

**The Effects of Delisting the Grizzly Bear from the
Endangered Species Act on Timber Management in the
Yellowstone Ecosystem**

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Abstract

When the grizzly bear is delisted from the Yellowstone Ecosystem, strict federal standards regulating timber management on the surrounding National Forests will elapse, and new standards written to protect grizzly bear habitat will take their place. Controversy surrounds this change in management, with some believing this will result in an increase in logging. This paper address how will the delisting may effect timber management on National Forest surrounding Yellowstone National Park. Comparing the documents that guided the management of grizzly bear populations and habitat as a listed species, and the documents guiding management post-delisting, has shown there were many standards and guidelines controlling the size, shape, location, and timing of timber sales in occupied grizzly bear habitat. When the bear is delisted, there will only be one standard controlling the size, shape, location, and timing of timber sales. This one standard will allow greater flexibility in how timber sales are designed, which may result in slight increases in the size of timber sales in occupied grizzly bear habitat.

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Table of Contents

CHAPTER 1	1
Introduction	1
The Endangered Species Act and Yellowstone Grizzly Bear Management	3
The Endangered Species Act	4
The History of the Yellowstone Grizzly and its Management.....	7
Management After Delisting	11
Delisting the Grizzly Bear: A New Challenge	14
Controversies and Questions	16
<i>Does Delisting the Bear have any effect on Development on Private Land?</i>	16
<i>Does the Conservation Strategy Protect Bear Populations?</i>	19
<i>How will the Delisting of the Bear affect the USFWS Review on Projects in the National Forest? ...</i>	20
<i>How Will Delisting the Bear Change the Amount of Mining, Logging, Oil, and Gas Exploration, and Grazing in National Forests?</i>	21
Summary	22
CHAPTER 2	25
Methodology	25
Document Review	25
Case-Study.....	29
CHAPTER 3	32
Comparison of the Current Management and Proposed Management	32
1993 Grizzly Bear Recovery Plan	33
1986 Interagency Grizzly Bear Guidelines	35
1987 Gallatin National Forest Plan.....	38
2002 Conservation Strategy.....	47
Amendment to the Forest Plan.....	49
Major Changes that Will Affect Timber Management	50
Case Study: Darroch-Eagle Creek Timber Sale	51
How the listing affects this timber sale.....	52
The Affects to the Sale from Delisting and Other Factors.....	64
Findings	78
CHAPTER 4	80
Forecast	80
CONCLUSION	88
REFERENCES	92

Chapter 1

The grizzly bear (*Ursos arcto horribilis*) will be delisted from the Endangered Species Act in the Yellowstone Ecosystem on May 1, 2007. When the grizzly bear is delisted, the standards and guidelines concerning timber management written to protect bear populations and their habitat will elapse. New standards and guidelines will be implemented to guide timber management in occupied grizzly bear habitat. This change in management raises the question if the delisting will spawn an increase in the amount of logging in National Forests surrounding Yellowstone National Park. This thesis will examine how the delisting of the grizzly bear in the Yellowstone Ecosystem will affect timber management within the National Forest.

Introduction

The Endangered Species Act (ESA) provides protections for species of plants and animals that are facing extinction, or may face extinction in the near future (Glicksman and Coggins, 2001). The Act requires that the United States Fish and Wildlife Service (USFWS) develop a recovery plan for listed species. This recovery plan must identify the factors that have led to the decline of the species (Kline, 2001) and describe the steps needed to mitigate those factors. Once the population of a species has stabilized, and the factors that have led to the species decline have been addressed, a species may be eligible for delisting from the ESA.

One of the major reasons that the grizzly bear was listed as a threatened species was because of the loss of habitat caused by logging and road building within the Yellowstone Ecosystem (Kline, 2001). Today the grizzly bear has increased significantly from when the population was listed, habitat critical to the bear's survival has been protected, and activities such as logging, road building, mining, oil and gas development, and grazing have been restricted (United States Fish and Wildlife, 2002b). Because of these three factors, the USFWS is in the process of delisting the grizzly bear from the Endangered Species Act. When delisted, the grizzly bear will no longer enjoy the same protections that have previously restricted resource development in the bear's habitat in the Yellowstone area. This thesis questions how the delisting of the grizzly bear will affect timber management on the National Forests.

This Masters Thesis will analyze how the delisting will affect timber management. Research revealed that no other species of animal has been delisted from the ESA that can be compared to the grizzly bear. No species with a similar range or habitat needs have recovered because of the protection of their habitat. A few species have recovered because their habitat was protected, but these species are found in very limited ranges where protection of habitat was relatively simple compared to the grizzly bear. This will create new challenges for federal, state, and local agencies. Questions about development, species viability, and the procedural process have been raised since the USFWS announced plans to delist the bear. Evidence suggests that resource development in the National Forest in the form of mining, logging, oil and gas, and grazing may increase once the bear is delisted. However, development on private

property will not be affected by the delisting because there are no restrictions on private property under the current listing of the bear.

This chapter has four sections. The first section provides background on the ESA, on the process of delisting a species from the ESA, on the management history of the Yellowstone Grizzly Bear, summarize the documents guiding management today, and summarize the documents guiding management when the bear is delisted. The second section discusses how the delisting of the grizzly bear is a first in the history of the ESA, and how the delisting will pose unique challenges for those agencies associated with the delisting of the grizzly bear. The third section analysis the available literature on the delisting of the grizzly bear and highlights controversy or major unanswered questions surrounding the delisting. The final section of this chapter summarizes the information covered in the previous sections, and identifies key questions.

The Endangered Species Act and Yellowstone Grizzly Bear Management

This section provides an overview of the ESA. It begins with a description of how the ESA works and the four major sections of importance. Second it explains of how delisting a species from the ESA is accomplished. Third it addresses the evolution grizzly bear management in the Yellowstone area since the species was listed. The section concludes with a discussion of how management will change when the grizzly bear is delisted.

The Endangered Species Act

The ESA was signed into law by President Richard Nixon in 1973. It was written as a response to the United States' long history of resource exploitation (Kline 2001). The primary intent of Congress when writing the ESA was to prevent species from becoming extinct (Doremus, 2001). The ESA is a powerful wildlife law; which was seen not long after its adoption when the Supreme Court of the United States stopped the completion of the Tellico Dam in Tennessee to protect a species of fish called the Snail Darter (Glicksman and Coggins, 2001). The ESA is now recognized as the strongest natural resource law in the United States, and perhaps in the world (Abbitt and Scott, 2001; Glicksman and Coggins 2001).

The goal of the ESA is to conserve endangered and threatened species and to protect the habitat on which they depend (Glicksman and Coggins, 2001). A species is listed as *endangered* when it is facing extinction. A *threatened* species is one that could become endangered in the foreseeable future (Doremus, 2001

The law has four main sections used to achieve the goals of conservation and protection: Section 4, Section 7, Section 9, and Section 10 (Glicksman and Coggins, 2001). These sections are described briefly below.

Section 4 describes the procedures for listing and delisting a species and for defining and designating the critical habitat of a species (Kline, 2001). Section 4 requires the Secretary of the Interior to define the critical habitat for a species. *Critical habitat* is the

area that is essential to the species' survival and the area occupied at the time of listing (Glicksman and Coggins, 2001). However, in the case of the grizzly bear, the courts have allowed the designation of a recovery zone in place of designating critical habitat (Glicksman and Coggins, 2001).

The Secretary of the Interior, using the best scientific and commercial data available, performs a five-step analysis to determine why a species existence is in jeopardy (Kline, 2001). Listings are to be based on results of the information collected in the five-step analysis. Economics should not be taken into consideration to prevent political considerations distorting decisions (Glicksman and Coggins, 2001). Once a species is listed the USFWS can take actions to protect that species and its habitat.

Section 7 requires that any action taken by any federal agency must not inflict harm on listed species (Glicksman and Coggins, 2001). If a federal agency proposes a management action, under the requirements of the National Environmental Policy Act (NEPA), that agency must perform a biological assessment. The USFWS reviews the biological assessment to determine the effects of the action on the environment (Glicksman and Coggins, 2001). The USFWS then issues a biological opinion based on how the action affects listed species. If the proposed action causes harm to a listed species, the USFWS may reject the action, propose alternatives, or suggest mitigation (Glicksman and Coggins, 2001).

Section 9 bans the taking of listed species as well as their import and export (Kline, 2001). The definition of a taking is broadly defined in the ESA, but can be described as harming or harassing a species, or the significant modification or destruction of its habitat (Glicksman and Coggins, 2001).

Section 10 limits private landowners and states from performing actions that may cause the taking of a species under Section 9 (Kline, 2001). Section 10 is the part of the legislation that gives the federal government the right to control actions on private property. However, restricting the use of private property has proven to be much more difficult for the USFWS than restricting the use of federal lands (Hatch et al., 2002). Section 10 also allows for the application of a takings permit by a state or private party. A takings permit allows the applying party to create a habitat conservation plan designed to mitigate their actions that may cause harm to a listed species (Glicksman and Coggins, 2001). A takings permit or a habitat conservation plan must be reviewed by the USFWS.

The Delisting Process-Section 4

The process for delisting a species is essentially the opposite of listing. The USFWS must first write a recovery plan for the listed species. The goal of the recovery plan is to allow the USFWS to make decisions that help the listed species recover (USFWS, 2005). The recovery plan will detail actions and policies needed to be taken by federal, state and local agencies to achieve the recovery of the species (USFWS, 2005). To do this the five-factor analysis of the species discussed above, must be preformed in reverse (Kline,

2001). Simply put, all of the factors that contributed to the listing of the species that were discovered in the five-factor analysis must be shown to no longer pose a threat to the existence of the species (Kline, 2001). The five-factor analysis in support of delisting must prove that the protection under the ESA is no longer required to protect the species (Doremus, 2001).

When a species is delisted, the USFWS relinquishes management control of the species and in many cases, the management of the species is handed over to states (Glicksman and Coggins, 2001). As a result, federal protections provided by the ESA are eliminated (Doremus, 2001). In some cases other federal statutes, such as the Migratory Bird Treaty Act, will still provide federal protection for some delisted species in specific instances (Glicksman and Coggins, 2001).

The History of the Yellowstone Grizzly and its Management

The grizzly bear is a symbol of Yellowstone National Park (Wilkinson, 1999b). The bear was once showcased in park garbage dumps, where people would congregate to watch bears rummage through trash. The garbage dumps became a major food source for the bear and the bears began to depend on them. The National Park Service closed the dumps between 1969 and 1971 hoping the bears would return to natural food sources, but they did not (Kline, 2001). This caused a rapid decrease in the population (John, Craighead, Sumner and Mitchell, 1997). The decline in population caused the USFWS to list the bear as a threatened species under the ESA in 1975 (Federal Register, 2005). The

bear has made a comeback since it was listed; the USFWS is now in the process of having the bear delisted under the ESA stating the bear is no longer in need of ESA protection (Federal Register, 2005).

To list the grizzly bear under the ESA, the USFWS was required to identify the factors that threatened the bear. The major factor was the destruction of the bear's habitat, primarily from logging and road building (Kline, 2001). Human induced mortality, which came in the form of state regulated hunting and unregulated killing, was the second greatest factor identified by the USFWS (Kline, 2001).

Once listed as a threatened species, management of the grizzly bear became the responsibility of the USFWS. In 1979 the USFWS issued guidelines for management of the grizzly bear designed to promote the conservation of bear habitat (United States Department of Agriculture, 2004). In 1981 the USFWS hired a bear recovery coordinator to organize recovery efforts (Federal Register, 2005). The first Grizzly Bear Recovery Plan was completed in 1982 by the USFWS. The 1982 plan loosely defined an area of suitable bear habitat around the Yellowstone National Park as the Yellowstone Grizzly Bear Ecosystem, a name that was changed in 1993 to the Yellowstone Grizzly Bear Recovery Zone (Federal Register, 2005). The plan used the 1979 Guidelines to guide recovery (USDA, 2004c). In spite of the 1979 Guidelines, 1981 and 1982 saw unacceptably high mortality for the Yellowstone Grizzly population. As a response, in 1983 the Interagency Grizzly Bear Committee (IGBC) was created by the USFWS (Kline, 2001) to coordinate management and research activities across the affected states

and federal lands (USFWS, 1986). The objective of the IGBC was to protect and improve bear habitat by changing land management practices (Federal Register, 2005). The 1979 Guidelines were replaced with new guidelines in 1986. The 1986 Guidelines lead to the 1993 Recovery Plan then the 2002 Conservation Strategy, and eventually the delisting of the grizzly bear in March of 2007.

Grizzly Bear timeline in the Yellowstone Ecosystem

- 1975 Grizzly bear listed as threatened under the ESA
- 1979 1979 Guidelines implemented
- 1981 First Grizzly Bear Coordinator hired
- 1982 1982 Recovery Plan implemented
- 1986 1986 Interagency Grizzly Bear Guidelines implemented
- 1987 Gallatin Forest Plan and Appendix G to the Forest Plan implemented
- 1993 1993 Recovery Plan implemented
- 2002 2002 Conservation Strategy written
- 2006 Amendment to the six Forest Plans approved
- March 2007 Final decision to delist the grizzly bear approved

The Interagency Grizzly Bear Guidelines (1986 Guidelines) created five management situations for grizzly bear management in the Greater Yellowstone Area (United States Fish and Wildlife Service, 1986). These management situations are used in the 1993 Grizzly Bear Recovery Plan to describe the different levels of intensity needed for bear management (USFWS, 2002).

The 1993 Grizzly Bear Recovery Plan (Recovery Plan) replaced the plan written in 1982. The Recover Plan included new information about grizzly bears, and new criteria for recovery efforts (Federal Register, 2005). Instead of considering all the grizzlies in the lower 48 states as one population, the plan defined six separate bear populations in the lower 48 states and divided them into six distinct populations for recovery. This allows individual populations to be delisted when recovery goals stated in the Recovery Plan have been meet for that population (Federal Register, 2005). The Recovery Plan defines a recovery zone for the Yellowstone Grizzly instead of defining critical habitat (Glicksman and Coggins, 2001). The recovery zone is designated as Management Situation (1). Outside the recovery zone where it was determined that occupation of grizzlies is acceptable and anticipated, the other four Management Situations apply depending on the suitability of the site for bears. The Recovery Plan is what currently guides management of the species (USFWS, 2002).

In 2002, the USFWS prepared the Final Conservation Strategy (Conservation Strategy) for the grizzly bear in the Greater Yellowstone Ecosystem (USFWS, 2002). This plan is the document that will outline management of the grizzly bear when the species is delisted as well as address deficiencies in the Recovery Plan (USFWS, 2002). The purpose of the Conservation Strategy is to describe, summarize, coordinate, and monitor the efforts to manage the grizzly bear once the bear is delisted. The four objectives of the Conservation Strategy are:

- 1) To specify standards for habitat, population, and nuisance bears

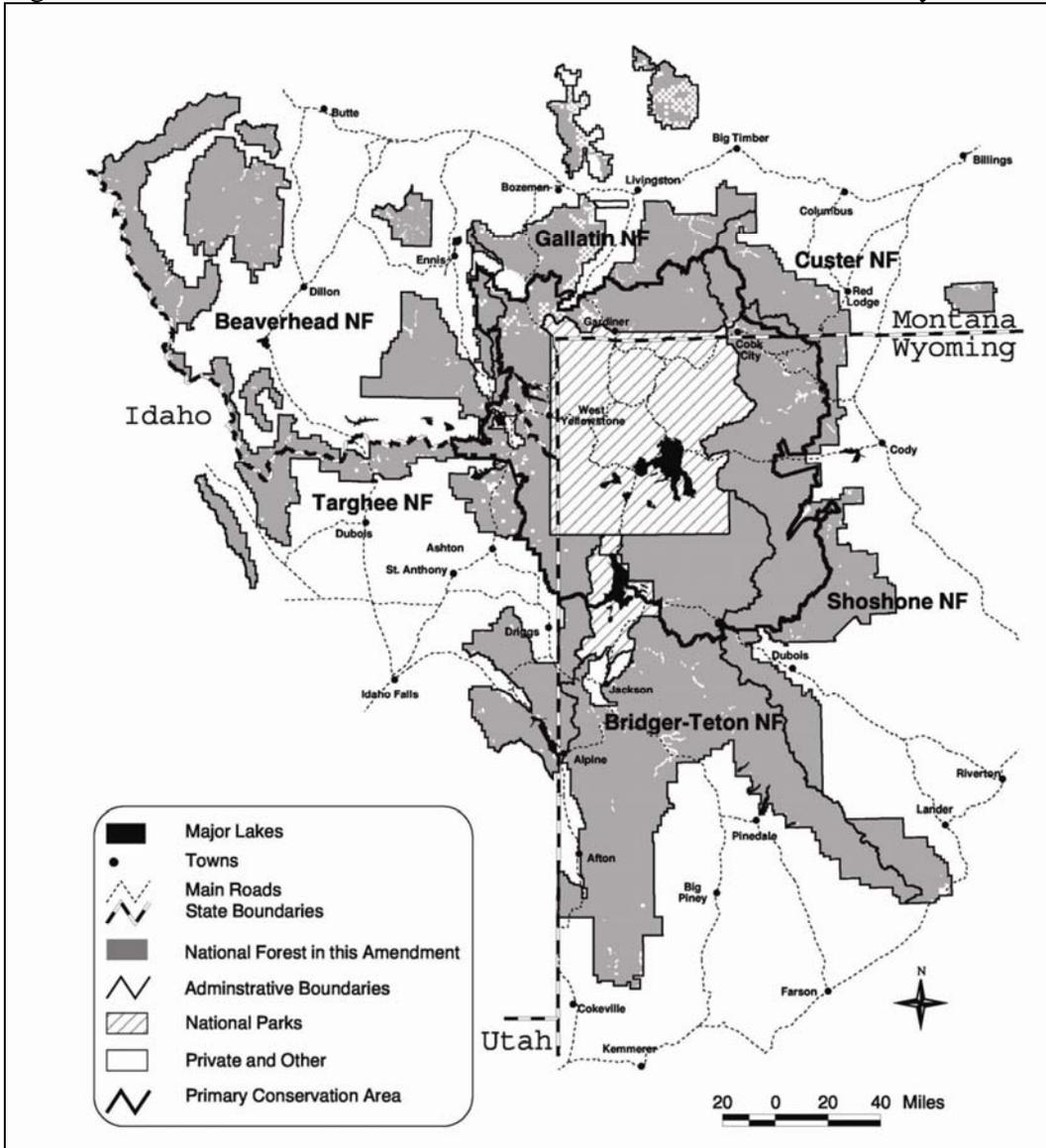
- 2) To document regulatory mechanisms, legal authorities, policies, management, and monitoring programs to maintain a recovered population
- 3) To document the role of other participating agencies
- 4) To monitor bear populations. (USFWS, 2002)

Management After Delisting

What will happen to the management of the Yellowstone Grizzly when the species is delisted? The USFWS will no longer be involved in the management of the grizzly bear or have review of other agencies actions that may affect the bear. The Recovery Plan will become obsolete; the Conservation Strategy will replace the Recovery Plan as the document providing management direction.

When the bear is delisted the Yellowstone area will be divided into two areas, the Primary Conservation Area (PCA), and the area outside the PCA where it is also suitable for bears to live (Figure 1) (USFWS, 2002). The PCA is the area where the protection of bears and their habitat has the highest priority (USFWS, 2002); the PCA is the same area as the recovery zone in the Recovery Plan. Ninety-eight percent of the land in the PCA is public lands, either Yellowstone National Park or National Forest (Federal Register, 2005).

Figure 1. The PCA and the six National Forests in the Yellowstone Ecosystem



Source (USDA, 2006Ab)

The Conservation Strategy will provide general direction for management both inside and outside the PCA. State plans for Idaho, Montana, and Wyoming, and forest plans for the surrounding National Forests' will guide site specific management outside the PCA. The Conservation Strategy will guide site specific management actions for federal and state agencies inside the PCA. (USFWS, 2002)

When the bear is delisted, the states of Idaho, Montana, and Wyoming will initiate their own grizzly bear management plans as required by the Conservation Strategy. Each of the state plans was written by the individual states in 2000 (Montana Fish Wildlife and Parks, 2002). The state plans were written to guide the management of the bear in the area outside of the PCA (USFWS, 2002). The individual state plans will be activated as an appendix to the Conservation Strategy when the bear is delisted (USFWS, 2002).

There are six National Forests in the Greater Yellowstone Ecosystem. These forests were required by the USFWS to make an amendment to their Forest Plans to incorporate the Conservation Strategy into their planning efforts (USFWS, 2002). The amendments to the Forest Plans have been written by the USFS. The amendment ensure the USFS will use the Conservation Strategy to make site specific management decisions to protect the bear on projects within the PCA, and to guide Forest Service management of the grizzly bear outside the PCA (USDA, 2004c). The amendment to the National Forest Plans were written so one amendment applies to all of the six forests (USDA, 2004c). The amendment will be activated when the bear is delisted as an appendix to the individual Forest Plans (USFWS, 2002).

The Conservation Strategy will be the document that guides management inside the PCA. The agency responsible for managing the land, such as the Forest Service, will be responsible for carrying out the planned strategies in the Conservation Strategy (USFWS, 2002). Thus, the National Park Service will be responsible for the National Parks; the Forest Service will be responsible for the National Forests; and the three states for state

and private lands. The USFWS will no longer be involved in bear management or in the review of projects which might impact the grizzly bear (Glicksman and Coggins, 2001). None of these plans will be implemented if the bear is not delisted (USFWS, 2006a).

Delisting the Grizzly Bear: A New Challenge

The delisting of the grizzly bear will present new challenges to state and federal agencies. Unlike any other species previously delisted from the ESA, the grizzly bear is a large mammal known as an umbrella species (Pyare and Berger, 2003). An umbrella species is a species of plant or animal whose viability is a sign of ecosystem health. The grizzly bear is also unique because its survival depends on both the preservation of habitat and limited human induced mortality (Servheen, 1986). One of the major factors leading to the original listing of the bear was loss of habitat due to different types of development, such as resource extraction (mining and logging). No other animal species with similar habitat needs and such expansive range have been delisted. Thus there is little historical or empirical data to suggest what will happen to land use when the grizzly bear is delisted.

In the past, delisting of species from the ESA has proven to be a difficult task. Very few species have been delisted because their populations have recovered (Abbitt and Scott, 2001). In fact fewer than one percent of the species listed under the ESA have been delisted because the USFWS has determined that the species has recovered (Science and Technology, 2006). According to the USFWS, 41 species have been delisted since the

act was signed into law in 1973, but only 16 species were delisted because they have recovered¹ (USFWS, 2006b).

There are three ways a species can be delisted.

- 1) The listed population of the species becomes extinct.
- 2) An error in how the species was listed, or new information is discovered.
- 3) The species population is recovered to a point where ESA protections are no longer necessary (USFWS, 2006b).

Although very few species have been delisted because their populations recovered, it is still useful to examine how the factors that contributed to the successful delisting of recovered species compare to the factors that led to the listing of the grizzly bear. As explained previously under the Delisting Process, the process for delisting a species is essentially the opposite of the process which results in listing the species as threatened or endangered. Therefore the factors that lead to the listing of a species must be addressed.

The main factor that contributed to the listing of the grizzly bear was the destruction of its habitat (Kline, 2001). However, of the eight other species that had actually recovered adequately to warrant their delisting from the ESA by 1999 (Abbitt and Scott, 2001) three recovered because DDT, their greatest threat, was banned, and five recovered because they were no longer commercially exploited (for example the American Alligator recovered after a ban on commercial hunting was enacted) (Doremus, 2001). None of

¹ The grizzly bear is already listed on the web page as recovered, but the delisting has not yet taken effect, therefore it was not counted as a recovered species

these eight species' main threat was the destruction of habitat² (Doremus, 2001). As of today, only one large mammal on United States soil has been delisted, a species of deer living only in isolated locations of Oregon and Washington (Kenworthy, 2003, USFWS, 2006b). The deer faced two main threats, habitat destruction and regulated hunting. These threats were reversed simply by the USFWS purchasing the few thousand acres where the deer was found, and stopping the hunt (Kenworthy, 2003).

Controversies and Questions

This section poses four important questions that arise from the delisting and presents a discussion of the literature that attempts to answer the questions.

- 1) Does delisting the bear have any effect on development on private property?
- 2) Will the Conservation Strategy adequately protect the bear, ensuring its survival?
- 3) How will the delisting of the bear affect the USFWS review on projects in the National Forest?
- 4) How will delisting the bear change the amount of mining, logging, oil and gas exploration, and grazing in National Forests?

Does Delisting the Bear have any effect on Development on Private Land?

Questions have been raised about how development of private property will change with the delisting of the bear (Fawn, 2006). As mentioned earlier, the Yellowstone area will

² The gray wolf, (*Canis lupus*) was delisted in the Great Lakes Region on February 2, 2007, and was not included in this study

be divided into two areas when the grizzly bear is delisted (USFWS, 2002). The first area is the PCA where bears are given the highest management priority. The second zone is suitable habitat outside the PCA where bears are not given the highest management priority (see figure 1). The PCA is 98% federal land, only 2% is private (Federal Register, 2005). This leaves very little room for federal statutes and policies to have much effect on private property. Outside the PCA where it is suitable for bears to live and likely to happen, there is substantially more private property. Approximately 12% of the second section, the area outside the PCA, is privately owned (Federal Register, 2005). This means there are some places outside the PCA where bears will be found on private property. Private lands outside the Park are some of the fast growing areas in the Rocky Mountains (Wilkinson, 1999b). Amenity based economies, like the Yellowstone area, have led to an expansion in ex-urban sprawl (Rasker and Hackman, 1996). The growth this region is experiencing increases the likelihood of human bear conflicts; grizzly bear mortality rates increase with increases of human disturbance (Servheen, 1986). How do the local and federal agencies involved manage development on private property to protect the bears?

The USFWS policy is that private property is not suitable for grizzly bears. No federal actions have been taken to manage activities on private property to protect grizzly bear populations or habitat under the Recovery Plan. The Conservation Strategy will also not take any actions to regulate actions on private property (USFWS, 2006a). Since the Recovery Plan and the Conservation Strategy have no controlling effect on development on private property, there will be no change if the bear is delisted. The only development

on private property that currently can be affected by the listing of the grizzly bear are projects involving federal agencies or funds that would fall under the NEPA process such as highway projects (USFWS, 2006a).

Local statutes and polices can be designed to regulate development on private property to protect bears. However there are currently no such local regulations that are associated with land within the range of the Yellowstone Grizzly bears (USFWS, 2006a). Historically in the Yellowstone area, local residents have had a negative image of grizzly bears and this attitude reflects the current situation in local politics (Kline, 2001). At this time I found no evidence that would indicate that the lack of regulation on private property is going to change.

Although it is possible for the listing of a species as endangered or threatened to affect development on private land, the case of the grizzly is somewhat different from other protected species because of the actions that the relevant regulatory agencies have taken. According to the USFWS the current listing of the bear has not affected the development of private property (USFWS, 2006a). Indeed the listing of other species, notably the red-cockaded woodpecker, has had an affect on private property (Glick, 2005). The red-cockaded woodpecker lives in pine stands in the southeast United States, and the listing of the species affected logging practices on private lands (Glick, 2005). Although the USFW does monitor bears on private land, the agency does not consider private land to be acceptable bear habitat and does not regulate private property for the protection of the grizzly bear (USFWS, 2006a; Federal Register, 2005). Because the current listing does

not affect private development, the delisting of the bear will not alter how development occurs on private land. However, some people believe that development on private land might negatively affect grizzly bears within protected habitat areas like Yellowstone National Park (Oko, 2000). The growing human population of the greater Yellowstone area increases the probability of confrontations between humans and bears both inside and outside the protected area. Development increases bear mortality (Servheen, 1986) and the development on private property may negatively affect the bear in public lands.

Does the Conservation Strategy Protect Bear Populations?

Does the Conservation Strategy do enough to ensure the perpetuation of the grizzly bear? There are two major concerns: (1) the stability of the bear's food source, and (2) the genetic stagnation of the population (USDA, 2004c). Two of the main sources of food for the grizzly bear in the Yellowstone ecosystem, spawning cutthroat trout and the nuts from whitebark pine are in decline (Kline, 2001). The populations of both the cutthroat trout and whitebark pine are declining due to pressures from diseases, global warming and competition from non-native species (Economist, 2005). In addition, the Yellowstone bear population is isolated from other grizzly bear populations leading to the concern that, over the long term, there may be inbreeding of the population (Miller and Waits, 2005). These concerns are all acknowledged by the USFWS and the USFS (USFWS, 2006a; USDA, 2004).

Whether or not the Conservation Strategy does enough to address the concerns over genetic diversity and food sources, to prevent the decline of the species is a legitimate question that the USFWS tries to address (USFWS, 2006a). However this paper focuses on how delisting will impact timber management on National Forests, not on how successful new management plans can or will be at protecting bears. It is beyond the scope of this project to evaluate whether these management strategies provide adequate protections for the bear.

How will the Delisting of the Bear affect the USFWS Review on Projects in the National Forest?

When the bear is delisted, the USFWS will no longer review biological assessments of actions proposed by federal agencies that may affect the grizzly bear populations and habitat. The agencies themselves will be responsible for conducting biological assessments of their proposed actions, assessing how those actions might affect the grizzly bear (Glicksman and Coggins, 2001). There is reason to believe this may shorten the lengthy bureaucratic delays and approval process inherent in current management actions (Wilkinson, 1999b). How will this alteration in the process affect the approval, disapproval, or alteration in project proposed by other federal agencies?

It is clear how the process for the review of biological assessments will change for federal agencies. The USFWS will no longer review any projects planned in the National Forest or National Parks; the review will be the responsibility of the agency initiating the management action (Glicksman and Coggins, 2001). How this will affect the approval or

denial of projects and the speed at which projects will be reviewed is yet to be seen. The manner in which projects are reviewed could well affect how mining, logging, oil and gas exploration and grazing projects are approved or denied on the National Forest.

How Will Delisting the Bear Change the Amount of Mining, Logging, Oil, and Gas Exploration, and Grazing in National Forests?

The most controversial issue to arise from the delisting of the bear is restrictions that affect mining, logging, oil and gas extraction, and grazing on the National Forest surrounding Yellowstone National Park may change (Gies, 2002-2003; Glick 2005; Kenworthy, 2003; Lemonick and Dawson, 2005; Wilkinson, 1999b). The pro-development community has advocated the delisting grizzly bear to be delisted for some time to allow more access to natural resources (Turbak, 93). Some groups believe the current presidential administration is pushing for delisting because of its energy policy which favors exploration over conservation (Gies, 2002-2003).

There is a demand for resource development in the Yellowstone area. Delisting the grizzly bear may allow increases in the amount of mining, logging, oil and gas exploration and grazing allowed in the National Forest (USFWS 2006a; Federal Register, 2005; USDA 2004). There is a demand from industry for such activities (Turbak, 1993). Also there are the local pressures for industrial expansion (Wilkinson, 1999b). It is also believed the Bush Administration is advocating delisting to ease restrictions for different types of development (Gies, 2002-2003; Kline, 2001). Overall there is substantial evidence that there is a demand for resource development in the Yellowstone area, couple

that with the weakening of restrictions on resource development, it seems highly likely that there will be an increase in resource development in the National Forest surrounding Yellowstone National Park.

Prior to the protection offered by the ESA, logging and road building were the two greatest pressures on grizzly bear habitat (Kline, 2001). Without the listing of the grizzly bear it is unlikely the protected area would be as large as it is today (Mattson, 2002). If the grizzly bear is delisted the same pressures of logging and road building is likely to return and threaten grizzly bear habitat (USFWS 2006a) but it is not clear at what magnitude the development may occur

Summary

The grizzly bear was listed as a threatened species in 1975 providing the above protections of the ESA. The species was threatened by the alteration of its habitat caused by logging and road building, and direct and indirect mortality caused by humans. After over a decade of work, the 1986 Grizzly Bear Guidelines were written which gave the USFWS different management situations to use for land management in grizzly bear habitat. The 1993 Grizzly Bear Recovery Plan used the 1986 Guidelines to provide direction for specific management actions in the different management situations. The grizzly bear population in the Yellowstone Area has steadily risen to where USFWS biologists feel it no longer needs protection from the ESA, and is now being delisted.

The Conservation Strategy was written to guide grizzly bear management when the species is delisted from the ESA.

The loss of federal protections provided by the ESA may allow an increase in the amount of logging as well as other resource development when the bear is delisted. Currently, land use decisions that may affect grizzly bear populations or habitat made by federal agencies must receive final approval by the USFWS before being implemented. The Recovery Plan is the authority on how management decisions are made. When delisted, the Recovery Plan will be obsolete and the Conservation Strategy will provide direction for federal agencies to make decisions. The USFWS will no longer review project that may affect grizzly bear habitat or populations.

This report evaluates how the delisting of the grizzly bear will affect the size, shape, location, and timing of timber sales on the National Forest in the Yellowstone ecosystem. A review of the USFWS experience with other delisted species does not give many insights into what is likely to happen in the bear's habitat. First, few species have ever been delisted. Second, the situation facing most of these species do not parallel the situation of the Yellowstone Grizzly Bear. The grizzly bear is unique for two major reasons. It is umbrella species and its habitat covers such a large area within its ecosystem. Thus there is little prior experience with delisted species to suggest exactly what will happen to land and resource development if the bear is delisted.

Ironically a major factor in the original listing of the bear was the impact of resource development on its habitat. Logging and road building had negative impacts on grizzly bears in the past, and may do so in the future. The ESA provides the authority for the USFWS used to restrict this type of development on federal land around Yellowstone National Park. If the bear is delisted, that authority will no longer be available. The Conservation Strategy will provide some of the same protections that were available under the ESA within the PCA. However the Conservation Strategy does not have the same powers as the Recovery Plan to control timber management. With loosened restrictions there could be an increase in the same type of development in the National Forest surrounding Yellowstone National Park that caused the bear's original decline.

Chapter 2

Methodology

Importance to planners

In the past, the majority of species that have been successfully delisted did not create new challenges to planners. Species that have been delisted had limited habitats, or recovered because of the banning of chemicals like DDT. A large umbrella species covering large land areas and utilizing many different habitats has not yet been delisted. The delisting of the Yellowstone grizzly bear will affect 3 states, 3 federal agencies, 6 National Forests, and 2 National Parks. Because a species of this magnitude has not been delisted, it is not possible to look to past delisting to compare effects, it is a new and unique challenge.

Because this is the first large umbrella species to be proposed for delisting, the consequences of this action are not known. Having an idea on what might happen to land use after delisting will give planners an advantage when making decision into the future. Furthermore, understanding how changes might occur, will help planners who face similar situations as other keystone species become eligible for delisting.

Document Review

There are two categories of documents that pertain to this thesis. The first category is the documents that currently are associated with the management of grizzly bear populations

and their habitat. These documents have been written while the grizzly bear enjoyed the protections of the ESA, and will continue to guide the management as long as the Yellowstone grizzly bear is listed (hereafter referred to as “Current Documents”). The second category of documents has been written to manage grizzly bear populations and habitat after the bear is delisted (hereafter referred to as “Delisting Documents”). These documents will go into effect the day the bear is delisted. Review and comparison of these two categories of documents is necessary to answer the question.

Current Documents

Three documents that currently guide management of grizzly bear populations and their habitat have been reviewed. These documents are the 1986 Interagency Grizzly Bear Guidelines, the 1993 Grizzly Bear Recovery Plan, and the 1987 Gallatin National Forest Plan (Forest Plan) specifically Appendix G. Only one Forest Plan was reviewed, instead of all six, to limit the scope of the research.

The 1986 Guidelines create five management situations that describe the management direction and priorities of how to manage grizzly bears and their habitat on federal land in the Yellowstone ecosystem. The 1986 Guidelines also provide standards and guidelines on how to conduct specific management activities for federal and state agencies from grazing to timber management in the different management situations. This document has been analyzed to determine how grizzly bear populations and habitat affect the size, shape, location, and timing of timber sales in the five different management situations, and how the guidelines relate to management decision in the National Forests.

The goal of the Recovery Plan is to “identify actions necessary for the conservation and recovery of the grizzly bear” (USFWS, 2000, pg. 15). The Recovery Plan establishes population goals for the grizzly bear that indicate the species recovery. The Recovery Plan provides a monitoring approach to determine the population levels. The plan also identifies population and habitat limiting factors, and identifies measures needed to be taken to remove these limiting factors. The plan describes how grizzly bear habitat and populations are currently managed, and how these management practices affect timber management on the National Forest.

The Gallatin National Forest sits adjacent to Yellowstone National Park’s northern boundary. A large portion of the Forest is in occupied grizzly bear habitat. The 1987 Gallatin National Forest Plan is the document that currently provides direction for all management actions in the Gallatin National Forest, including actions that affect the grizzly bear. Appendix G of this plan specifically addresses the grizzly bear, providing specific management standards for forest managers making decision that may affect grizzly bear populations and habitats. The entire Forest Plan was analyzed to determine how the listing of the grizzly bear affects the size, shape, location, and timing of timber sales. Only this Forest Plan was reviewed, to limit the scope of the research.

Delisting Documents

When the grizzly bear is delisted, there are two documents that will guide management practices on the National Forest. The first document is the Conservation Strategy, and the second is an amendment to the Forest Plan. This amendment was written to apply to all six of the National Forest in the Yellowstone Ecosystem including the Gallatin National Forest. This amendment will replace the Appendix G of the Forest Plan currently in place.

The purpose of the Conservation Strategy is to describe, summarize, coordinate, and monitor the efforts to manage the grizzly bear once the bear is delisted. This document will replace the Recovery Plan as the document describing management when the grizzly bear is delisted. The Conservation Strategy provides specific management direction within the PCA. Outside the PCA management direction is left to the individual states and federal agencies. The Conservation Strategy creates three standards that must be followed within the PCA on federal and state lands. Only one standard, the secure habitat standard, will have any effect on the size, shape, location and timing of timber sales. When the grizzly bear is delisted, the standards in the 1986 Guidelines will become obsolete, and the Conservation Strategy will be activated

The new Amendment to the Forest Plan is the document that will provide specific management direction for the Forest Service when making land use decisions that may affect grizzly bear populations and habitats. On the Gallatin National Forest, within the

PCA, Appendix G will become obsolete when the grizzly bear is delisted, and the new Amendment will take its place. The new Amendment has been reviewed and analyzed against the 1986 Guidelines and current Appendix G of the Forest Plan for differences in specific management of grizzly bear habitat and populations.

Comparison of the Current Documents to Delisting Documents

An analysis between the current documents and the delisting documents has been done identifying the differences in the restrictions on timber management. The findings of this analysis expose the general differences in the two management approaches that will affect the size, shape, location and timing of timber sales.

Case-Study

The case study has been performed by analyzing an Environmental Assessment of a proposed timber sale in occupied grizzly bear habitat to see how the current documents affect the size, shape, location and timing of a specific timber sale. The parts of the current documents that affect this timber sale are isolated, and then compared to the delisting documents. The result of this comparison will show the differences of how the current documents and delisting documents affect timber management on the National Forests.

The Darroch-Eagle Creek Timber Sale Environmental Assessment (EA) was written to document the impacts of a proposed timber sale on the Gardiner Ranger District of the

Gallatin National Forest. This location is in occupied grizzly bear habitat, and may affect bear habitat and populations. A biological review and a biological assessment of the proposed action are included in the EA as appendices. The EA and appendices focus in detail on the effects of timber operations on grizzly bear populations and habitat. The documents discuss the effects of timber management on grizzly bears in the Yellowstone ecosystem in general, and provide in depth analysis of whether actions associated with this timber sale may impact the grizzly bear. If actions may affect the grizzly bear, mitigation as defined in the Appendix G of the Forest Plan, the 1986 Guidelines, and the Recovery Plan are discussed.

In this case study, the timber sale is analyzed twice. The objective of the first analysis is to determine how the current bear management affects the design of the timber sale. The EA was reviewed for any mention of how the timber sale may affect grizzly bear populations and or habitat. When a possible impact to the grizzly bear was identified the EA refers to specific standards in the Forest Plan. The standards are management actions the agency must follow to protect grizzly bear habitat and populations. This paints a clear picture of how the current management plans affect the size, shape, location and timing of the timber sale.

The objective of the second analysis was to determine how the recovery documents would affect the design of a specific timber sale if the sale were proposed after the delisting. This was done by reviewing how the Delisting Documents and the Recovery Documents would differ in regulating timber management. The EA was analyzed to

determine if different alternatives could be selected as the preferred alternative when the bear is delisted. If different alternatives could be selected, these alternatives were analyzed to determine if they would allow an increase in the size of timber units.

Forecast

Using the findings of the case study, a forecast was created to create an estimate at how much of a change in the amount of logging may occur. This forecast analyzed three factors. (1) The outcome of the case study which determines if there will or will not be an increase in logging. (2) The past trends of logging on the National Forests. This was analyzed to create a baseline of how many acres of land were logged per Forest per year. (3) The amount of land available for timber management. Not all of the National Forest is open to logging, much of the Forests around Yellowstone are in congressionally designated wilderness. These three factors were examined in conjuncture to create an estimate in the amount of change in acres per Forest per year. What this forecast will describe is how the current trends in logging, in the areas available for timber management, may change with the delisting.

Chapter 3

This chapter addresses how the delisting of the grizzly bear may affect timber management on National Forests by comparing current and proposed grizzly bear management plans. Exposing differences in management approaches will demonstrate how timber management may be altered when the grizzly bear is delisted. Next, a study of the Darroch-Eagle Environmental Assessment will be presented to consider how the delisting may affect an individual timber sale. This will be done by identifying the standards and guidelines specific to timber management, written to satisfy section 7 of the ESA. These standards that currently affect the size, shape, location and timing of the timber sale will be compared to the new standards, showing how the size, shape, location or timing of the sale may differ between the two management approaches.

Comparison of the Current Management and Proposed Management

This section will describe the Current Documents and the Delisting Documents. The documents to be reviewed will be the 1993 Grizzly Bear Recover Plan, the 1986 Interagency Grizzly Bear Guidelines, the 1987 Gallatin National Forest Plan, the Conservation Strategy, and the proposed amendments to the National Forest Plan that will go into effect when the grizzly bear is delisted. Once the documents have been described, they will be analyzed for differences in how they regulate timber management. The findings of this analysis expose the general differences in the two management approaches that will affect the size, shape, location and timing of timber sales.

1993 Grizzly Bear Recovery Plan

The 1993 Grizzly Bear Recovery Plan provides management direction for federal and state agencies in the Yellowstone Ecosystem. The first section presents the purpose and need for the Recovery Plan as well as overarching themes of recovery. The following sections detail the actions needed for the recovery of grizzly bear populations in the lower 48 states. The goal of the recovery plan is to remove the grizzly bear from the ESA by identifying actions that are necessary for the conservation and recovery of the grizzly bear. The specific objectives of this plan are to:

- 1) Identify grizzly bear population goals that represent species recovery in measurable and quantifiable terms.
- 2) Provide a population monitoring approach that will allow determination of recovered levels.
- 3) Identify limiting factors of the grizzly bear population and their habitat that account for current populations existing at levels that require threatened status under the ESA.
- 4) Identify management measures needed to remove limiting factors on population and habitat so that the grizzly bear populations will increase and sustain themselves at levels identified as the recovery goals.
- 5) Establish recovery population in each of the ecosystems where habitat is available to sustain a grizzly bear population. (USFWS, 1993)

The Recovery Plan does not intend to provide precise details on all aspects of grizzly bear management. Precise details are provided in the 1986 Interagency Grizzly Bear Guidelines and agency decision documents such as Forest plans.

The Recovery Plan actually provides management direction for seven different populations of grizzly bears in the lower 48 states. Each population is considered distinct and can be delisted from the ESA in separate actions. Each population is addressed specifically in the recovery plan. For the purpose of this paper, only those parts of the Recovery Plan specifically related to the Yellowstone population will be analyzed.

To achieve the objectives of the Recovery Plan in the Yellowstone ecosystem, the plan n establishes 8 actions, including;

- 1) Establishing the population objectives for recovery, and identifies limiting factors.
- 2) Developing ways to minimize actions that limit populations.
- 3) Determining the habitat and space requirements for the achievement of the grizzly bear population goals for the Yellowstone ecosystem.
- 4) Developing monitoring programs for populations and habitats
- 5) Suggesting guidelines for agencies to follow to manage populations and habitats.
- 6) Developing and initiating appropriate information and education programs
- 7) Requiring the appointment of a Recovery Coordinator to lead the implementation of the recovery plan,
- 8) Requiring appropriate federal and state regulations to be revised to reflect current situations and initiate international cooperation. (USFWS, 1993)

Habitat monitoring is central to the 1993 Recovery Plan. The plan introduces a habitat monitoring program called the Cumulative Effects Analysis (CEA). The CEA is implemented through Cumulative Effects Modeling (CEM). The CEM is an assessment of how natural process and events, and human activities in an area change over time. It is

used to measure grizzly bear habitat effectiveness. The 1993 Plan requires this process to be implemented in the Yellowstone Ecosystem. The CEM will be run every 5 years to assess trends in grizzly bear habitat.

The Recovery Plan also separates the recovery area into 18 separate Bear Management Units (BMU's) and 40 subunits. The BMU's are monitored to assure the even distribution of habitat and populations throughout the recovery area. Population goals for the plan are measured by individual BMU. For example, having a specific number of females with cubs per BMU is an important part of population monitoring for the Yellowstone Ecosystem. BMU's are also used with the CEA to ensure habitat within these 18 compartments is maintained at a threshold level.

In summary, the main focus of the recovery plan is to set population conditions for grizzly bear survival, and develop an effective plan to monitor these populations. The plan forfeits the authority on how to regulate timber management to protect grizzly bears and their habitat to the 1986 Grizzly Bear Guidelines, and land management agencies involved, in this case that document would be the 1987 Gallatin National Forest Plan.

1986 Interagency Grizzly Bear Guidelines

The 1986 Interagency Grizzly Bear Guidelines were written to provide specific management actions for agencies involved in the recovery of the grizzly bear. There are two parts to this document, the Grizzly Bear Management Situations, and the Grizzly

Bear Management Guidelines. The Management Situations, discussed in chapter one, describes the priority of management between grizzly bear populations and habitat, and human uses. There are 5 management situations. It is important to note, that only situations 1 through 3 apply to the recovery zone, but all the management situations can be implemented outside of the recovery zone.

The five Management Situations are:

Management Situation 1:

These areas have habitat components and population centers that are key to the survival of the species. Federal activities or programs may have a direct or indirect relationship to the recovery of the species. Grizzly bear habitat and grizzly-human conflict minimization will receive the highest management priority. Land use decisions will favor the needs of the grizzly bear when values compete. Land uses that are not compatible with the needs of the bear will not be allowed.

Management Situation 2:

These areas are not grizzly bear population centers, and lack highly suitable habitat, but some habitat does exist and grizzlies may occasionally be present. Federal activities or programs may affect the conservation of the species. Grizzly bear habitat and grizzly bear human conflict minimization is important, but not the highest consideration in management. Grizzly populations and habitat will be accommodated with other land

uses if they are compatible with the objectives of the other land uses. Land use decisions will not always favor the needs of the bear when values compete.

Management Situation 3:

Current conditions in this situation, often because of development, make the presence of grizzly bears possible, but infrequent. Human presence creates untenable conditions for grizzly bears, endangering both grizzlies and humans. Grizzly-human conflict minimization is a high priority, but grizzly bear presence will be actively discouraged. Grizzlies frequenting the area will be controlled.

Management Situation 4:

Grizzly bears do not currently occupy habitat in this situation, but suitable habitat is present making the area suitable for occupation in the future. The grizzly bear is a potential use of the area. The probability is very great that federal actions will affect the recovery of the species. Because grizzly bears are not present, grizzly-human conflicts will not be a management consideration; however land use decisions that degrade habitat will not occur pending decisions of grizzly reestablishment.

Management Situation 5:

In this situation, grizzlies do not or only rarely occur, and habitat is unsuitable or unavailable. Federal activities or programs will not affect the recovery of the species. Consideration of grizzly populations or habitat is not necessary.

The Grizzly Bear Management Guidelines provides direction for agencies to manage projects in these five situations. The Guidelines provide specific direction on how go about timber management in the five different Management Situations. The most important thing to know about these Management Guidelines is that they are just guidelines. The USFWS does not have the authority to dictate management actions on the National Forests. The Forest Service writes the management actions, the USFWS reviews and approves them. So in the case of the Forest Service, the Management Situations apply, but the Management Guidelines do not, they are just guidelines that do not have to be followed. However the USFS has incorporated a modified form of the Management Guidelines into its Forest Plans. Because the Guidelines do not actually apply to the Forest Service, it is not necessary to review them; instead, the modified form of the Guidelines in the 1987 Gallatin National Forest Plan will be reviewed.

1987 Gallatin National Forest Plan

The National Forest Management Act of 1976 requires each National Forest to write a resource management plan that identifies what areas of the forest are and aren't suitable for timber management (National Forest Management Act of 1976. 16 U.S.C. §§ 1600-1614, August 17, 1974, as amended 1976, 1978, 1980, 1981, 1983, 1985, 1988 and 1990). The 1987 Gallatin National Forest Plan is the document written in accordance with this act, and describes natural resource management activities, establishes management standards and designates suitable areas for these activities within the National Forest-(Gallatin NF, 1987). There are two parts of the Forest Plan that directly

address timber management effects on the habitat and populations of grizzly bears. Appendix G was written specifically to address section 7 of the ESA. Appendix G addresses management actions that must occur in the Management Situation created in the 1986 Guidelines. They are a set of standards and guidelines that are forest wide for MS 1, 2, and 3. The second part of the Forest Plan that addresses the effects of timber management on grizzly bear populations and habitat is in the description of Management Areas (MA). The Forest Plan separates the Gallatin National Forest into different Management Areas which describes the activities that can and are expected to occur in that area. Certain Management Areas are specified as suitable for grizzly bears and timber management. These areas will be discussed in further detail below.

Appendix G

Appendix G incorporates the five Management Situations from the 1986 Guidelines. In the Gallatin National Forest within the recovery zone, Situations 1, 2, and 3 apply. The majority of the acreage, 493,357 acres is Management Situation 1, 324,010 acres is Management Situation 2, and just 1,100 acres is Management Situation 3. For the area outside of the recovery zone in the Gallatin National Forest, only management situation 5 applies.

The Gallatin National Forest created 4 objectives for meeting the goal of recovering the grizzly bear. The objectives are:

- 1) Strive for zero preventable grizzly bear losses on the Gallatin Nation Forest per year to expedite recovery.

- 2) To manage all Management Situation 1 acreage on the Gallatin with the grizzly bear as the primary emphasis.
- 3) To manage Management Situations 2 and 3 for multiple-use activities that is designed to minimize potential grizzly/human conflict.
- 4) To manage all areas not currently occupied by grizzly bears as Management Situation 5. (USDA, 1987)

Appendix G modified the 1986 Guidelines resulting in standards and guidelines for the Gallatin National Forest to assist land managers in grizzly bear recovery by providing specific management direction for actions that may affect grizzly bear populations or habitat. This section contains standards, and guidelines. The Forest Service has written standards that provide specific direction in management situations. Following standards is mandatory. If there is a need to deviate from a standard the approval of the Forest Supervisor is required. Unlike the standards, guidelines provide broad, non binding direction which should be strived for in all management activities.

Finally, the Forest Service must produce a biological review as directed by section 7 of the ESA, for all projects to see how they may affect the grizzly bear and other listed species. The USFWS reviews all of these documents.

Much like the 1986 Guidelines, the standards and guidelines of Appendix G are separated into six sections:

- 1) wildlife management,
- 2) timber/fire management,
- 3) range management,
- 4) recreation management,

- 5) minerals, energy, watershed, and special uses management, and
- 6) purchases and exchanges (USDA, 1987)

Below are four tables that present standards and guidelines as presented in the Forest Plan Appendix G that are specific to timber management. These standards and guidelines were written to protect grizzly bear habitat and populations in Management Situations 1, 2, and 3. An X in the table indicates what Management Situation it applies too. Table 1 presents the standards for wildlife management. Table 2 presents guidelines for wildlife management. Table 3 presents the standards for timber and fire management. Table 4 presents the guidelines for timber and fire management. These standards and guidelines will expire when the grizzly bear is delisted.

Table 1. Wildlife Management Standards			
Management Action	Management Situation		
	I	II	III
Maintain contact with research organizations to ensure current data is being used in resource planning and administration affecting grizzlies	X	X	X
Informal consultation with USFS is mandatory during preparation and documentation in all biological reviews	X	X	X
USFWS must review biological reviews.	X	X	X
If USFWS determines a conflict between the management action and grizzly populations, and the conflict can not be made compatible, the management action will be eliminated	X		
If USFWS determines a conflict between the management action and grizzly populations, and the conflict can not be made compatible, the action must be modified to become compatible		X	
Monitor the application of these standards and guidelines to ensure that they are being effectively used, and recommend improvements to the Forest Supervisor	X	X	X
Riparian zones must be managed following the policy established within the Forest Plan	X	X	
Update grizzly bear management unit maps and correlate grizzly use and behavior with the availability of suitable habitat. Refine management situation stratification with the availability of suitable habitat.	X	X	X
Source: (USDA, 1987)			

Table 2. Wildlife Management Guidelines			
Management Action	Management Situation		
	I	II	III
Based upon recommendations of the USFWS opinion of the biological review, specify measures to be taken independent of other resource management activities to improve grizzly bear management	X	X	
Source: (USDA, 1987)			

Table 3. Timber/Fire Management Standards			
Management Action	Management Situation		
	I	II	III
All proposed timber management activities will be evaluated (by a biological review) for their effects upon the grizzly bear. Analysis will be done on a compartmental basis rather than on just the activity	X	X	
Depending upon the finding of the biological review, timber sales will consider grizzly bear management goals and objectives, and describe measures necessary to achieve them	X	X	
Based on the findings of the biological review, if timber sales cannot be made compatible between grizzly bears and other resources, the timber sales will be modified to remove this conflict, or it will be eliminated	X	X	
Based on the Biological Review, sivilcultural treatment will be selected that benefit the grizzly	X		
Long term habitat management in timber resource areas should strive for at least a minimum percent of the areas in 10% of each successional stage	X		
Harvest units should be irregular in shape and have no more than 600 feet from cover	X		
When harvest units are located adjacent to natural or man made openings, hiding cover should be maintained on 75% of the openings perimeter	X		
Maintain a minimum of 20% of the each project area in hiding cover	X		
Existing and proposed roads will be evaluated by the biological review process to determine potential for affecting the grizzly bear. When warranted existing roads will be closed	X	X	
Timber and fire management contractors and their employees will provided appropriate signs and information of the risks of working in grizzly country	X	X	
Temporary living facilities for timber contractors will be closely regulated to limit food and garbage available to grizzly bears. Requirements will be included in sales contracts	X	X	
Source: (USDA, 1987)			

Table 4. Timber/Fire Management Guidelines			
Management Action	Management Situation		
	I	II	III
Knudsen-Vandenberg Act funds (KV funds) collected for post-sale improvement should be used to enhance grizzly bear habitat when practical	X	X	
Reforestation could be used to establish cover patches in cut blocks and supplemental cover screens for riparian areas	X	X	
Revegetation with native grasses could be used to establish natural foods for grizzly bears	X	X	
Improvements to enhance or restore the water table could be used in riparian areas	X	X	
Open road use may be managed with KV funds	X	X	
Follow the “Dead and Down Woody Materials Guidelines” for the Gallatin National Forest	X	X	
Silvicultural treatments will be designed to maintain or favor mature, cone producing stand of whitebark pine if it exist in a sale areas. Whitebark pine should not be cut.	X	X	
The open road density goal will be equivalent to greater than 80 percent of the elk habitat effectiveness	X		
The open road density goal will be equivalent to greater than 60 percent of the elk habitat effectiveness		X	
An exception to permanent road closures could be allowed if a seasonal closure data shows grizzly bears use of the area to be seasonal and the road facilitates other important resource uses that would not be possible without the road		X	X
An exception to permanent road closures could be allowed if roads would be open for short periods of time		X	X
Based on the biological review, sivilcultural treatment will be selected that benefit the grizzly		X	
Long term habitat management in timber resource areas should strive for at least a minimum percent of the areas in 10% of each succesional stage		X	
Harvest units should be irregular in shape and have no more than 600 feet from cover		X	
When harvest units are located adjacent to natural or man made openings, hiding cover should be maintained on 75% of the openings perimeter		X	
Maintain a minimum of 20% of the each project area in hiding cover		X	
Source: (USDA, 1987)			

The standards and guidelines also contain a clause for writing contracts on timber sales. When creating contracts for timber sales, the Forest Service reserves the right to cancel or postpone contracts if new information on grizzly bears is found that show the timber sale will have a negative effect on grizzly bear populations or habitat, and if the contractor is not following the standards and guidelines.

The Forest Plan also contains an appendix with the USFWS biological opinion of the above standards and guidelines. The USFWS did not see reason to initiate formal consultation on the Gallatin's amendments to the Forest Plan.

Appendix G is not the only part of the Forest Plan that addresses the grizzly bear. The Forest Plan separates the Gallatin Nation Forest into separate Management Areas (MA). MA 13, 14, and 15 are lands allocated to grizzly bear habitat management. In these areas the standards and guidelines are implemented to their fullest effect. These are the areas in the Forest that fall within Management Situations 1, 2, and 3 in the 1986 Guidelines. The standards and guidelines not in Appendix G will not expire when the grizzly bear is delisted.

Management Area 13 is occupied grizzly bear habitat where timber harvest is possible if the habitat objectives for the bear are met. The goals for MA 13 are

- 1) Manage vegetation in a manner that is beneficial to the recovery of the grizzly bear.
- 2) Meet grizzly bear mortality goals established by the IGBC
- 3) Allow timber harvest if compatible with goal 1 (USDA, 1987)

Timber harvest in MA 13 must be developed with consultation of the USFWS and the standards and guidelines in Appendix G. All timber sales will consider enhancing habitat security, enhancing forest components like forest openings, whitebark pine nut availability, and enhancing regeneration of tree species. Timber harvest must maintain 30% of the forest stand structure as old growth. Timber harvest should include even-aged and uneven-aged silviculture treatments. No commercial thinning will be allowed, but pre-commercial thinning will be allowed to improve growth rates in trees to provide thermal cover. Timber harvest should promote multi-structured stands. Site preparation methods should be selected to enhance food production for grizzly bears. In addition, the Cumulative Effects Analysis requires restrictions on MA 13 to protect habitat by limiting access to the area for timber harvest to one treatment every 10 years, and the treatment can only last 3 years.

Management Areas 14 and 15 are classified as unsuitable for timber management.

Management Areas 1, 2, 4, 5, 7, 19, 19A, 20, 24, 25, and 26, also are in occupied grizzly bear habitat. These areas are not managed for grizzly bear habitat, but an emphasis is placed on reducing human-caused mortality to the grizzly, and maintaining secure habitat as guided by Appendix G. Of these MA, only MA 5, 7, and 24 are suitable for timber management.

Management Area 5 is heavily used as travel corridors for recreation. The goals for MA 5 are:

- 1) Maintaining and improving wildlife habitat and the natural attractiveness of the area
- 2) Allowing timber harvest that are compatible with goal 1 (USDA, 1987)

Timber management in these areas should be managed to provide a diverse pattern, by even and un-even aged management, and allow commercial and pre-commercial thinning. There is no mention of how timber harvest will affect grizzly bear habitat.

Management Area 7 is riparian. The goal for these areas is to protect soil, water, vegetation, fish, and wildlife that depend on riparian areas. This area is only suitable for timber management if the adjacent MA is suitable for timber management. Timber management in these areas should be designed to meet the needs of riparian species, maintain riparian vegetative structure, and minimize soil disturbance. Stocking densities should maintain hiding and thermal cover for wildlife. Pre-commercial and commercial thinning are allowed. Natural regeneration of trees may be allowed if sufficient.

Management Area 24 is comprised of areas currently or recently used for mining. Timber harvest in these locations is permitted only where vegetation will be disturbed by the mine.

2002 Conservation Strategy

The Conservation Strategy is the document guiding the monitoring and management of the grizzly bear population and habitat once the bear is delisted from the ESA. Grizzly bear populations and habitat in the Greater Yellowstone Ecosystem will be managed in an approach that identifies a Primary Conservation Area, and areas adjacent to the PCA that are occupied by grizzly bears. The recovery zone designated in the Recovery Plan will become the PCA. The Management Situations and guidelines for specific management as found in the 1986 Guidelines will no longer be applicable. The Conservation Strategy provides management direction inside the PCA; outside the PCA in areas adjacent to the PCA that are occupied by grizzly bears, existing Forest Plans will provide management direction. An amendment to the Gallatin National Forest Plan will require the Forest Service to follow the management direction that is provided in the Conservation Strategy for the PCA.

The Conservation Strategy has four objectives:

- 1) describe and summarize how efforts should be coordinated to manage bear populations and their habitat to ensure the grizzly bear conservation
- 2) specify the habitat and population standards to maintain the grizzly bear population
- 3) document the legal authorities, mechanisms, policies, management and monitoring programs to maintain the grizzly population, and
- 4) document the commitment of the participating agencies. (USFWS, 2002)

The Conservation Strategy redefines and reworks the population objectives and monitoring standards that were presented in the 1993 Recovery Plan. The Conservation Strategy establishes 1998 as a baseline in which the amount of habitat should be maintained at, or improved upon. 1998 was chosen as a baseline for monitoring habitat, because this was the year that all of the population objectives set in the Recovery Plan were met.

The Recovery Plan did not dictate management direction within the recovery zone; specific management direction was provided in the 1986 Guidelines. The Conservation Strategy does provide standards for management direction inside the PCA. As mentioned above, the Forest Service will incorporate these standards into their Forest Plans once the bear is delisted. The Conservation Strategy does not provide any management direction outside of the PCA. Outside the PCA existing Forest Plans and will guide specific management.

The Conservation Strategy presents three standards, the Secure Habitat Standard, the Developed Site Standard, and the Livestock Allotment Standard. The goal of these standards is to maintain or improve upon the 1998 baseline. Timber management is not mentioned in any of the standards. The Secure Habitat Standard addresses the use and construction of roads and reoccurring helicopter flights in secure habitat. Roads or reoccurring helicopter flights are necessary for timber management. This is the only standard that will affect timber management.

Secure Habitat Standard

Secure habitat is defined in the Conservation Strategy as any area that is more than 500 meters from an open or gated road that is greater than 10 acres. Secure habitat for the grizzly bear must remain or improve upon the 1998 baseline for all of the BMU's. Permanent and temporary alterations of grizzly bear habitat are allowed under specific conditions. Permanent alterations to habitat are allowed only if a replacement of secure habitat is created in the same bear subunit either before or concurrent to the management action that will cause the alteration. Temporary alterations to secure habitat will be permitted if one of the following conditions are met:

- 1) Only one project is active in a bear management subunit at any given time
 - 2) The acreage of the project will not be greater than 1% of the total acreage of the BMU subunit. The acreage that counts against the project is the acreage associated with the 500 meters around any road that intrudes into secure habitat.
 - 3) Secure habitat must be restored within one year of the completion of the project.
- (USFWS, 2002)

All activities that do not require road construction, road reconstruction, opening of restricted roads, or reoccurring helicopter flights are considered to be activities allowed in secure habitat.

Amendment to the Forest Plan

A new amendment to the Forest Plan has been written and will go into effect upon the delisting of the grizzly bear. It was written to make the Conservation Strategy an

Appendix to the Forest Plan, and replace Appendix G of the Forest Plan within the PCA. Outside of the PCA, Appendix G will still be the document guiding the management of grizzly bear habitat and populations when the bear is delisted.

The Amendment to the Forest Plan is identical to the management direction described in the Conservation Strategy (see the Conservation Strategy above). The goal of the amendment is to sustain the grizzly bear within the PCA, and allow for the continuance of grizzly bears outside of the PCA where socially acceptable to humans and biologically acceptable for bears.

Major Changes that Will Affect Timber Management

The current direction for management of the grizzly bear in the Yellowstone ecosystem focuses on stabilization of the population and its habitat by creating procedures that monitor grizzly population and habitat. These procedures were created in the Recovery Plan using the CEA and the CEM. The population objectives were set by biologist, as what they believed would be sufficient to allow the species to reach a recovered level. The 1986 Guidelines created management situations, and guidelines for federal agencies to follow in those management situations. The 1986 Guidelines suggest specific management direction for agency actions including timber management in the different management situations. They are focused on specific actions in timber management. The Forest Service incorporated these guidelines in a modified form in their individual Forest Plans. In the Gallatin National Forest they are specific standards to be followed

when a timber sale is sold in occupied grizzly bear habitat. The standards relate directly to the size, shape, location, and timing of timber sales.

When the bear is delisted, the Conservation Strategy will guide the management of grizzly bear populations and habitat. The Conservation Strategy will keep, and improve upon the monitoring procedures for population and habitats established in the Recovery Plan. Instead of setting a population goal to reach recovery, the Conservation Strategy establishes a population standard that will maintain the grizzly bear at a recovered level. The Conservation Strategy sets a baseline on habitat conditions which shall be maintained or improved upon. The strategy of using very specific standards affecting the size, shape, location and timing of timber sales will no longer be used. The new standard that will affect logging is very general, allowing flexibility in timber management.

Case Study: Darroch-Eagle Creek Timber Sale

The following is a case study of a timber sale in occupied grizzly bear habitat in the Gallatin National Forest. The goal of this case study is to analyze an individual project to see how it will be affected by the delisting of the grizzly bear. This will be done in two parts. The objective of the first part is to find out how the current listing of the grizzly bear affects the size, shape, location, and timing of the timber sale. The first part describes the timber sale, and looks at the Forest Service Standards that can affect the size, shape, location and timing of the timber sale. The standards that will expire when the grizzly bear is delisted and the standards that won't will be identified. The standards

that will elapse will be analyzed to see how they affect the size, shape, location, and timing of the timber sale. The objective of the second part is to see how the delisting of the grizzly bear would affect the size, shape, location and timing of the timber sale.

How the listing affects this timber sale

The document reviewed for this timber sale is a revised Environmental Assessment (EA) written in January, 2004 for the Darroch-Eagle Creek Timber Sale. The proposed harvest is located in the Gallatin National Forest 4 to 6 miles northeast of the town of Gardiner, Montana. The site, in the Absorka Mountain Range, is in occupied grizzly bear habitat Management Situation 1.

The sale, originally proposed in 1998, was challenged in district court in 1999 on the grounds that it violated the National Environmental Policy Act, the National Forest Management Act, and the ESA. The Court found in favor of the Forest Service and the sale was advertised and awarded in the summer of 2001. The plaintiff in the original suit appealed the district court's decision to the 9th circuit court of appeals almost immediately. The appeals court sided with the plaintiff, deciding the Forest Service failed to fully comply with NEPA, for not fully considering the cumulative impacts of road density of this timber sale in conjecture with other sales on the Gallatin National Forest, and for not complying with the ESA, because the original biological assessment did not fully address issues with the grizzly bear. The Forest Service revised the EA to address these issues, and this EA is the document being reviewed.

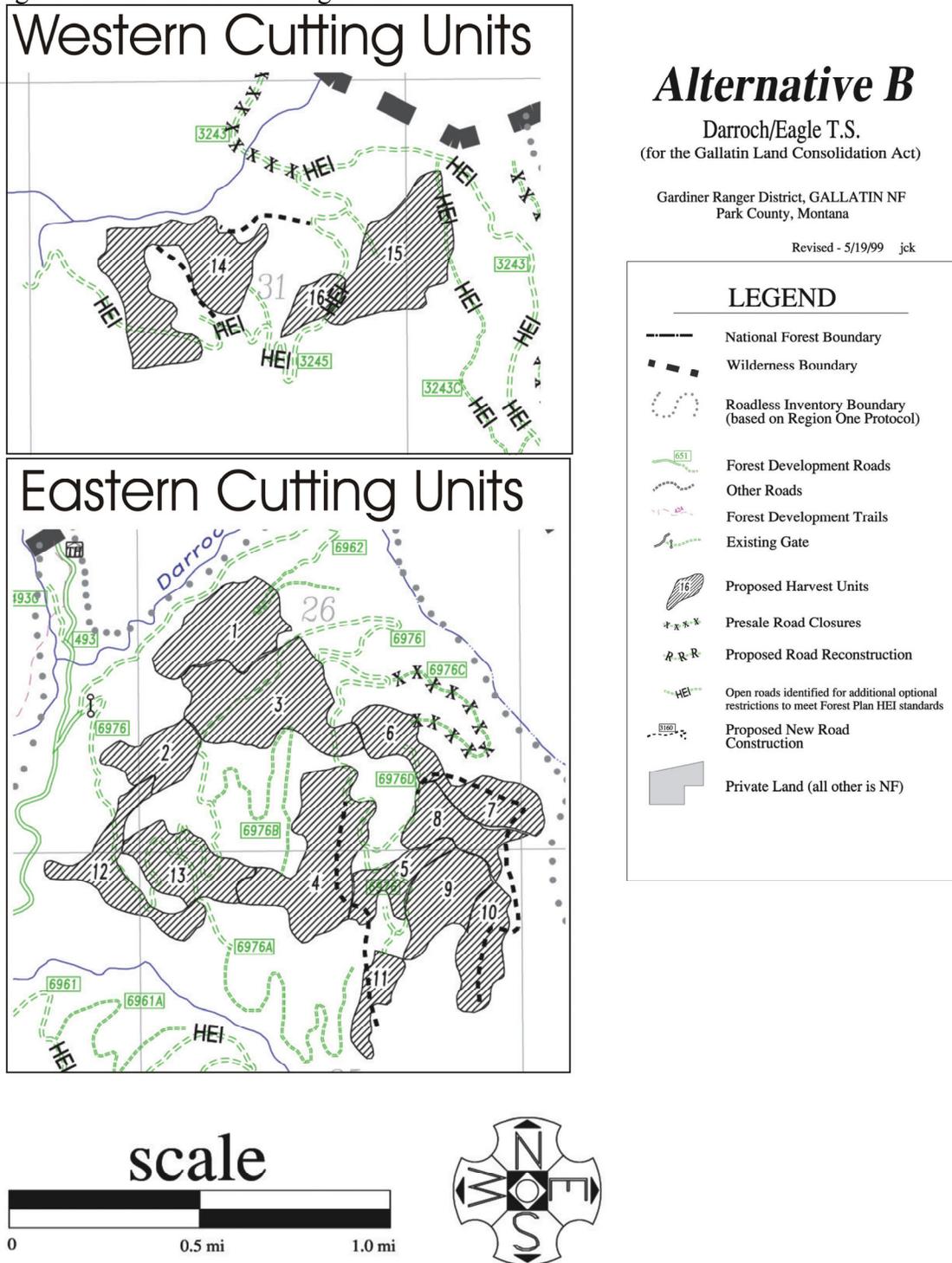
Accompanying the EA as appendices are a biological evaluation (BE) analyzing how the sale would affect sensitive wildlife, and a biological assessment (BA) analyzing how the sale would affect threatened and endangered species. The biological assessment specifically addresses how the sale would affect the grizzly bear.

During the scoping process, issues were identified regarding the timber sales effect on grizzly populations of how the sale might negatively affect the grizzly bear. The issues are: (1) loss of foraging habitat, (2) change in hiding and security cover, (3) increased potential for bear mortalities, (4) changes in dening habitat, (5) changes in prey base, (6) population viability, (7) increased availability of human attractants; and (8) the effects of this project in concert with other known private and state activities. The EA and BA address these issues.

The EA presents five alternatives. Alternative A is the no action alternative, Alternative B is the proposed alternative, Alternative C aims to harvest the greatest amount of timber at the lowest cost, Alternative D does not open holes in the canopy greater than 40 acres, and Alternative D modified is the preferred alternative. Table 5 below shows some of the differences between the 5 alternatives, and figures 1 through 4 show maps of the cutting units. Alternative A, the no action alternative, will not be addressed in the remainder of this paper as it provides no insight towards the questions being addressed.

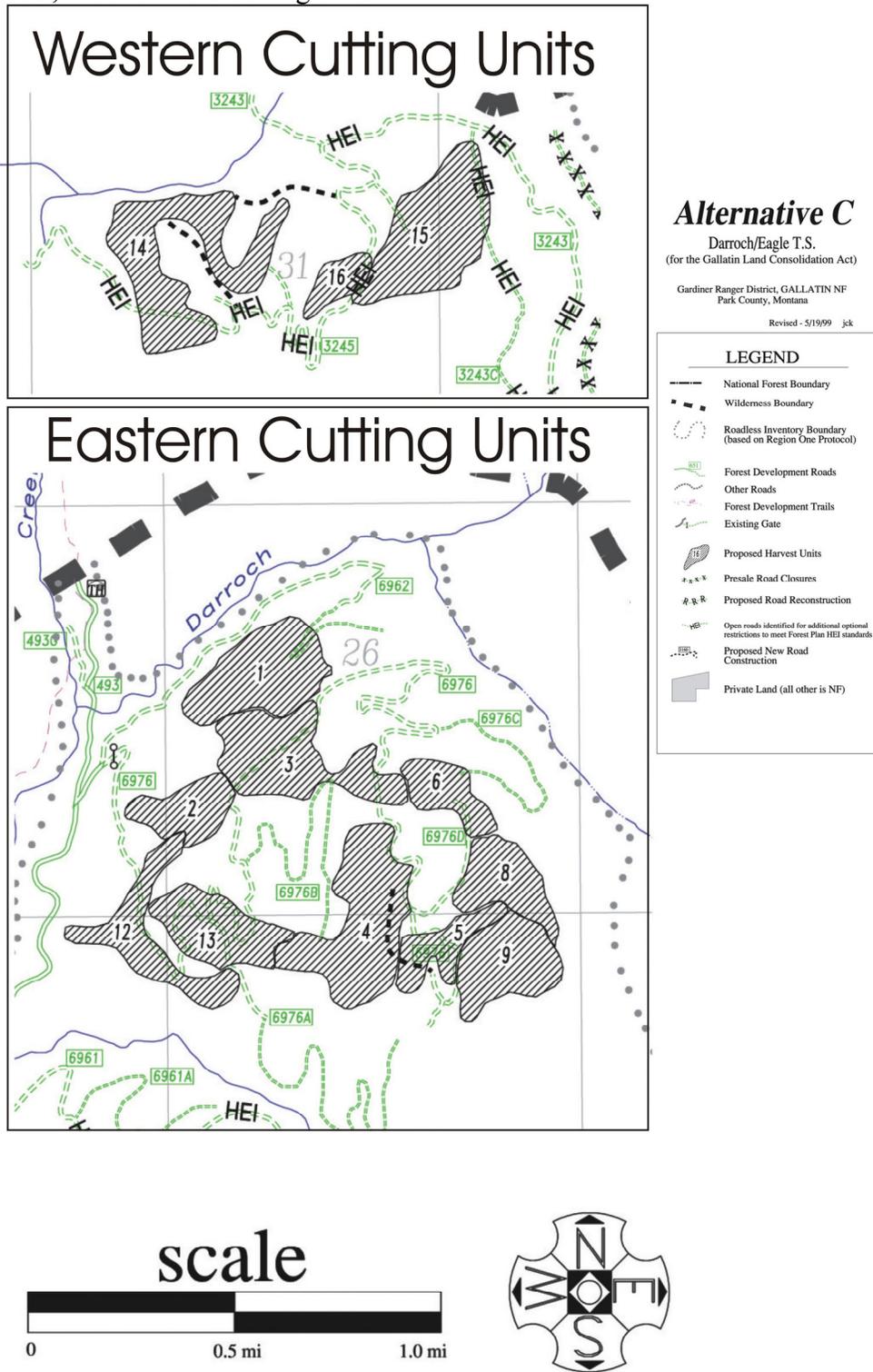
Table 5. Darroch-Eagle EA alternatives					
	Alternative A	Alternative B	Alternative C	Alternative D	Alternative D Modified
Acres harvested	0	448	337	266	195
MBF harvested	0	3.4 mbf	2.9 mbf	2.1 mbf	1.5 mbf
Miles of new roads	0	2	.9	.6	.9
Reconstruction of existing roads	0	4.4	4.4.	4.4.	3.6
Road closure (open roads)	1.4	1.4	1.4	1.4	1.4
Improvement of closure barrier	.4	.4	.4	.4	.4
Source: (USDA, 2004)					

Figure 2. Alternative B cutting units.



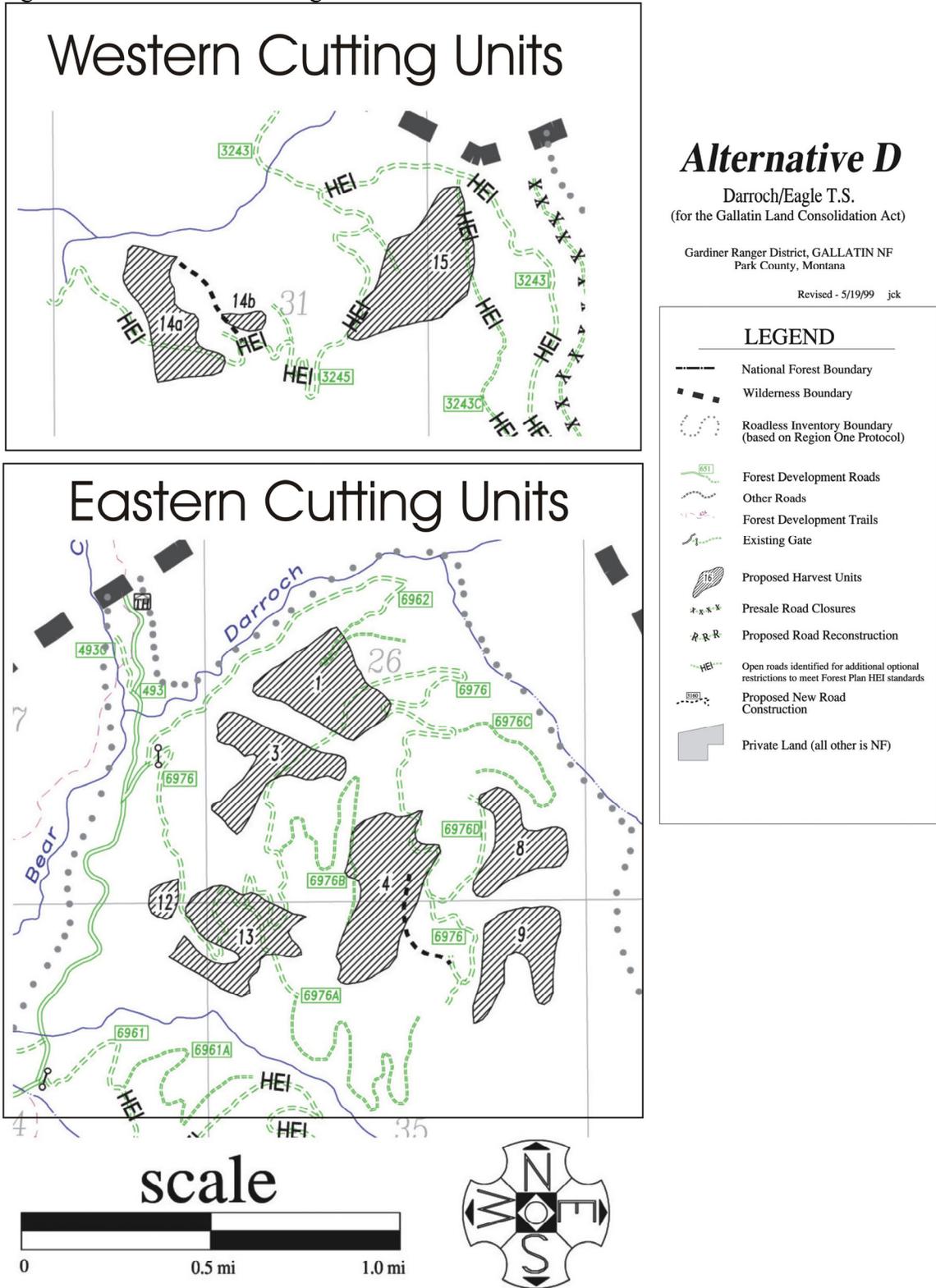
Source: (USDA, 2004a)

Figure 3, Alternative C cutting units.



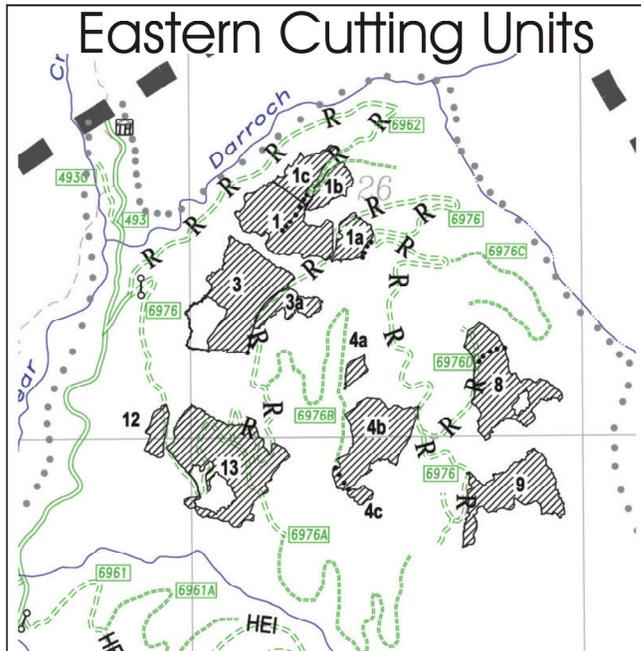
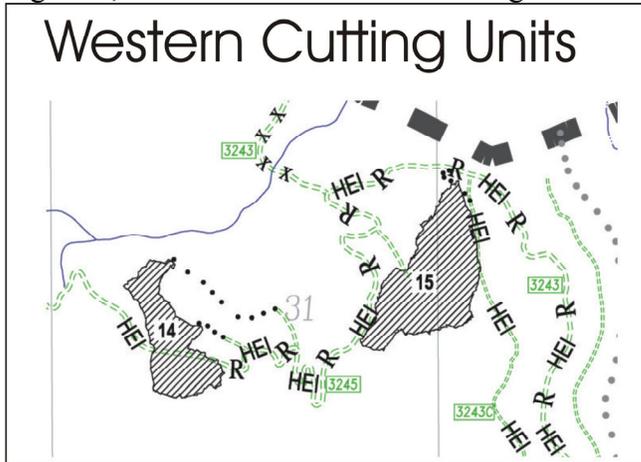
Source: (USDA, 2004a)

Figure 4: Alternative D cutting units.



Source: (USDA, 2004a)

Figure 5; Alternative D Modified cutting units.



Alternative D - Modified

Darroch/Eagle T.S.
(for the Gallatin Land Consolidation Act)

Gardiner Ranger District, GALLATIN NF
Park County, Montana

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LEGEND

- National Forest Boundary
- Wilderness Boundary
- Roadless Inventory Boundary (based on Region One Protocol)
- Forest Development Roads
- Other Roads
- Forest Development Trails
- Existing Gate
- Proposed Harvest Units
- Presale Road Closures
- Proposed Road Reconstruction
- Open roads identified for additional optional restrictions to meet Forest Plan HEI standards
- Proposed New Road Construction
- Private Land (all other is NF)

scale



Source: (USDA, 2004a)

Alternative D modified was chosen over the other alternatives in the EA because it has the least effect on grizzly bear populations and habitat. According to the Record of Decision, impacts on the grizzly bear due to the project were the number one issue. Alternative D Modified best complies with the Appendix G of the Gallatin National Forest Plan, and it complies with two standards in the forest plan, no greater than 600 feet distance to hiding cover, and no openings greater than 40 acres. Alternative B, and C, do not comply with these standards

Alternative D Modified

Alternative D Modified was designed to not create any holes in the canopy greater than 40 acres. The design would allow 60 to 80% of the timber within the cutting boundaries to be felled. The timing of actually logging would be restricted to times of the year that would have the least impact on grizzly bears. Activities would be allowed May through October depending on the unit in the sale. The sale would cut approximately 1.5 mbf from 195 acres.

Alternative D Modified would require the construction of 0.9 miles of new roads, and the reconditioning of 3.6 miles of existing roads (to make the roads safe for logging traffic). To mitigate the effects of any new road construction on grizzly bear security habitat, closure of approximately 1.4 miles of existing open system roads and improvement of the closure barrier on 0.4 miles of currently closed road in the project area was implemented in 1999.

Relation to the Gallatin National Forest Plan

The size, shape, location and timing of the timber sale are all affected by standards and guidelines set within the Forest Plan. Some of these standards and guidelines are written specifically for the protection of grizzly bear populations and habitats. These grizzly bear specific standards and guidelines also affect the size, shape, location, and timing of this timber sale.

The standards and guidelines that will affect the timber sale have been identified in two tables below. Table 6 shows the standards and guidelines written in Appendix G of the Forest Plan. These standards and guidelines were written specifically to comply with the ESA to protect grizzly bears and will become obsolete when the grizzly bear is delisted. Table 7 contains the standards and guidelines written specifically for MA 13. These standards and guidelines are written for the grizzly bear as well, but they are not part of Appendix G, and will not elapse when the bear is delisted.

Table 6. Forest Plan standards and guidelines written specifically for grizzly bears			
Rule	Standard or Guideline	How it affects the preferred alternative D-Modified	Size, shape, location, timing
Cut units should be irregular in size and shape with no more than 600 feet to hiding cover	Standard	The size and shape of cutting units have been limited in the preferred alternative to meet this requirement. Alternative B and C do not meet this standard. An amendment to the Forest Plan would be needed for Alternative B and C	Size/shape
Cover within grizzly bear habitat equivalent to 20% hiding cover, 10% thermal cover, and additional 10% in either hiding or thermal cover for a total of 40% cover	Standard	All alternatives meet this standard	Size/location
Duration of the management activities restricted to last no longer than 3 consecutive years, with at least seven years between activities. This results in only one management action in a BMU in a ten year period.	Standard	All alternatives meet this standard	Timing
Source: (USDA, 1987)			

There are three standards that will become obsolete when the new Secure Habitat Standard takes affect. These standards affect the size, shape, location, and timing of this timber sale.

First Standard

In the Forest Plan Appendix G, there is a standard that requires harvest units be irregular in size and shape with no more than 600 feet to hiding cover. This means that the timber harvest should not alter the habitat so a grizzly bear is more than 600 feet from adequate cover anywhere in the cutting unit. This standard will be obsolete once the grizzly bear is delisted. This standard affected the size and shape of the cutting units by requiring their design be irregular in shape, and limiting their size as to not have openings greater than 600 feet from cover. Alternatives B and C would violate this standard, requiring the Forest Service to write an amendment to the forest plan. This is a major reason why these two alternatives were not selected as the preferred alternative. Alternative D and D Modified would not violate this standard.

Second Standard

This standard requires cover within a BMU subunit to be equivalent to 20% hiding cover, 10% thermal cover, and additional 10% in either hiding or thermal cover for a total of 40% cover for any given grizzly bear subunit. This standard will also become obsolete. This standard affects the size, and location of the sale. It affects the size, as harvesting cannot reduce cover below 40% in that subunit. It affects the location because a sale cannot take place in an area that does not meet the 40% cover.

In this timber sale, the change in standards will not affect the size of the sale. No alternative proposed in the EA comes close to violating the current standard, thus the size of the sale has not been limited by the current standards. The largest alternative would affect 448 acres. Currently 63% of the forested acres in the analysis area provide hiding cover (USDA, 2004a). The percentage of hiding cover would not drop below 40%. There are 52,608 acres in this subunit, a timber sale affecting greater than 31,000 acres would be need to drop this below 40%.

Third Standard

This standard affects the timing of the timber sale. It requires the duration of the management activities be restricted to last no longer than 3 consecutive years, with at least seven years between activities. This results in only one management action in a BMU in a ten year period. The Secure Habitat Standard requires the same timing. Therefore the timing of the timber sale would not be altered.

Of the standards that will elapse with the delisting of the grizzly bear, the limiting factor of the size and shape of this sale is the standard of 600 ft to hiding cover. If this sale was proposed under the new standard, the only limiting factor would be the secure habitat standard.

The current listing of the grizzly bear has had an affect on the size and shape of this timber sale. The original proposed alternative, Alternative B, covers 253 acres and cuts

1.9 mbf more than the final preferred alternative. The reduction in size and shape of the sale is partially a result of the proposed alternatives' impacts on grizzly bear habitat. The proposed alternative did not conform with the standard in the Forest Plan requiring less than 600 feet distance to hiding cover. This would require an amendment to the Forest Plan. In the Decision Notice/Finding of No Significant Impact, it says that Alternative D modified was chosen over the other action alternatives because it has the least impact on the grizzly bear by not violating the 600 feet to hiding cover standard (USDA, 2004b).

The Effects to the Sale from Delisting and Other Factors

Unlike the current amendment to the Forest Plan, the Conservation Strategy, which will guide bear management post delisting, has only one standard that will affect the size and shape of timber sales in MA 1, 2, and 3. The objective of this part of the chapter is to find how the Conservation Strategy will affect the timber sale if the sale was proposed post delisting. This will be done by analyzing the 4 alternatives to find if they violate the secure habitat standard, any alternative violating the secure habitat standard will be eliminated from further consideration. Next, it will be necessary to see what other factors not yet analyzed have a limiting effect on the size, shape, location, and timing of the timber sale. This will be done by examining the standards specific to MA 13 that will not expire when the grizzly bear is delisted and looking for other standards in the Forest Plan that will not expire upon delisting.

Once the bear is delisted, Appendix G of the Forest Plan will become obsolete inside the PCA. The Standards in the Conservation Strategy will take their place. Outside the

PCA, Appendix G will still be in place. The standards and guidelines that affected the size, shape, and location of the timber sale in Table 6 on page 63 will be replaced with the new standards. The Secure Habitat Standard in the Conservation Strategy will take their place.

The Secure Habitat Standard in the Conservation Strategy requires that secure habitat for the grizzly bear must remain or be improved upon the 1998 baseline for all of the BMU's. Secure habitat is defined in the Conservation Strategy as any area that is more than 500 meters from an open or gated road that is greater than 10 acres. Permanent and temporary alterations of secure habitat are allowed under specific conditions. Permanent alterations to habitat are allowed only if a replacement of secure habitat is created in the same bear subunit either before, or concurrent to the management action that will cause the alteration. Temporary alteration to secure habitat will be permitted if one of the following conditions are met:

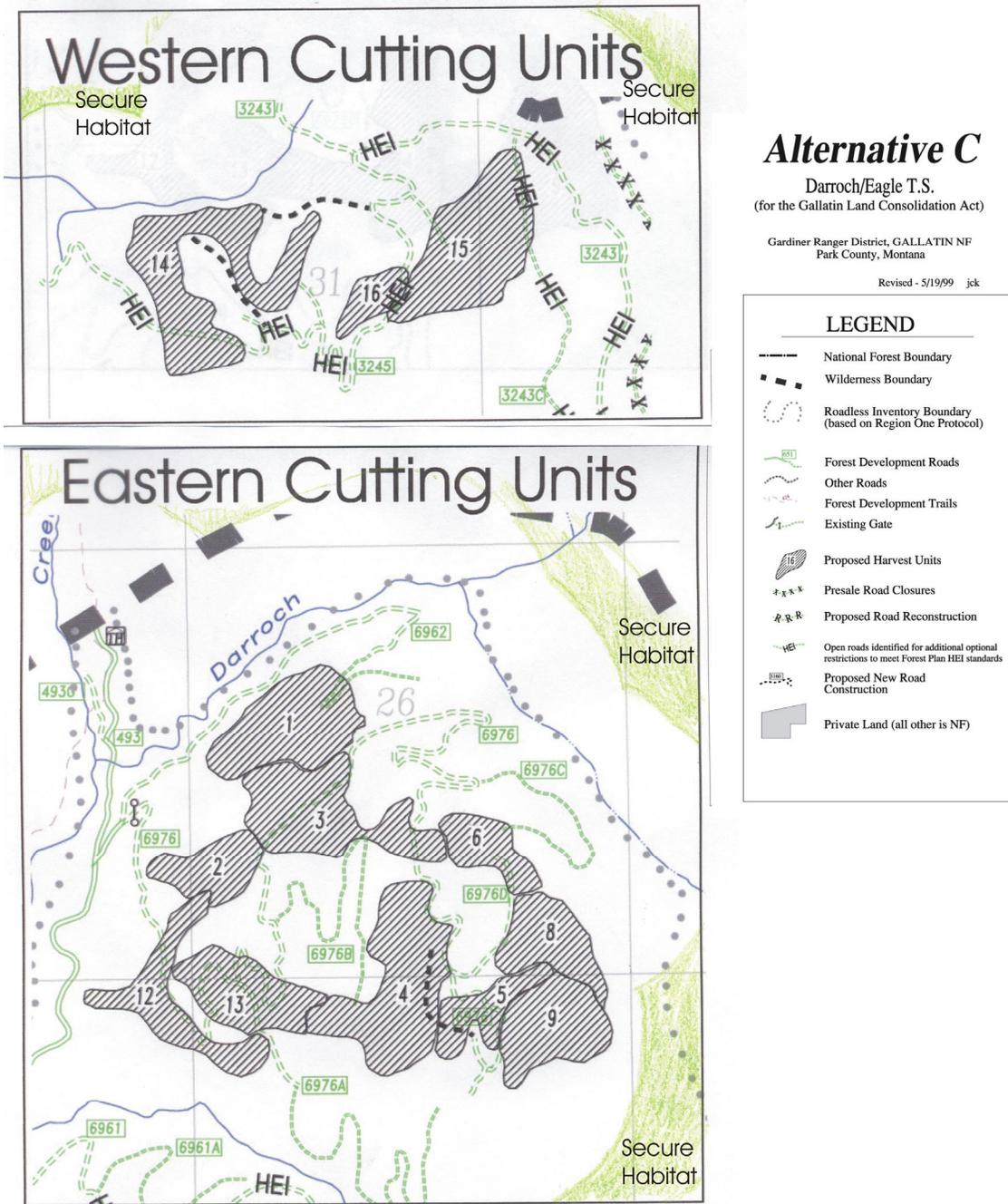
- 1) Only one project is active in a bear management subunit at any given time
 - 2) The acreage of the project will not be greater than 1% of the total acreage of the bear management subunit. The acreage that counts against the project is the acreage associated with the 500 meters around any road that intrudes into secure habitat.
 - 3) Secure habitat must be restored within one year of the completion of the project.
- (USFWS, 2002)

1) Will any of the action alternatives alter the secure habitat of this BMU?

To analyze this, a 500 meter buffer has been drawn around all the existing roads in the project area. Any new road construction that alters the shape of the current configuration

of secure habitat is displayed in Figures 5 through 9. A new road in Alternative B will alter the shape of the current configuration of secure habitat. This will result in the elimination of Alternative B from further consideration. This Alternative will not be acceptable when the grizzly bear is delisted. No other alternative was found to have any new road construction altering secure habitat; therefore, Alternative C, D and D modified are acceptable.

Figure 7: Alternative C, effects on secure habitat.



Alternative C

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(for the Gallatin Land Consolidation Act)

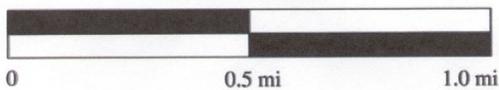
Gardiner Ranger District, GALLATIN NF
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LEGEND

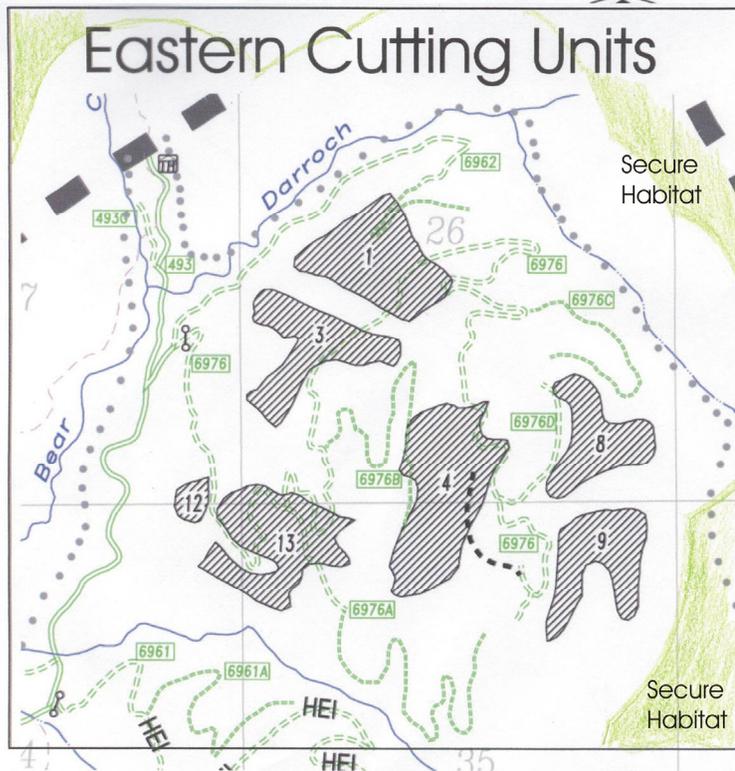
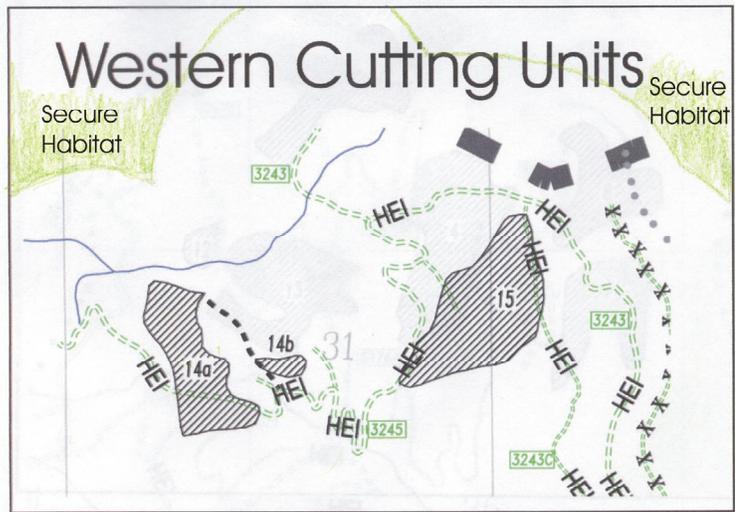
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- Private Land (all other is NF)

scale



Source: (USDA, 2004a)

Figure 8: Alternative D, effects on secure habitat.



Alternative D

Darroch/Eagle T.S.
(for the Gallatin Land Consolidation Act)

Gardiner Ranger District, GALLATIN NF
Park County, Montana

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LEGEND

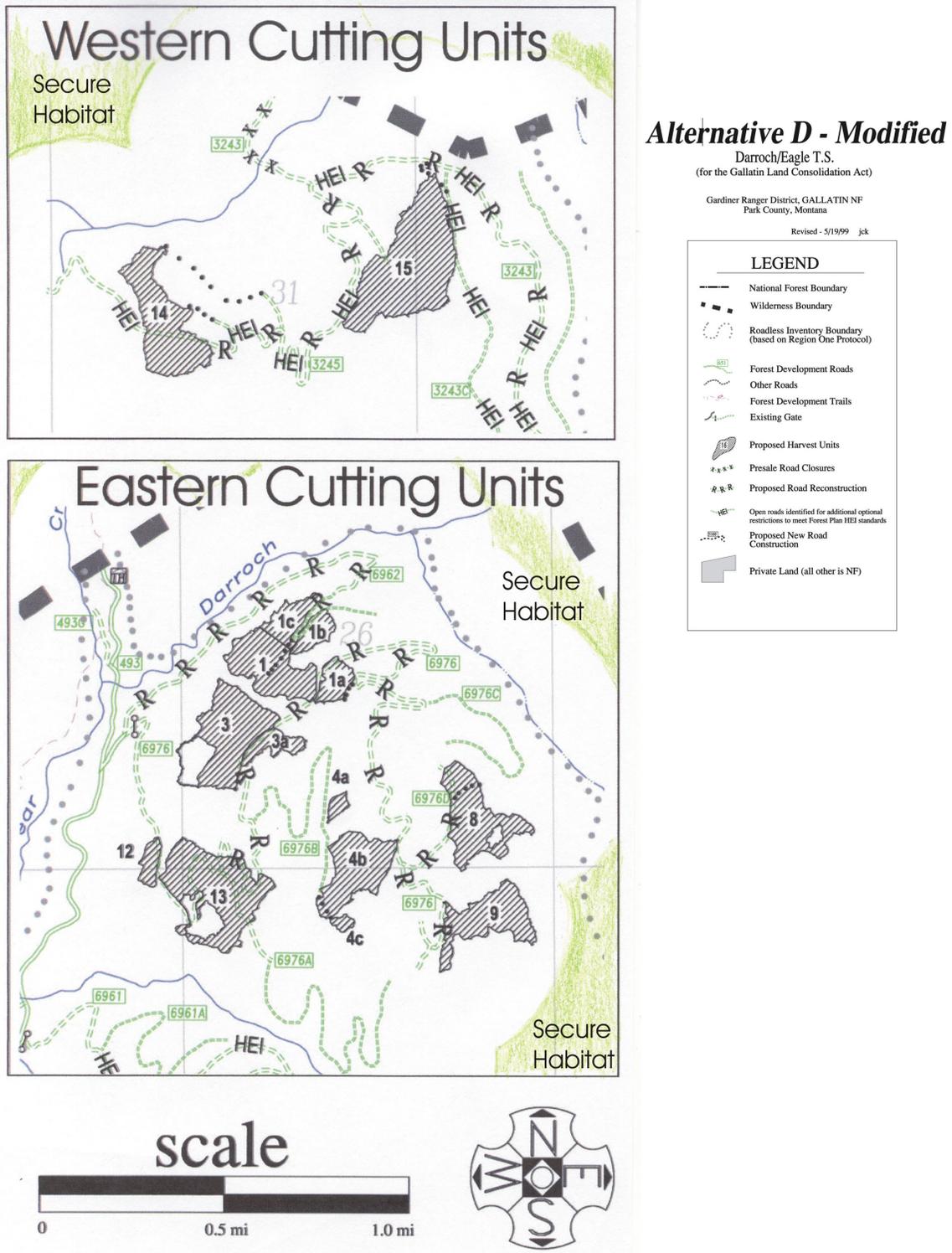
-  National Forest Boundary
-  Wilderness Boundary
-  Roadless Inventory Boundary (based on Region One Protocol)
-  Forest Development Roads
-  Other Roads
-  Forest Development Trails
-  Existing Gate
-  Proposed Harvest Units
-  Presale Road Closures
-  Proposed Road Reconstruction
-  Open roads identified for additional optional restrictions to meet Forest Plan HEI standards
-  Proposed New Road Construction
-  Private Land (all other is NF)

scale



Source: (USDA, 2004a)

Figure 9: Alternative D, effects on secure habitat.



Source: (USDA, 2004a)

2) Will any of the remaining alternatives be constricted by standards in MA 13?

The standards in the Forest Plan for MA 13 (Table 7) will not elapse when the bear is delisted. Do these standards limit the size or shape of the timber sale?

Table 7: Forest Plan Standards and Guidelines written specifically for MA 13			
Rule	Standard or Guideline	How it affects the preferred alternative D-Modified	Size, shape, location, timing
The forest area can be considered for harvest provided grizzly bear habitat objects are met	Standard	The timber sale is in MA 13, requiring this standard be met. Further more this location is MS 1, giving the highest priority to the grizzly bear. The affects of the sale on grizzly bear is of the highest concern. The preferred alternative (D-Modified) does the least of the action alternatives to modify grizzly bear habitat or affect grizzly bear populations	Location
30% of the analysis area will remain in old growth habitat	Standard	The area this timber sale is located in currently has 58% old growth habitat. No alternative would lower this percentage below 30%. Alternative D-Modified will only lower it by 0.5 %.	Size/location
Forest Openings should not be greater than 40 acres (60 day public comment period needed to not meet this standard)	Standard	The size and shape of cutting units have been limited in the preferred alternative to meet this requirement. Alternative B and C do not meet this standard, however, only a 60 day public comment period is need to avoid this standards, which is necessary for any EA, making this Standard simple to navigate around.	Size/shape
Vegetative diversity	Standard	The site currently does not meet this alternative, therefore no alternative will meet this standard, however, all of the action alternatives will make the site closer to meeting this standard in the long term	Size/shape
Source: (USDA, 1987)			

First Standard

The first standard allows timber sales in MA 13 provided grizzly bear habitat objectives are met. The best way to assess this is to look at the eight issues in this timber sale that may affect the grizzly presented in the EA and how they were addressed in the biological assessment.

- 1) loss of foraging habitat
 - a. All alternatives of the timber sale would probably create more foraging habitat by opening the canopy to shrubs used by the grizzly bear.
- 2) Change in hiding and security cover
 - a. No alternative would lower the hiding and security covers in this bear subunit unit below levels that are acceptable for any species. Alternatives D and D Modified would do the least to change the hiding and security cover, but all the action alternatives would be acceptable.
- 3) Increased potential for bear mortalities
 - a. Increased human activity increases the chances of human/bear conflicts. Human/bear conflicts increase the chances that bears will be killed. Both the current management and the proposed management have provisions that allow the Forest Service too temporarily, or permanently, cease operation at the sale to limit chances of human/bear conflicts.
- 4) Changes in dening habitat
 - a. The location of all alternatives are not in dening habitat

5) Changes in prey base

- a. The locations of all alternatives are not in large ungulate migration routes. Large ungulate winter kill is an important spring food for grizzly bears emerging from winter hibernation. All alternatives may have temporary affect on local moose populations; however moose are not an important food source for grizzly bears in the Yellowstone ecosystem.

6) Population viability

- a. No alternative will have any affect on the population viability of the grizzly bear in the Yellowstone ecosystem.

7) Increased availability of human attractants

- a. The increased presence of humans in the area during logging increases the chances of grizzly bears coming into contact with human attractants, in this case being food and trash. The Forest Service has established a food order requiring all users of the Nation Forest in these areas to properly store and dispose of food and trash. The Forest Service has the authority to temporarily or permanently suspend the timber contract if this order is not followed. This will not be altered if the bear is delisted.

8) The affects of the project with other know state and private activities.

- a. This project is part of a group of projects whose goal is to provide funding for the purchase of private in holdings in important grizzly bear habitat in the Gallatin National Forest. The purchase of these

properties will help protect the grizzly bear. Also, actions on state and private lands are not in the control of the Forest Service, and are therefore out of the scope of this project. (USDA, 2004b)

None of the alternatives would be eliminated because of this standard; all of the alternatives are suitable for MA 13.

Second Standard

The second standard which states that 30% of the analysis area will remain in old growth will not be violated by any of the Alternatives.

Third Standard

The Standard that forest openings should not be greater than 40 acres is a forest wide standard, and is not specific to MA 13, however, it was part of the consideration that eliminated Alternatives B and C in the EA. This standard is not related to the protection of grizzly bear populations or habitat, and will not elapse when the bear is delisted. It must be considered because it was a major factor in the decision of the preferred alternative. This standard requires the Forest Service to write a site specific amendment to the Forest Plan to exceed this standard as well as meet the approval of the Forest Supervisor. This Standard may be exceeded given 60 days public notice and the creating of a site-specific Forest amendment. Despite not meeting this standard, Alternative C

will not be eliminated at this point from further consideration because it is not currently know if an amendment to this standard is reasonable.

Fourth Standard

This area does not meet the Standard for vegetation diversity in the Forest Plan. No alternative will meet this standard. All the action alternatives will improve the conditions towards meeting this standard. All the alternatives will require a site-specific amendment to the Forest Plan. This Standard will not eliminate any alternatives from consideration.

3) Will other Standards in the Forest Plan, or factors not yet mentioned have a constricting effect on the alternatives?

To best analyze how other Standards in the Forest Plan, or factors not yet mentioned have affected the size or shape of this timber sale, it is best to look at the Decision Notice/FONSI written as to why Alternative D Modified was chosen over other alternatives.

Alternative B

Alternative B has been eliminated because it would alter secure habitat, thus violate the secure habitat standard.

Alternative C

Alternative C was originally designed to remove the greatest amount of timber with the least cost to the government. This alternative was not chosen for two reasons. The first reason was that it would require openings in the canopy greater than 40 acres and the conditions necessary to exceed this standard were not met. The Forest Service elected not to pursue a Forest Plan amendment to this alternative because it was felt that it would not meet the exceptions to this standard. Secondly, this alternative violated the distance to hiding cover standard; however this standard would no longer be in place.

The Forest Service elected to not choose this alternative for two reasons; violation of the standard restricting 40 acre openings, and violation of the standard requiring 600 feet to hiding cover. The latter standard will no longer be applicable when the grizzly bear is delisted, and this alternative would not violate the secure habitat standard. It is not known whether the Forest Service would choose to pursue this alternative in this scenario, therefore Alternative C will be eliminated.

Alternative D and Alternative D Modified

Alternative D was written to avoid openings greater than 40 acres. This alternative was found to be acceptable. Alternative D Modified is very similar to Alternative D except better data was used to form the cutting unit boundaries and the decision that whitebark

pine would not be harvested. Alternative D modified was chosen over Alternative D for those reasons.

The results of this analysis shows that Alternative B would not be acceptable, either now or when the bear is delisted, because it would violate the secure habitat standard in the Conservation Strategy. Alternative C would not be eliminated because of the grizzly bear; rather it may be eliminated because it violates the forest wide standard requiring all even-aged treatments be less the 40 acres. Alternative D was not eliminated because of the listing of the bear, nor was it eliminated because the bear will be delisted. Rather, it was eliminated because a new alternative, Alternative D Modified was created with better data, and to avoid cutting whitebark pine.

At first glance it would appear that the delisting of the grizzly bear will not affect the timber sale, but this is not the case. The removal of the 600 feet to hiding cover standard may allow Alternative C, an alternative that would cut 1.4 mbf and 142 acres more then the preferred alternative to be chosen. The standard restricting openings in the canopy greater then 40 acres for even -aged treatments would have been the only standard preventing this alternative from being chosen. It is possible, that when the grizzly bear is delisted, that the Forest Service could have designed this timber sale to not have violated this standard, or could have pursued an amendment for the Forest Plan for Alternative C.

Findings

This chapter presents findings on how the standards and guidelines will change when the bear is delisted, and examines a specific timber sale to create a picture of how the current listing and the possible delisting may affect the size, shape, location, and or timing of a the sale. To accomplish this, the chapter was separated into two sections. The first section focused on the current documents related to grizzly bear management and timber management on the National Forest, and the documents that will guide management when the bear is delisted. This was done to show what the general changes between the management approaches would be. The second section examines a specific timber sale proposed in the Gallatin National Forest to show how the general changes will affect specific parts of a timber sale. The outcome of this analysis created a picture of how the delisting might affect specific timber management actions. These two sections are examined together to create a description on how the delisting of the grizzly bear will affect timber management on the National Forests.

When the grizzly bear is delisted from the ESA, the potential for changes in the size and shape of timber sales on the National Forest is possible. The current management approach has multiple standards that affect the size, shape, location and timing of timber sales. These standards will elapse when the grizzly bear is desisted. After review of the details of the timber sale, it was found that the current management standards did not have any affect on the location of the sale, but they did affect its size, shape and timing. The details of the sale were then compared to the proposed management approach to find how the size, shape, location, and timing would be different. It was found that it was

possible that the size and shape may be different; possibly allowing the units to be larger in size, but the location and the timing of the sale would not change. It was next necessary to find how current management standards that were related to the grizzly bear and timber management affected the size and shape of the sale. It was found that while there was potential for the sale to be larger because of the delisting; other standards in the Forest Plan ultimately limited the size of the sale. In summary, when the grizzly bear is delisted, one standard will replace many that affect the size, shape, location, and timing of timber sales, allowing greater flexibility in design, and possibly allowing timber sales to increase in size.

Chapter 4

In chapter 3 it was revealed there are a number of standards guiding timber management in occupied grizzly bear habitat. These standards are specific in how they affect the size, shape, location and timing of timber sales. The Conservation Strategy which sets standards once the bear is delisted has only one broad standard that will have any affect on timber management. This standard is called the secure habitat standard. The cancellation of the old standards and the implementation of the new may create the potential for larger timber sales. Because there are other standards in Forest Plans that do not pertain to the grizzly bear, but do limit the size, shape, location and timing of timber sales, it is unlikely increases in timber sales will be substantial. This chapter attempts to estimate a range which the potential increases may occur. This will be done by examining the past trends of acres logged, and how much land is available for timber management on the six National Forests in the Yellowstone Ecosystem.

Forecast

The delisting of the grizzly bear may allow a limited increase in the size of logging units inside the PCA, but what exactly does this mean? To gain some perspective on how much of an increase in logging may occur, the amount of land available for timber management and the past trends in acres cut have been examined for each National Forest.

Beaverhead National Forest

The Beaverhead National Forest has no acreage in the PCA suitable for logging (USDA, 2004c). No increase in logging is possible.

Bridger-Teton National Forest

In the Bridger-Teton National Forest, 90% of its total acreage inside the PCA is unavailable for timber management. The high percentage of land not suitable for logging limits the potential increases to very small amounts. Since the implementation of the 1986 Guidelines, only 100 acres have been treated per year. (USDA, 2004c)

Custer National Forest

The Custer National Forest has 96% of its acreage in the PCA in wilderness designation, and this Forest has not logged an acre within the PCA since 1989 (USDA, 2004c). Because no logging has occurred in 18 years, any logging would be an increase. A small percent of the Forest is suitable. This means a slight increase in logging is possible on the Custer National Forest, but because of past trends, it is unlikely.

Gallatin National Forest

Approximately 86% of the Gallatin National Forest within the PCA is unavailable for timber management. Since the implementation of the 1986 Guidelines, the Gallatin National Forest has logged an average of 1000 acres per year from 1986 to 2000. This average dropped significantly after 2000 to 200 acres per year inside the PCA. (USDA, 2004c)

Shoshone National Forest

The Shoshone National Forest has 76% of its acreage inside the PCA designated as wilderness or not suitable for timber management. About 400 acres per year have been treated until 2000, when the number dropped to 50 acres. The Forest experienced several large fires in 1988 which resulted in salvage cutting. The salvage cutting explains the higher numbers before 2000. (USDA, 2004c)

Targhee National Forest

The Targhee National Forest has about 53% of the acreage inside the PCA designated as suitable for timber management. In the 1980's, the Forest suffered from a pine beetle epidemic resulting in high harvest levels for that decade. During the 1980's the Forest cut 1600 acres per year. This number dropped to 100 acres per year cut inside the PCA in the 1990's. (USDA, 2004c)

Table 8 shows the average number of acres cut in the PCA per National Forest between the implementation of the 1986 Guidelines, and 2006. During this 20 year period, an average of only 286 acres was cut per National Forest per year.

Forest	Period			1986-2006
	1986-1990	1990-2000	2000-2006	
Beaverhead	0	0	0	
Bridger-Teton	100	100	100	
Custer	0	0	0	
Gallatin	1000	1000	200	
Shoshone	400	400	50	
Targhee	1600	100	100	
Total	3100	1600	450	
Average	516.667	266.667	75	286.11
Source (USDA, 2004)				

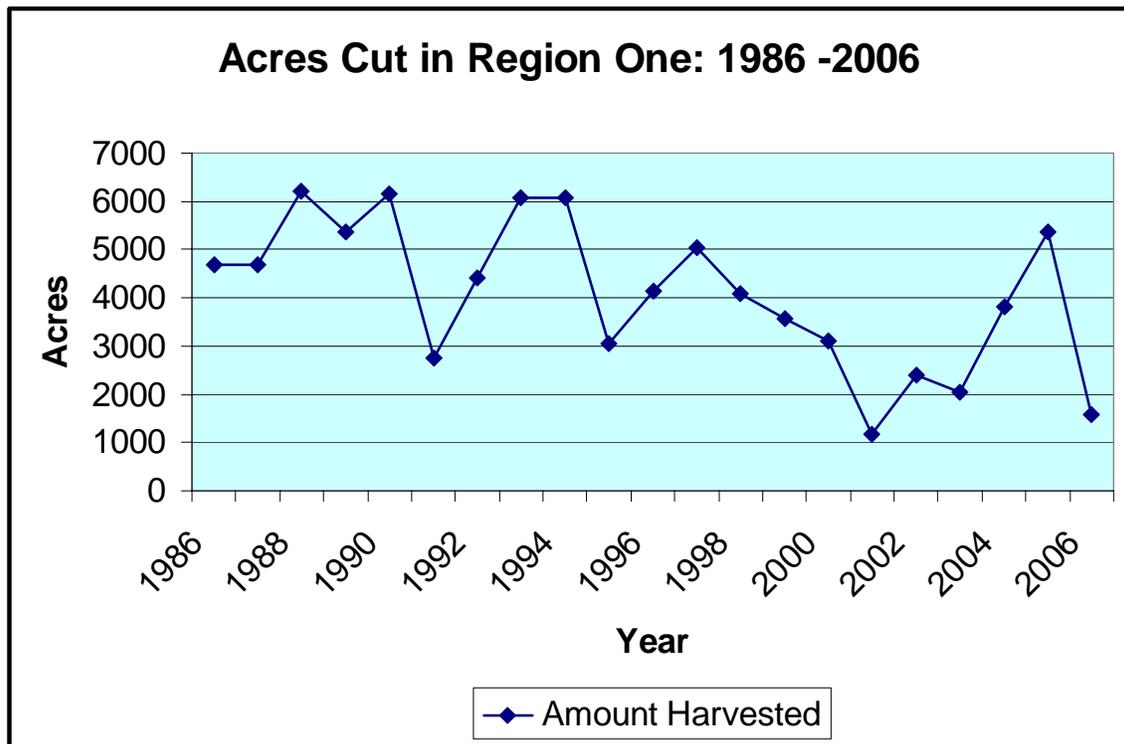
This number is skewed slightly as two National Forest have not had timber sales during this time. Table 9 shows the same information but does not include the Beaverhead and the Custer National Forests. This table probably provides a more accurate number of the acres cut per Forest per year within the PCA during this 20 year period.

Forest	Period			1986-2006
	1986-1990	1990-2000	2000-2006	
Bridger-Teton	100	100	100	
Gallatin	1000	1000	200	
Shoshone	400	400	50	
Targhee	1600	100	100	
Total	3100	1600	450	
Average	775	400	112.5	429.167
Source (USDA, 2004c)				

The average acres cut per year during this 20-year period on the 4 National Forest harvesting timber is approximately 429 acres. This is a relatively low number when

compared to the National Forest System. Region One, encompasses 12 National Forest in the Idaho Panhandle, Montana, and Western North and South Dakota. This region has wet forests in the west that are relatively productive for timber and dry forests in the east with low productivity. In the same 20-year period, Region One averaged 4083 acres cut per National Forest per year. This is over 9 times greater than the number of acres harvested within the PCA. Figure 9 shows the average acres cut per National Forest per year in Region One, from 1986 to 2006. One single Forest, the Kootenai, averaged over 11,000 acres cut per year during the same time period. This shows that while the PCA is used for timber harvesting, it contributes a small amount of the harvest produced by the National Forest System. (USDA, 2006A)

Figure 10: Acres cut per Forest per Year in Region One



Source (USDA, 2006Aa)

There are a number of limiting factors for timber management within the PCA. Currently, 78% of the National Forest within the PCA is in a management designation

that is unavailable for timber management (USDA, 2004c). Another limiting factor in the amount of area available for timber management is the percentage of the BMU subunit in secure habitat. An area could be in a MA acceptable for timber management, but could be in secure habitat, thus of limits to road building needed for logging. Of the 40 BMU subunit's in the PCA, 22 either have a percentage of their area in secure habitat above 90%, or they are completely within Yellowstone National Park, or both (USDA, 2004c). These two factors limit the potential for an increase in logging these areas even further. However, because secure habitat is defined by the lack of roads, it is likely that a high percentage of these BMU subunits are in designated wilderness.

There are some areas available for logging with low percentages of secure habitat. Seven sub units have less the 80% of their area in secure habitat, and four of these have less than 50% (USDA, 2004c). It is very likely that there are some locations where large tracts of land inside the PCA are outside secure habitat, and are available for timber management. These areas, though limited, may potentially experience increases in logging if the bear is delisted. However, only one entry into a BMU subunit is permitted every ten years. These areas could experience larger sales; however they will most likely not experience a greater number of sales.

The number of acres cut by Forest per year has been declining since the implementation of the 1986 Guidelines. Since the year 2000, the four Forest that harvest timber have only averaged about 112 acres cut per Forest per year. Because this is the trend over the last six years, 112 acres cut per Forest per year is the baseline in which I am basing an

increase from. The reasons for declines in timber sales on the National Forest System are a complex issue. The reasons for declining timber sales are outside the scope of this thesis and will not be explored.

In the period between 1986 and 1990 the average cut per Forest per year was closer to 775 acres. The standards for timber management have not changed during this period; factors outside the scope of this project have contributed to these declines. Because the current standards have not changed it would seem possible that harvest could return to these levels. Because the standards have not changed, and given that there is the potential for larger timber sales once the grizzly bear is delisted, it creates the illusion that an increase in acres cut greater than 600 acres per forest per year would be possible. However, the Conservation Strategy uses 1998 as a baseline in which habitat conditions should be maintained at or improved upon. During the 1990's, the period in which the 1998 baseline was established, 400 acres were cut per Forest per year. Therefore an increase greater than 600 acres to 1986-1990 levels may lower habitat conditions below the 1998 baseline, and is unlikely.

During the years the 1998 baseline was established, the average cut per Forest per year was about 400 acres. If an increase is to occur, it would not likely be greater than difference between the current average of 112 acres and 400 acres per Forest per year. This is because if logging was to occur at a higher rate, then habitat conditions would be likely to degrade beyond the 1998 baseline. It is more likely that the average would only increase by 300 acres, or the 1990 levels.

It is important to note, that this forecast is created, by observing a limited number of factors as discussed above. The amount of logging on National Forest is constantly changing. Supply, demand, the age and suitability of forest, the needs of the nation can change. What is the status quo today may be very different in 20 years. The age and suitability of forest for timber harvest may be at a low point today, after 40 years may be mature for harvest. Factors unseen may result in huge change in how National Forest manages timber resources. A forecast of only 300 acres per Forest per year may seem like a very low estimate in the future.

Comparing the low historic acreages of logging inside the PCA and relatively limited area where logging may occur. It is reasonable to conclude that while the delisting of the bear will provide the possibility of increased logging on the National Forests within the PCA, the increases will be minimal and when compared to the National Forest System as a whole, insignificant. Outside of the PCA, the situation post delisting will be very similar to the current conditions. The one main change that may affect timber management is the lack of USFWS review on projects concerning the grizzly bear. The limiting of red tape may create an easier path to gain approval of timber sales and a reduction in the cost of approving timber sales. The impact of this will not be known for sometime. Therefore, it is my forecast, that the delisting of the grizzly bear will result in only minor increases of not greater than 300 acres per Forest per year, and is unlikely to increase the number of timber sales.

Conclusion

The importance of the ESA to planners is far reaching. It is one of the only federal laws that can affect land use on state and private lands, as well as federal lands. It is considered to be one of the strongest wildlife laws on the planet. It is essential for planners to be aware of threatened and endangered species within their jurisdiction and how these listed species will impact their community.

The delisting of the grizzly bear is uncharted waters. The grizzly bear is an umbrella species whose range covers many different habitat types and huge expanses of country. When the grizzly bear was listed, a five factor analysis was conducted to determine the cause of the species decline. One of the factors was the destruction of habitat caused by logging. Restrictions on logging were enforced upon the National Forest's to protect grizzly bear populations and habitat. Today the grizzly bear is being delisted from the ESA in the Yellowstone Ecosystem. A species of this magnitude has never been delisted from the ESA. The affects of this delisting are a source of controversy. One side believes the delisting of the bear will allow increases in logging upon the National Forest, while other groups do not think an increase in logging is likely.

The delisting of the grizzly bear will cause a shift in how the land is managed in the Yellowstone Ecosystem. The goal of this report is to explore how the delisting of the bear may affect timber management. To do this, the current management approach for the grizzly bear has been examined with the proposed management approach to find

differences in the rules affecting timber management. Also, the details of a single timber sale were evaluated to determine how the delisting may affect a project.

The analysis of the two different management approaches has revealed when the grizzly bear is delisted, the standards affecting timber management will no longer be composed of several specific standards, but rather one general standard. This will allow greater flexibility in the size and shape of timber sales, allowing for the size of the sales to increase.

The analysis of the EA shows the listing of the grizzly bear limited the size and shape of the timber sale. However, there are many other factors that may limit the size and shape of timber sales. In the end, the listing of the grizzly bear was one of two factors that limited the size and shape of the timber sale. The other factor was not related to the grizzly bear. This study showed the delisting of the bear will allow for more flexibility and has the potential to allow larger timber sales.

In both the comparison of the two management approaches, and the study of the timber sale, the key component was the standards guiding timber management. The Forest Service has modified the 1986 Guidelines to manage timber harvest in areas occupied by the grizzly bear. This refinement incorporates a number of different standards the Forest Service must follow, that affect the size, shape, location, and timing of timber sales. From the case study we found the standard requiring timber sales to maintain 600 feet distance to hiding cover was a key to limiting the size and shape of a timber sale. When

the bear is delisted, all of the current standards including the 600 feet to hiding cover standard, will become obsolete. A new standard defining a term called secure habitat will take effect. Secure habitat is any area greater than ten acres at least 500 meters from a road. The standard does not allow new roads to be built that protrude into secure habitat. The standard is very general and allows most uses, including timber sales, to occur as long as new roads are not built that reduce secure habitat. This standard does not limit the size or shape of timber sales outside of secure habitat in any way.

What the study of the timber sale also shows, is that there are many other standards the Forest Service must follow that limit the size and shape of timber sales in the National Forest to meet multiple use values. These standards will not elapse when the grizzly bear is delisted. While the listing of the grizzly bear does limit the size and shape, other standards not related to the grizzly bear also limit the size and shape. The delisting of the grizzly bear may allow the size of timber sales to increase, but the increase will be minimal because of these other standards affecting timber management.

Finally, the National Forests surrounding Yellowstone N.P. were examined to find how many acres were being harvested on each of the six National Forests' in the last 20 years, and how much of the Forests' are available to timber harvest. This was done to link the concept of a slight increase in the size of timber sales to actual numbers. It was found that the average number of acres cut per National Forest that harvest timber in the Yellowstone ecosystem has averaged about 430 acres a year. This is a very low number compared to other parts of the National Forest system. It was estimated in this analysis

that an increase in the acres cut per Forest per year would not likely be more the 300 acres

While the size of timber sales may increase, the number of timber sales is very unlikely to increase. The standard allowing only one entry to perform a management activity into a BMU subunit every ten years will not elapse. This means only one timber sale could occur in a BMU subunit in a ten year period. Timber sales must compete with other activities for entry. Because of this, the number of timber sales that occur in the Yellowstone ecosystem is unlikely to increase when the bear is delisted.

When the grizzly bear is delisted from the ESA, the standards affecting the size, shape, location and timing of timber sales will become obsolete, and be replaced with a very general standard concerning critical habitat. This will allow the size of timber sales to increase. But given the complex structure of Forest Service standards, the historically small amount of logging, and the limited amount of land available for timber management, it is the conclusion of this paper, that the delisting of the grizzly bear will only allow a minimal increase in the size of logging units on the National Forest in the Yellowstone Ecosystem.

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