree to which management direction for the area covered by a forest plan is being changed. NFMA provides that forest plans may be amended in any manner, but if the amendment results in a significant change in the plan, additional procedures must be followed. Forest Service Handbook 1909.12 Land and Resource Management Planning, section 5.32, identifies four factors to consider in determining whether an amendment is significant. These factors are addressed below in relation to the proposed action.

Factor 1: Timing

Identify when the change is to take place. Determine whether the change is necessary during or after the plan period or whether the change is to take place after the next scheduled revision of the forest plan.

NFMA requires that forest and grassland plans be revised every 15 years. All but one of the plans has been in place since 1987. The Targhee National Forest completed its plan revision in 1997, and the remaining plans are scheduled to be revised in the next few years—for most plans, it is late in the current planning period (Figure 3).

As stated in Forest Service Handbook 1909.12 Land and Resource Management Planning, “the later the change, the less likely it is to be significant for the current forest plan.” During revision, units may revisit the management direction added by this amendment, and incorporate local information.

Factor 2: Location and size

Determine the location and size of the area involved. Define the relationship of the affected area to the overall planning area.

There are approximately 10.5 million acres within the six GYA national forests. Most of the management direction proposed in the alternatives would modify the direction in land allocations that allow for development such as road construction. Of the 10.5 million acres of National Forest System land, approximately 3.4 million acres (PCA) are affected by the proposed action. Seventy-eight percent of the current management of the area is fully consistent with the proposed action because of wilderness or backcountry allocations. This means about 6% of the 10.5 million acres would be most affected by new management direction.

Factor 3: Goals, objectives, and output

Determine whether the change alters long-term relationships between the levels of goods and services projected by the forest plan. Consider whether an increase in one type of output would trigger an increase or decrease in another. Determine whether there is a demand for goods and services not discussed in the forest plan.

The proposed action would add one goal to forest plans: conservation of habitat to support the continued recovery of the grizzly bear. This goal is consistent with other goals in existing plans and other legal requirements to provide habitat needs for threatened and endangered species. The proposed action would add several standards requiring consideration of secure habitat for the grizzly bear. The additional standards provide more guidance in relation to secure habitat, developed sites, and grazing but are consistent with current standards in management of the grizzly bear.

The proposed action would not substantially alter outputs for grazing, timber, minerals, transportation systems, and developed recreation areas. These activities would not be prohibited by the proposed action; however, secure habitat needs for grizzly bear would need to be considered when managing these resources. The proposed action would maintain secure habitat and developed sites at the 1998 baseline—in general, it would not change the status quo. Alternatives to the proposed action, specifically Alternatives 3 and 4, would alter outputs for grazing, timber, and minerals, and for Alternative 4 these changes may be considered substantial.

Factor 4: Management prescriptions

Determine whether the change in a management prescription is only for a specific situation or it would apply to future decisions throughout the planning area. Determine whether or not the change alters the desired future condition of the land and resources or the anticipated goods and services to be produced.

The proposed action would apply to future decisions in the PCA. The proposed action would not change any management area (MA) designations and would change the degree that some activities may occur within an MA. For example, it would require secure habitat to be maintained at a certain level. This standard could affect how much secure habitat is maintained, but it would not change MA designation. However, as noted in chapter 3 for the various resources, the proposed action would not likely change the level of goods and services to be produced. It may increase the cost of managing for those goods and services.

Summary

Considering the four factors, adopting the proposed action would not be a significant change under NFMA to the six forest plans. The proposed action would not be a significant change under NFMA because it would make relatively minor changes in plan direction on a small proportion of the national forests. The new direction would be a refinement of existing direction to maintain habitat for the grizzly bear, and would not alter management area designations or expected outputs. Alternatives 3 and 4 could alter long-term outputs. Alternative 4 may substantially alter the level of goods and services projected by the Forest Plan.

Chapter 4 Consultation and Coordination

4.1 Preparers

Interdisciplinary Team Members

Name	Agency Location	Position Responsibility
Dave Cawrse	Forest Service Shoshone National Forest	Resource staff Core team IDT leader Vegetation and economics analyses
Jack deGolia	Forest Service Beaverhead-Deerlodge National Forest	Public affairs officer Extended team Public involvement
Joe Hicks	Forest Service Shoshone National Forest	Range management specialist Extended team Grazing analysis
Kerry McMenus	Forest Service Region 1 Regional Office	Coordinator Inventory, Monitoring, and Assessment Core team Recreation and social analyses
Kim Barber	Forest Service Shoshone National Forest	Wildlife biologist Core team Wildlife and GIS analyses BA/BE preparation
Leslie Vaculik	Forest Service Region 1 Regional Office	Leasable mineral specialist Extended team Minerals and oil and gas analyses
Mark Orme	Forest Service Caribou-Targhee National Forest	Wildlife biologist Core team Wildlife analysis BA/BE preparation
Pete Bengeyfield	Forest Service Beaverhead-Deerlodge National Forest	Hydrologist Extended team Soil and water analyses
Rick Connell	Forest Service Shoshone National Forest	Assistant forest fire management officer Extended team Fire and fuels analyses
Rose Lehman	Forest Service Caribou-Targhee National Forest	Botanist Extended team Sensitive plants and noxious weeds analyses
Susan Winter	Forest Service Inventory and Monitoring Institute	Economist Extended team Data for economic analysis
Susie Douglas	Forest Service Shoshone National Forest	Writer/editor Core team Document editing and preparation

Steering Team Members (oversight and advisory group)

Name	Agency Location	Position
Becki Heath	Forest Service Gallatin National Forest	Forest Supervisor
Becky Aus	Forest Service Shoshone National Forest	Forest Supervisor
Dan Nolan	Forest Service Region 2 Regional Office	Deputy director Renewable Resources
Jerry Reese	Forest Service Caribou-Targhee National Forest	Forest Supervisor
Kniffy Hamilton	Forest Service Bridger-Teton National Forest	Forest Supervisor
Nancy Curriden	Forest Service Custer National Forest	Forest Supervisor
Rick Roberts	Forest Service Region 1 Regional Office	Director Ecosystem Assessment and Planning
Steve Solem	Forest Service Region 4 Regional Office	Director Planning, Appeals, and Litigation
Tom Reilly	Forest Service Beaverhead-Deerlodge National Forest	Forest Supervisor

4.2 Distribution of the Environmental Impact Statement

This DEIS has been distributed to individuals who specifically requested a copy of the document. In addition, the DEIS and/or the Executive Summary were sent to the following federal agencies, federally recognized tribes, state and local governments, and organizations.

Advisory Council on Historic Preservation
Alliance for the Wild Rockies
Allied Manufacturing
American Farm Bureau Federation
American Wildlands
Bear Creek Council
Bear Lake County Commissioners
Beaverhead County
Biodiversity Conservation Alliance
Blackfeet Tribal Council
Bonneville County Commissioners
Bradford Environmental Research
Buffalo West/Alpine Tesoro
Bureau of Land Management
Capital Trail Vehicle Association
Carbon County Commissioners
Caribou County Commission
Chairman, Sisseton-Wahpeton Sioux Tribe
Cheyenne River Sioux Tribal Council
Citizens for a User Friendly Forest
Clark County Commissioners
Cody Lumber, Inc.
Colorado Grizzly Project
Colville Confederated Tribes
Confederated Salish and Kootenai Tribes
Continental Divide Trail Society

Crow Creek Sioux Tribe
Crow Tribal Council
Deer Lodge County Commission
Devils Lake Sioux Tribe
Doonan Gulch Outfitters
Eastern Shoshone Business Council
Eco Analyst Research
Environmental Protection Agency
Federal Highway Administration, WY Division
Fort Peck Tribal Council
Franklin County Commission
Fremont County (Idaho) Commission
Fremont County (Wyoming) Commission
Gallatin County Commissioners
Gallatin Wildlife Association
Grand Teton National Park
Great Bear Foundation
Greater Yellowstone Coalition
Green River Valley Cattleman's Association
Hagenbarth Livestock
Highland Rose Contracting
Hot Springs County Commissioners
House District 33 (Montana)
House District 56 (Montana)
Idaho Department of Fish and Game
Idaho State Historic Preservation Office
Idaho State Parks and Recreation
Idaho State Snowmobile Association
Intermountain Forest Association
Jackson Hole Mountain Resort
JBR Environmental Consultants
Lincoln County Commission
Lower Brule Sioux Tribe, Tribal Office
Madison County (Idaho) Commission
Madison County (Montana) Commissioners
Mandan Hidatsa Arikara Tribe
Meagher County Commissioners
Medicine Wheel Coalition
Montana Department of Natural Resources
Montana Fish, Wildlife & Parks
National Elk Refuge
National Park Service
National Wildlife Federation, Northern Rockies Resource Center
Native Ecosystems Council
Natural Resource Defense Council
Nez Perce Tribal Council
Northern Arapaho Tribal Council Chairman
Northern Cheyenne Tribal Council
Northern Ute Tribal Council
Northwest Band of the Shoshone Nation
NRCS, Snow Surveys
Oglala Sioux Tribal Council
Oneida County Commission
Park County (Montana) Commissioners
Park County (Wyoming) Commissioners
Perkins County Commissioners
Powder River County Commissioners

Power County Commission
Predator Project
Representative Barbara Cubin
Representative Dennis Rehberg
Rosebud Sioux Tribal Council
R-Y Timber, Inc.
Salish-Kootenai Tribal Council
Senator Conrad Burns
Senator Craig Thomas
Senator Larry Craig
Senator Max Baucus
Senator Michael Enzi
Senator Mike Crapo
Shoshone-Bannock Tribal Council
Sierra Club
Sierra Club Grizzly Bear Ecosystems Project
Sioux Tribe
Skyline Guide Service
Sportsmen for Fish and Wildlife of Wyoming
Standing Rock Sioux Tribe, Cultural Resources
Stillwater County Commission
Stillwater Mining Company
Sublette County
Sweet Grass County Commissioners
Sweet Grass Extension Agent
Teton County (Idaho) Commissioners
Teton County (Wyoming) Commissioners
The Ecology Center, Inc
The Paw and Whisker
Three Affiliated Tribes
Tribal Chairman (Shoshone-Bannock Tribes)
Turpin Meadow Ranch
U.P. Forest Resources
U.S. Fish and Wildlife Service
U.S. Geological Survey
Wildlife Management Institute
Willow Creek Ecology Center
Wojtalewicz Law Firm, Ltd
Wyoming Department of Agriculture
Wyoming Department of Environmental Quality – Air Quality
Wyoming Department of Environmental Quality – Land Quality
Wyoming Farm Bureau
Wyoming Game and Fish Department
Wyoming Livestock Board
Wyoming Outdoor Council
Wyoming State Forestry
Wyoming State Historic Preservation Office
Wyoming State Lands and Investments
Wyoming State Planning Office
Wyoming Stockgrowers Association
Wyoming Water Development Commission
Wyoming Wilderness Association
Yellowstone National Park

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Healthy Forests Restoration Act/Healthy Forests Initiative at http://www.usda.gov/news/releases/2003/12/fs0405.htm

Idaho State Historical Society State Historic Preservation Office (SHPO) at http://www.idahohistory.net/shpo.html

Invasive Species Executive Order at http://www.invasivespecies.gov/laws/execorder.shtml

Montana Historical Society State Historic Preservation Office (SHPO) at http://www.his.state.mt.us/shpo/default.asp

National Environmental Policy Act http://ceq.eh.doe.gov/nepa/nepanet.htm with links to related Executive Orders

National Historic Preservation Act of 1966 at http://www4.law.cornell.edu/uscode/16/ch1A.html#PC1A

Secure Schools and Community Self-determination Act at http://wwwnotes.fs.fed.us:81/r4/payments_to_states.nsf

State of Wyoming State Historic Preservation Office (SHPO) at http://wyoshpo.state.wy.us/

Appendix A — BMU/Subunit Information within the PCA, and Analysis Unit Information outside the PCA

BMU/Subunit Information within the PCA

Within the PCA there are 18 bear management units (BMUs) and 40 BMU subunits, totaling 9,035 square miles (Figure 103 and Figure 105). The major land management agencies include six national forests and two national parks.

Secure Habitat and Motorized Access Route Density within the PCA for each BMU Subunit

Using GIS databases created by each administrative unit, the percent secure habitat, open motorized access route density > 1 mile per square mile, and total motorized access route density > 2 miles/square mile were estimated as of 1998 for each BMU subunit (Figure 104). OMARD is evaluated for each of two seasons, as access routes may be restricted in one season and not another. TMARD and secure habitat are single values by definition and do not vary by season. The contribution of private roads and state and county highways was also evaluated for each BMU subunit (Figure 106). These values represent a minimum percent for OMARD and TMARD, and a maximum percent for secure habitat even if all motorized access features administered by the land management agencies were obliterated or decommissioned on public lands. A standardized program (AML) that runs in the ARC/INFO software environment was used to make the calculations. The buffer command in ARC/INFO is used to buffer all relevant motorized access features by 500 meters. The area outside of this buffer is secure habitat. Motorized access route density is calculated using a moving windows process with 30-meter cells and a one-mile square window.

Figure 103. General BMU subunit information (thousands of acres) inside the PCA.

Subunit name	BMU #	Acres	Land management agencies
Bechler/Teton	18	341.8	Caribou-Targhee NF, Yellowstone NP, Grand Teton NP
Boulder/Slough #1	4	180.5	Custer NF, Gallatin NF
Boulder/Slough #2	4	148.5	Custer NF, Gallatin NF, Yellowstone NP
Buffalo/Spread Creek #1	17	142.1	Bridger-Teton NF, Grand Teton NP
Buffalo/Spread Creek #2	17	325.1	Bridger-Teton NF
Crandall/Sunlight #1	6	83.2	Gallatin NF, Shoshone NF
Crandall/Sunlight #2	6	202.2	Gallatin NF, Shoshone NF
Crandall/Sunlight #3	6	142.1	Shoshone NF
Firehole/Hayden #1	10	217.0	Yellowstone NP
Firehole/Hayden #2	10	113.3	Yellowstone NP
Gallatin #1	2	81.9	Yellowstone NP
Gallatin #2	2	99.2	Yellowstone NP
Gallatin #3	2	139.5	Gallatin NF
Hellroaring/Bear #1	3	118.4	Gallatin NF, Yellowstone NP
Hellroaring/Bear #2	3	146.6	Gallatin NF, Yellowstone NP
Henrys Lake #1	12	128.6	Caribou-Targhee NF
Henrys Lake #2	12	97.9	Caribou-Targhee NF, Gallatin NF
Hilgard #1	1	128.6	Beaverhead-Deerlodge NF, Gallatin NF
Hilgard #2	1	90.2	Beaverhead-Deerlodge NF, Gallatin NF
Lamar #1	5	192.0	Yellowstone NP
Lamar #2	5	115.8	Yellowstone NP

Subunit name	BMU #	Acres	Land management agencies
Madison #1	11	145.3	Beaverhead-Deerlodge NF, Gallatin NF
Madison #2	11	100.5	Gallatin NF
Pelican/Clear #1	8	69.1	Yellowstone NP
Pelican/Clear #2	8	164.5	Yellowstone NP
Plateau #1	13	183.0	Caribou-Targhee NF, Gallatin NF, Yellowstone NP
Plateau #2	13	268.8	Caribou-Targhee NF, Yellowstone NP
Shoshone #1	7	78.1	Shoshone NF
Shoshone #2	7	84.5	Shoshone NF
Shoshone #3	7	90.2	Shoshone NF
Shoshone #4	7	121.0	Shoshone NF
South Absaroka #1	16	104.3	Shoshone NF
South Absaroka #2	16	122.2	Shoshone NF
South Absaroka #3	16	222.7	Shoshone NF
Thorofare #1	15	175.4	Bridger-Teton NF, Yellowstone NP
Thorofare #2	15	115.2	Bridger-Teton NF, Yellowstone NP
Two Ocean/Lake #1	14	310.4	Bridger-Teton NF, Yellowstone NP
Two Ocean/Lake #2	14	91.5	Bridger-Teton NF, Yellowstone NP
Washburn #1	9	113.9	Yellowstone NP
Washburn #2	9	92.2	Yellowstone NP

Figure 104. The 1998 baseline values for secure habitat, OMARD >1 mile per square mile, and TMARD >2 miles per square miles for 40 BMU subunits in the GYA. Includes USFS, BLM, state, county, and private motorized access routes. Size is shown in thousands of acres[1].

Subunit name	BMU #	OMARD % > 1 mi/sq mi		TMARD % >2 mi/sq mi	% secure habitat[2]	Size
		S1	S2			
Bechler/Teton	18	12.7	12.7	4.7	78.1	341.8
Boulder/Slough #1	4	2.2	2.2	0.1	96.6	180.5
Boulder/Slough #2	4	1.0	1.0	0	97.7	148.5
Buffalo/Spread Creek #1	17	10.1	10.2	4.1	88.3	142.1 (140.8)
Buffalo/Spread Creek #2	17	13.3	14.5	10.4	81.1[3]	325.1
Crandall/Sunlight #1	6	11.9	16.2	4.0	81.1	83.2
Crandall/Sunlight #2	6	13.6	14.6	8.9	82.3	202.2
Crandall/Sunlight #3	6	12.8	16.6	8.2	80.4	142.1
Firehole/Hayden #1	10	6.3	6.3	1.2	88.4	217.0

Subunit name	BMU #	OMARD % > 1 mi/sq mi		TMARD % >2 mi/sq mi	% secure habitat[2]	Size
		S1	S2			
Firehole/Hayden #2	10	6.3	6.3	0.9	88.4	113.3
Gallatin #1	2	1.6	1.6	0.1	96.3	81.9
Gallatin #2	2	7.8	7.8	3.8	90.2	99.2
Gallatin #3	2	41.5	42.5	16.9	55.3	139.5
Hellroaring/Bear #1	3	20.8	21.5	13.5	77.0	118.4
Hellroaring/Bear #2	3	0.6	0.6	0.2	99.5	146.6
Henrys Lake #1	12	44.7	44.7	25.9	45.4	128.6 (122.2)
Henrys Lake #2	12	46.1	46.1	28.1	45.7	97.9 (89.6)
Hilgard #1	1	25.1	25.1	12.5	69.8	128.6
Hilgard #2	1	16.0	16.0	10.3	71.5	90.2
Lamar #1	5	7.0	7.0	3.3	89.4	192.0
Lamar #2	5	0	0	0	100	115.8
Madison #1	11	24.2	24.5	10.2	71.5	145.3
Madison #2	11	31.7	31.7	22.3	66.5	100.5 (95.4)
Pelican/Clear #1	8	1.3	1.3	0.4	97.8	69.1
Pelican/Clear #2	8	3.0	3.0	0.2	94.1	164.5
Plateau #1	13	19.0	19.2	9.8	68.9	183.0
Plateau #2	13	6.1	6.1	2.4	88.7	268.8
Shoshone #1	7	1.5	1.5	0.9	98.5	78.1
Shoshone #2	7	1.1	1.1	0.4	98.8	84.5
Shoshone #3	7	3.4	3.4	1.3	97.0	90.2
Shoshone #4	7	3.9	4.6	2.0	94.9	121.0
South Absaroka #1	16	0.4	0.4	0	99.2	104.3
South Absaroka #2	16	0	0	0	99.9	122.2
South Absaroka #3	16	2.1	2.1	2.3	96.8	222.7

Subunit name	BMU #	OMARD % > 1 mi/sq mi		TMARD % >2 mi/sq mi	% secure habitat[2]	Size
		S1	S2			
Thorofare #1	15	0	0	0	100	175.4
Thorofare #2	15	0	0	0	100	115.2
Two Ocean/Lake #1	14	1.8	1.8	0.1	96.3	310.4 (238.1)
Two Ocean/Lake #2	14	0	0	0	100	91.5 (80.0)
Washburn #1	9	12.4	12.4	2.9	83.0	113.9
Washburn#2	9	3.6	3.6	0.7	92.0	92.2
Mean for PCA/total acres		10.4	10.7	5.3	86.2	5,893.8 (5,782.4)

[1] Lakes >1 mile in size were removed from subunit totals, OMARD, TMARD, and secure habitat calculations. Numbers in parentheses are acres of subunit without these lakes.
[2] Percent secure habitat was rounded to the nearest whole percent for showing BMU subunits that are below 70% (Figure 105).
[3] This subunit will be recalculated before FEIS publication to better reflect secure habitat conditions in 1998.

Figure 105. BMU subunits.

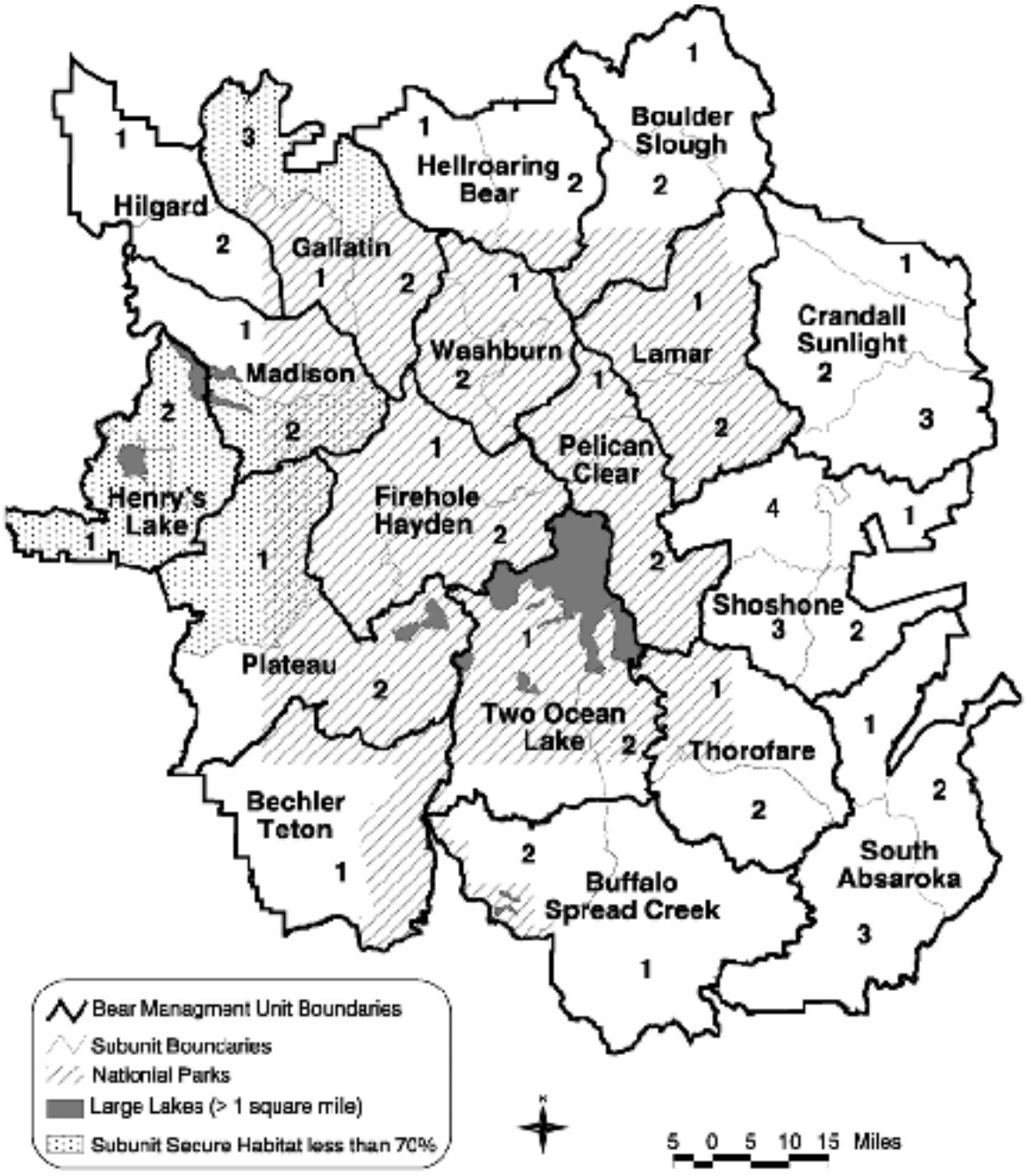


Figure 106. The 1998 baseline values for secure habitat, OMARD >1 mile per square mile, and TMARD >2 miles per square mile for 40 BMU subunits in the GYA. Includes only private roads and state and county highways[2]. Size is shown in thousands of acres[1, 2].

Subunit name	BMU #	OMARD % > 1 mi/sq mi		TMARD % >2 mi/sq mi	% secure habitat[2]	Size
		S1	S2			
Bechler/Teton	18	0	0	0	99	341.8
Boulder/Slough #1	4	2	2	0	97	180.5
Boulder/Slough #2	4	0	0	0	100	148.5
Buffalo/Spread Creek #1	17	0	0	0	99	142.1 (140.8)
Buffalo/Spread Creek #2	17	2	2	0	95	325.1
Crandall/Sunlight #1	6	6	6	1	92	83.2
Crandall/Sunlight #2	6	8	8	1	89	202.2
Crandall/Sunlight #3	6	5	5	1	93	142.1
Firehole/Hayden #1	10	0	0	0	100	217.0
Firehole/Hayden #2	10	0	0	0	100	113.3
Gallatin #1	2	0	0	0	99	81.9
Gallatin #2	2	1	1	0	99	99.2
Gallatin #3	2	16	16	8	81	139.5
Hellroaring/Bear #1	3	9	9	4	91	118.4
Hellroaring/Bear #2	3	0	0	0	100	146.6
Henrys Lake #1	12	31	31	16	67	128.6 (122.2)
Henrys Lake #2	12	14	14	7	85	97.9 (89.6)
Hilgard #1	1	6	6	2	91	128.6
Hilgard #2	1	2	2	3	92	90.2
Lamar #1	5	2	2	1	97	192.0
Lamar #2	5	0	0	0	100	115.8
Madison #1	11	6	6	3	94	145.3
Madison #2	11	8	8	4	90	100.5 (95.4)

Subunit name	BMU #	OMARD % > 1 mi/sq mi		TMARD % >2 mi/sq mi	% secure habitat[2]	Size
		S1	S2			
Pelican/Clear #1	8	0	0	0	100	69.1
Pelican/Clear #2	8	0	0	0	100	164.5
Plateau #1	13	2	2	1	95	183.0
Plateau #2	13	0	0	0	99	268.8
Shoshone #1	7	1	1	0	99	78.1
Shoshone #2	7	0	0	0	99	84.5
Shoshone #3	7	1	1	0	98	90.2
Shoshone #4	7	1	1	0	96	121.0
South Absaroka #1	16	0	0	0	99	104.3
South Absaroka #2	16	0	0	0	100	122.2
South Absaroka #3	16	0	0	0	100	222.7
Thorofare #1	15	0	0	0	100	175.4
Thorofare #2	15	0	0	0	100	115.2
Two Ocean/Lake #1	14	0	0	0	100	310.4 (238.1)
Two Ocean/Lake #2	14	0	0	0	100	91.5 (80.0)
Washburn #1	9	0	0	0	100	113.9
Washburn#2	9	0	0	0	100	92.2
Mean for PCA/total acres		3	3	1.3	96	5,893.8 (5,782.4)

[1] Lakes >1 square mile in size were removed from subunit totals, OMARD, TMARD, and secure habitat calculations. Numbers in parentheses are acres of subunit without these lakes.

[2] These motorized features are not subject to management under this proposal and the values in this table represent a minimum percent for OMARD and TMARD, and a maximum percent for secure habitat even if all motorized access features administered by the land management agencies were obliterated or decommissioned on public lands.

Figure 107. Percent rule acres (in thousands) and national forest/national park overlap when applying the 1% rule[1].

BMU #	Largest BMU subunit	1% rule acres[2]	National forests within the entire BMU	National parks within the entire BMU
18	Bechler/Teton #1	3.4	Targhee	Yellowstone, Grand Teton
4	Boulder/Slough #1	1.8	Custer, Gallatin	Yellowstone
17	Buffalo/Spread Creek #2	3.3	Bridger-Teton	Grand Teton
6	Crandall/Sunlight #2	2.0	Gallatin, Shoshone	
10	Firehole/Hayden #1	2.2		Yellowstone
2	Gallatin #3	1.4	Gallatin	Yellowstone
3	Hellroaring/Bear #2	1.5	Gallatin	Yellowstone
12	Henrys Lake #1	1.2	Gallatin, Targhee	
1	Hilgard #1	1.3	Beaverhead, Gallatin	Yellowstone
5	Lamar #1	1.9	Custer, Gallatin	Yellowstone
11	Madison #1	1.5	Gallatin	Yellowstone
8	Pelican/Clear #2	1.6		Yellowstone
13	Plateau #2	2.7	Gallatin, Targhee	Yellowstone
7	Shoshone #4	1.2	Shoshone	
16	South Absaroka #3	2.2	Shoshone	
15	Thorofare #1	1.2	Bridger-Teton	Yellowstone
14	Two Ocean/Lake #1	2.4	Bridger-Teton	Yellowstone, Grand Teton
9	Washburn #1	1.1		Yellowstone
PCA	Total 1% rule acres	34.4		
	Total 1% rule acres—BMUs with national parks only	4.9		
	Total 1% rule acres—BMUs with national forests only	6.6		
	Total 1% rule acres—BMUs with national forests plus national parks	22.9		

[1] The 1% rule is based on the size of the largest BMU subunit. When BMU boundaries include more than one national forest and/or national park, administrative units will need to coordinate to ensure that the 1% rule is not exceeded.
[2] Large lakes not included in 1% rule acre calculations.

Figure 108. Miles of OMAR to be closed to meet Standard 1 for Alternatives 3 and 4 within the PCA.

Subunit name	Miles of OMAR within inventoried roadless areas to be closed in Alternatives 3 and 4	Additional miles of OMAR to be closed to meet minimum 70% secure	Total miles of OMAR to be closed
Bechler/Teton	2	0	2
Boulder/Slough #1	0	0	0
Boulder/Slough #2	0	0	0
Buffalo/Spread Creek #1	2	0	2
Buffalo/Spread Creek #2	19	0	19
Crandall/Sunlight #1	14	0	14
Crandall/Sunlight #2	8	0	8
Crandall/Sunlight #3	8	0	8
Firehole/Hayden #1	0	0	0
Firehole/Hayden #2	0	0	0
Gallatin #1	0	0	0
Gallatin #2	0	0	0
Gallatin #3	105		105
Hellroaring/Bear #1	15	0	15
Hellroaring/Bear #2	0	0	0
Henrys Lake #1	3	58.6	61.6
Henrys Lake #2	20	29.6	49.6
Hilgard #1	80	0	80
Hilgard #2	37	0	37
Lamar #1	6	0	6
Lamar #2	0	0	0
Madison #1	62	0	62
Madison #2	0	8.4	8.4
Pelican/Clear #1	0	0	0
Pelican/Clear #2	0	0	0
Plateau #1	7	0	7
Plateau #2	0	0	0
Shoshone #1	0	0	0
Shoshone #2	0	0	0

Subunit name	Miles of OMAR within inventoried roadless areas to be closed in Alternatives 3 and 4	Additional miles of OMAR to be closed to meet minimum 70% secure	Total miles of OMAR to be closed
Shoshone #3	0	0	0
Shoshone #4	1	0	1
South Absaroka #1	0	0	0
South Absaroka #2	0	0	0
South Absaroka #3	1	0	1
Thorofare #1	0	0	0
Thorofare #2	0	0	0
Two Ocean/Lake #1	0	0	0
Two Ocean/Lake #2	0	0	0
Washburn #1	0	0	0
Washburn #2	0	0	0
Total	390	96.6	486.6

Figure 109. Changes in acres (in thousands) of secure habitat to meet Standard 1 for Alternatives 3 and 4 within the PCA.

Subunit name	Existing acres of secure habitat	Increased acres of secure habitat when OMARs are closed in inventoried roadless areas	Additional acres of secure habitat needed to reach minimum 70% secure	Total acres of secure habitat for Alternatives 3 and 4
Bechler/Teton	266.9	3.0	0	269.9
Boulder/Slough #1	174.3	0.2	0	174.6
Boulder/Slough #2	145.1	0	0	145.1
Buffalo/Spread Creek #1	124.3	1.0	0	125.3
Buffalo/Spread Creek #2	263.7	10.2	0	273.9
Crandall/Sunlight #1	67.5	6.5	0	74.0
Crandall/Sunlight #2	166.4	5.6	0	172.1
Crandall/Sunlight #3	114.2	7.6	0	121.9
Firehole/Hayden #1	191.8	0	0	191.8
Firehole/Hayden #2	100.1	0	0	100.1
Gallatin #1	78.9	0	0	78.9

Subunit name	Existing acres of secure habitat	Increased acres of secure habitat when OMARs are closed in inventoried roadless areas	Additional acres of secure habitat needed to reach minimum 70% secure	Total acres of secure habitat for Alternatives 3 and 4
Gallatin #2	89.5	0	0	89.5
Gallatin #3	77.2	28.7	0	105.8
Hellroaring/Bear #1	91.2	6.4		97.5
Hellroaring/Bear #2	145.8	0	0	145.8
Henrys Lake #1	55.5	6.8	23.3	85.6
Henrys Lake #2	40.9	10.0	11.8	62.7
Hilgard #1	89.8	19.0	0	108.8
Hilgard #2	64.5	13.6	0	78.1
Lamar #1	171.6	3.4	0	175.0
Lamar #2	115.8	0	0	115.8
Madison #1	103.9	22.2	0	126.1
Madison #2	63.4	0	3.3	66.8
Pelican/Clear #1	67.6	0	0	67.6
Pelican/Clear #2	154.8	0	0	154.8
Plateau #1	126.1	2.2	0	128.3
Plateau #2	238.4	0	0	238.4
Shoshone #1	76.9	0.2	0	77.2
Shoshone #2	83.5	0.4	0	83.9
Shoshone #3	87.5	1.0	0	88.5
Shoshone #4	114.8	2.0	0	116.8
South Absaroka #1	103.5	0	0	103.5
South Absaroka #2	122.1	0.1	0	122.2
South Absaroka #3	215.6	1.3	0	216.9
Thorofare #1	175.4	0	0	175.4
Thorofare #2	115.2	0	0	115.2
Two Ocean/Lake #1	229.3	0.1		229.4
Two Ocean/Lake #2	80.0	0	0	80.0
Washburn #1	94.6	0	0	94.6
Washburn #2	84.8	0	0	84.8
Total	4,972.4	151.5	38.4	5,162.3

Developed Sites on Public Lands within the PCA

Developed sites include all sites on public land developed or improved for human use or resource development such as campgrounds, trailheads, lodges, administrative sites, service stations, summer homes, restaurants, visitor's centers, and permitted resource development sites such as oil and gas exploratory wells, production wells, plans of operation for minerals activities, work camps, etc. Developed sites on public lands are currently inventoried in existing GIS databases and are an input item to the Yellowstone Grizzly Bear Cumulative Effects Model (CEM). Figure 110 displays the number of developed sites for each administrative unit by BMU subunit as of 1998.

Figure 110. The 1998 baseline for number of developed sites on public lands within each of the BMU subunits in the GYA.

Subunit	Administrative units	Permitted summer home complexes[1]	Developed campgrounds[2]	Trailheads	Major developed sites and lodges	Administrative or maintenance sites	Other developed sites[3]	Plans of operation for minerals activities[4]
Bechler/Teton	Targhee NF Yellowstone NP Grand Teton NP	0 0 0	1 0 8	5 2 3	2 0 1	4 2 3	17 2 10	0 0 0
Boulder/Slough #1	Custer NF Gallatin NF	0 0	0 1	1 7	0 0	0 1	0 3	6 2
Boulder/Slough #2	Gallatin NF Yellowstone NP	0 0	0 1	0 3	0 0	2 2	0 1	0 0
Buffalo/Spread Creek #1	Bridger-Teton NF Grand Teton NP	0 0	1 0	1 7	0 2	0 2	1 3	0 0
Buffalo/Spread Creek #2	Bridger-Teton NF	1	4	3	3	4	5	2
Crandall/Sunlight #1	Shoshone NF Gallatin NF	0 0	2 1	5 2	1 0	1 0	5 5	0 0
Crandall/Sunlight #2	Shoshone NF Gallatin NF	0 0	5 1	4 0	1 0	2 0	5 0	1 0
Crandall/Sunlight #3	Shoshone NF Wyoming Game and Fish	0 0	2 2	3 0	0 0	1 1	2 0	0 0
Firehole/Hayden #1	Yellowstone NP	0	1	5	1	6	13	0
Firehole/Hayden #2	Yellowstone NP	0	1	3	1	2	8	0
Gallatin #1	Yellowstone NP	0	0	3	0	1	0	0
Gallatin #2	Yellowstone NP	0	2	5	1	12	1	0

Subunit	Administrative units	Permitted summer home complexes[1]	Developed campgrounds[2]	Trailheads	Major developed sites and lodges	Administrative or maintenance sites	Other developed sites[3]	Plans of operation for minerals activities[4]
Gallatin #3	Gallatin NF Yellowstone NP	0 0	2 0	10 0	0 0	0 0	7 0	0 0
Hellroaring/Bear #1	Gallatin NF Yellowstone NP	0 0	5 0	12 1	1 0	1 0	5 1	8[5] 0
Hellroaring/Bear #2	Gallatin NF Yellowstone NP	0 0	0 0	1 0	0 0	1 2	0 0	0 0
Henrys Lake #1	Targhee NF	2	3	1	0	3	10	1
Henrys Lake #2	Targhee NF Gallatin NF	0 6	0 3	1 4	0 0	1 0	1 2	1 0
Hilgard #1	Beaverhead NF Gallatin NF	0 0	0 0	0 6	0 1	3 2	0 2	0 0
Hilgard #2	Gallatin NF Yellowstone NP	0 0	0 0	4 3	0 0	1 0	1 0	0 0
Lamar #1	Yellowstone NP Gallatin NF Shoshone NF Custer NF	0 0 0 0	1 2 0 0	5 5 0 1	0 0 0 0	3 6 0 0	2 4 0 0	0 6 0 2
Lamar #2	Yellowstone NP	0	0	0	0	4	0	0
Madison #1	Gallatin NF Yellowstone NP	0 0	1 0	11 0	0 0	1 0	9 0	0 0
Madison #2	Gallatin NF Yellowstone NP	8 0	2 0	1 1	1 0	6 2	6 1	0 0
Pelican/Clear #1	Yellowstone NP	0	0	2	0	0	0	0
Pelican/Clear #2	Yellowstone NP	0	1	4	1	4	3	0

Subunit	Administrative units	Permitted summer home complexes[1]	Developed campgrounds[2]	Trailheads	Major developed sites and lodges	Administrative or maintenance sites	Other developed sites[3]	Plans of operation for minerals activities[4]
Plateau #1	Targhee NF Gallatin NF Yellowstone NP	1 0 0	0 0 0	0 1 0	0 0 0	0 0 1	1 0 0	0 0 0
Plateau #2	Targhee NF Yellowstone NP	0 0	1 0	1 0	0 0	1 4	1 0	0 0
Shoshone #1	Shoshone NF	1	2	0	0	0	6	0
Shoshone #2	Shoshone NF	0	0	1	1	0	0	0
Shoshone #3	Shoshone NF	2	0	1	1	0	0	0
Shoshone #4	Shoshone NF	3	3	3	6	0	8	0
South Absaroka #1	Shoshone NF	0	0	0	0	0	0	0
South Absaroka #2	Shoshone NF	0	0	0	0	2	0	0
South Absaroka #3	Shoshone NF	1	3	4	1	1	4	0
Thorofare #1	Bridger-Teton NF Yellowstone NP	0 0	0 0	0 0	0 0	0 4	0 0	0 0
Thorofare #2	Bridger-Tetoon NF Yellowstone NP	0 0	0 0	0 0	0 0	2 0	0 0	0 0
Two Ocean/Lake #1	Yellowstone NP Bridger-Teton NF Grand Teton NP	0 0 0	2 1 0	3 0 1	1 0 0	3 0 0	2 0 1	0 0 0
Two Ocean/Lake #2	Yellowstone NP Bridger-Teton NF	0 0	0 0	0 0	0 0	2 1	0 0	0 0
Washburn #1	Yellowstone NP	0	2	8	2	7	6	0

Subunit	Administrative units	Permitted summer home complexes[1]	Developed campgrounds[2]	Trailheads	Major developed sites and lodges	Administrative or maintenance sites	Other developed sites[3]	Plans of operation for minerals activities[4]
Washburn #2	Yellowstone NP	0	1	6	0	1	4	0
Primary Conservation Area	All	25	68	164	29	115	168	29

[1] Single permitted recreation residences are classified as other developed sites in this table. Figure 60 classifies these single residences as permitted summer home complexes.
[2] Four trailheads on the Bridger-Teton National Forest are combined with the associated campgrounds and are considered a single developed site.
[3] Includes developed recreation sites shown in Figure 60 as well as community infrastructure sites, dams (Figure 87), and other miscellaneous facilities .
[4] Mining claims with plans of operation are considered developed sites for this baseline. Currently, not all sites have active projects.
[5] Includes one mineral materials site with an outside contractor.

Figure 111. Number of mining claims as of 1998 in BMU subunits in the PCA[1].

Subunit	Gallatin NF	Custer NF	Caribou-Targhee NF	Shoshone NF	Bridger-Teton NF
Boulder/Slough #1	8	144			
Buffalo/Spread Creek #1					14
Buffalo/Spread Creek #2					6
Hellroaring/Bear #1	653				
Henrys Lake #1			5		
Henrys Lake #2			3		
Lamar #1	429	42			
Shoshone #3				16	
South Absaroka #2				28	
South Absaroka #3				6	
Total	1,090	186	8	50	20

[1] Activities based in statutory rights, such as oil and gas leases and mining claims under the 1872 General Mining Law are also tracked as part of the developed site monitoring effort. Mining claims and or oil and gas leases do not in and of themselves constitute a site development, but have the potential to be developed sometime in the future. There were no oil and gas leases inside the PCA as of 1998, and 1,354 mining claims in ten subunits inside the PCA. It is important to note that one mining claim does not necessarily mean a potential for one operating plan. Claims are often staked around known mineral deposits to protect the original claim, and operating plans can sometimes encompass hundreds of claims. In addition, there are always a number of claims filed that, after detailed exploration, do not prove to have enough mineralization to be economically developed. Claims or claim groups with approved operating plans are included in the developed site baseline (Figure 110).

Livestock Grazing on Public Lands within the PCA

There were 100 commercial livestock grazing allotments inside the PCA in 1998 and 23,090 permitted sheep AMs (Figure 112). Allotments with less than 100 acres inside the PCA were not included. Where several allotments are managed as one, this was counted as a single allotment. Sheep AMs are calculated by multiplying the permitted number of sheep times the months of permitted use. In many cases, actual use by sheep may have been less than the permitted numbers identified for 1998.

Allotments include both vacant and active commercial grazing allotments. Vacant allotments are those without an active permit but may be used periodically by other permittees at the discretion of the land management agency to resolve resource issues or other concerns. Reissuance of permits for vacant cattle allotments may result in an increase in the number of permitted cattle but the number of allotments would remain the same as the 1998 baseline. Combining or dividing existing allotments would be allowed as long as acreage in allotments does not increase. Any such use of vacant cattle allotments resulting in an increase in cattle numbers will only be done after an analysis to evaluate impacts on grizzly bears. Where chronic conflicts occur on cattle allotments inside the PCA, and an opportunity exists with a willing permittee, one alternative for resolving the conflict may be to phase out cattle grazing or to move the cattle to a currently vacant allotment where there is less likelihood of conflict. Should such cattle grazing be phased out, the cattle allotment with the history of chronic conflicts may be closed to grazing without further NEPA analysis.

Figure 112. Number of commercial livestock grazing allotments and sheep AMs inside the PCA in 1998.

Administrative unit	Cattle allotments		Sheep allotments		Sheep AMs[1]
	Active[2]	Vacant	Active[1]	Vacant	
Beaverhead-Deerlodge NF	2	3	0	0	0
Bridger-Teton NF	9	0	0	0	0
Caribou-Targhee NF	9	1	7	4	14,163
Custer NF	0	0	0	0	0
Gallatin NF	24	9	2	3	3,540
Shoshone NF	24	0	2	0	5,387
Grand Teton NP	1	0	0	0	0
Total in PCA	69	13	11	7	23,090

[1]Since 1998 five of the seven active sheep allotments on the Caribou-Targhee National Forest and the two active sheep allotments on the Shoshone National Forest within the PCA have been closed. As of 2004, there are only four active sheep allotments in side the PCA, totaling 7,130 AMs.
[2] One of the active cattle allotments on the Bridger-Teton National Forest was closed in late 2003.

Analysis Unit Information Outside the PCA for Alternative 4 Areas

For Alternative 4 outside the PCA, there are 39 Analysis Units (AUs) totaling 14,315 square miles on six national forests (Figure 115). National Forest System land comprises 96% of this area. Private and other agency lands within national forest boundaries comprise 4% of this area.

Secure Habitat outside the PCA for each Analysis Unit in Alternative 4

Using GIS databases created by each administrative unit, the percent secure habitat was estimated as of 2003 for each AU for National Forest System lands in Alternative 4 (Figure 113). A standardized program (AML) that runs in the ARC/INFO software environment was used to make the calculations. The buffer command in ARC/INFO is used to buffer all relevant motorized access features by 500 meters. The area outside of this buffer is secure habitat.

Figure 113. Secure habitat analysis on National Forest System lands for each analysis unit outside of the PCA in Alternative 4. Acres are shown in thousands.

Analysis unit	Total national forest acres	Existing national forest secure habitat acres	Existing % secure habitat	New additional acres of secure habitat to meet Standard 1 in Alternative 4[1]	Total % secure habitat for Alternative 4	Minimum miles of motorized access to close to achieve Alternative 4 standards	Total existing open motorized access miles
Beaverhead 2	256.0	162.1	63	17.1	70	26	499.3
Beaverhead 3	299.1	161.0	54	69.7	77	97	585.2
Beaverhead 4	152.3	143.3	94	8.6	100	2	21.9
Beaverhead 5	98.8	50.2	51	31.9	83	45	173.3
Beaverhead 6	222.3	148.7	67	49.6	89	37	242.3
Beaverhead 7	244.3	156.8	64	40.8	81	30	322.2
Beaverhead 8	54.9	53.6	98	0	98	0	4.4
Beaverhead 9	113.7	55.0	48	24.6	70	21	215.8
Beaverhead 10	114.5	62.9	55	30.4	82	17	179.5
Bridger-Teton 2	131.6	126.7	96	4.1	99	10	13.6
Bridger-Teton 3	190.4	190.4	100	0	100	0	0
Bridger-Teton 4	337.8	222.3	66	58.1	83	195	449.1

Analysis unit	Total national forest acres	Existing national forest secure habitat acres	Existing % secure habitat	New additional acres of secure habitat to meet Standard 1 in Alternative 4[1]	Total % secure habitat for Alternative 4	Minimum miles of motorized access to close to achieve Alternative 4 standards	Total existing open motorized access miles
Bridger-Teton 5	324.9	206.3	64[2]	45.3	77	57	271.5
Bridger-Teton 6	128.9	109.5	85[2]	9.0	92	13	40.8
Bridger-Teton 7	179.3	130.1	73[2]	27.5	88	24	99.3
Custer 2	136.7	118.4	87	4.8	90	5	70.4
Custer 3	204.2	188.3	92	2.7	94	5	50.1
Gallatin 2	183.1	130.7	71	9.3	76	17	356.7
Gallatin 3	100.8	65.2	65	6.0	71	10	180.0
Gallatin 4	187.3	161.8	86	9.1	91	27	148.7
Gallatin 5	130.4	110.2	85	6.4	89	10	62.8
Gallatin 6	95.3	70.7	74	7.9	83	18	203.3
Gallatin 7	42.3	36.5	86	2.5	92	4	22.8
Gallatin 8	44.0	43.8	100	0	100	0	0.4
Shoshone 2	100.4	72.6	72	13.8	86	32	114.6
Shoshone 3	90.0	70.6	78	7.9	87	12	72.8
Shoshone 4	155.8	124.4	80	9.7	86	17	117.4
Shoshone 5	145.6	123.0	85	7.1	89	4	88.8
Shoshone 6	152.7	113.2	74	8.3	80	23	173.3
Shoshone 7	114.2	32.5	29	47.4	70	117	433.3
Shoshone 8	130.8	128.9	99	0.7	99	3	5.8
Shoshone 9	72.6	72.6	100	0	100	0	0

Analysis unit	Total national forest acres	Existing national forest secure habitat acres	Existing % secure habitat	New additional acres of secure habitat to meet Standard 1 in Alternative 4[1]	Total % secure habitat for Alternative 4	Minimum miles of motorized access to close to achieve Alternative 4 standards	Total existing open motorized access miles
Shoshone 10	119.0	114.5	96	1.9	98	2	16.1
Targhee 2	219.3	123.5	56	61.5	84	150	304.1
Targhee 3	225.4	164.6	73	49.1	95	137	194.8
Targhee 4	77.6	69.3	89[2]	6.3	98	2	7.5
Targhee 5	194.3	65.1	34[2]	70.9	70	178	344.5
Targhee 6	165.6	96.4	58	19.5	70	45	221.1
Targhee 7	52.1	31.3	60	10.9	81	22	58.1
Total	5,988.3	4,307.0	72	780.4	85	1,414	6,365.6

[1] There are two steps in calculating the new additional acres of secure habitat to meet Standard 1. The first step is closing all motorized access routes in inventoried roadless areas. The second step is closing additional motorized access routes if necessary to achieve a minimum of 70% secure habitat. Sometimes the first step results in achieving more than the minimum 70% secure habitat. Standard 1 requires closing all motorized access routes in inventoried roadless areas even if 70% secure habitat is exceeded.

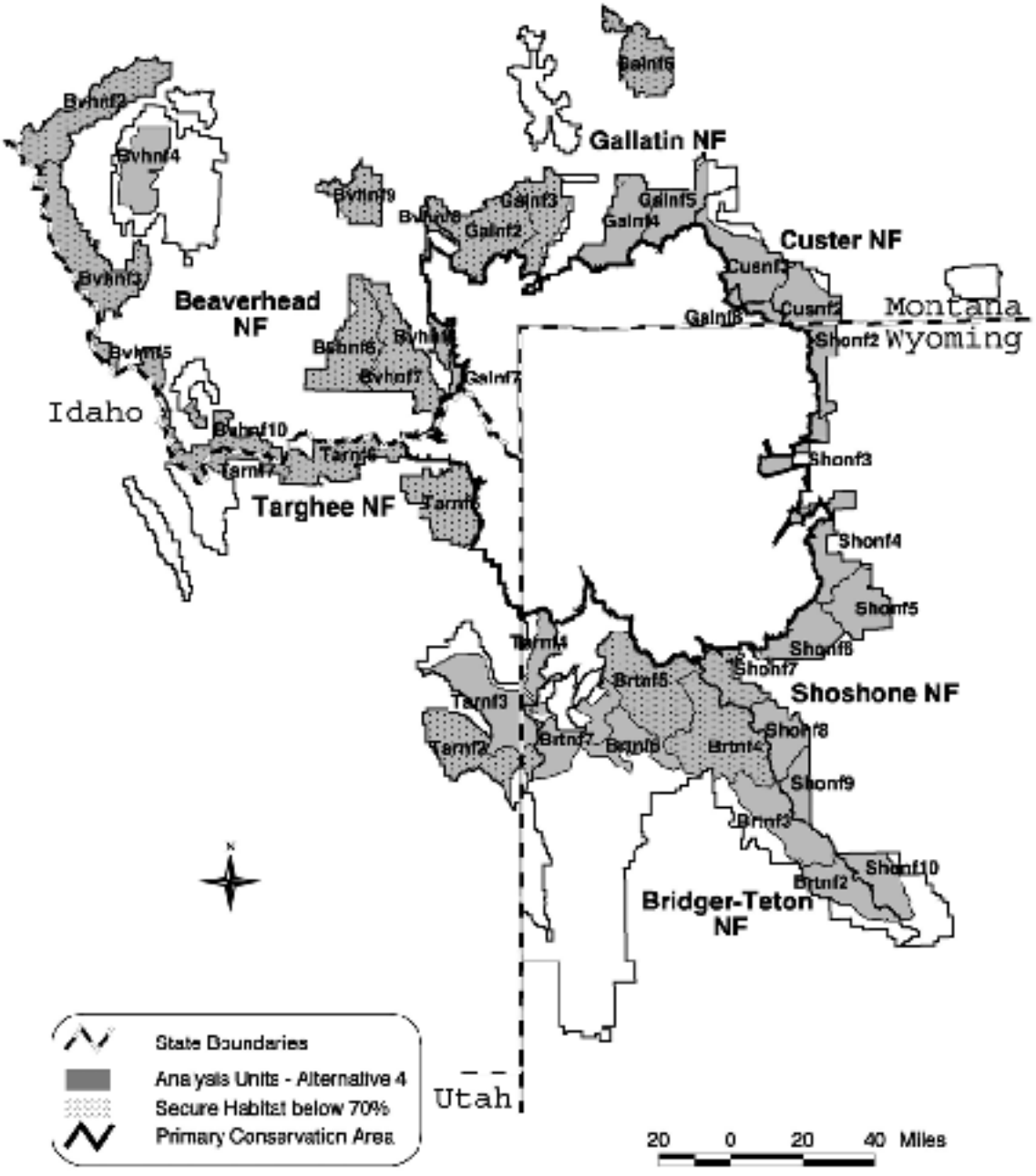
[2] These five analysis units have areas open to cross-country motorized travel, which reduces the amount of secure habitat. If the cross-country motorized travel areas were closed to such use, the amount of secure habitat would be as follows: Bridger-Teton 5 would be 76% secure, Bridger-Teton 6 would be 87% secure, Bridger-Teton 7 would be 80% secure, Targhee 4 would be 96% secure, Targhee 5 would be 49% secure. If the cross-country motorized travel areas were closed to such use, fewer miles of motorized access would need to be closed to achieve 70% secure.

Figure 114. Analysis unit information outside the PCA for private/other ownership lands. Acres are shown in thousands.

Analysis unit	Total private/other acres	Existing secure acres	Percent secure
Beaverhead 2	6.6	1.8	28
Beaverhead 3	7.4	1.0	13
Beaverhead 4	0.4	0.3	84
Beaverhead 5	1.0	0.05	5
Beaverhead 6	1.7	0.4	24
Beaverhead 7	1.7	0.7	40
Beaverhead 8	2.1	2.0	93
Beaverhead 9	1.0	0.06	6
Beaverhead 10	2.0	0.1	5
Bridger-Teton 2	0.0	0.0	na
Bridger-Teton 3	0.0	0.0	na
Bridger-Teton 4	0.0	0.0	na
Bridger-Teton 5	0.0	0.0	na
Bridger-Teton 6	0.0	0.0	na
Bridger-Teton 7	0.6	0.02	3
Custer 2	0.0	0.0	na
Custer 3	0.0	0.0	na
Gallatin 2	82.5	21.8	26
Gallatin 3	55.7	32.6	58
Gallatin 4	10.1	5.8	57
Gallatin 5	4.2	1.2	28
Gallatin 6	67.7	36.8	54
Gallatin 7	0.1	0.03	3
Gallatin 8	0.0	0.0	na

Analysis unit	Total private/other acres	Existing secure acres	Percent secure
Shoshone 2	2.3	1.0	42
Shoshone 3	1.7	0.6	37
Shoshone 4	11.3	4.0	35
Shoshone 5	0.7	0.3	43
Shoshone 6	0.8	0.07	9
Shoshone 7	0.8	0.2	25
Shoshone 8	0.04	0.04	100
Shoshone 9	0.0	0.0	na
Shoshone 10	0.0	0.0	na
Targhee 2	6.7	1.3	20
Targhee 3	2.4	0.5	20
Targhee 4	0.0	0.0	na
Targhee 5	19.3	8.1	42
Targhee 6	6.0	1.0	17
Targhee 7	0.4	0.007	2
Total	297.2	121.6	41

Figure 115. Analysis units outside the PCA.



Developed Sites on Forest Service System Lands outside the PCA in Alternative 4

Developed sites here include all sites on National Forest System Lands developed or improved for human use or resource development such as campgrounds, trailheads, lodges, administrative sites, service stations, summer homes, restaurants, visitor's centers, and permitted resource development sites such as oil and gas exploratory wells, production wells, plans of operation for minerals activities, work camps, etc. Figure 116 displays the number of developed sites for each administrative unit within the boundaries of Alternative 4 outside the PCA.

Figure 116. The 2003 baseline for numbers of developed sites on National Forest System lands within the boundaries of Alternative 4 outside the PCA.

National forest	Permitted summer home complexes	Developed campgrounds	Trailheads	Major developed site and lodges	Administrative or maintenance sites[1]	Other developed sites[2]	Plans of operation for minerals activities[3]
Beaverhead	2	23	16	3	29	22	35
Bridger-Teton	0	16	25	0	0	21	0
Custer	3	13	25	0	0	11	6
Gallatin	3	21	59	2	0	58	16
Shoshone	6	14	26	7	15	24	0
Targhee	5	19	24	9	7	37	6
Total	19	106	165	21	51	173	63

[1] Not all administrative and maintenance sites are included. These sites are exempt from the developed site standard.
[2] includes developed recreation sites shown in Figure 61 as well as community infrastructure site, dams (Figure 87), and other facilities.
[3] mining claims with plans of operation are considered developed sites for this baseline. Currently, not all sites have active projects.

Appendix B—Definitions and Descriptions of the Management Situations

Management Situation 1

Population and habitat conditions

The area contains grizzly population centers (areas key to the survival of grizzly where seasonal or year-long grizzly activity, under natural, free-ranging conditions is common) and habitat components needed for the survival and recovery of the species or a segment of its population. The probability is very great that major federal activities or programs may affect (have direct or indirect relationships to the conservation and recovery of) the grizzly.

Management direction

Grizzly habitat maintenance and improvement (improvement does not apply to Park Service), and grizzly-human conflict minimization will receive the highest management priority. Management decisions will favor the needs of the grizzly bear when grizzly habitat and other land use values compete. Land uses which can affect grizzlies and/or their habitat will be made compatible with grizzly needs or such uses will be disallowed or eliminated. Grizzly-human conflicts will be resolved in favor of grizzlies unless the bear involved is determined to be a nuisance. Nuisance bears may be controlled through either relocation or removal but only if such control would result in a more natural free-ranging grizzly population and all reasonable measures have been taken to protect the bear and/or its habitat (including area closures and/or activity curtailments).

Management Situation 2

Population and habitat conditions

Current information indicates that the area lacks distinct population centers; highly suitable habitat does not generally occur, although some grizzly habitat components exist and grizzlies may be present occasionally. Habitat resources in Management Situation 2 either are unnecessary for survival and recovery of the species, or the need has not yet been determined but habitat resources may be necessary. Certain management actions are necessary. The status of such areas is subject to review and change according to demonstrated grizzly population and habitat needs. Major federal activities may affect the conservation of the grizzly bear primarily in that they may contribute toward (a) human-caused bear mortalities or (b) long-term displacement where the zone of influence could affect habitat use in Management Situation 1.

Management direction

The grizzly bear is an important, but not the primary, use of the area. In some cases, habitat maintenance and improvement may be important management considerations. Minimization of grizzly-human conflict potential that could lead to human-caused mortalities is a high management priority. In this management situation, managers would accommodate demonstrated grizzly populations and/or grizzly habitat use in other land use activities if feasible, but not to the extent of exclusion of other uses. A feasible accommodation is one which is compatible with (does not make unobtainable) the major goals and/or objectives of other uses. Management will at least maintain those habitat conditions which resulted in the area being stratified Management Situation 2. When grizzly population and/or grizzly habitat use and other land use needs are mutually exclusive, the other land use needs may prevail in management consideration. In cases where the need of the habitat resources for recovery has not yet been determined, other land uses may prevail to the extent that they do not result in irretrievable/irreversible resource commitments which would preclude the possibility of eventual restratification to Management Situation 1. If grizzly population and/or habitat use represents demonstrated needs that are so great (necessary to the normal needs or survival of the species or a segment of its population) that they should prevail in management considerations, then the area should be reclassified under Management Situation 1. Managers would control nuisance grizzlies.

Management Situation 3

Population and habitat conditions

Grizzly presence is possible but infrequent. Developments, such as campgrounds, resorts or other high human use associated facilities, and human presence result in conditions which make grizzly presence untenable for humans and/or grizzlies. There is a high probability that major Federal activities or programs may affect the species' conservation and recovery.

Management direction

Grizzly habitat maintenance and improvement are not management considerations. Grizzly-human conflict minimization is a high priority management consideration. Grizzly bear presence and factors contributing to their presence will be actively discouraged. Any grizzly involved in a grizzly-human conflict will be controlled. Any grizzly frequenting an area will be controlled.

Appendix C—National Categories for Management Areas

Category 1

In Category 1, ecological processes such as fire, insects, and disease are allowed to operate relatively free from the influence of humans. A predominately diverse, native vegetation results from natural succession and disturbance processes, while non-native vegetation is rare. People who use Category 1 areas must be self-reliant and should expect little contact with others. Few, if any man-made facilities and structural improvements are present. Travel is non-mechanized with few exceptions. Typical types of Category 1 areas are designated as wilderness, roadless, and backcountry lands. A small amount of motorized use may be required to restore desired conditions in core restoration areas.

Category 2

These areas provide for conservation of representative, or particularly rare and narrowly distributed, ecological settings or components. They help ensure conservation of ecosystems or ecosystem components that may provide important functions ensuring the overall sustainability of larger landscapes. Human influences on the ecological processes are limited to the degree possible, but are sometimes evident. Type of human use varies, but generally is not intensive. Travel is generally non-motorized. Some of these areas help provide an important role under an adaptive management philosophy by providing “natural” reference areas that are intensively managed for a particular objective. These areas are often formally designated. Research Natural Areas, National Recreation Areas, designated Wild and Scenic Rivers, and Special Interest Areas are typically included in Category 2.

Category 3

Ecological values are in balance with human occupancy and consideration is given to both. Resource management activities may occur, but natural ecological processes and resulting patterns will normally predominate. Ecosystems are allowed to function naturally while resource use may change over time to accommodate the ecological factors. Although these areas are characterized by predominantly natural appearing landscapes, an array of management tools may be used to restore or maintain relatively natural patterns of ecological progress. This will result in some evidence of human activities. Users expect to experience some isolation from the sights and sounds of people in a setting that offers some challenge and risk. Restrictions on motorized travel may vary from area to area and from season to season.

Category 4

Ecological values are managed to provide recreational use, but are maintained well within the levels necessary to sustain overall ecological systems. Resource use for other values is not emphasized and has little impact on ecological structure, function, or composition. Human use is recreation oriented. Sights and sounds of people on the site are expected and may even be desired. Motorized transportation is common.

Category 5

These areas are primarily forested ecosystems that are managed to meet a variety of ecological and human needs. They are often characterized by a substantially modified natural environment. A wide variety of structure and composition is present, some showing the effects of past management activities, others affected by predominantly natural forces such as fire, insects, and diseases. Ecological conditions are maintained, while emphasizing selected biological structures and compositions considering the range of natural variability. These lands often display high levels of investment, use, and activity; density of facilities; and evidence of vegetative manipulation. Users expect to see other people and evidence of human activities. Facilities supporting the various resource uses are common. Motorized transportation is common.

In some ecosystems, intensive management is necessary to restore the systems to their range of natural variability. This management is usually a combination of prescribed fire and timber harvest treatments. These lands appear similar to “natural” landscapes if left to function under

natural disturbance processes. Restoration to the range of natural variability will only be a goal when the stated as part of the decision documented in the Record of Decision for a particular forest plan. On some forests in Region 2, the decision may be to manage these resources outside of their range of natural variability, or a documented decision that management within the range of natural variability is not possible to accomplish within the life of the forest plan.

Category 6

These areas are primarily grasslands or other non-forested ecosystems managed to meet a variety of ecological and human needs. They are often characterized by a substantially modified natural environment. Ecological conditions are maintained while emphasizing selected biological structures and compositions considering the range of natural variability. A wide variety of structure and composition is present, some showing the effects of past management activities, others affected by predominantly natural forces such as fire, insects, and diseases. These lands often display high levels of investment, use and activity, density of facilities, and evidence of vegetative manipulation. Users expect to see other people and evidence of human activities. Facilities supporting the various resource uses are common. Motorized transportation is common.

Category 7

Public lands are intermingled with private lands to such an extent that ecosystem management objectives for National Forest System lands must be tempered by other landowners' uses and objectives. Human activities have altered the natural appearance of these landscapes in most areas on both the public and private lands. Sights and sounds of people predominate. Private land use is often residential. Resource use is not planned on a sustainable basis, but may occur in concert with surrounding private land values. Motorized transportation is common.

Category 8

Ecological conditions including processes are likely to be permanently altered beyond the level needed to maintain natural-appearing landscapes and ecological processes by human activities. These areas are generally small in scale. Ecological values are protected where they affect the health and welfare of human occupancy. Areas such as mines or other concentrated uses are included in this category. Human activities are generally commercial in nature and directly or indirectly provide jobs and income. Motorized transportation is common.

Figure 117. Management area crosswalk to the national categories for the six GYA national forests.

		National Management Area Category						
MA	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**8**
	Beaverhead National Forest							
1	Custodial management	X						
6	Research Natural Areas		X					
7	Developed recreation sites							X
8	Dispersed recreation sites			X				
9	Wilderness	X						
10	Wilderness study	X						
13	Timber/wildlife					X		

		National Management Area Category						
MA	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**8**
14	Wetlands			X				
16	Timber					X		
17	Timber/range					X		
18	Timber/range/recreation					X		
19	Wildlife/timber(low)/range					X		
20	Wildlife/timber(mod)/range					X		
21	Wildlife/timber(mod)					X		
22	Range (high)						X	
23	Range (mod)						X	
24	Wildlife/range						X	
25	Big game winter range			X				
26	Big game summer range/timber					X		
27	Watershed restoration				X			
28	Recreation complex							X
30	Historic/scenic trails			X				
	Bridger-Teton National Forest							
1B	Timber/range					X		
2A	Primitive and semiprimitive nonmotorized recreation		X					
2B	Motorized recreation					X		
3	River recreation			X				
4	Municipal watersheds		X					
6A-6D, S	Wilderness	X						
7A	Grizzly bear recovery through scheduled timber harvest				X			

		National Management Area Category						
MA	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**8**
8	Grizzly bear habitat recovery—few roads/habitat security			X				
9A	Developed and administrative sites							X
9B	Special use recreation areas			X				
10	Some development and roads while having no adverse wildlife effects			X				
12	Backcountry, dispersed recreation and wildlife security areas		X					
	Custer National Forest							
B	Livestock grazing/minerals						X	
C	Key wildlife habitat/MS 1/current allotment status maintained			X				
D	Timber/range/wildlife					X		
E	Mineral management emphasis						X	
F	Recreation							X
G	Timber					X		
H	Wilderness study	X						
I	Absaroka-Beartooth Wilderness	X						
L	Research Natural Areas		X					
P	Administrative sites							X
Q	Wild horses			X				

		National Management Area Category						
MA	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**8**
R	Municipal watersheds				X			
T	Scenic highway			X				
	Gallatin National Forest							
1	Developed recreation sites							X
2	Ski area special use permits							X
3	Custodial management/maintain present conditions	X						
4	Absaroka-Beartooth and Lee Metcalf Wildernesses and recommended wilderness	X						
5	Travel corridors			X				
6	Semiprimitive motorized and nonmotorized			X				
7	Riparian areas (timber and grazing suitable)				X			
8	Timber management					X		
9	Timber with dispersed recreation					X		
10	Timber interspersed with grassland					X		
11	Forested big game habitat					X		
12	Wildlife summer and winter range				X			
13	Occupied grizzly bear habitat (forested suitable timber)				X			
14	Occupied grizzly bear habitat, big game winter range, not suitable for timber but suitable for grazing			X				

		National Management Area Category						
MA	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**8**
15	Occupied grizzly bear habitat (mostly grassland), suitable grazing			X				
16	Grassland, unsuitable timber						X	
17	Forage production for livestock and wildlife			X				
18	Hyalite-Porcupine-Buffalo Horn Wilderness Study Area		X					
19	Hyalite-Porcupine-Buffalo Horn Wilderness Study Area		X					
20	Cabin Creek recreation and wildlife management area		X					
21	Proposed Research Natural Areas		X					
24	Mineral extraction							X
26	Administrative sites							X
	Acquired lands		X					
	Shoshone National Forest							
2A	Semiprimitive motorized recreation			X				
2B	Rural and roaded natural recreation				X			
3A	Semiprimitive nonmotorized recreation				X			
4B	Management indicator species					X		
5A	Big game winter range (nonforested)					X		
5B	Big game winter range (forested)					X		
7E	Wood fiber production					X		

		National Management Area Category						
MA	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**8**
8A	Pristine wilderness	X						
8B	Primitive wilderness	X						
8C	Semiprimitive wilderness	X						
8E	Fitzpatrick Wilderness addition	X						
9A	Riparian area management			X				
9E	Water impoundments				X			
10A	Research Natural Areas		X					
10D	Wild and scenic rivers	X						
10E	High Lakes Wilderness Study Area	X						
10F	Dunoir Special Management Area	X						
Targhee National Forest								
1.1.6, 7, 8	Designated wilderness	X						
1.2	Wilderness study area	X						
1.3	Recommended wilderness	X						
2.1.1	Special management areas		X					
2.1.2	Visual quality maintenance		X					
2.2	Research Natural Areas		X					
2.3	Eligible wild river		X					

		National Management Area Category						
MA	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**8**
2.4	Eligible scenic river		X					
2.5	Eligible recreational river		X					
2.6.1(a)	Grizzly bear habitat (no ASQ, no cross country, no sheep)		X					
2.6.2	Grizzly bear core area		X					
2.6.5	Grizzly bear security area		X					
2.7(a,b)	Elk and deer winter range		X					
2.8.3	Aquatic influence zone		X					
2.9.1	South Fork Snake River eligible scenic river		X					
2.9.2	South Fork Snake River eligible recreation river		X					
3.1.1(a)	Nonmotorized			X				
3.1.2	Nonmotorized			X				
3.2(b-j)	Semiprimitive motorized			X				
4.1	Developed recreation sites							X
4.2	Special use permit recreation sites							X
4.3	Dispersed camping management				X			
5.1(c)	Timber management					X		
5.1.3(a,b)	Timber management (no clearcutting, urban interface)					X		
5.4(a-c)	Elk summer range					X		

		National Management Area Category						
MA	**Description**	**1**	**2**	**3**	**4**	**5**	**6**	**8**
5.2.1,2	Visual quality maintenance and improvement					X		
5.3.5	Grizzly bear habitat (non-interchangeable [NIC] for ASQ), no cross country, phase out sheep)					X		
6.1(b)	Range management						X	
8.1	Concentrated development areas							X
	Water		X					

Appendix D—Species Lists

Threatened, Endangered, Proposed, and Candidate Wildlife and Plant Species									
Species common name	**Species scientific name**	**Listed Status[1]**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[2]**
Mammals									
Black-footed ferret	*Mustella nigripes*	E			X		X		
Canada lynx	*Lynx canadensis*	T	X	X	X	X	X	X	Y
Gray wolf	*Canis lupus*	EN	X	X	X	X	X	X	Y
Grizzly bear	*Ursos arctos horribilis*	T	X	X	X	X	X	X	Y
Birds									
Bald eagle	*Haliaeetus leucocephalus*	T	X	X	X	X	X	X	Y Beaverhead, Bridger-Teton, Gallatin, Shoshone, Targhee
Yellow-billed cuckoo	*Coccyzus americanus*	C						X	
Fish									
Bonytail chub	*Gila elegans*	E		X					
Bull trout	*Salvelinus confluentus*	T	X						
Colorado pikeminnow	*Ptychocheilus lucius*	E		X					
Humpback chub	*Gila cypha*	E		X					
Kendall Warm Springs dace	*Rhinichthys osculus thermalis*	E		X					

Threatened, Endangered, Proposed, and Candidate Wildlife and Plant Species									
Species common name	**Species scientific name**	**Listed Status[1]**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[2]**
Pallid sturgeon	*Scaphirhynchus albus*	E		X					
Razorback sucker	*Xyrauchen texanus*	E		X					
Plants									
Ute ladies' tresses	*Spiranthes diluvialis*	T		X				X	

[1] T = threatened, E = endangered, P = proposed, C = candidate, EN = experimental non-essential

[2] Y in this column means "yes" for all national forests that have a particular species. Y followed by the name of a national forest means "yes" just for the national forests listed. A blank cell means that habitat for the species is not found within the grizzly bear recovery line.

Forest Service Sensitive Wildlife Species								
Species common name	**Species scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[2]**
Mammals								
American (pine) marten	*Martes Americana origins*					X		Y
Rocky Mountain bighorn sheep	*Ovis Canadensis canadensis*			X				Y
Black-tailed prairie dog	*Cynomys ludovicianus*			X				
Fisher	*Martes pennanti*	X	X	X			X	Y
Fringe-tailed myotis	*Myotis thysanodes pahasapensis*					X		Y

Forest Service Sensitive Wildlife Species								
Species common name	**Species scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[2]**
North American wolverine	*Gulo gulo*	X	X	X	X	X	X	Y
Northern bog lemming	*Synaptomys borealis*	X		X				Y Custer
Pallid bat	*Antrozous pallidus*			X				
Pygmy rabbit	*Brachylagus idahoensis*	X					X	
River otter	*Lutra Canadensis*					X		Y
Spotted bat	*Euderma maculatum*		X	X		X	X	Y Bridger-Teton, Shoshone, Targhee
Water vole	*Microtus richardsoni*					X		Y
Western (Townsend's) big-eared bat	*Corynorhinus townsendii pallescens*	X	X	X	X	X	X	Y
White-tailed prairie dog	*Cynomys leucurus*			X		X		
Birds								
Baird's sparrow	*Ammodramus bairdii*			X				
Black tern	*Childonias niger*					X		
Black-backed woodpecker	*Picoides arcticus*	X		X	X	X		Y
Boreal owl	*Aegolius funereus*		X			X	X	Y
Brewer's sparrow	*Spizella breweri*					X		Y
Burrowing owl	*Athene cunicularia*	X		X		X		
Columbian sharp-tailed grouse	*Tymphanuchus phasianellus columbianus*	X					X	

Forest Service Sensitive Wildlife Species								
Species common name	**Species scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[2]**
Common loon	*Gavial immer*	X	X				X	Y Bridger-Teton, Shoshone, Targhee
Ferruginous hawk	*Buteo regalus*					X		
Flammulated owl	*Otus flammulatus*	X	X	X	X		X	Y Targhee, Unknown Bridger-Teton, Gallatin
Grasshopper sparrow	*Ammodramus savannarum*					X		
Great gray owl	*Strix occidentalis occidentalis*		X				X	Y
Harlequin duck	*Histrionicus histrionicus*	X	X	X	X	X	X	Y Bridger-Teton, Custer, Gallatin, Shoshone, Targhee
Lewis's woodpecker	*Malanerpes lewis*					X		
Loggerhead shrike	*Lanius ludovicianus*			X		X		
Long-billed curlew	*Numenius americanus*					X		
Mountain plover	*Charadrius montanus*					X		
Northern goshawk	*Accipiter gentiles*	X	X	X	X	X	X	Y
Northern harrier	*Circus cyaneus*					X		
Olive-sided flycatcher	*Contopus cooperi*					X		Y
Peregrine falcon	*Falco peregrinus anatum*	X		X	X	X	X	Y
Sage grouse	*Centrocercus urophasianus*	X	X	X			X	Y Beaverhead, Targhee
Short-eared owl	*Asio flammeus*					X		
Sprague's pipit	*Anthus spragueii*			X				

Forest Service Sensitive Wildlife Species								
Species common name	**Species scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[2]**
Three-toed woodpecker	*Picoides tridaclylus*		X			X	X	Y
Trumpeter swan	*Cygnus buccinator*	X	X		X	X	X	Y
Yellow-billed cuckoo	*Coccyzus americanus*					X		Y
Amphibians								
Boreal (western) toad	*Bufo boreas*	X		X	X	X		Y Custer, Gallatin, Shoshone
Columbia spotted frog	*Rana luteiventris*		X			X	X	Y
Northern leopard frog	*Rana pipiens*	X		X	X	X		Y Custer, Gallatin, Shoshone
Fish								
Bonneville cutthroat trout	*Oncorhynchus clarki utah*		X					
Colorado River cutthroat trout	*Oncorhynchus clarki pleuriticus*		X					
Lake chub	*Couesius plumbeus*					X		Y
Mountain sucker	*Catostomus platyrhynchus*					X		
Snake River fine spotted cutthroat trout	*Oncorhynchus clarki spp.*		X				X	Y Bridger-Teton
Westslope cutthroat trout	*Oncorhynchus clarki lewisi*	X			X			Y
Yellowstone cutthroat trout	*Oncorhynchus clarki bouvieri*		X	X	X	X	X	Y

Forest Service Sensitive Wildlife Species								
Species common name	**Species scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[2]**
Insects								
Dakota skipper butterfly	*Hasperia dacotae*			X				
Hudsonian emerald dragonfly	*Somatochlora hudsonica*					X		
Regal fritillary butterfly	*Speyeria idalia*			X				
Tawny crescent butterfly	*Phyciodes batesii*			X				

[1] The sensitive species list for the Gallatin National Forest is in the process of being updated.
[2] Y in this column means "yes" for all national forests that have a particular species. Y followed by the name of a national forest means "yes" just for the national forests listed. A blank cell means that habitat for the species is not found within the grizzly bear recovery line.

Forest Service Sensitive Plant Species								
Species Common name	**Species Scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Absaroka goldenweed	*Pyrrocomma (aka Haplopappus) carthamoides var. subsquarrosus*			X		X		Y Shoshone
Absaroka Range beardtongue	*Penstemon absarokensis*					X		Y
Alkali primrose	*Primula alcalina*						X	
Alpine meadowrue	*Thalictrum alpinum*	X			X			Suspected
Austin's knotweed	*Polygonum douglasii spp. austiniae*				X			Suspected Beaverhead, Gallatin

Forest Service Sensitive Plant Species								
Species Common name	**Species Scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Barr's milkvetch	*Astragalus barrii*			X				
Barratt's willow	*Salix barrattiana*			X	X	X		Y
Beaked spikerush	*Eleocharis rostellata*	X						
Beautiful bladderpod	*Lesquerella pulchella*	X						
Bitterroot milkvetch	*Astragalus scaphoides*	X						
Black and purple sedge	*Carex luzulina var. atropurpurea*		X					
Bristlystalked sedge	*Carex leptalea*					X		
California false-hellebore	*Veratrum californicum*	X			X			Suspected Gallatin
California Indian potato	*Orogenia fusiformis*	X						Y
Centennial rabbitbrush	*Chrysothamnus parryi spp. montanus*	X?					X	
Colville Indian paintbrush	*Castilleja covilleana*	X?						
Creeping twinpod	*Physaria didymocarpa var. lyrata*		X					
Cusick's giant hyssop	*Agastache cusickii*	X						?
Dakota buckwheat	*Eriogonum visheri*			X				
Denseleaf pussytoes	*Antennaria densifolia*	X						

Forest Service Sensitive Plant Species								
Species Common name	**Species Scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Discoid godenweed	*Haplopappus macronema var. macronema (Ericameria discoidea)*				X			Y
Discoid goldenweed	*Haplopappus macronema var. macronema*	X			X			
Douglass' wavewing	*Cymopterus douglassii*						X	
English sundew	*Drosera anglica*				X	X		Y
Entire-leaf goldenweed	*Pyrrocoma integrifolia*					X		Y
Fiveleaf cinquefoil	*Potentilla quinquefolia (Potentilla nivea var. pentaphylla)*	X						Y
Fremont bladderpod	*Lesquerella fremontii*					X		
Giant helleborine	*Epipactis gigantean*	X		X	X			Y Custer Suspected Gallatin
Greenland primrose	*Primula egalikensis*		X			X		Y Shoshone
Hall's fescue	*Festuca hallii*					X		Y
Hall's rush	*Juncos hallii*	X		X	X	X		Y Custer, Gallatin, Shoshone
Hiker's gentian	*Gentianopsis simplex*	X		X	X			Y Custer Suspected Gallatin
Hoary willow	*Salix candida*					X		Y

Forest Service Sensitive Plant Species								
Species Common name	**Species Scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Hollyleaf clover	*Trifolium gymnocarpon*	X?						
Ice cold buttercup	*Ranunculus karelinii*					X		
Idaho fleabane	*Erigeron asperugineus*	X						Y
Idaho sedge	*Carex idahoa (Carex parryana spp. Idahoa)*	X						Y
Jove's buttercup	*Ranunculus jovis*	X			X			Y
Kelsey's phlox	*Phlox kelseyi var. missoulensis*	X						
Kotzebue's grass-of-Parnassus	*Parnassia kotzebuei*					X		
Large-leaved balsamroot	*Balsamorhiza macrophylla*	X			X			Y
Lemhi milkvetch	*Astragalus aquilonius*						X	
Lemhi penstemon	*Penstemon lemhiensis*	X						
Lesser bladderwort	*Utricularia minor*					X		
Lesser panicled sedge	*Carex diandra*					X		Y
Livid (pale) sedge	*Carex livida*				X	X		Y Shoshone Suspected Gallatin
Lost River milkvetch	*Astragalus amnis-amissi*						X	
Marsh's bluegrass	*Poa abbreviata ssp. marshii*						X	Y
Meadow milkvetch	*Astragalus diversifolius diversifolius*		X				X	?
Mountain blubells	*Mertensia ciliata*			X				

Forest Service Sensitive Plant Species								
Species Common name	**Species Scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Mt. Sapphire rockcress	*Arabis fecunda*	X						
Musk root	*Adoxa moschatellina*	X		X	X			Y Custer Suspected Gallatin
Myrtleleaf willow	*Salix myrtilifolia var. myrtillifolia*					X		Y
Naked-stemmed parrya	*Parrya nudicaulis*		X					
Narrow-leaf goldenweed	*Haplopappus radiatus (Pyrrocoma radiate)*		X					Y
North Fork Easter daisy	*Townsendia condensate var. anomala*					X		Y
Northern Rattlesnake plantain	*Goodyera repens*				X			Suspected
Ovalleaf milkweed	*Asclepias ovalifolia*			X				
Payson's bladderpod	*Lesquerella paysonii*	X	X				X	Y Targhee Suspected Bridger-Teton
Payson's milkvetch	*Astragalus paysonii*		X				X	Suspected
Peculiar moonwort	*Botrychium paradoxum*	X						
Pink agoseris	*Agoseris lackschewitzii*		X				X	
Prairie gentian	*Gentiana affinis*			X				
Pregnant sedge	*Carex gravida var. gravida*			X				
Primrose monkeyflower	*Mimulus primuloides*	X						

Forest Service Sensitive Plant Species								
Species Common name	**Species Scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Rockcress (Welsh) draba	*Draba globosa (Draba densifolia apiculata)*		X				X	Y?
Russet cottongrass	*Eriophorum chamissonis*					X		Y
Scalloped moonwort	*Botrychium crenulatum*	X						
Seaside sedge	*Carex incurviformis*		X					
Short-styled columbine	*Aguilegia brevistyla*				X			Y
Shoshonea	*Shoshonea pulvinata*			X	X	X		Y Gallatin, Shoshone
Simple bogsedge	*Kobresia simpliciuscula*					X		
Slender cottongrass	*Eriophorum gracile*				X	X		Y
Slender paintbrush	*Castilleja gracillima*				X			Y
Small onion	*Allium parvum*	X						
Small round-leaved orchid	*Amerorchis rotundifolia*					X		
Small yellow lady's slipper	*Cypripedium parviflorum*			X	X			Y
Soft aster	*Aster mollis*		X					Suspected
Stalked-pod crazyweed	*Oxytropis podocarpa*	X?						
Starveling miklkvetch	*Astragalus jejunus jejunus*		X					
Storm tempestiva	*Saxifraga tempestiva*	X						Suspected
Sugarstick	*Allotropa virgata*	X						

Forest Service Sensitive Plant Species								
Species Common name	**Species Scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Sweet-flowered rock jasmine	*Androasace chamaejasme var. carinata*		X				X	Y Targhee
Tapertip onion	*Allium acuminatum*	X						
Tufted bulrush	*Scirpus cespitosus (Trichophorum caespitosum)*	X						
Weber's sawwort	*Saussurea weberii*		X					?
Western boneset	*Eupatorium occidentale*	X?						
Western moonwort	*Botrychium hesperium*	X						
Wolf's willow	*Salix wolfii var. wolfii*	X			X			Y Gallatin Suspected Beaverhead
Wooly-head clover	*Trifolium eriocephalum*	X?						
Woolly fleabane	*Erigeron lanatus*		X					
Wyoming tansymustard	*Descurania torulosa*		X			X		Y

[1]Y in this column means "yes" for all national forests that have a particular species. Y followed by the name of a national forest means "yes" just for the national forests listed. A blank cell means that habitat for the species is not found within the grizzly bear recovery line.

Management Indicator Species—Wildlife and Plants								
Species common name	**Species scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Mammals								
American (pine) marten	*Martes americana origines*	X	X		X	X	X	Y
Beaver	*Castor canadensis*					X		Y
Black-footed ferret	*Mustella nigripes*					X		

Management Indicator Species—Wildlife and Plants								
Species common name	**Species scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Canada lynx	*Lynx canadensis*						X	Y
Elk and deer winter range							X	Y
Fisher	*Martes pennanti*						X	Y
Gray wolf	*Canis lupus*	X				X	X	Y
Grizzly bear	*Ursus arctos horribilis*	X	X		X	X	X	Y
Mountain goat	*Oreamnos americanus*					X		Y
Mule deer	*Odocoileus hemonious*		X			X		Y
North American wolverine	*Gulo gulo*						X	Y
Pronghorn antelope	*Antilocapra Americana*		X					
Red squirrel	*Tamiasciurus hudsonicus*						X	Y
Rocky Mountain bighon sheep	*Ovis canadensis canadensis*		X			X		Y
Rocky Mountain elk	*Cervus elaphus nelsoni*	X	X		X	X	X	Y
Shiras moose	*Alces alces shirasi*		X			X		Y
White-tailed deer	*Odocoileus virginianus*			X				
Birds								
Bald eagle	*Haliaeetus leucocephalus*	X	X		X	X	X	Y
Blue grouse	*Dendragapus obscurus*					X		Y
Boreal owl	*Aegolius funereus*						X	Y
Brewer’s sparrow	*Spizella breweri*		X	X		X		Y Bridger-Teton
Bullock’s oriole	*Icterus bullockii3*			X				
Columbian sharp-tailed grouse	*Tympanuchus phasianellus columbianus*			X				
Common loon	*Gavia immer*						X	Y
Flammulated owl	*Otus flammulatus*						X	Y
Great gray owl	*Strix occidentalis occidentalis*						X	Y
Hairy woodpecker	*Picoides villosus*					X	X	Y
Harlequin duck	*Histrionicus histrionicus*						X	Y

Management Indicator Species—Wildlife and Plants								
Species common name	**Species scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Lark sparrow	*Chondestes grammacus*			X				
Northern goshawk	*Accipiter gentiles*	X		X	X	X	X	Y
Ovenbird	*Seiurus aurocapillus*			X				
Peregrine falcon	*Falco peregrinus anatum*	X	X			X	X	Y
Primary cavity nesters[2]							X	Y
Ruffed grouse	*Bonasa umbellus*			X		X		Y
Sage grouse	*Centrocercus urophasianus*	X						Y
Spotted (Rufous-sided) towhee	*Pipilo erythrophthalmus*			X				
Trumpeter swan	*Cygnus buccinator*	X					X	Y
Western kingbird	*Tyrannus verticalis*			X				
Whooping crane	*Grus americana*		X					Y
Yellow warbler	*Dendroica petechia*			X				
Amphibians								
Columbia spotted frog	*Rana luteiventris*						X	Y
Fish								
Cutthroat trout	*Oncorhynchus clarki*	X	X				X	Y
Game trout						X		Y
Kendall Warm Springs dace	*Rhinichthys osculus thermalis*		X					
Largemouth bass	*Micropterus salmoides*			X				
Rainbow trout	*Onchorynchus mykiss*		X			X		Y
Wild trout					X			Y
Yellowstone cutthroat trout	*Oncorhynchus clarki bouvieri*			X		X		Y

Management Indicator Species—Wildlife and Plants								
Species common name	**Species scientific name**	**Beaverhead NF**	**Bridger-Teton NF**	**Custer NF**	**Gallatin NF**	**Shoshone NF**	**Targhee NF**	**Habitat inside the grizzly bear recovery line?[1]**
Plants								
Boreal draba	*Draba borealis*		X					Y
Payson's milkvetch	*Astragalus paysonii*		X					Suspected
Shultz milkvetch	*Astragalus shultziorum*		X					Y
Sweet-flowered rock jasmine	*Androsace chamaejasme*		X					
Weber's saw-wort	*Saussurea weberii*		X					
Wyoming tansymustard	*Descurainia torulosa*		X					

[1]Y in this column means "yes" for all national forests that have a particular species. Y followed by the name of a national forest means "yes" just for the national forests listed. A blank cell means that habitat for the species is not found within the grizzly bear recovery line.

[2] Primary cavity nesters includes eight species: three-toed woodpecker, Lewis' woodpecker, red-napped sapsucker, Williamson's sapsucker, downy woodpecker, hairy woodpecker, black-backed woodpecker, and northern flicker.

[3]Bullock's oriole was formerly the northern oriole (*Icterus galbula*). In 1995, the AOU split the northern oriole group, making Bullock's oriole a separate species.

Appendix E - Nuisance Bear Standards

From the 1986 Interagency Grizzly Bear Guidelines, pages 6 through 39

Grizzly Bear Management Guidelines for Management Situation 1

Management System or Activity: Wildlife Management

Resolve Grizzly-Human Conflicts

Line Officers will be provided with instructions for:

1. Fact finding, including
   - Determination of where, why, when, and how the conflict occurred
   - Who was involved
   - Determination of status of problem bear (nuisance or non-nuisance) considering unnatural food dependency and individual bear history. See the Guidelines for Determining Nuisance Bear Status, beginning on page 286 of this appendix.
2. Grizzly control, including names and phone numbers of personnel from State wildlife management agencies and the U.S. Fish and Wildlife Service.
3. Live trapping
4. Tranquilization
5. Removal, including carcass disposal
6. Relocation, including maps of specific recommended relocation sites. Relocation plans with implications for National Parks, National Forests, and BLM lands will be reviewed and agreed upon by Park Service, and State wildlife management personnel.

Management System or Activity: Timber and Fire Management

Resolve Grizzly-Human Conflicts

In cases of grizzly-human conflict, District Rangers in cooperation with state wildlife management agencies will immediately identify the cause by determining where, why, when, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removed the man-related cause. Likely man-related causes are grizzly attractants and/or human activities interfering with grizzly use of habitat. Attractants include food and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in possession of man, and transportation and/or work livestock. Interference activities are those associated with logging or burning or fire control (camps) which disrupt grizzlies, grizzly habitat and/or grizzly use of habitat. Cause removal could involve simple activity modification or temporary or permanent activity curtailment.

If the problem bear is determined to be a nuisance and all reasonable measures have been taken to protect the bear and habitat and a more natural grizzly population would be a likely result of its control, the U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

See the Guidelines for Determining Nuisance Bear Status, beginning on page 286 of this appendix.

Management System or Activity: Range Management

Resolve Grizzly-Human Conflicts

In cases of grizzly-human conflict or grizzly-livestock depredation, District Rangers in cooperation with State wildlife management agencies, will immediately identify the cause by determining where, when, why, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing the man-related cause. Likely man-related causes are grizzly attractants and/or activities interfering with grizzly use of habitat. Attractants include foods and food odors associated with man, domestic livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings,

game meat in possession of man, and domestic and/or transportation livestock. Interference activities are domestic livestock and/or any other livestock operation activity disrupting the grizzly's natural activities in meeting its biological requirements (i.e., food use in wet areas with succulent, herbaceous vegetation which is scarce and thereby vitally important to the species especially during dry years or in late summer and autumn). Cause removal could involve simple activity modification or temporary or permanent activity curtailment in deference to seasonal or year-long grizzly use needs.

If the problem bear is determined to be a nuisance and all reasonable measures have been taken to protect the bear and its habitat and a ore natural grizzly population would be a likely result of its control, the U.S. Fish and Wildlife Service and state wildlife agencies will be requested to exercise control.

See the Guidelines for Determining Nuisance Bear Status, beginning on page 286 of this appendix.

Management System or Activity: Recreation Management

Resolve Grizzly-Human Conflicts

In cases of grizzly-human conflict, District Rangers, in cooperation with State wildlife management agencies, will immediately identify the cause by determining where, why, when, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing the man-related cause. Likely man-related causes are grizly attractants and/or human activities interfering with grizzly use of habitat. Attractants include foods and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in the possession of man, and transportation and/or domestic livestock. Interference activities are those associated with recreation activities (transportation livestock grazing, camping, trail and road access, etc.) which disrupt grizzlies, grizzly habitat and/or grizzly use of habitat. Cause removal could involve simple active ity modification or temporary or permanent activity curtailment or access closure.

If the problem bear is determined to be a nuisance and all reasonable measures have been taken to protect the bear and its habitat and a more natural grizzly population would be a likely result of its control, the U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

See the Guidelines for Determining Nuisance Bear Status, beginning on page 286 of this appendix.

Management System or Activity: Minerals, Watershed, and Special Uses Management

In cases of grizzly-human conflict, District Rangers in cooperation with State wildlife management agencies will immediately identify the cause by determining where, why, when, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing the man-related cause. Causes are grizzly attractants and/or human activities interfering with grizzly use of habitat. Attractants include foods and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in possession of man, and transportation and/or work livestock. Interference activities are those associated with mining, watershed development, and special uses which disrupt grizzlies, grizzly habitat, and/or grizzly use of habitat. Cause removal could involve simple activity modification or temporary or permanent activity curtailment.

If the problem bear is determined to be a nuisance and all reasonable measures have been taken to protect the bear and its habitat and a more natural grizzly population would be a likely result of its control, the U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

See the Guidelines for Determining Nuisance Bear Status, beginning on page 286 of this appendix.

Grizzly Bear Management Guidelines for Management Situation 2

Management System or Activity: Wildlife Management

Resolve Grizzly-Human Conflicts

Line Officers will be provided with instructions for:

1. Fact finding, including
   - Determination of where, why, when, and how the conflict occurred
   - Who was involved
   - Determination of status of problem bear (nuisance or non-nuisance) considering unnatural food dependency and individual bear history, see Appendix page 51
2. Grizzly control, including names and phone numbers of personnel from State wildlife management agencies and the U.S. Fish and Wildlife Service.
3. Live trapping
4. Tranquilization
5. Removal, including carcass disposal
6. Relocation, including maps of specific recommended relocation sites. Relocation plans with implications for National Parks, National Forests, and BLM lands will be reviewed and agreed upon by Park Service, and State wildlife management personnel.

Management System or Activity: Timber and Fire Management

In cases of grizzly-human conflict, District Rangers in cooperation with State wildlife management agencies will immediately identify the cause by determining where, why, when, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing, if feasible, the man-related cause. Likely man-related causes are grizzly attractants and/or human activities interfering with grizzly use of habitat. Attractants include foods and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in possession of man, and transportation and/or work livestock. Interference activities are those associatd with logging or burning or fire control (camps) which disrupt grizzlies, grizzly habitat and/or grizzly use of habitat. Cause removal could involve simple activity modification or temporary activity cessation.

If the area does not warrant reclassification under Management Situation 1 and temporary cessation or activity modification is not possible or does not solve the problem or if the problem bear is determined to be a nuisance, the U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

See the Guidelines for Determining Nuisance Bear Status, beginning on page 286 of this appendix.

Management System or Activity: Range Management

In cases of grizzly-human conflict or grizzly-livestock depredation, District Rangers in cooperation with state wildlife management agencies, will immediately identify the cause by determining where, when, why, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing, if feasible, the man-related cause. Likely man-related causes are grizzly attractants and/or activities interfering with grizzly use of habitat. Attractants include foods and food odors associated with man, domestic livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in possession of man, and domestic and/or transportation livestock. Interference activities are domestic livestock and/or any other livestock operation activity disrupting the grizzly's natural activities (i.e., food use in wet areas with succulent, herbaceous vegetation which is scarce and therefore vitally important to the species especially during dry years or in late summer and autumn). Cause removal could involve simple activity modification or temporary activity cessation. If the area does not warrant reclassification under Management

Situation 1 and temporary activity cessation or activity modification is not feasible or does not solve the problem or if the problem bear is determined to be a nuisance, the U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

See the Guidelines for Determining Nuisance Bear Status, beginning on page 286 of this appendix.

Management System or Activity: Recreation Management

In cases of grizzly-human conflict, District Rangers in cooperation with state wildlife management agencies, will immediately identify the cause by determining where, why, when, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing, if feasible, the man-related cause. Likely man-related causes are grizzly attractants and/or human activities interfering with grizzly use of habitat. Attractants include food and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in possession of man, and transportation and/or domestic livestock. Interference activities are those associated with recreation activities (transportation livestock grazing, camping, etc.) which disrupt grizzlies, grizzly habitat and/or grizzly use of habitat. Cause removal could involve simple activity modification or temporary activity cessation. If the area does not warrant reclassification under Management Situation 1 and temporary activity cessation or activity modification is not feasible or does not solve the problem or if the problem bear is determined to be a nuisance, the U.S. Fish and Wildlife Service and state wildlife agencies will be requested to exercise control.

See the Guidelines for Determining Nuisance Bear Status, beginning on page 286 of this appendix.

Management System or Activity: Minerals, Watershed, and Special Use Management

In cases of grizzly-human conflict, District Rangers in cooperation with state wildlife management agencies, will immediately identify the cause by determining where, why, when, and how the conflict occurred. If the problem bear is not determined to be a nuisance then correct the problem immediately by removing, if feasible, the man-related cause. Likely man-related causes are grizzly attractants and/or human activities interfering with grizzly use of habitat. Attractants include food and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, camps or other dwellings, game meat in possession of man, and transportation and/or work livestock. Interference activities are those associated with mining, watershed development and special uses which disrupt grizzlies, grizzly habitat and/or grizzly use of habitat. Cause removal could involve simple activity modification or temporary activity cessation. If the area does not warrant reclassification under Management Situation 1 and temporary activity cessation or activity modification is not possible or feasible or does not solve the problem or if the problem bear is determined to be a nuisance, the U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

See the Guidelines for Determining Nuisance Bear Status, beginning on page 286 of this appendix.

Grizzly Bear Management Guidelines for Management Situation 3

Management System or Activity: Wildlife Management

Resolve Grizzly-Human Conflicts

Line Officers will be provided with instructions for:

1. Fact finding, including
   - Determination of where, why, when, and how the conflict occurred
   - Who was involved
2. Grizzly control, including names and phone numbers of personnel from State wildlife management agencies and the U.S. Fish and Wildlife Service, page 51.
3. Live trapping

4. Tranquilization
5. Removal, including carcass disposal
6. Relocation, including maps of specific recommended relocation sites. Relocation plans with implications for National Parks, National Forests, and BLM lands will be reviewed and agreed upon by Park Service, and State wildlife management personnel.

Management System or Activity: Timber and Fire Management

In cases of grizzly-human conflicts, District Rangers in cooperation with state wildlife management agencies will immediately identify the cause by determining where, why, when, and how the conflict occurred. Correct the problem immediately by removing the man-related cause and controlling the problem bear. Likely man-related causes are grizzly attractants. Attractants include foods and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, unsanitary camps or other dwellings, and game meat in possession of man. The U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

Management System or Activity: Range Management

In cases of grizzly-human conflict or grizzly livestock depredation, District Rangers in cooperation with state wildlife management agencies will immediately identify the cause by determining where, why, when, and how the conflict occurred. Correct the problem immediately by removing the man-related cause and controlling the problem bear. Likely man-related causes are grizzly attractants. Attractants include foods and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, unsanitary camps or other dwellings, and game meat in possession of man. The U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

Management System or Activity: Recreation Management

In cases of grizzly-human conflict, District Rangers in cooperation with state wildlife management agencies, will immediately identify the cause by determining where, why, when, and how the conflict occurred. Correct the problem immediately by removing the man-related cause and controlling the problem bear. Likely man-related causes are grizzly attractants. Attractants include food and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, unsanitary camps or other dwellings and game meat in possession of man. The U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

Management System or Activity: Minerals, Watershed, and Special Uses Management

In cases of grizzly-human conflict, District Rangers in cooperation with state wildlife management agencies, will immediately identify the cause by determining where, why, when, and how the conflict occurred. Correct the problem immediately by removing the man-related cause and controlling the problem bear. Likely man-related causes are grizzly attractants. Attractants include food and food odors associated with man, livestock carrion, garbage, garbage dumps, prepared livestock and pet foods, unsanitary camps or other dwellings and game meat in possession of man. The U.S. Fish and Wildlife Service and State wildlife agencies will be requested to exercise control.

Guidelines for Determining Grizzly Bear Nuisance Status

From the 1986 Interagency Grizzly Bear Guidelines, pages 53 through 57

These guidelines apply to the Management Situation Areas defined in Interagency Grizzly Bear Guidelines. In Management Situations Areas 1 and 2, grizzlies must be determined to be a nuisance by specific criteria before they can be controlled. In Situation Areas 3 and 5, any grizzly involved in a grizzly-human conflict situation is considered a nuisance and will be controlled. Control must be compatible with Grizzly Bear Recovery Plan objectives for limiting man-caused grizzly mortality and with Federal and State laws and regulations.

A grizzly bear may be determined to be a nuisance if any or all of the following conditions apply:

- Condition A. The bear causes significant depredation to lawfully present livestock or uses unnatural food materials (human and livestock foods, garbage, home gardens, livestock carrion, and game meat in possession of man) which have been reasonably secured from the bear resulting in conditioning of the bear or significant loss of property.
- Condition B. The bear has displayed aggressive (not defensive) behavior toward humans which constitutes a demonstrable immediate or potential threat to human safety and/or a minor human injury resulted from a human/bear encounter.
- Condition C. The bear has had an encounter with people resulting in a substantial human injury or loss of human life.

The following are considerations in determining grizzly nuisance status under Condition A:

Unnatural foods were reasonably secure from grizzlies. Reasonably secure means all steps were taken to comply with guideline objectives (a) Maintain and Improve Habitat and (b) Minimize Grizzly-Human Conflict Potential. The following are examples of reasonably secure conditions:

1. Sight and/or smell of edibles and/or garbage was not dominant (i.e. food was canned or in other sealed containers) and edibles and/or garbage was made unavailable (hung out of reach or secured in a solid-sided-bear-proof structure). Livestock use did not occur in habitat components critically important to grizzlies in time or space
2. Livestock and wildlife carcasses were removed, destroyed or treated so that the material would not reasonably be expected to attract grizzlies
3. Game meat was stored at least 100 yards from any sleeping area
4. No baits were placed for purposes of sport hunting black bears, nor did any artificial feeding of bears occur

The following are considerations in determining grizzly nuisance status under Condition B:

The bear has displayed aggression toward man. Sound evidence must be available to establish that the bear acted aggressively without provocation (not defensively), and that such behavior constituted a threat to human safety and/or a minor human injury occurred as a result of a nondefensive grizzly attack.

The following are considerations in determining grizzly nuisance status under Condition C:

An encounter with people which resulted in a serious human injury or loss of human life. A bear that is involved in an accidental encounter with people, defense of young, or in a provoked attack (the bear acted defensively not aggressively) which results in a minor human injury should not be considered a nuisance under this condition.

If information is insufficient to clearly establish the above requisites under Conditions A, B, and C, then the involved bear(s) probably should not be determined a nuisance under that condition. The criteria in Table 1 should be used to guide control actions.

Preventive Action

Certain specific grizzlies have known behavioral patterns, which, when combined with location, time and other factors, indicate that an incident is highly probable. In such situations, direct preventive action designed to safely remove the bear(s) from the situation (prior to an occurrence which would result in nuisance status and possible loss of the bear(s) to the ecosystem) can be implemented regardless of the Management Situation involved. Human activities must be in compliance with applicable guidelines to minimize potential for grizzly-human conflicts for that Management Situation. Control actions should be designed to capture and remove the specific target bear(s).

In other situations, a bear may move into a visitor use or residential area without causing an incident, but there is indication that due to its persistent use of the area, it may become overly-familiar with humans and may become habituated. The animal may be relocated if a suitable

release site (free of circumstances similar to the capture site) is available. This is an action to prevent a possible incident or habituation of the bear. It does not count as an offense when determining the disposition of the bear (using Table 1), should the bear be recaptured in a future control action.

III. Grizzly Bear Control Action

1. If a grizzly bear is not determined to be a nuisance after consideration of criteria in Section II, no control action will be initiated.
2. Capture of nuisance grizzly bears outside the National Parks is the primary responsibility of the State Fish and Game Agency in conjunction with the U.S. Fish and Wildlife Service. The National Park Service is responsible for bear capture within National Parks. Figure 1 is a schematic diagram showing the sequence of notification and the decision process which will be used in all grizzly control actions. Data forms for recording information about the captured bear(s) and the control action are provided in the Appendix. Nuisance bear forms should be completed by the on-site official and forwarded to the Grizzly Bear Recovery Coordinator for subsequent distribution.
3. Nuisance grizzlies that are sick or injured beyond a point where natural recovery is likely will be removed from the population. Other nuisance grizzlies will be controlled according to the guidelines in Table 1.
4. After a bear has been captured during a control action, the decision on where to relocate the bear or whether to kill it must be made within 24 hours of its capture. The relocation must be made as expeditiously as possible after the disposition of the bear is determined. Bears will not be held in a snare but will be immobilized, marked, and placed in an appropriate holding facility (can be a culvert trap).

With due consideration of mortality risk associated with immobilization, grizzly bears released should be marked with numbered ear tags, lip tattoo, and functioning radio transmitters. Monitoring will be a cooperative effort between State and Federal agencies. On-site release may be accomplished if the bear taken is: (a) determined not to be a nuisance bear or, (b) on a first offense when the bear cannot be relocated because of terrain, weather, or inaccessibility to a relocation site. Females with cubs, where relocation is identified in the above table, will be released on-site if relocation is not feasible for previously stated reasons or if the cubs cannot also be caught and relocated with the female. An on-site release will not be conducted in developed areas. On-site releases will be accomplished after approval of the land management agency if the release is monitored in such a way to determine its success or failure with respect to bear survival and conflict resolution.

5. If a bear is to be killed, the action will be completed only by authorized State or Federal or Tribal employees. A grizzly bear mortality report form should be completed and the carcass forwarded to the Montana Department of Fish, Wildlife and Parks lab in Bozeman, Montana for examination and subsequent disposition.
6. The initiating agency may “take back” a relocated bear, according to case-by-case agreements.
7. The State Fish and Game Regional Office will be the principal coordination point for all control actions, unless specified otherwise in the initial discussions on a particular incident.

The public and news media are extremely interested in all operations involving grizzly bears. To ensure that they receive the proper information, it is critical that information be shared between all involved agencies in an accurate and timely manner. Planned news releases will be the responsibility of the State Fish and Game agency in close consultation with the administering land management agency (or Tribe) and the Grizzly Bear Recovery Coordinator.

Table 1. **Type of Problem**

Type of Grizzly	No Offense	Condition A			Condition B		Condition C
	Offense	**1st**	**2nd**	**3rd**	**1st**	**2nd**	**1st**
Females							
Orphaned Cub	RLS[1]/REL[2]						
Cub		REL	REL	REM[3]	REL	REM	REM
Yearling		REL	REL	REM	REL	REM	REM
Subadult		REL	REL	REM	REL	REM	REM
Prime Adult with young		REL	REL	REM (Adult)	REL	REM (Adult)	REM (Adult)
Old Adult		REL	REM	---	REM	---	REM
Old Adult with young		REL	REL	REM (Adult)	REL	REM (Adult)	REM (Adult)
Males							
Orphaned Cub	RLS/REL						
Cub		REL	REL	REM	REL	REM	REM
Yearling		REL	REM	---	REM	---	REM
Subadult		REL	REM	---	REM	---	REM
Prime Adult		REL	REL	---	REM	---	REM
Old Adult		REM		---	REM	---	REM

[1]RLS=Release on site [2]REL=Relocate [3]REM=Remove from population
(Nuisance grizzlies that are sick or injured beyond a point where natural recovery is likely will be removed.)
Cub=Young of the Year. **Yearling** =12 to 24 months old. **Subadult** =24 to 48 months old.
Young=Cub, yearling, or subadult accompanying mother. Old=advanced age and deteriorated physical state; indicators are tooth wear and physical appearance.

Action Procedures in Cases of Grizzly-Human Conflict

From the 1986 Interagency Grizzly Bear Guidelines, page 59

All grizzly bear habitat

1. All incidents of grizzly-human conflict will be investigated immediately and a factual and detailed report (answering who, what, when, why, where and how) submitted to the line officer. In case of human death, notify the County Sheriff and County Coroner. In case of grizzly death, notify the U.S. Fish and Wildlife Service and the appropriate State wildlife management agency.
2. State wildlife management agencies and/or the U.S. Fish and Wildlife Service, National Park Service, Tribe will handle nuisance grizzlies.
3. County sheriffs will have primary responsibility for backcountry rescue outside National Parks and Indian Reservations.
4. The site of an incident will be closed immediately to human use until the investigation is complete and the problem solved or corrected. This closure is the responsibility of the managing agency.
5. All incidents resulting in serious human injury or death will be investigated by an interagency team with members from the county law enforcement agency, State wildlife management agency, land management agency, U.S. Fish and Wildlife Service, NPS and appropriate outside experts as necessary.
6. News releases involving grizzly-human conflict incidents will be coordinated through all concerned agencies.

Further, in National Parks,

7. All grizzly-human conflicts will be investigated and a factual and detailed bear incident report submitted to the Superintendent's Office. In incidents where injury and/or property damage have occurred, the investigating officer's report will be supplemented when possible by the statements of witnesses to the incident. All incidents of grizzly inflicted human death will be investigated by an interagency investigation team (as in 5.).
8. All management actions involving bears will be reported by telephone to the Bear Management Office/Resource Management Office.
9. All grizzly bear sightings will be recorded in the station log and telephoned daily to the Bear Management Office/Resource Management Specialist. Information shall include observer, data, location, time, number, activity, and if possible, sex, age class, and individual description.

From the 2003 Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area

Conservation Strategy Nuisance Bear Standards, pages 59 and 60

The focus and intent of nuisance grizzly bear management inside and outside the PCA are predicated on the strategies and actions to prevent grizzly bear/human conflicts. It is recognized that active management aimed at individual nuisance bears will be required in both areas. Management actions outside the PCA will be implemented according to state management plans in coordination with landowners and land management agencies. These actions will be compatible with grizzly bear population management objectives for each state for the areas outside the PCA.

General Criteria

Location, cause of incident, severity of incident, history of bear, health/age/sex of bear, and demographic characteristics of animals involved will all be considered in any relocation or removal. Removal of nuisance bears will be carefully considered and consistent with mortality limits for the GYA as described in the Conservation Strategy. Recognizing that conservation of female bears is essential to maintenance of a grizzly population, removal of nuisance females will be minimized.

Within the Primary Conservation Area

Within the PCA, management of nuisance bears will be addressed according to the following standards:

- Bears displaying food conditioning and/or habituation may be either relocated or removed based on specific details of the incident. State wildlife agencies, following consultation with other appropriate management authorities, and national parks will make this judgment after considering the cause, location, and severity of the incident or incidents.
- Bears may be relocated as many times as judged prudent by management authorities. No bear may be removed for any offense, other than unnatural aggression, without at least one relocation unless representatives of affected agencies document the reason in writing. All relocations outside the PCA will be governed by state management plans.
- Bears may be preemptively moved when they are in areas where they are likely to come into conflicts with site-specific human activities, but only as a last resort. Such preemptive moves will not count against the bear as nuisance moves.
- Bears preying on lawfully present livestock (cows, domestic sheep, horses, goats, llamas, etc.) on public lands will be managed according to the following criteria:
    - No grizzly bear involved in livestock depredations inside the PCA shall be removed unless it has been relocated at least one time and continues to cause livestock depredations. This does not apply to depredations occurring in sheep allotments inside the PCA in areas that were designated Management Situation 1[22] under the Interagency Grizzly Bear Guidelines (IGBC 1986).
    - Grizzly bears will not be removed or relocated from sheep allotments on federal land inside the PCA in areas in areas that were designated Management Situation 1 under the Interagency Grizzly Bear Guidelines (IGBC 1986).
- Before any removal, except in cases of human safety, management authorities will consult by telephone or in person to judge the adequacy of the reason for removal.
- Bears displaying natural aggression are not to be removed, even if the aggression results in human injury or death, unless it is the judgment of management authorities that the particular circumstances warrant removal.
- Bears displaying unnatural aggression will be removed from the population.
- Decisions based on criteria for relocation and removal inside the PCA for management of nuisance bears in the Conservation Strategy and best biological judgment of authorities.
    - Authorized National Park Service authorities will implement removals and relocations within YNP and GTNP.
    - Authorized state authorities outside YNP and GTNP will implement other removals and relocations.
    - State wildlife agencies in coordination with the appropriate federal agencies will predetermine adequate and available sites for relocations. Relocation sites should be agreed upon before the need for relocation occurs. In order to deal with problem bears more efficiently, managers should have full access to relocation sites without having to conduct individual consultation for each relocation.
    - Livestock damage prevention and compensation are addressed in individual state management plans.
- Management of all nuisance bear situations will emphasize removal of the human cause of the conflict, when possible, or management and education actions to limit such conflicts. Relocation and removal of grizzly bears may occur if the above actions are not successful.

[22] Management Situation 1 areas are described in forest plans.

Specific Criteria for Removals

Captured grizzly bears identified for removal may be given to public research institutions or public zoological parks for appropriate non-release educational or scientific purposes as per regulations of states and national parks. Grizzly bears not suitable for release, research, or educational purposes will be removed as described in appropriate state management plans or in compliance with national park rules and regulations.

Outside of national parks, individual nuisance bears deemed appropriate for removal may be taken by a legal hunter in compliance with rules and regulations promulgated by the appropriate wildlife agency commission, as long as such taking is in compliance with existing state and federal laws, and as long as mortality limits specified for the GYA as described in this Conservation Strategy are not exceeded. This could include licensed hunters or property owners or their agents who have obtained appropriate permits from the state. Licensed hunters will be allowed to possess bear parts for bears that are legally harvested under a state permit.

Monitoring Protocol

All nuisance bear control actions, and grizzly bear/human and grizzly bear/livestock conflicts will be summarized annually in the Annual Report of the IGBST. Most conflicts are due to availability of human foods, human developments, or livestock depredations in occupied grizzly bear habitat. This report will detail the cause and location of each conflict and management action and display an annual spatial distribution of conflicts that can be used by managers to identify where problems occur and to compare trends in locations, sources, landownership, and types of conflicts.