Lightning Creek Restoration Project

Wildlife Report

Prepared by:
Joe Madison
Wildlife Biologist

Sandpoint Ranger District
Idaho Panhandle National Forests

October 23, 2008

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Table of Contents

Regulatory Framework 1
Threatened, Endangered and Proposed Species 1
Sensitive Species 1
Management Indicator Species and Other Wildlife 2
Analysis Methods 2
Introduction 2
Species Screen 2
Effects Analysis Methodology 5
Threatened and Endangered Species 12
Grizzly Bear 12
Gray Wolf 31
Canada Lynx 36
Sensitive Species 44
Wolverine 44
Harlequin Duck 48
Western Toad 53
Management Indicator Species and Others 57
Northern Goshawk 57
Rocky Mountain Elk 62
Summary of Effects to Wildlife 67
Design Features 69
Literature Cited 73
Attachment A - Grizzly Bear Management Protection Plan 80

List of Tables

Table 1. Wildlife species not analyzed in detail 3
Table 2. Wildlife species analyzed detail 5
Table 3. Issue indicators used to measure effects to special status wildlife species 6
Table 4. Existing condition of open and total motorized road density and core in the Scotchman and North Lightning BMUs compared to standards 15
Table 5. Condition of security (square miles) in the Scotchman and North Lightning BMUs compared to Forest Plan standard 15
Table 6. Estimated number of days to complete work in each subdrainage. 18
Table 7. Core temporarily impacted by project activities (acres) and percent of the core block impacted 23
Table 8. Comparison of alternatives to grizzly bear management unit standards for the each affected BMUs.. 28
Table 9. Comparison of alternatives to Forest Plan grizzly bear habitat security standard (square miles). 28
Table 10. Comparison in the amount of motorized roads and trails (approximate miles) and motorized road and trail density (approximate miles/square mile) within the Lightning Creek Restoration project area before and after the 2006 flood. 33
Table 11. Comparison between the alternatives in the amount of motorized roads and trails (approximate miles) and motorized road and trail density (approximate miles/square mile) within the Lightning Creek Restoration project area 35
Table 12. Existing condition of LAUs that are entirely or partially within the Lightning Creek Restoration project area 39

Table 13. Comparison of drivable roads and motorized trails (miles) within each LAU 41
Table 14. Comparison of groomed snowmobile routes (miles) within each LAU 42
Table 15. Harlequin duck observations within the project area 49
Table 16. Comparison of roads and trails (miles) within 150 meters of potential harlequin duck breeding streams, including roads on private lands 51
Table 17. Comparison of alternatives to pre-flood and existing condition for species analyzed in detail based on the effects to the species after implementation of the alternative is complete 67
Table 18. Summary of effects determinations by alternative for all wildlife species considered, including those not analyzed in detail. 67

List of Figures

Figure 1. Wildlife cumulative effects analysis area 9
Figure 2. Grizzly bear cumulative effects analysis area (BMU = bear management unit) 10
Figure 3. Canada lynx cumulative effects analysis area (LAU = lynx analysis unit) 11
Figure 4. Geographic zones for grizzly bear protection (see Design Features for the specific design criteria regarding these zones) 19

Regulatory Framework

The principle regulatory direction applicable to the management of wildlife resources on the Idaho Panhandle National Forests (IPNF) includes:

- The Endangered Species Act of 1973 (ESA), as amended
- Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA)
- National Forest Management Act of 1976 (NFMA)
- The Migratory Bird Treaty Act of 1918 (MBTA), as amended
- Idaho Panhandle National Forests Forest Plan (1987)
- Forest Service Manual (FSM) and Handbook (FSH) direction

The following is a summary of regulatory guidance and its relation to the management of wildlife species and habitats on the Idaho Panhandle National Forests.

Threatened, Endangered and Proposed Species

The National Forest Management Act requires the Forest Service to "*provide for a diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives*" (NFMA 1976 Sec. 6[g][3][B]). Additional guidance is found in Forest Service Manual direction that states: "*identify and prescribe measures to prevent adverse modification or destruction of critical habitat and other habitats essential for the conservation of endangered, threatened and proposed species*" (FSM 2670.31 [6]). The IPNF Forest Plan provides additional direction to "*manage vertebrate wildlife habitat to maintain viable populations*" of wildlife and "*to contribute to the conservation and recovery of listed species*", in accordance with species recovery or management plans (USDA Forest Service 1987).

The ESA, as amended, requires the Forest Service to manage for recovery of threatened, endangered, and proposed species and the ecosystems upon which they depend. The direction requires the completion of a biological assessment to evaluate the potential effects of proposed actions on listed species or identified habitats and a determination as to the effects of those actions. The Forest is required to consult with the U.S. Fish and Wildlife Service if a proposed activity may affect the population or habitat of a listed species. The biological assessment and consultation documents will be located in the wildlife project file upon their completion.

On April 9, 2008, the U.S. Fish and Wildlife Service issued a list of threatened and endangered species that may be present on the Idaho Panhandle National Forests (USDI Fish and Wildlife Service 2008a). The only endangered species for the Forest on that list was woodland caribou (*Rangifer tarandus caribou*). Threatened species include grizzly bear (*Ursus arctos*) and Canada lynx (*Lynx canadensis*). Although the gray wolf (*Canis lupus*) was removed from the endangered species list in March of 2008, a court ruling on July 18, 2008, imposed a preliminary injunction on the delisting, which reinstated its endangered status in areas north of Interstate 90.

Sensitive Species

The Forest Service Manual also directs the Regional Forester to identify sensitive species for each National Forest where species viability may be a concern. The direction requires the Forest Service to manage the habitat of the species listed in the Regional Sensitive Species List (USDA Forest Service 2005) to prevent further declines in populations, which could lead to federal listing under the Endangered Species Act.

Management Indicator Species and Other Wildlife

NFMA directs the Forest Service to manage wildlife habitat for existing native and desired non-native species in the planning area (Idaho Panhandle National Forests). To facilitate the management of all wildlife species and their habitat, management indicator species (MIS) were identified in the Forest planning process. These species are used to evaluate or assess impacts, whose population changes are believed to indicate effects of land management activities on other species with similar habitat needs. MIS are also used to monitor effects of planned management activities on populations of socially or economically important wildlife and fish species.

Analysis Methods

Introduction

Species surveys were conducted for some species, where relevant and applicable, to determine presence. However, presence surveys do not necessarily determine absence of a species. Therefore, a more meaningful and creditable approach in conducting an analysis is to assume presence based on habitat attributes, using survey information to help validate suitability of habitats. In some cases, surveys can identify key habitats (e.g., breeding or nesting sites) that can be protected through design features.

An important concept in discussing habitat suitability for some species is the distinction between *capable habitat* and *suitable habitat*. Capable habitat refers to the inherent potential of a site to produce the necessary biotic and abiotic components to support a given species. Suitable habitat refers to habitat that is currently providing the necessary components to support a species. Therefore, habitat that is *unsuitable* is capable habitat that has the potential to develop into a suitable condition, but currently does not meet the habitat requirements for a species. Habitat that is *not capable* has no potential to develop into a suitable condition.

Species Screen

The Council on Environmental Quality (40 CFR 1502.2) directs that impacts be discussed in proportion to their significance. Some wildlife species require a detailed analysis to determine effects of an action on them. Other wildlife species may not be impacted or impacted at a level that does not increase risk to the species. Some species may be adequately protected by altering the project design. Generally, these species do not require a detailed discussion and analysis.

The appropriate methodology and level of analysis needed to determine potential effects are influenced by a number of variables including presence of a species or its habitat, the scope and nature of the activities associated with the proposed action and alternatives, and the risk to factors that could ultimately result in a meaningful adverse or favorable effect.

In preparation for this document, a review was conducted using a variety of information including scientific literature, resource inventories, and sighting records, to help screen and determine species relevancy to the project. The screening process included the following documents:

- U.S. Fish and Wildlife Service list of federally threatened and endangered species that may occur on the Idaho Panhandle National Forests (USDI Fish and Wildlife Service 2008a)
- Region 1 Sensitive Species list (USDA Forest Service 2005)
- IPNF Management Indicator Species List (USDA Forest Service 1987)

- Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin (Quigley and Arbelbide 1997)
- Idaho Panhandle National Forest Land and Resource Management Plan
- Conservation Assessments and Strategies for wildlife species

Species Not Analyzed in Detail

A preliminary analysis was conducted for each potentially affected wildlife species and their habitat to determine the scope of analysis. The species listed in Table 1 would not likely be affected by the proposed activities because:

- they do not have suitable habitat,
- they are not expected to be in or near the project area,
- they would not be impacted, or
- impacts would be avoided or inconsequential given the project design.

For these reasons, these species were not analyzed in detail.

Table 1. Wildlife species not analyzed in detail

Species	Rationale for Elimination from Detailed Analysis	Preferred Habitat
Threatened and Endangered Species		
Woodland Caribou (*Rangifer tarandus caribou*)	No suitable habitat is present within the project area. The project area is outside recognized caribou habitat.	Above 4,000 ft. in Englemann spruce/subalpine fir and western red cedar/western hemlock forests.
Sensitive Species		
Bald Eagle (*Haliaeetus leucocephalus*)	No known nests or winter roosts within the project area.	Normally nest and forage near large bodies of water. Winter visitors or yearlong residents of northern Idaho.
Black Swift (*Cypseloides niger*)	Suitable habitat within the project area would not be impacted by proposed activities.	Builds nest behind or next to waterfalls and wet cliffs.
Peregrine Falcon (*Falco peregrinus anatum*)	Potentially suitable habitat within the project area would not be impacted by project activities.	Open habitats near cliffs and mountains. Nest in cliffs near an adequate prey base.
Common Loon (*Gavia immmer*)	No suitable habitat is present within the project area.	Large, clear lakes below 5,000 ft. elevation with at least a partially forested shoreline.
Flammulated Owl (*Otus flammeolus*)	Suitable habitat within the project area would not be impacted by proposed activities.	Mature to old growth ponderosa pine, Douglas-fir forest.
Black-backed Woodpecker (*Picoides arcticus*)	Suitable habitat within the project area would not be impacted by project activities.	Mature conifer stands with numerous snags. Post-fire habitat producing an abundance of snags.
Pygmy Nuthatch (*Sitta pygmaea*)	Suitable habitat within the project area would not be impacted by project activities.	Ponderosa pine habitat, especially mature to old growth stands.

Species	Rationale for Elimination from Detailed Analysis	Preferred Habitat
Fringed Myotis (*Myotis thysanodes*)	Suitable habitat within the project area would not be impacted by project activities.	Caves, mines, and abandoned buildings, large snag habitat.
Fisher (*Martes pennanti*)	Suitable habitat within the project area would not be impacted by project activities.	Mature, mesic forested habitats.
Northern Bog Lemming (*Synaptomys borealis*)	Potentially suitable habitat within the project area would not be impacted by project activities.	Bogs, fens and, wet alpine and sub-alpine meadows.
Townsend's Big-eared Bat (*Plecotus townsendii*)	Suitable habitat within the project area would not be impacted by project activities.	Caves, mines, and abandoned buildings.
Coeur d'Alene Salamander (*Plethodon vandykei idahoensis*)	Suitable habitat within the project area would not be impacted by project activities.	Springs, seeps, spray zones.
Management Indicator Species and Others		
White-tailed Deer (*Odocoileus virginianus*)	Suitable winter range within the project area would not be impacted in a way that would result in a meaningful or detectable change in habitat quality.	Mosaic of habitat types that provide open parks for foraging and forested areas for thermal and security cover.
American Marten (*Martes americana*)	Suitable habitat within the project area would not be impacted by project activities.	Variable mature conifer stands with canopy closures greater than 40 percent with abundant large, down woody debris
Pileated Woodpecker (*Dryocopus pileatus*)	Suitable habitat within the project area would not be impacted by project activities.	Forests with tall, large diameter dead or defective trees for nesting.
Forest Landbirds	Best addressed on a large scale and by ecosystem and habitat condition rather than on a species-by-species basis at the project level, particularly since any action, including no action, would be detrimental to some species and beneficial to others.	Diverse habitats, dependent on species.

Species Analyzed in Detail

Wildlife species analyzed in detail are those that have been identified as species of concern within the project area that could potentially be affected by proposed activities. The detailed analysis for each species describes the environmental baseline and relevant habitat components that may or may not be affected by the alternatives if they were to be implemented. Information presented in the analysis is based on scientific literature, wildlife databases, and professional judgment, along with field surveys and habitat evaluations conducted over the last three years. Table 2 summarizes the species analyzed in detail, the rationale for analyzing them, and their preferred habitat.

Table 2. Wildlife species analyzed detail

Species	Rationale for Detailed Analysis	Preferred Habitat
Threatened or Endangered Species		
Grizzly Bear (*Ursus arctos horribilis*; threatened)	The project area is within the Scotchman and North Lightning Bear Management Units.	Habitat generalist with seasonal preferences. Denning areas isolated and remote from human development.
Northern Gray Wolf (*Canis lupus*; endangered)	Although there is no confirmed wolf pack or home range within the project area (e.g., observation of reproduction, den sites or rendezvous sites), there has been recent documented use of the project area and adjacent watersheds by wolves.	Wide variety of habitats generally remote and isolated from human development. Adequate populations of prey species, including wintering concentrations of deer or elk.
Canada Lynx (*Lynx Canadensis;* threatened)	The project area is within all or part of the Scotchman, Lightning, Lunch and Trestle Lynx Analysis Units.	Higher elevation lodgepole pine and spruce/ fir forests with adequate prey base of snowshoe hares, its primary food.
Sensitive Species		
Wolverine (*Gulo gulo*)	Suitable habitat is present within the project area.	Far-ranging omnivorous, habitat generalist.
Harlequin Duck (*Histrionicus histrionicus*)	Suitable habitat is present within the project area.	Shallow, swift streams in forested areas.
Western Toad (*Bufo boreas*)	Terrestrial and breeding habitat is present within the project area.	Adults occur in a variety of uplands. Breed in shallow ponds, lakes, or slow moving streams.
Management Indicator Species and Focal Species		
Northern Goshawk (*Accipiter gentilis*)	Suitable habitat is present within the project area.	Mature to old growth forest with a relatively closed canopy.
Rocky Mountain Elk (*Cervus elaphus nelsoni*)	Suitable habitat is present within the project area.	Move seasonally using a variety of habitat types. Winter on low to mid-elevation slopes that are south facing.

Effects Analysis Methodology

The environmental consequences discussion for each species provides information regarding the potential effects on those wildlife species from the proposed actions. Effects discussions include direct, indirect, and cumulative effects, all of which may have positive, negative, or neutral consequences. Effects are quantified where possible, and qualitative discussions are also included. Table 3 lists the species analyzed in detail and the issue indicators that are used to measure potential effects to those species.

Direct environmental effects are those occurring at the same time and place as the triggered action. Indirect effects are those that occur later in time or are spatially removed from the activity. Cumulative effects result from incremental effects of proposed actions, when added to other past, present, and reasonably foreseeable future actions, regardless of the source.

Cumulative effects can result from individually minor, but collectively significant actions taking place over a period of time.

Past actions contribute to the baseline conditions that provide a foundation for the analysis (e.g., previous timber harvesting, road building, and fire suppression actions since the early 1900s). Past activities (such as road building) and natural processes (such as floods) are described in the existing condition section for each species, and provide baseline conditions for habitats.

Table 3. Issue indicators used to measure effects to special status wildlife species

Species	Status	Indicator
Grizzly Bear	Threatened	Changes/trends in road density (miles/square mile), core habitat (acres) and security (square miles and disturbance/displacement)
Gray Wolf	Endangered	Changes/trends in habitat security (miles of drivable roads/motorized trails, road density and disturbance/displacement)
Canada Lynx	Threatened	Changes/trends in habitat security (miles of groomed snowmobile routes, miles of drivable roads/motorized trails and disturbance/displacement)
Wolverine	Sensitive	Changes/trends in habitat security (miles of drivable roads/motorized trails, road density and disturbance/displacement)
Harlequin Duck	Sensitive	Changes/trends in security of breeding streams (miles of drivable roads within RHCAs of breeding streams and disturbance/displacement) and changes in water quality
Western Toad	Sensitive	Changes/trends in the quality of breeding habitat and direct disturbance/displacement
Northern Goshawk	Management Indicator Species	Changes/trends in security of nesting habitat (disturbance/displacement)
Rocky Mountain Elk	Focal	Changes/trends in habitat security (miles of drivable roads/motorized trails, road density and disturbance/displacement)

Cumulative Effects Analysis

Present, ongoing, and reasonably foreseeable actions that could contribute to cumulative effects for species being analyzed are identified and described in the project file of the Lightning Creek Restoration Environmental Assessment (from here forward referenced as the “EA”). Below is a general description of these actions that are applicable to wildlife species analyzed in detail. Not all of these actions are relevant to every species analyzed and only those that are applicable will be addressed in the cumulative effects section of each species.

Supplemental Forest Plan Motorized Access Amendment – The ongoing Supplemental Forest Plan Motorized Access Amendment is scheduled to be completed in the fall or winter of 2008-2009 and is anticipated to put into effect in 2009. This amendment is strategic in nature and would not make site-specific decisions regarding access management, but it would establish grizzly bear core habitat and road management standards specific to each grizzly management unit. The

actions that stem from the amendment decision would provide benefits to multiple wildlife species through road management that is specifically designed to increase habitat security.

Activities on Other Ownerships – Part of the southern portion of the Lightning Creek watershed, a large part of the southeast portion of the Scotchman BMU and scattered portions of the southwest and northwest boundaries of the North Lightning BMU are owned by private individuals or industry. These lands historically likely represented key components of wildlife habitat, such as big game winter range or grizzly bear spring habitat. However, the past and ongoing development of residences, construction of roads, timber harvesting and other activities on private lands associated with human presence have severely limited the suitability of these lands for wildlife.

Hope/Sagle Land Exchange – The Forest Service is currently in the process of conducting a land exchange with the Stimson Lumber Company. As part of this land exchange, approximately 925 acres of land within the cumulative effects area currently owned by Stimson would become National Forest land. The lands that would be removed from Federal ownership are not within or in close proximity to the Lightning Creek watershed. The acres that would become National Forest land are located at a low elevation with a generally south to southwest-facing aspect. These lands have been harvested by Stimson within the last decade and are currently dominated by brush species.

Exploratory Mining in the Lightning Mountain Area – There is a proposal for exploratory drilling in the Lightning Mountain area of the project. The project would involve the short-term use of helicopters to fly in equipment to and from the drill site, and the use of heavy machinery to conduct drilling operations for a period of less than two months during late spring and early summer.

Wildfire Suppression – Over the past century, there has been an ongoing policy of fire suppression within the analysis area, which has led to an increase in tree density in stands that would have historically been thinned, modified or reverted to an earlier successional stage by periodic wildfires. Suppression activities often include activities that have the potential to cause disturbance and displacement effects on wildlife, such as the use of helicopters, OHVs and other mechanized equipment within core habitat or on restricted roads. On rarer occasions, impassible roads or emergency roads are reconstructed or constructed to allow for suppression activities.

Hunting and Trapping – Big game species and non-game species such as white-tailed deer, mule deer, elk, moose, black bear, mountain lion, coyote, marten, fox, bobcat and grouse are found in the Lightning Creek watershed and are commonly hunted or trapped by the public. Wildlife species analyzed could potentially be taken during hunting or trapping activities. The Idaho Department of Fish and Game regulates the legal hunting of wildlife and systematically determines the number and type of permits available to the public in order to maintain healthy and productive populations of game species. The Lightning Creek Restoration project would decrease motorized access to some subdrainages, but would increase the ability of hunters to access the main drainage by constructing a bridge over East Fork Creek in Alternatives 4A and 4B. These changes in access would likely alter the distribution of hunters and may affect the number of hunters, but it is unclear to what extent.

Snowmobiling – The popularity of motorized winter recreation has increased over the past couple of decades with the last decade seeing notable changes in the performance and range of snowmobiles. The Lightning Creek Restoration project would decrease the miles of drivable roads into some subdrainages, which would potentially make them more difficult to access via

snowmobile for some riders. Conversely, constructing a bridge over East Fork Creek in Alternatives 4A and 4B would increase the ability of snowmobilers to access the main Lightning Creek drainage. These changes in access would likely alter the number and distribution of snowmobilers using the drainage, but it is unclear to what extent.

Noxious Weeds Monitoring and Treatment – This activity would follow the guidelines established in the Sandpoint Noxious Weeds Control Project EIS (USDA Forest Service 1998). Effects to the aquatic resource were analyzed in that document and its adaptive strategy.

Cumulative Effects Analysis Areas

The appropriate scale or geographic bounds for a cumulative effects analysis relates to an area that would be affected by the proposed action or reasonable alternative, in addition to other past, ongoing, or reasonably foreseeable activities in the vicinity of the project area. This area is referred to as the cumulative effects analysis area, and it may vary between resources. The task of selecting the geographical boundaries involves several factors, including the scope of the project considered, the features of the land, species' relative home range size in relation to available habitat, and points of diminishing effects.

With the exception of grizzly bear and Canada lynx, the cumulative effects analysis area for species analyzed in detail is the project area and encompasses approximately 75,726 acres or 118 square miles (see Figure 1). This represents the size of multiple home ranges for these species. The boundary of the cumulative effects analysis area is drawn along the Lightning Creek watershed delineation.

For grizzly bears, the cumulative effects analysis area is comprised of the North Lightning Bear Management Unit (BMU) and the Scotchman BMU (see Figure 2), which will be analyzed separately. These bear management units were created by the Forest Service in the early 1980s and later adopted by the U.S. Fish and Wildlife Service to roughly represent the size of a female grizzly bear's home range containing all necessary habitat components. These BMUs are the principle unit for evaluating and analyzing potential impacts on grizzly bears. BMUs do not represent actual home ranges, but are areas established for the purpose of grizzly bear analysis.

For Canada lynx, the cumulative effects analysis area is the Scotchman Lynx Analysis Unit (LAU), Lightning LAU, Lunch LAU and Trestle LAU (see Figure 3), which will each be analyzed separately. Per the direction from the Lynx Conservation Assessment and Strategy (LCAS; Ruediger et al. 2000), the Forest Service and other agencies delineated LAUs. LAUs are not intended to depict actual lynx home ranges, but are intended to provide analysis units of the appropriate scale with which to analyze the potential direct, indirect, and cumulative effects of projects or activities on lynx and changes to their habitat. The Northern Rockies Lynx Management Direction (NRLMD; USDA Forest Service 2007) superseded the LCAS by providing further direction on refining lynx habitat based on more recent research findings and defining risk factors to lynx. The NRLMD also established standards and guidelines on how to address risk factors in order to reduce or eliminate impacts on lynx and their habitat, but it maintained the use of LAUs as the appropriate analysis areas.

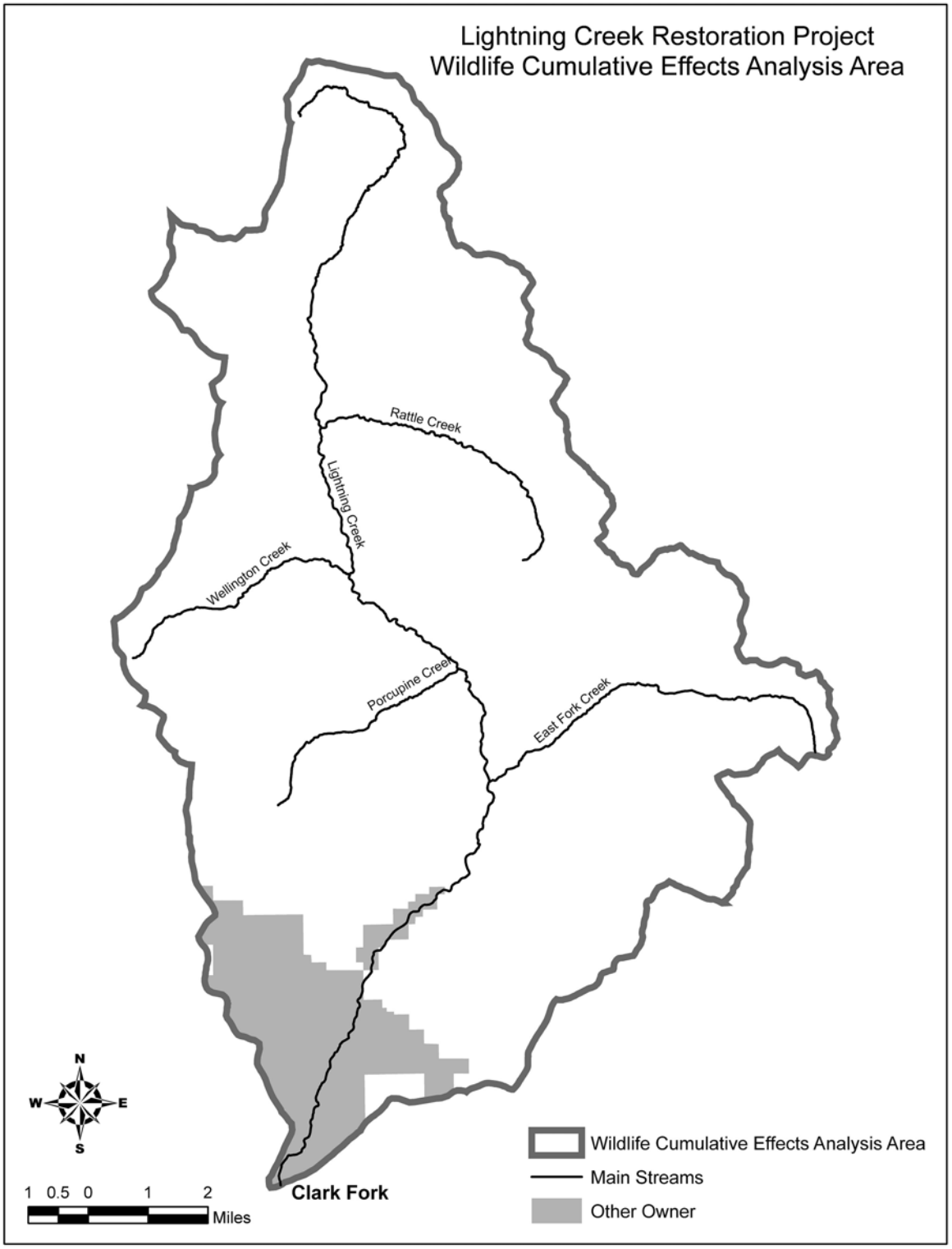

Figure 1. Wildlife cumulative effects analysis area

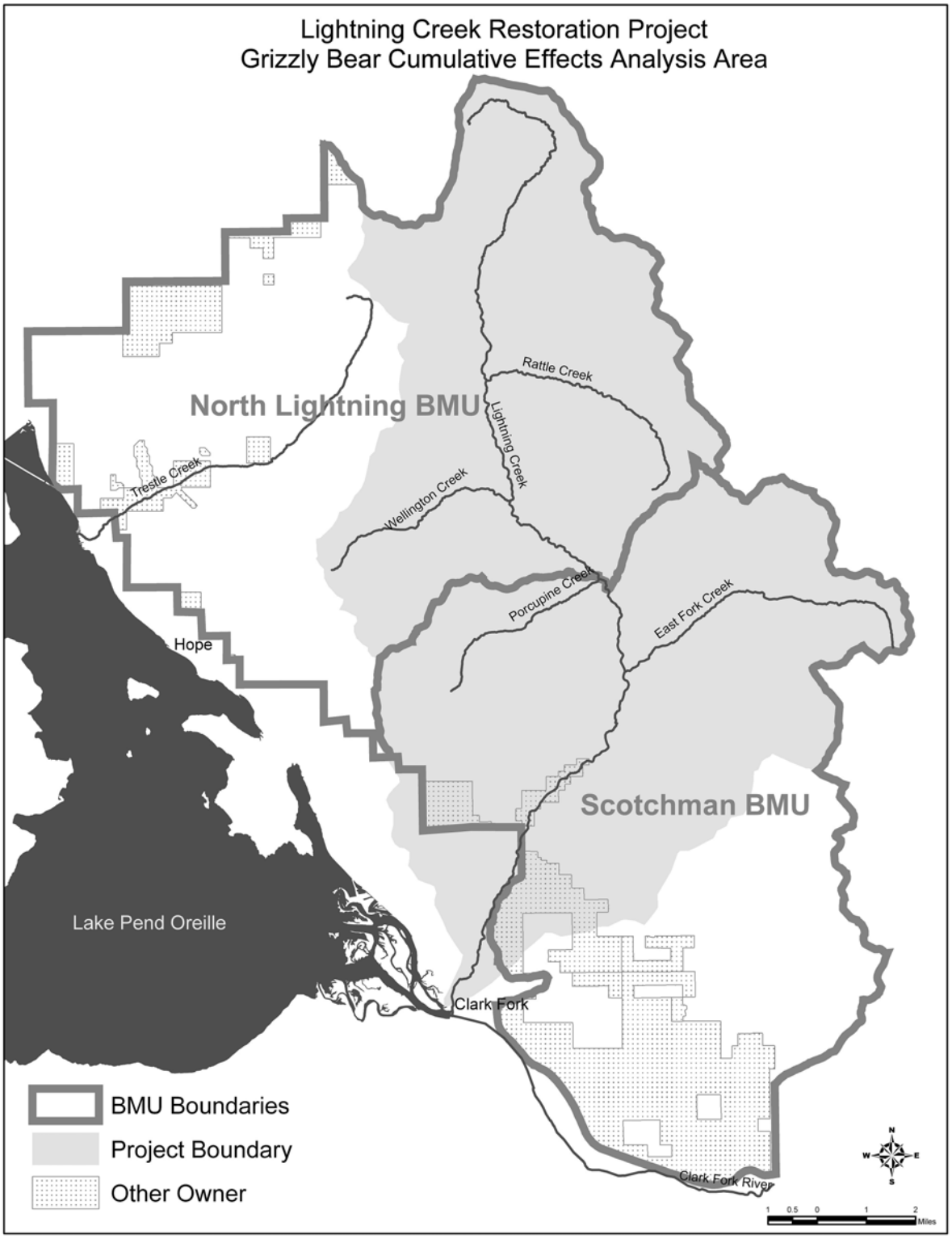

Figure 2. Grizzly bear cumulative effects analysis area (BMU = bear management unit)

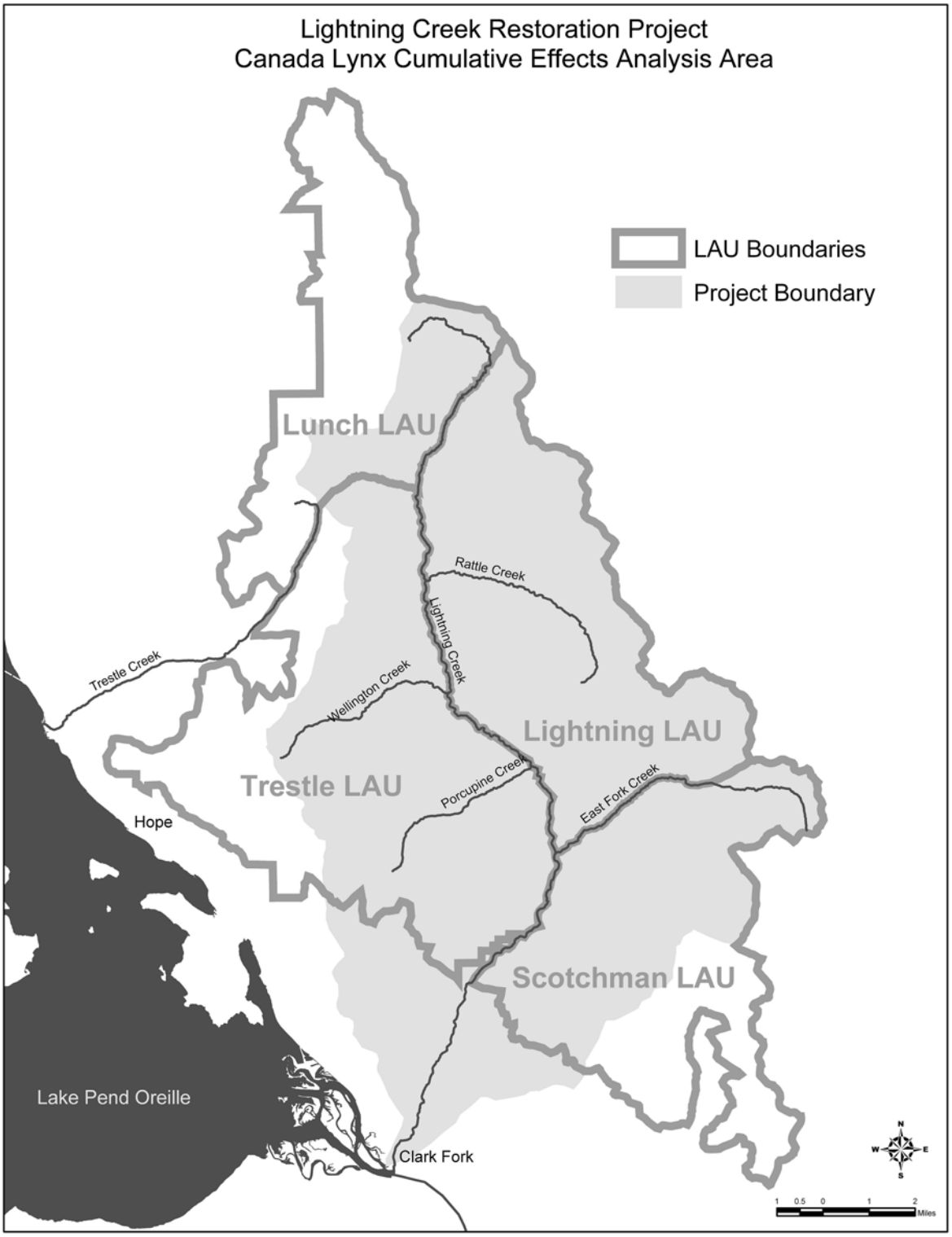

Figure 3. Canada lynx cumulative effects analysis area (LAU = lynx analysis unit)

Adjacent Lands and Other Ownerships

Approximately 6,162 acres or 8 percent of the main cumulative effects analysis area are on private lands or other government agencies (Federal and local) concentrated in the southern most portion of the watershed outside the IPNF administrative boundary. Other ownerships include approximately 762 acres belonging to Stimson Lumber Company, 177 acres of Bureau of Land Management lands, 81 acres belonging to the City of Clark Fork and 20 acres belonging to Forest Capital. Other ownerships, particularly Stimson and Forest Capital lands, are managed for the primary purpose of timber extraction. Since these timber stands are managed on a relatively short rotation, they are usually precluded from reaching suitable habitat conditions for species that require a mature or late-successional forest structure.

There are also several private residences within these private lands, including a portion of the City of Clark Fork, and the number of residences continues to increase. Activities associated with these residences include, but are not limited to, road construction, road maintenance and use, lot clearing, hazardous fuels reduction around homes, and conversion of once forested lands to grassy areas. As a result, these ownerships are highly susceptible to adverse habitat modifications, and the presence of suitable habitat for the species analyzed cannot be relied upon over time.

Threatened and Endangered Species

Grizzly Bear

Grizzly bears are considered habitat generalists, using a broad spectrum of habitats. Populations of grizzly bears persist in areas where large expanses of relatively secure habitat exist and where human-caused mortality is low. Use patterns are usually dictated by food distribution and availability combined with a secure environment. Grizzly bears commonly choose low-elevation riparian areas and wet meadows during the spring, and are generally found at higher elevation meadows, ridges and open brush fields during the summer. Fall habitats are generally associated with timbered and riparian habitats.

The grizzly bear was listed as threatened in 1975. It was originally distributed throughout western North America. Today, it is confined to less than 2 percent of its original range and present in only five or six population centers in the contiguous United States. The centers include the Cabinet-Yaak and Selkirk ecosystems in northeastern Washington, northern Idaho and northwestern Montana. The historical distribution of grizzly bears has been well-documented (IGBC 1987, USDI Fish and Wildlife Service 1993) and previously included all of northern Idaho.

The decline in grizzly bear numbers can be greatly attributed to habitat loss and human-caused mortality, either directly or indirectly (USDI Fish and Wildlife Service 1993). Controlling motorized access is one of the most important tools in managing for grizzly bear recovery. The grizzly bear recovery plan states that roads likely pose the most imminent threat to grizzly bears and recommends that road management be given top priority within all recovery zones (USDI Fish and Wildlife Service 1993). By managing motorized access, certain objectives can be achieved including minimizing human/bear interactions and the potential for grizzly bear mortality, and reducing the displacement of bears from important habitats. According to an Interagency Grizzly Bear Committee Taskforce Report (IGBC 1998),

> "Studies regarding the influence of roads on grizzly bear habitat use have provided a range of distances wherein bears appear to show avoidance. Mattson et al. (1987) found that grizzly bears in Yellowstone National Park tended to avoid habitat within 500 meters (.31 miles) of roads during spring and summer. Research in southeastern British Columbia found that grizzly bears used the area within 100 meters (.06 miles) of roads less than expected on the basis of availability (McLellan and Shackleton 1988). Aune and Kasworm (1989) reported less than expected use of habitat within 200 meters (.12 miles) of roads during spring, 100 meters (.06 miles) during summer and 400 meters (.25 miles) during autumn on the East Front study area of north central Montana. A study of road influences on grizzly bears in the Cabinet Mountains of northwest Montana indicated less than expected use within 914 meters (.57 miles) of roads with nonsignificant seasonal variation (Kasworm and Manley 1990). Given this range in the zones of less than expected use (100 to 914 meters), the distance of .31 miles or 500 meters has been recommended."

The Amended Biological Opinion for the Continued Implementation of the Idaho Panhandle National Forests Land and Resource Management Plan (from here forward referenced as the "2001 Biological Opinion"; USDI Fish and Wildlife Service 2001), provided a strategy for minimizing these risks by setting uniform standards for open motorized road density (OMRD), total motorized road density (TMRD) and core habitat[1] within each bear management unit. In 2002, the IPNF produced a forest plan amendment regarding access management within BMUs that revised the standards for core, OMRD and TMRD to implement BMU-specific standards (USDA Forest Service 2002). Based on the specific characteristics of each BMU, in most cases, these standards set a higher standard than those required by the 2001 Biological Opinion. However, due to litigation, the 2002 Forest Plan Motorized Access Amendment is no longer in place.

The IPNF is currently working on a Supplemental Forest Plan Motorized Access Amendment and after its completion, along with the subsequent Biological Opinion from the Fish and Wildlife Service, the standards are expected to be the same, if not more stringent, than those required by the 2002 Forest Plan Motorized Access Amendment. Therefore, while the Forest Service is currently only required to meet the BMU standards of the 2001 Biological Opinion, the IPNF will continue to work toward meeting the standards contained in the 2002 Forest Plan Motorized Access Amendment and the Draft Supplemental Forest Plan Motorized Access Amendment because it affords greater protection for grizzly bears than the standards and guidelines set by previous documents. In addition, it will trend the affected BMUs towards compliance with the likely minimum standards that will be in place upon completion of the Final Supplemental Forest Plan Motorized Access Amendment and associated Biological Opinion.

The BMUs within the project area will also be evaluated with respect to the original Forest Plan standards for grizzly bear security[2]. Questions over the effectiveness of using security as a tool

[1] Core habitat is areas of high quality, secure habitat within a BMU that contains no motorized travel routes or high use non-motorized trails during the non-denning season and is a minimum of 0.3 miles (500 meters) from a drivable road. Core habitat may contain roads that are impassable due to vegetation or constructed barriers. Core habitat should remain in place for a minimum of 10 years and should represent the full range of seasonal habitats available within the BMU (IGBC 1998, USDA Forest Service 2002).

[2] Security is a measure of habitat effectiveness at a given point in time within a BMU calculated by establishing buffers around open roads and other activities such as timber harvesting. The width of the

for determining the ability of habitat to support grizzly bears led to the development of the Forest Plan Motorized Access Amendment. Consequently, the security analysis alone may not accurately depict impacts to grizzly bear, so the grizzly bear analysis for this project will include the effect of the alternatives on grizzly bears with respect to the standards and guidelines contained in the 2001 Biological Opinion, the 2002 Forest Plan Motorized Access Amendment and Draft Supplemental Forest Plan Motorized Access Amendment, as well as the original Forest Plan.

Existing Condition

The majority of the project area and all of the proposed activities are within either the Scotchman or North Lightning BMUs. About 49 percent of the project area is in the Scotchman BMU and approximately 47 percent is in the North Lightning BMU (see Figure 2). The Scotchman BMU is comprised of 61,612 acres containing 39,053 acres of core habitat and the North Lightning BMU is 65,216 acres in size with 40,746 acres of core habitat. Each BMU is designed to possess all of the habitat components necessary to support grizzly bears throughout the year by including habitats typically used by bears during all four seasons. The Lightning Creek drainage encompasses a wide variety of habitat types, aspects and elevations. Consequently, the suitability of the drainage as grizzly bear habitat varies from area to area and from season to season. See the wildlife project file for maps illustrating the grizzly bear seasonal habitat designations for the North Lightning and Scotchman BMUs.

Per the 2001 Biological Opinion and the Draft Supplemental Forest Plan Motorized Access Amendment, the existing conditions of the total and open motorized road densities and core habitat were calculated for the BMUs potentially affected by the proposed action. The comparisons of the existing conditions with respect to the established standards are displayed in Table 4. Per the Forest Plan security standard of striving for 70 square miles of security within each BMU, the existing condition of the Scotchman and North Lightning BMUs during the 2008 active bear season or “bear year” (April 1 to November 15) was calculated. The comparison of the existing conditions with respect to the Forest Plan security standard is displayed in Table 5.

Based on the best available information, grizzly bear density in the Cabinet-Yaak ecosystem is currently relatively low at about 30 to 40 individuals over a 2,600 square mile recovery zone (USDI Fish and Wildlife Service 2008b). There are only sporadic documented sightings or signs of grizzly bear activity (e.g., prints) in the Idaho portion of the ecosystem. Within the entire Scotchman BMU, there has been one documented sighting in the past 10 years, which is comprised of a sow with a yearling in the West Fork Blue Creek drainage in 2003. Within the North Lightning BMU, there have been two documented sightings within the past 10 years; one sighting of a sow with young in the Kirby Creek drainage and one lone bear near Lake Darling.

In addition to the previously documented sightings, two grizzly bears that were radio collared in Montana, were tracked from the air in 2006 and 2007, and had documented locations within both the Scotchman and North Lightning BMUs. Both of these bears have spent the majority of their time in Montana, outside of the Lightning Creek drainage, but both have utilized the eastern edge of the drainage, particularly in the East Fork Peak, Upper Rattle Creek, and Moose Lake areas. The radio collar on one of these bears quit transmitting in the fall of 2007, so it is unknown if that bear is continuing to periodically use the Lightning Creek drainage.

---

buffer depends on the type of activity, but is ¼ of a mile for open roads and ½ mile for helicopter logging (Christensen and Madel 1982).

Table 4. Existing condition of open and total motorized road density and core in the Scotchman and North Lightning BMUs compared to standards

	Open Motorized Road Density (OMRD)			
Bear Management Unit	**2001 FWS Biological Opinion Standard (Maximum Percent)**	**Draft Supplemental Forest Plan Motorized Access Amendment Standard (Maximum Percent)**	**Pre-Flood Condition**	**2008 Existing Condition**
Scotchman	33%	35%	35%	35%
North Lightning	33%	35%	40%	35%

	Total Motorized Road Density (TMRD)			
Bear Management Unit	**2001 FWS Biological Opinion Standard (Maximum Percent)**	**Draft Supplemental Forest Plan Motorized Access Amendment Standard (Maximum Percent)**	**Pre-Flood Condition**	**2008 Existing Condition**
Scotchman	26%	26%	26%	26%
North Lightning	26%	26%	21%	19%

	Core			
Bear Management Unit	**2001 FWS Biological Opinion Standard (Minimum Percent)**	**Draft Supplemental Forest Plan Motorized Access Amendment Standard (Minimum Percent)**	**Pre-Flood Condition**	**2008 Existing Condition**
Scotchman	55%	62%	63%	63%
North Lightning	55%	61%	61%	63%

Table 5. Condition of security (square miles) in the Scotchman and North Lightning BMUs compared to Forest Plan standard

Bear Management Unit	Entire BMU (square miles)	Forest Plan Security Standard (square miles)	Pre-Flood Condition	2008 Existing Condition (square miles)
Scotchman	96	70	67	67
North Lightning	102	70	71	74

Environmental Consequences

Methodology

The 2001 Biological Opinion (USDI Fish and Wildlife Service 2001) set standards for each bear management unit with regards to open motorized road densities (OMRD), total motorized road densities (TMRD) and core habitat, in order to maintain the unit in a condition that promotes viability of the grizzly bear population. It is assumed that if each BMU were maintained in a condition promoting viability of the species, then the recovery area, which is the total of all the bear management units, would also promote viability (USDA Forest Service 1982). Similarly, the Forest Plan set a standard for security that strives toward providing habitat to support a recovered grizzly bear population (USDA Forest Service 1987).

The potential effects on grizzly bears were determined by calculating changes in the open and total motorized road densities within the affected BMUs, and the associated reduction or impacts to grizzly bear core habitat. Also, temporary changes in security (e.g., disturbance and displacement) that would result from implementation of the alternatives were analyzed based on the intensity, seasonality, and duration of project activities. The habitat characteristics of the project area were determined by evaluating the vegetative structure and composition, topography and elevation to assess the likely temporal and spatial use of the area by grizzly bear (see project file – Wildlife).

As mentioned above, grizzly bear numbers within the Scotchman and North Lightning BMU are relatively low. The North Lightning BMU has had three documented occurrences grizzly bears over the last 10 years and the Scotchman BMU has had only two. Consequently, the likelihood of conflicts between grizzly bears and project activities is lower for all alternatives than in ecosystems with a higher density of grizzly bears.

Direct, Indirect and Cumulative Effects of Alternative 1

This alternative would have no impacts on grizzly bear or their habitat because there would be no new management activities within the project area such as road decommissioning, road reconstruction and bridge removal and construction. Consequently, there would also be no disturbance or displacement of grizzly bears during management activities because there would be no use of mechanized equipment, explosives or helicopters.

Alternative 1 does represent about a 7 mile decrease in drivable miles of roads and trails when compared to the pre-flood road condition. This change translates to an increase in the amount of core habitat and a decrease in both total and open motorized road densities in the North Lightning BMU when compared to the pre-flood condition. As a result, the existing condition has increased the security of grizzly bear habitat within the project area since the 2006 flood.

Because there would be no road decommissioning or conversion of roads and motorized trails to non-motorized trails under this alternative, there would be no additional decrease in total motorized or open motorized road densities or increase in grizzly bear core habitat or security within the North Lightning or Scotchman BMU.

Since Alternative 1 would have no impact on grizzly bear or their habitat, there is no need to consider the impacts from a cumulative effects standpoint because this alternative would not have an additional impact on grizzly bears.

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Most of the type of project activities that have the potential to impact grizzly bears would be the same under each of the action alternatives. These activities include the use of mechanized equipment (e.g., excavators, chainsaws), explosives, and helicopters for tasks such as road decommissioning, road maintenance, culvert replacement and removal and the associated activities. However, the extent and location of these activities varies between alternatives based on the desired access management for a particular road segment after project implementation. A few key differences between the alternatives from a grizzly bear analysis standpoint are that Forest Roads 1030, the majority of 1184, more of Forest Road 473 and the Lake Darling trail would be converted to non-motorized trails in Alternatives 4A and 4B. Chapter 2 of the EA contains a detailed description and comparison of the specific actions to be taken under each alternative. The maps in Appendix D of the EA also illustrate the differences in the extent of the proposed activities under each alternative.

There would be no new road construction as part of the project activities other than two short reroutes of Forest Road 419 around flood damage. However, Forest Road 1054, which is currently a barriered road, would be converted to a restricted road during project implementation to allow for the acquisition and hauling of rock from an existing quarry site to be used for road reconstruction and maintenance purposes. This road would remain closed to the public during project implementation and would be decommissioned following its use.

To avoid possible displacement of bears during the spring season (April 1 through June 15) when grizzly bears are most likely to be present, project activities within core habitat designated as spring habitat would take place outside of this time period (see Design Features – Grizzly Bear Protection).

Due to the large area to be impacted by project activities within the North Lightning and Scotchman BMUs, there is a need to stagger activities both temporally and spatially from a contracting standpoint and a desire to not have disturbances occurring throughout the entire Lightning Creek drainage at the same time. Therefore, the project is designed to be implemented in a series of steps (see Design Features – Grizzly Bear Protection for a more detailed description). This would substantially limit the impact to core habitat and security at any given point in time.

This design feature would limit project activities to smaller geographic zones based on slightly modified subwatershed boundaries (see Figure 4). To allow for secure displacement habitat adjacent to where project activities are being conducted, the project design stipulates that project activities requiring the use of motorized equipment (e.g., excavators, chainsaws, helicopters) or explosives within core habitat would only take place in one of the geographic zones per year (see Design Features – Grizzly Bear Protection). This decreases the amount of disturbance to grizzly bears across the landscape and retains the ability of adjacent subwatersheds to support grizzly bears that could potentially be displaced from areas with active project activities. It is important that areas to be maintained as secure habitat are in the vicinity of disturbance activities that could result in displacement, in order for the habitat to benefit potentially displaced grizzly bears (Christensen and Madel 1982). Because of the low density of grizzly bears within the Cabinet-Yaak, if a grizzly bear is displaced by project activities, it is far more likely to be able to find adequate displacement habitat nearby that is not occupied by another grizzly bear (USDI Fish and Wildlife Service 2006). See the section on displacement for a more detailed discussion on the potential displacement on grizzly bears. Based on this design feature, the implementation of the project activities under any of the action alternatives would take approximately 6 years to

complete. The number of days to complete project work in each subdrainage for each year of the project would range from an estimated 30 days in the Quartz Creek subdrainage to 120 days for the work on Forest Road 419 along the main stem of Lightning Creek, including the construction of a bridge over East Fork Creek (see Table 6). None of the proposed activities on Forest Road 419 along the main stem of Lightning Creek would occur within core habitat.

Table 6. Estimated number of days to complete work in each subdrainage.

Subdrainage	Year of Project	Estimated Number of Days to Complete Work
Main Lightning Creek	1	120*
Porcupine Creek	1	60*
Rattle Creek	2	100
East Fork Creek	3	50
Wellington Creek	4	40
Middle Lightning Creek	5	50
Quartz Creek)	6	30

*The work to be completed in Main Lightning Creek and Porcupine Creek during the first year of the project would be done concurrently.

The order in which the subdrainages were placed was determined largely on the existing condition of the subdrainages with respect to the aquatic resource. For example, consideration of whether there is still an existing increased risk of erosion or landslides within a particular subdrainage was a key factor in determining the order. Another factor that played a role in determining the order is that multiple funding sources are contributing to the implementation of this project and the availability of funds from each source varies. Some agencies supplying funds have provided a timeline under which they would like to see the portion of the project they are funding completed. Also taken into consideration was the desire to move across the landscape in a somewhat systematic approach to reduce the disturbance to wildlife.

Project activities within core habitat would consist of decommissioning approximately 46 miles of roads that were previously barriered, some of which were originally closed for the purpose of creating additional secure habitat for grizzly bears. Most of these roads have become brushed in and no longer represent drivable road prisms. Road decommissioning would entail conducting activities such as removing culverts, installing waterbars and the full or partial recontouring of the road prism to render it hydrologically inert. To accomplish this would require the use of ground-based mechanized equipment (e.g., excavators), explosives, and/or helicopters depending on the site-specific variables such as topography, microsite characteristics (e.g., amount of fill, substrate) and distance from a drivable road. Almost all ground-based activities within core habitat would take place on existing road prisms, although some would occur on prisms that are currently brushed in and impassable.

Each road and culvert site would be evaluated on a case-by case basis to determine the appropriate method (explosives vs. heavy equipment) to meet the objective of road decommissioning work, while providing for the best protection to forest resources such as wildlife and aquatic habitat.

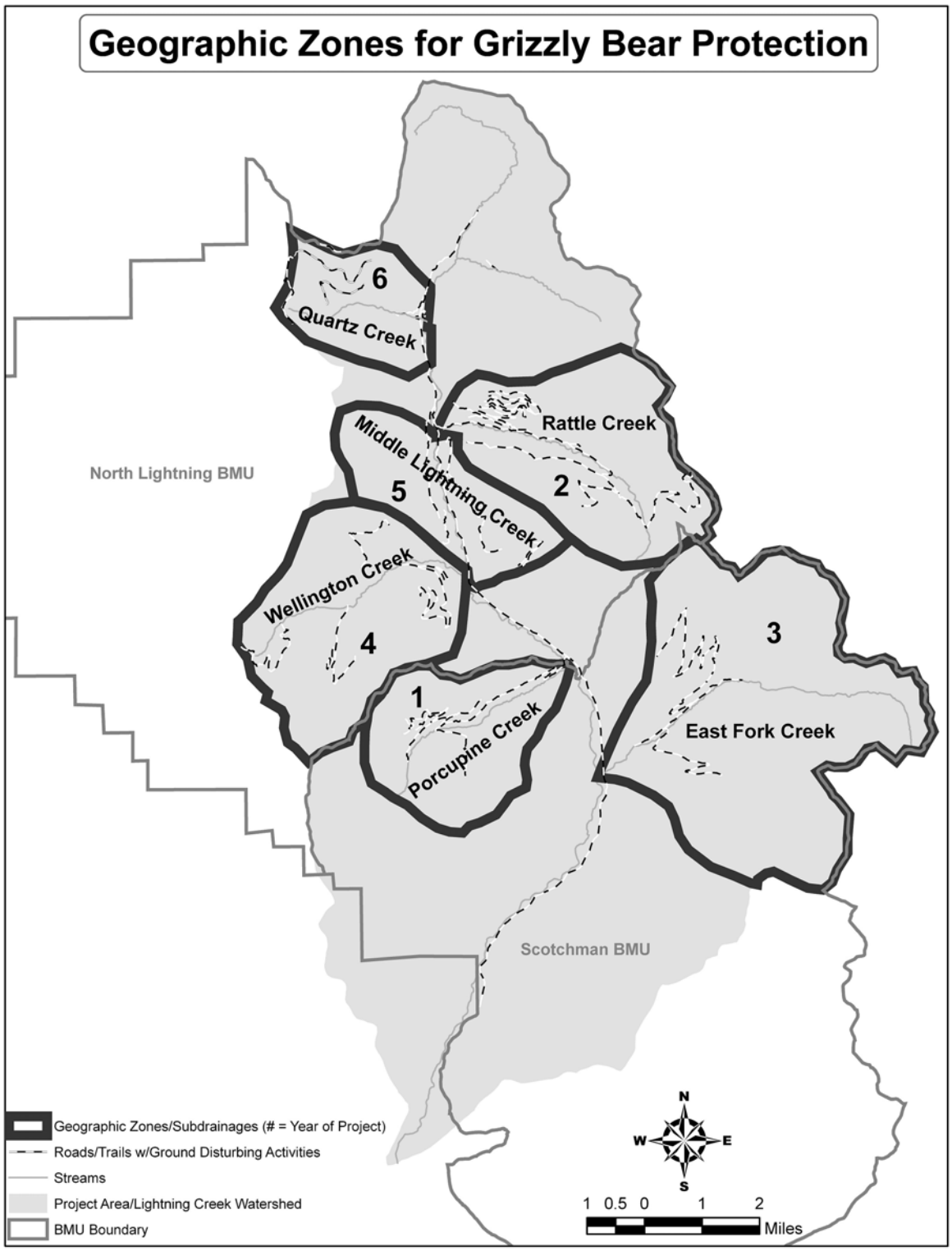

Figure 4. Geographic zones for grizzly bear protection (see Design Features for the specific design criteria regarding these zones)

Use of Explosives vs. Heavy Equipment - As an alternative to using heavy equipment, explosives are proposed for use on some currently impassable roads to facilitate the removal of culverts during road decommissioning without having to remake the road prism drivable by heavy equipment. The use of explosives and the noise that results represents a potential source of disturbance to grizzly bears. Explosives would also be used at one location along Forest Road 419 to obtain rock for use in the project.

According to a review of research on the effects of noise on wildlife conducted by Larkin (1996), the noise from military and civilian blasts had no effects on wildlife beyond what is typically documented from other human-generated noises. McLellan and Shackleton (1989) found no significant difference in the habitat use of grizzly bears in an area of seismic exploration that included the use of explosives when compared to the same area before seismic activity. The use of explosives would be expected to have a range of impacts on grizzly bears spanning from no discernable reaction to the bear being displaced from the area. As with any source of disturbance, many factors can influence their reaction, including distance from the noise, noise level, topography, vegetative cover where the bear is located, and previous exposure to human noises.

Several roads within the project area proposed for decommissioning are currently impassable by motorized vehicles because they have become grown in with brush and small trees. In this condition, these roads are considered part of the core habitat because the risk of human-caused mortality and disturbance is substantially lower than areas associated with open roads. Where explosives are not practical, the roads would have to be re-opened to some degree to allow heavy machinery to be driven to the culvert sites. This would entail removing the closure device at the beginning of the road, clearing the majority of vegetation in the road prism, and transporting the machinery to the work site. Upon completion of the decommissioning activities, a closure device would be placed at the beginning of the road and the first line of sight distance would be recontoured (see Design Features – Road Decommissioning). However, the newly cleared road prism would cause formerly impassable roads to become more susceptible to new unauthorized, motorized use.

One benefit of using explosives on impassable roads is that it reduces the amount of time high-intensity activities occur. The use of heavy machinery would take longer than explosives to accomplish the same objectives. Besides clearing the road of existing barriers and vegetation, the equipment would have to travel in and out the area at a slow pace and spend longer at each site where a culvert would be removed, which would spread the noise disturbance and human presence out over a longer period of time; possibly days.

In contrast, the use of explosives for road-decommissioning-related work does not require as much mechanized preparation work (e.g. no opening up impassable roads) as the use of heavy equipment does, and the removal of each culvert would be completed in a shorter amount of time. Once at the site, a drill may be used to auger holes for the explosives, but the potential for disturbance to bears is much less than with heavy equipment. Although the blast itself represents a disturbance to wildlife, it is a short-term noise disturbance and there is no associated use of heavy equipment, except in the limited instances where helicopters may be used to transport culverts out of remote areas. The possible use of helicopters will be discussed and analyzed in a later section.

Although each use of explosives is short in duration, the decibel level associated with each detonation would be expected to cause disturbance to wildlife in the area. Based on documented findings from previous uses of explosives, methods would be used to reduce the noise level of explosive detonations as low as possible while still effectively accomplishing the particular

objectives as each site (see Design Features – Reducing Disturbance from Explosives). These measures, which have been shown to reduce noise level, include methods such as daily timing restrictions and placement of the explosives, thereby affecting a smaller area and reducing the potential for disturbance of wildlife in the vicinity of the blasting (USDA Forest Service, unpublished report).

Using these design features, the noise level of the explosives used would be expected to peak at approximately 91 decibels (db) of a low to mid-frequency sound, which is comparable to a brief exposure to heavy traffic or a lawn mower. The sound of the blast reaches full volume instantaneously, maintains volume for about 7 seconds, and then is gone approximately 16 seconds after detonation. The distance that the sound travels is largely determined by the topography, degree of vegetation, weather (foggy days carry sound farther than dry, clear days) and existing ambient noise levels. For comparative purposes, examples of ambient forest background noises include major rivers (88 db), creeks (59 db), and general forest ambient noises (48-59 db; lodgepole/fir forest on a dry summer day). Examples of the average decibel level of other sounds include OHVs (96 db), lawn mowers (90 db), heavy traffic (85 db), chainsaw (100 db), gun blast (140 db) and thunder about (120 db; Martin et al. 2005, Galen Carol Audio 2007, Heidorn 1999). Each 10-decibel increase in noise level is perceived as doubling in loudness (USDI Fish and Wildlife Service 2006).

After detonation of a particular site, crews using only non-mechanized hand tools would complete the recontouring of the stream channels. This would also substantially reduce the potential for disturbance, particularly on impassable roads, because hand crews would replace mechanized equipment. To further reduce potential impacts to grizzly bears and other wildlife when using explosives, equipment and supplies would be packed in by personnel or livestock to avoid having to use motorized vehicles, particularly on roads that are currently impassable (see Design Features – Wildlife Habitat Security Measures). This would considerably reduce the potential for disturbance in the areas where explosives are used.

The use of explosives at culvert sites represents a short-term point-source disturbance, but does not necessitate a reduction or loss of core because it does not pose the same long-term displacement and mortality risks to grizzly bears associated with permanent landscape features such as roads. See the section on helicopter use for a more detailed discussion on short-term point-source disturbances.

Although the final method for culvert removal would be determined during project implementation, the number of sites where explosives are expected to be used would be between 7 and 42 culverts under all action alternatives. One reason for the range in the number of culverts to be removed using explosives is that some of the currently impassable roads may have culverts that were washed out during the 2006 flood event and under those circumstances, explosives would likely not be needed. Also, on Forest Road 473UB four culverts would likely be removed using explosives. However, if the condition of the road warrants that a large portion of the road prism would need to be recontoured to protect the aquatic resource, then explosives would not be used and the culverts would be removed using heavy equipment.

Under ideal conditions (e.g., flat ground, short distance between culverts, good weather), it is possible to use explosives on a maximum of about five sites per day. However, based on the location of the culverts to be blasted and the design features in place to limit noise and disturbance, it is expected that only two or three explosions would be possible per day, with some of the more remote culverts requiring a single day for each one. The number of culverts within

each subdrainage that would potentially be removed using explosives ranges from 0 in the Quartz Creek and Porcupine Creek subdrainages, to 18 in the Rattle Creek subdrainage.

To determine the area potentially impacted by the use of explosives, the zone of influence of potential disturbance for each site will be analyzed as 800 meters (0.5 mile). The actual on-the-ground zone of influence would vary from site to site based on the topography, vegetation present, weather conditions, and other factors. Ten of the sites identified for potential explosives use are not within core habitat, but would temporarily impact core habitat. Using an 800-meter zone of influence, the action alternatives would temporarily impact with explosives approximately 3,475 acres of core habitat in the North Lightning BMU and 1,057 acres in the Scotchman BMU spread out over a six-year period. Due to the project being conducted in a series of steps with activities only occurring in core habitat within one subdrainage per year, the number of acres of core habitat potentially affected by explosives during any one active bear season ranges from approximately 685 acres to 1,425 acres (see Table 7). Since the Quartz Creek and Porcupine Creek subdrainages would not have explosives used within them, there would be two years during project implementation where no temporary disturbance to core habitat from the use of explosives would occur. It is also important to note that even within a particular subdrainage, not all of the acres would be impacted simultaneously and the maximum amount of core habitat affected by explosives at any one particular site would be approximately 497 acres.

For all of the action alternatives, culvert removal using mechanized equipment would occur on 13 different road prisms that are currently barriered or impassable. Consequently, these old road prisms are within core habitat. To reach these culverts and to recontour the road prisms to make them hydrologically inert, approximately 17 miles of barriered or impassable roads would have to be reopened. Using a zone of influence of 500 meters (0.31 mile) for the use of mechanized equipment along these roads, the action alternatives would temporarily impact approximately 2,648 acres of core habitat in the North Lightning BMU and 536 acres in the Scotchman BMU. Such as is the case with the use of explosives, not all of these acres would be impacted in the same year and the amount of core habitat impacted during any one bear year ranges from approximately 43 acres to 1,125 acres (see Table 7). And again not all of the acres that would be potentially impacted in a given year would be impacted simultaneously since project activities would move from site to site along road prisms.

Two wooden culverts would be removed using chainsaws on Forest Road 642UA, which is currently impassable. Using a zone of influence of 500 meters (0.31 mile) for the chainsaw use, the acres of core habitat potentially affected by these two sites is approximately 130 acres within the Scotchman BMU (see Table 7).

Use of Helicopters - Helicopters may be used to assist in accomplishing road decommissioning tasks in remote locations. If helicopters are used at all, they would only be used to fly out removed culverts or transport small loads of equipment (e.g., hand tools, explosives) to remote sites on currently impassable roads. In some instances, use of helicopters may be preferable to clearing impassable roads and driving in mechanized equipment. However, based on preliminary results from blasting on the IPNF and multiple uses on the Tongass National Forest in Alaska, it appears that in most locations where explosives would be used, if not all, the pieces of metal remaining after detonation would be small enough to be packed out by personnel or livestock. Consequently, the use of helicopters would likely be minimal for this project and may be eliminated altogether. However, in order to disclose potential impacts to wildlife, particularly grizzly bears, the use of helicopters has been analyzed.

Table 7. Core temporarily impacted by project activities (acres) and percent of the core block impacted

		Activities Temporarily Impacting Core Habitat				
Subdrainage by Core Block (BMU)	**Pre-Flood Size of Core Block* (acres)**	**Explosives** (acres)**	**Heavy Equipment (acres)**	**Chainsaw (acres)**	**Total*** (acres)**	**Percent of Core Block Impacted**
East Fork Creek (SM)	95,883	1,057	158	0	1,159	1%
Rattle Creek – north of FR 473 (NL)	88,061	714	0	0	714	<1%
Rattle Creek – south of FR 473 (NL)	95,883	651	435	0	1,086	1%
Porcupine Creek (SM)	16,397	0	378	130	508	3%
Wellington Creek – north of FR 489 (NL)	11,505	0	460	0	460	4%
Wellington Creek – south of FR 489 (NL)	16,397	1,425	585	0	2,010	12%
Middle Lightning Creek – west of FR 419 (NL)	11,505	0	284	0	284	2%
Middle Lightning Creek – east of FR 419 (NL)	95,883	685	841	0	1,210	1%
Quartz Creek (NL)	11,505	0	43	0	43	<1%
Total	--	4,532	3,184	130	7,474	--

SM = Scotchman NL = North Lightning

*The size of the core block for this analysis was defined as a contiguous block of core taking into account only core habitat within the BMU that the subdrainage occurs and immediately adjacent BMUs when that core is contiguous. Some of the core blocks would be impacted during activities in more than one year, and some of the activities within a subdrainage would impact more than one core block. See the wildlife project file for a map displaying the core blocks.

**The acres shown for the use of explosives are the maximum acres temporarily impacted if all 42 sites identified as possible culverts to remove with explosives were in fact removed using explosives.

***The acres of core potentially impacted by the separate activities do not add up to the total acres of core habitat potentially impacted because in some cases more than one activity affects the same acres of core. Core potentially impacted by helicopter use is not included in these numbers.

Helicopter flights in grizzly bear habitat represent a potential source of disturbance to grizzly bears. Potential impacts to grizzly bears range from behavioral changes, such as displacement to areas away from the disturbance, to physiological changes, such as increased heart rates and stress (Larkin 1996, Reynolds et al. 1986). There is wide variability in the reaction of grizzly bears to aircraft disturbances (IGBC 1987). Factors influencing how a particular bear may react to aircraft include the availability of escape cover, the topography of the landscape, the degree of habituation to aircraft, and the type, noise level, altitude above ground, flight path and distance away from the aircraft (USDI National Park Service 2003).

According to the Interagency Grizzly Bear Committee (IGBC 1998), grizzly bear core habitat is primarily defined in terms of roads and motorized trails. Although the use of helicopters within core habitat represents a potential disturbance or impact to grizzly bears and their habitat, it does not represent a reduction or loss of core because it is a temporary intrusion and does not involve the motorized use of restricted roads or the construction of new roads. Helicopters do not pose the same long-term displacement effects and increased mortality risk to grizzly bears that are associated with permanent landscape features such as roads. The use of helicopters is transitory and does not bring additional human use and public access into grizzly bear habitat, whereas roads are generally longer term or permanent features on the landscape that do facilitate human access. However, helicopter use may result in temporary impacts to grizzly bear core habitat because grizzly bears may be displaced from the area during the time that helicopter operations are ongoing and for some time after. Consequently, while helicopter use within grizzly bear core habitat would not require a deduction in the amount of core habitat, the potential temporary disturbance and displacement effects to grizzly bears has been considered and opportunities to reduce the impact have been incorporated.

To reduce potential impacts to grizzly bears from the use of helicopters, several mitigation measures would be applied regarding their use (see Design Features – Helicopter Use). If helicopters are used at all, their use would be kept to a minimum and only for tasks requiring their use or when they likely poses a lower level of disturbance to bears than alternative methods of accomplishing the same tasks. If helicopters are used to fly out removed culverts, flights would be coordinated to fly out as many culverts at a time as possible to limit the number of flights.

Whenever possible, helicopters would use a flight path directly over open roads. Open roads are an existing source of disturbance for grizzly bears with a zone of influence from these roads extending out 500 meters to each side of the road (IGBC 1998). The zone of influence for helicopters varies in the literature from 500 meters to over 3,000 meters from the flight path or to the nearest ridgeline (Christensen and Madel 1982, USDA Forest Service et al. 1988, USDI Park Service 2003). Through past projects and ongoing discussions with the Fish and Wildlife Service, the zone of influence for the use of helicopters is considered 800 meters from the flight path. By requiring flight paths to remain over open roads when possible, it lessens the overall likelihood of disturbance to grizzly bears because there would be overlap between the zones of influence of the road and flight path instead of creating two distinct zones of influence that would potentially affect more habitat.

The height above ground level at which aircraft fly can influence how much of an effect the aircraft has on wildlife. The height recommended in literature for reducing or eliminating disturbance to wildlife varies from 150 meters to 700 meters above ground level (Reynolds et al. 1986, Efroymson et al. 2000, USDI National Park Service 2003, Klein 1974). While recommendations vary, ongoing discussions between the Forest Service and Fish and Wildlife Service have considered 500 meters above ground level the prudent height at which the intensity of aircraft disturbance is diminished to a point less likely to cause a measurable impact to grizzly bears. Consequently, whenever it is feasible, taking into account flight safety, topography, necessary landings, sling loading, and other pertinent factors, helicopter flights conducted as part of project activities would occur at a minimum of 500 meters above ground level.

Human activity near den sites, particularly from helicopters, may cause bears to prematurely leave the area of a den site or avoid the area for future denning, if human activity persists (Schoen et al. 1986). Grizzly bears prefer denning areas that are isolated from human activity and development. Grizzly bear females with young tend to stay in the vicinity of the den site for

around 3 weeks after emerging from the den. Impacts from disturbance appear to be at their highest during den emergence (Schoen et al. 1986). Kasworm et al. (2007) reported that in the Cabinet-Yaak ecosystem 95 percent of grizzly bears emerged from their dens after April 1, with 82 percent emerging during the month of April. In order to reduce or eliminate the disturbance from helicopters to grizzly bears during the den emergence period, there would be no helicopter flights for project purposes from April 1 to May 15 (see Design Features – Helicopter Use).

To further reduce the potential for disturbance and displacement of grizzly bears, bears observed from helicopters would not be approached and the flight path would be altered to either gain an altitude of at least 500 meters above ground level or to fly around the bear by at least one-half mile. Also, all helicopter landing sites within the North Lightning or Scotchman BMU would be placed along an open road so the landing would be within the existing area of disturbance associated with the road.

Since determining where helicopters might be used is a difficult if not impossible task, it is not possible to determine the exact amount of acres of core habitat that would be temporarily impacted by the use of helicopters. Also, as discussed previously, the use of helicopters would be kept to a minimum or eliminated altogether. To attempt to quantify the amount of core habitat that could potentially be temporarily impacted by the use of helicopters, five possible flight lines were mapped from the most remote culverts (at least one per subdrainage where explosives would be used) to the closest major landing along an open road. The flight lines chosen are intended to show the maximum amount of acres potentially impacted; however, this analysis likely overestimates the acres impacted since it does not take into consideration landings that may be closer to the culverts or culverts closer to open roads. When determining the estimated acres of core that would potentially be temporarily impacted by helicopters, all of the design features related to helicopter use were followed (e.g., staying above open roads when possible). The acres of core potentially impacted were then calculated for each hypothetical flight path. The amount of acres temporarily impacted by helicopters using these flight lines ranges from approximately 541 acres to 1,218 acres with an average of 756 acres. Although these impacts to core from helicopters are in addition to the acres illustrated in Table 7, all of these acres are not shown as added in because there is substantial overlap in the actual acres of core impacted from flight lines, the use of explosives, and other project activities. And, as mentioned previously, the use of helicopters is likely to be minimal, if they are used at all.

Displacement - Grizzly bear home ranges are large and overlap. With the low number of grizzly bears in the Cabinet-Yaak ecosystem (about 30 to 40 individuals), it is unlikely that density-induced stresses currently affect adult female grizzly bears within their home ranges (USDI Fish and Wildlife Service 2006). More likely, they have adequate amounts of space and habitat. The lower probability of grizzly bear presence within the Lightning Creek drainage also decreases the probability that displacement would actually occur because bears are less likely to be present. However, if displacement were to occur, the likelihood of a bear being displaced into an occupied territory is low because of the low population density, which decreases the potential for adverse interactions with other grizzly bears.

Displacement behavior in grizzly bears ranges from a change in their habitat use or movement patterns, underusing or avoiding preferred habitats, and other stress-related behaviors (USDI Fish and Wildlife Service 2006). Whether the displacement is short term or long term depends largely on the nature of the disturbance and the consequence to a particular grizzly bear as a result of the displacement (USDI Fish and Wildlife Service 2006). There are currently approximately 40,746 acres of core habitat within the North Lightning BMU. Although project activities would be

spread over a six-year period, if all project activities were to occur simultaneously, they would impact approximately 5,807 acres of core, which would mean that just under 35,000 acres or 86 percent of core habitat within the North Lightning BMU would remain intact with no disturbance from project activities. In reality, no single bear year would receive impacts on more than 2,470 acres of core. Similarly, in the Scotchman BMU, there are currently approximately 39,053 acres of core habitat and if all project activities within this BMU were to occur simultaneously, they would temporarily impact approximately 1,667 acres of core, leaving 37,386 acres or 96 percent of the core habitat within the Scotchman BMU would remain intact with no disturbance from project activities. Once again, in reality, no single bear year would receive temporary impacts on more than 1,159 acres of core.

In addition, there are large blocks of core habitat within the BMUs immediately adjacent to the project area that would provide secure habitat for grizzly bears potentially displaced by project activities. These blocks of core are contiguous with the large blocks of core within the North Lightning and Scotchman BMUs and are located in a remote area of the Cabinet Mountains not in close proximity to human development. As a result, they typically receive little human disturbance. The Grouse BMU, which is to the north of the North Lightning BMU, has a core block of approximately 21,643 acres that is contiguous with a core block of approximately 9,537 acres in the northern portion of the North Lighting BMU. There are also large blocks of contiguous core on the Kootenai National Forest to the east in BMU 9 and BMU 3 of approximately 48,853 acres and 8,028 acres respectively, which are contiguous with the same North Lighting core block. All together, this block of core is approximately 88,061 acres in size and approximately 714 acres or less than 1 percent of the core block would be potentially impacted by project activities (see Table 7). Also on the Kootenai National Forest, BMU 4 and a portion of BMU 3 have large blocks of core contiguous with the large block of core in the eastern portion of the Scotchman BMU, which is approximately 33,430 acres. The BMU 4 and BMU 3 blocks of core are approximately 29,811 acres and 32,642 acres respectively. All together, this block of core is approximately 95,883 acres in size and approximately 3455 acres or 4 percent of the core block would be potentially impacted by project activities (see Table 7). See the wildlife project file for a map displaying core habitat for the BMUs in and adjacent to the project area.

Based on the grizzly bear habitat map for the Scotchman and North Lightning BMU, the areas remaining undisturbed by project activities that would be available as displacement habitat contain all of the seasonal habitats used by grizzly bears distributed throughout the BMUs (see project file – Wildlife). The core habitat located adjacent to the project area on the Kootenai National Forest also contains all of grizzly bear seasonal habitats (personal communication, Glen Gill and Steve Johnson 2008).

In addition, because the design features eliminate project activities in spring bear habitat during the spring season, bears would not be “pushed” by project activities toward developed areas that contain a higher concentration of spring habitat. In contrast, when project activities would be occurring, grizzly bears are more likely to be moving into habitat at higher elevations, which are further removed from existing human disturbance and less likely to be in close proximity to ongoing project activities. Also, project activities are not occurring within close proximity to developed areas, which reduces the risk even further that grizzly bears will be displaced into an area with a higher risk of mortality. Grizzly bears know the landscape within their home range and are keenly aware of the location of areas such as human disturbance and development along the front country. Based on that knowledge, if a grizzly bear were to be temporarily displaced by project activities, it is more likely to move to an area that is further away from existing human

disturbance (e.g. residential development) into more secure habitat, which again would decrease the risk of exposure to humans and reduce the mortality risk.

Therefore, although displacement of grizzly bears is a possibility during project implementation, it is not expected that the project would cause the displacement of grizzly bears into more developed areas, lead to a substantial increase in the exposure of grizzly bears to humans or substantially increase their risk of mortality, based on the combination of all of the factors discussed above.

Direct and Indirect Effects Common to Alternative 4A and 4B

The type of project activities (e.g., the use of explosives and mechanized equipment) that have the potential to impact grizzly bears would be the same as described above. Project activities that have the potential to impact grizzly bears that would only occur under these alternatives include:

- Converting Trail 52 (Lake Darling Trail) to a nonmotorized trail
- Converting Forest Roads 1184 and 1030 to nonmotorized trails
- Converting a larger portion of Forest Road 473 to a nonmotorized trail

Although there are other differences between Alternatives 4A and 4B, and between them and Alternative 3, the differences are not additional activities, but represent different management options for access after project implementation and have been factored into the analysis accordingly.

Both Alternatives 4A and 4B would convert Trail 52 (Lake Darling) from a motorized trail to a non-motorized trail. This would be expected to be beneficial to many wildlife species, particularly grizzly bear, because it represents habitat in an area that appears to support a variety of wildlife species based on tracks, documented sightings and unconfirmed reports. The conversion of this trail alone to non-motorized would create approximately 765 acres of grizzly bear core habitat.

Under Alternatives 4A and 4B, a portion of Forest Roads 1184, 1030 and 473 would be converted to nonmotorized trails, whereas under Alternative 3 the same road segments would be reconstructed as open roads. The level of work needed and the length of time needed to complete the trail conversion would be substantially less under these alternatives because the roads would not be reconstructed. In addition, the conversion of these road segments to nonmotorized represents an increase in grizzly bear core habitat and security, as well as a decrease in road densities.

Alternative 4B would result in the largest increase in core habitat and the largest decrease in OMRD and TMRD. Therefore, it would be the most beneficial for grizzly bears. Because Alternative 4A proposes mostly the same activities as Alternative 4B, with the exception of Forest Road 2240 becoming a motorized trail instead of being decommissioned in the North Lighting BMU, it is only slightly less of a beneficial impact for grizzly bears than Alternative 4B. In the Scotchman BMU Alternatives 4A and 4B would have no difference in effects. Overall, Alternatives 4A and 4B would be an improvement in core, OMRD and TMRD over both the pre-flood condition and the existing condition (see Table 8).

Alternatives 4A and 4B would also bring both the North Lightning and Scotchman BMUs into compliance with the Draft Supplemental Forest Plan Motorized Access Amendment standards, but OMRD for both BMUs would not be brought into compliance with the 2001 Biological

Opinion standard. Both alternatives would also meet the objective of the Forest Plan security standard by striving toward providing 70 square miles of security habitat within each BMU. Under these alternatives, the North Lightning BMU, which currently contains greater than 70 square miles of security habitat, would have an increase in security. The Scotchman BMU would have an increase in security and continue to strive toward 70 square miles, but would remain below it (see Table 9).

Table 8. Comparison of alternatives to grizzly bear management unit standards for the each affected BMUs. The percent of each standard for each BMU is typically reported by rounding to the nearest whole number. To better illustrate the differences between the alternatives, the numbers have been shown out to the hundredths, with the numbers rounded to whole numbers in parentheses.

North Lightning BMU	% Core	% OMRD	% TMRD
2001 FWS Biological Opinion Standard	55	33	26
Draft Supplemental Forest Plan Motorized Access Amendment Standard	61	35	26
Alternative 1	63.33 (63)	35.37 (35)*	18.71 (19)
Alternative 3	62.22 (62)	36.35 (36)**	19.26 (19)
Alternative 4A	64.67 (65)	34.38 (34)*	17.70 (18)
Alternative 4B	65.30 (65)	33.77 (34)*	16.95 (17)
Scotchman BMU			
2001 FWS Biological Opinion Standard	55	33	26
Draft Supplemental Forest Plan Motorized Access Amendment Standard	62	35	26
Alternative 1	63.40 (63)	34.76 (35)*	26.26 (26)
Alternative 3	63.40 (63)	34.80 (35)*	26.41 (26)
Alternative 4A	66.47 (66)	33.46 (33)	24.68 (25)
Alternative 4B	66.47 (66)	33.46 (33)	24.68 (25)

*Does not meet the 2001 FWS B.O. standards.
**Does not meet the 2001 Biological Opinion or the Draft Supplemental Forest Plan Motorized Access Amendment standard .

Table 9. Comparison of alternatives to Forest Plan grizzly bear habitat security standard (square miles). The amount of square miles of security for each BMU is typically reported by rounded to the nearest whole number. However, to better illustrate the differences between the alternatives, particularly within the North Lightning BMU, the numbers have been shown out to the tenths with the numbers rounded to whole numbers in parentheses.

	Square miles of Scotchman BMU	Square miles of North Lightning BMU
1987 Forest Plan Standard	70	70
Pre-Flood Condition	67	71
Alternative 1	67.2 (67)	73.7 (74)
Alternative 3	67.2 (67)	72.7 (73)
Alternative 4A	67.9 (68)	74.7 (75)
Alternative 4B	67.9 (68)	75.3 (75)

Direct and Indirect Effects of Alternative 3

As stated above, project activities specific to this action alternative include reconstructing Forest Road 1184 and a larger portion of Forest Road 473, and maintaining Forest Road 1030 as a restricted road. The actions needed to accomplish these objectives would require a higher degree of activity and a longer period of time to complete. Consequently, the potential for disturbance under this alternative is greater during project implementation. Additionally, the use of these road segments as drivable road prisms after project implementation retains the risk of disturbance or mortality to grizzly bears associated with drivable roads.

Although Alternative 3 would decrease core habitat and increase OMRD and TMRD over the existing condition, it would represent an increase in core habitat and a decrease in OMRD and TMRD over the pre-flood condition. The result would be an improved condition of grizzly habitat following project implementation. However, this alternative would not bring the North Lightning BMU into compliance with the Draft Supplemental Forest Plan Motorized Access Amendment standard for OMRD (see Table 8).

Alternative 3 would maintain the current level of security within the Scotchman BMU. In the North Lightning BMU, this alternative would increase security over the pre-flood condition. Although this alternative would result in a slight decrease in security over the existing condition within the North Lightning BMU, the amount of security habitat would remain above the 70 square mile standard (see Table 9).

Cumulative Effects Common to Alternatives 3, 4A and 4B

Because the implementation of any of the action alternatives would greatly improve the security of grizzly bear habitat after project implementation, cumulative impacts would be negligible or discountable. The activities discussed below are the past, present and reasonably foreseeable actions identified in the project file that are within the grizzly bear cumulative effects area and are relevant to the grizzly bear cumulative effects analysis. For a brief description of each of these actions see the Cumulative Effects Analysis section.

Supplemental Forest Plan Motorized Access Amendment –The actions that stem from the amendment decision would provide benefits to grizzly bears through road management that is specifically designed to benefit them. The Lightning Creek Restoration project would be an integral part of achieving the BMU standards that will be established by the amendment.

Activities on Other Ownerships – A large part of the southwest portion of the Scotchman BMU and scattered portions of the southwest and northwest boundaries of the North Lightning BMU are owned by private individuals or industry. These lower elevation areas, particularly in the Scotchman BMU, represent the highest concentration of grizzly bear spring habitat, which is a vital component of habitat for grizzly bears. Because of the development of these private lands, its suitability as grizzly bear habitat has been severely limited. Consequently, spring habitat on National Forest lands has become even more critical for grizzly bears as potential spring habitat. Roads located on private lands within the Scotchman BMU and North Lightning BMU have been accounted for in determining the amount of core habitat and the levels of OMRD and TMRD within the BMUs. The increase in core habitat and reduction in OMRD and TMRD as a result of the implementation of the action alternatives would cumulatively help offset the decrease in the suitability of spring habitat for grizzly bears from the ongoing human disturbance on private land.

Hope/Sagle Land Exchange – Of the 925 acres that would become National Forest land, approximately 458 acres are within the Scotchman BMU. Due to the elevation, aspect and

habitat type of this land, and the elimination of the land's potential for residential development should it become National Forest land, the land exchange would enhance grizzly bear spring habitat and security. Therefore, the Hope/Sagle Land Exchange and the implementation of any of the action alternatives would act cumulatively to trend the analysis area towards providing a higher quality and quantity of spring habitat for grizzly bears.

Exploratory Mining in the Lightning Mountain Area – Due to the use of helicopters and heavy machinery in grizzly bear core habitat, this project would represent a short-term impact to grizzly bears within a short distance from the project area. It has not been determined whether the exploratory mining would occur during the implementation of the Lightning Creek Restoration project. If Lightning Creek Restoration activities proposed for the Rattle Creek subdrainage and the exploratory mining were to take place simultaneously, they would temporarily increase the likelihood of disturbance or displacement of grizzly bears. However, because of the low population density, the potential cumulative disturbance and displacement would remain low. In addition, although there would be a temporary impact to core habitat as a result of the exploratory mining, there would be no permanent loss of core habitat and ultimately the Lightning Creek Restoration project would substantially increase core habitat and decrease road densities within the Rattle Creek subdrainage.

Wildfire Suppression – The effects on grizzly bears from fire suppression and any changes to the environmental baseline as a result of them are analyzed and addressed during emergency consultation with the Fish and Wildlife Service. If fire suppression activities such as described previously were to occur within the Lightning Creek drainage, there would potentially be cumulative impacts to grizzly bears depending on the spatial and temporal details of the suppression activities and project activities in relation to one another.

Hunting – Grizzly bear could potentially be taken during hunting activities. The implementation of any of the action alternatives would likely reduce the mortality risk to grizzly bears, particularly during hunting season, because of the decrease in motorized access leading to an increase in secure habitat within the cumulative effects analysis area. Therefore, there would be little to no cumulative effects.

Other activities that may affect grizzly bears within the cumulative effects area include prescribed burning, recreation activities (e.g., berry picking, horseback riding, rock permits, firewood gathering, hiking), road maintenance, helispot maintenance, climatic station maintenance, and the maintenance of communication sites. The potential impact of these activities on grizzly bears would be the short-term displacement or avoidance of the activity by bears, and the degree of impact would vary greatly depending on the duration, intensity, timing, and probability of grizzly bear presence in the area. However, because the implementation of any of the action alternatives would represent an increase in grizzly habitat security within the cumulative effects analysis area when compared to the pre-flood condition, the Lightning Creek Restoration project, when viewed in conjunction with these other activities, would still trend the analysis area toward a higher degree of habitat security for grizzly bears.

All reasonably foreseeable activities described above that may affect grizzly bear or their habitat would be subject to separate analyses and possible consultation with the U.S. Fish and Wildlife Service in accordance with applicable laws and regulations prior to their implementation to avoid adverse effects to grizzly bear.

Conclusion of Effects

Increases in grizzly bear mortality have been linked to increases in roads into bear habitat and the associated increase in public access. Because there would be very little new road construction (the exception being a few short reroutes) under any of the action alternatives, there would be no increase in access onto National Forest lands or into grizzly bear habitat over the pre-flood condition. However, Alternative 3 would represent an increase in access over the existing condition.

The implementation of any of the action alternatives has the potential to have negative impacts on grizzly bears within close proximity during and immediately following project activities due to the possibility of temporary disturbance or displacement. There would be a temporary impact to core habitat and security from project activities, but no reduction in the amount of core, and only a temporary reduction in security. There would be a greater risk of temporary disturbance or displacement of grizzly bears under Alternative 3 than with Alternatives 4A or 4B because the proposed activities would include additional road reconstruction. Following project implementation, and as each subdrainage recovers from the disturbance associated with project activities, the Scotchman and North Lightning BMUs would have a substantial increase in their ability to support grizzly bears under Alternatives 4A and 4B. This increase is largely due to the reduction in miles of drivable roads and the conversion of Trail 52 to nonmotorized, which leads to more secure habitat. Alternative 4B represents the greatest benefit to grizzly bears and their habitat, closely followed by Alternative 4A. Alternative 3 does represent an increase in secure habitat for grizzly bears over the pre-flood condition in the North Lightning BMU, but not to the level achieved by the other action alternatives and not to the required standard.

The implementation of any of the action alternatives, in conjunction with the past actions, ongoing activities and reasonably foreseeable actions would trend the affected BMUs toward more effective grizzly bear habitat due to the increase in core habitat and security, and a decrease in total and motorized road densities. However, there would be a short-term impact to core habitat and security that could potentially displace grizzly bear. Therefore, the implementation of any of the action alternatives is ***likely to adversely affect*** grizzly bears or their habitat during project activities because of the disturbance associated with the project.

Consistency with Forest Plan and Other Regulations

All alternatives are consistent with the Forest Plan direction for grizzly bear to manage the habitat of species listed under the Endangered Species Act (USDA Forest Service 1987, p. II-6). Although there would be a decrease in security during project implementation, upon project completion, the Forest Plan standard of striving for at least 70 square miles of security would be achieved because there would be an increase in security in the North Lightning and Scotchman BMUs. Because the implementation of any of the action alternatives would result in an increase in the amount of grizzly bear core habitat and decreases in OMRD and TMRD within the North Lightning and Scotchman BMUs, the alternatives are also consistent with Endangered Species Act direction to not jeopardize the continued existence of the species and not cause the destruction or adverse modification of critical habitat.

Gray Wolf

Wolves are highly social animals with large home ranges that include a wide variety of habitats. A sufficient, year-round prey base, primarily ungulates, and adequate protection from human-caused mortality are considered important components of wolf habitat (USDI Fish and Wildlife Service 1987, Tucker et al. 1990).

Historically, gray wolves were common throughout most of North America, including northern Idaho. However, their population declined drastically as conflicts with humans rose, which resulted in control efforts to reduce livestock and big game depredations by wolves. By the 1930s, the Rocky Mountain wolf (once recognized a subspecies of the gray wolf) had successfully been eradicated from its historic range. The northern Rocky Mountain wolf was listed as endangered in 1973. In 1978, the gray wolf was listed as an endangered at the species level, except in Minnesota, to eliminate problems associated with listing subspecies and the relatively narrow geographic areas in which they were protected (USDI Fish and Wildlife Service 2003).

In 1994, final rules in the Federal Register made a distinction between wolves that occur north of Interstate 90 and wolves that occur south of Interstate 90, in Idaho. Gray wolves occurring north of the interstate remained federally listed as an endangered species while wolves south of the interstate were listed as part of a nonessential, experimental population with special regulations defining their protection and management.

An inadequate prey density and a high level of human disturbance are the main factors that appear to limit wolf population and distribution (Mech 1995). Wolf packs appear to be sensitive to human disturbance near active den sites and depending on the disturbance may abandon the site (Ballard et al. 1987). They are also sensitive to human disturbance at rendezvous sites and are most sensitive around the early summer sites (USDI Fish and Wildlife Service 1987). Limiting wolf mortality associated with human/wolf interactions, limiting human disturbance around den and rendezvous sites, and managing for an abundant prey base are key in the recovery of wolf populations. The density and distribution of open roads provides a good measure for determining the level of risk to wolves from human-caused mortality and disturbance to den and rendezvous sites.

Existing Condition

The Lightning Creek Restoration project occurs north of Interstate 90 and is within the region where the gray wolf is currently federally listed as endangered. The project area lies within the Northwest Montana Recovery Area (Mack and Laudon 1988).

While occasional wolf sightings are reported in northern Idaho, currently there is only one confirmed pack in the vicinity of the project area, which is the Calder Mountain pack just to the north. There are currently no other confirmed, established wolf packs or home ranges (e.g., observations of reproduction, den sites, rendezvous sites) within close proximity of the project area. However, on separate occasions in July 2008, what was thought to be a lone wolf was seen along Forest Road 419 and wolf tracks were reported along the shore of Lake Darling, both of which are within the project area. This activity might indicate transient wolves, lone individuals, or wolves from a neighboring pack such as the Calder Mountain pack. There have also been several sightings and sign of wolves adjacent to the project area to the east in the Kootenai National Forest during the summer of 2008. It is believed that these wolves are likely a newly established pack and not part of one of the known existing packs.

In the Sandpoint Ranger District, available ungulate prey for wolves includes white-tailed deer, mule deer, elk, and moose. Although no specific population numbers are available, deer, elk and moose are common in and around the project area.

Prior to the flood, there was a little less than 116 miles of motorized access in the Lightning Creek drainage, which correlates to a road density of approximately 0.98 mile per square mile

over the entire drainage. Due to flood damage and the subsequent access management restrictions, the miles of motorized access after the flood decreased to a little over 108 miles, which correlates to a road density of approximately 0.92 mile per square mile. See Table 10 for a more detailed breakdown of the motorized access types before and after the flood.

Table 10. Comparison in the amount of motorized roads and trails (approximate miles) and motorized road and trail density (approximate miles/square mile) within the Lightning Creek Restoration project area before and after the 2006 flood.

Motorized Access Type	Pre-Flood Condition	Post-Flood (Existing) Condition
Open Roads	60.9	22.1
Restricted Roads	9.4	3.4
Motorized Trails	2.1	39.6*
Roads on non-Federal Lands	43.2	43.2
Total Motorized Access	115.7	108.3
Motorized Road/Trail Density (mi/mi^2)	0.98	0.92

*Includes 6 miles of restricted motorized trails that are closed to motorized use from April 1 through November 15

Environmental Consequences

Methodology

Because wolves use a wide variety of habitats and the alternatives analyzed do not propose any vegetation management activities, none of the alternatives would alter the suitability of habitat within the project area for wolves or their prey species. Therefore, the potential effects on wolves were determined by analyzing the change in miles of motorized roads and trails and road density as a result of each alternative and the potential impacts to habitat security for wolves from disturbance and displacement during project implementation.

Direct, Indirect and Cumulative Effects of Alternative 1

This alternative would have no effects on wolves or their habitat because there would be no new management activities within the project area such as road decommissioning, road reconstruction and bridge removal and construction. Consequently, there would also be no disturbance or displacement of wolves.

Alternative 1 does represent about a 7 mile decrease in drivable miles of roads and trails, and a slight decrease in road density over the pre-flood condition, which corresponds to increased security of wolf habitat within the project area.

Since Alternative 1 would have no effect on wolves or their habitat, there is no need to consider the impacts of the project from a cumulative effects standpoint because this alternative would not be an additional impact on wolves.

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Most of the type of project activities that have the potential to impact wolves would be the same under each of the action alternatives. These activities include the use of mechanized equipment (e.g., excavators, chainsaws) and explosives for tasks such as road decommissioning, road maintenance, culvert replacement or removal, and associated activities. However, the extent and location of these activities varies between alternatives based on the desired access management for a particular road segment after project implementation. A few key differences between the

alternatives from a wolf analysis standpoint are that Forest Roads 1030, the majority of 1184, more of Forest Road 473 and the Lake Darling trail would be converted to nonmotorized trails in Alternatives 4A and 4B. See Table 11 for a comparison of the alternatives with respect to miles of road and road densities under each action alternative. Chapter 2 of the EA contains a detailed description and comparison of the specific actions to be taken under each alternative. The maps in Appendix D of the EA also illustrate the differences in the extent of the proposed activities under each alternative. In addition, refer to the grizzly bear analysis for a more detailed description of specific project activities and their potential impact on wildlife with respect to disturbance and displacement during project implementation.

The use of mechanized equipment (e.g., chainsaws and helicopters) and explosives, which are considered high intensity activities, along with the presence of crews conducting project activities in fairly remote mountainous areas have the potential to temporarily disturb or displace wolves that may be utilizing the area. The probability of wolves being present within the proposed action area during project activities is low to moderate due to the limited wolf activity documented in the area. Alternative 3 would have a higher probability of disturbance or temporary displacement over Alternatives 4A and 4B because the intensity and length of time needed to complete the activities associated with reconstructing Forest Road 1184 and more of the upper portion of Forest Road 473 would be greater than what would be required under Alternatives 4A and 4B.

Although wolves seem to prefer remote areas free of disturbance, they are somewhat tolerant of human disturbance, with the possible exception of den and rendezvous sites. Project activities in close proximity to a den site could cause disturbance to the wolves and could cause them to move to a new den location, depending on the distance of their den to the disturbance and their tolerance of human activity and noise. However, some research shows that even if wolves move their pups to a new den site, they typically do not move them very far and pup survival is not decreased (Thiel et al. 1998, Ballard et al. 1987). To reduce potential negative impacts to wolves when they are most sensitive to disturbance, if any active den sites or rendezvous sites are discovered within or adjacent to the project area, there would be no project activities within one mile of the site from April 15 through June 30 (see Design Features – Gray Wolf Protection).

The project is designed to be implemented in a series of step due to the large area covered by the proposed activities, the need to stagger activities from a contracting standpoint, and the desire to not have disturbance occurring throughout the entire Lightning Creek drainage simultaneously (see Design Features – Grizzly Bear Protection, for a more detailed description and Figure 4 for a map of the proposed area restrictions) These factors would limit project activities to smaller geographic areas and would therefore decrease the amount of potential disturbance or temporary displacement of wolves across the landscape. Areas adjacent to the areas with active project activities would retain the ability to support displaced wolves.

There would be a decrease in miles of road and motorized trails and in road density under any of the action alternatives as compared to the pre-flood condition. Alternatives 4A and 4B would not only substantially reduce the miles of drivable roads and motorized trails and road density over the pre-flood condition, but also over the existing condition. As a result of the project activities, there would be an increase in secure habitat available to wolves following project activities. Alternative 4B represents the biggest gain in secure habitat and Alternative 3 represents the smallest gain.

Table 11. Comparison between the alternatives in the amount of motorized roads and trails (approximate miles) and motorized road and trail density (approximate miles/square mile) within the Lightning Creek Restoration project area

Motorized Access Type	Pre-Flood Condition	Alt 1	Alt 3	Alt 4A	Alt 4B
Open Roads	60.9	22.1	55.4	42.9	42.9
Restricted Roads	9.4	3.4	9.4	0.1	0.1
Motorized Trails	2.1	39.6*	2.1	7.6	5.1
Roads on non-Federal Lands	43.2	43.2	43.2	43.2	43.2
Total Motorized Access	115.7	108.3	110.1	93.8	91.3
Motorized Road/Trail Density (mi/mi^2)	0.98	0.92	0.93	0.79	0.77

*Includes 6 miles of restricted motorized trails that are closed to motorized use from April 1 through November 15

Cumulative Effects Common to Alternatives 3, 4A and 4B

Because the implementation of any of the action alternatives would improve the security of wolf habitat after project implementation, cumulative impacts would be negligible or discountable. The activities discussed below are the past, present and reasonably foreseeable actions identified in the project file that are within the analysis area and are relevant to the gray wolf cumulative effects analysis. For a brief description of each of these actions see the Cumulative Effects Analysis section.

Supplemental Forest Plan Motorized Access Amendment – Because of the significant overlap between the grizzly bear recovery area and wolf habitat, the access management actions that stem from the amendment decision would provide benefits to wolves through road management that is designed to increase grizzly bear habitat security.

Exploratory Mining in the Lightning Mountain Area – Due to the use of helicopters and heavy machinery in potential wolf habitat, this project would represent a short-term impact to wolves within a short distance from the project area. It has not been determined whether or not the exploratory mining would occur during the implementation of the Lightning Creek Restoration project. If Lightning Creek Restoration activities proposed for the Rattle Creek drainage and the exploratory mining was to take place simultaneously, it would result in a temporary increase in the likelihood of disturbance or displacement of wolves from the area. However, the exploratory mining would not result in a long-term loss of wolf habitat or displacement and the implementation of any of the Lightning Creek Restoration action alternatives would increase the security of wolf habitat and decrease road densities over the pre-flood condition after project completion.

Wildfire Suppression – Fire suppression has led to an increase in tree density in stands that historically would have been thinned and modified by periodic wildfires. This increase in tree density and lack of wildfire has decreased the availability of browse forage for ungulates and therefore has likely reduced the availability of prey available to wolves. Although the Lightning Creek Restoration project would not have a measurable impact on browse forage for ungulates, the decrease in motorized access and road density within the drainage may result in the ability of ungulates to forage in areas that they may have previously avoided due to human presence. As a result there may be an increase in prey available to wolves.

The effects on wolves from fire suppression and any changes to the environmental baseline as a result of them are analyzed and addressed during emergency consultation with the Fish and Wildlife Service. If fire suppression activities such as described previously were to occur within

the Lightning Creek drainage, there would potentially be cumulative impacts to gray wolves from the disturbance depending on the spatial and temporal details of the suppression activities and project activities in relation to one another.

Hunting and Trapping –Wolves could potentially be taken during hunting or trapping activities. However, the likelihood of this occurring is low due to the low wolf numbers in the area and the limited amount of trapping known to occur within the analysis area. The changes in access would increase the security of wolf habitat after project completion.

All reasonably foreseeable activities described above that may affect wolves or their habitat would be subject to separate analyses and possible consultation with the U.S. Fish and Wildlife Service in accordance with applicable laws and regulations prior to their implementation to avoid adverse effects to wolves.

Conclusion of Effects

There would be no detrimental modification of habitat for gray wolves or their prey species resulting from the proposed action. The proposed action would not increase the exposure of wolves to humans and it would not decrease the abundance of prey species available to wolves. In addition, due to the ability of gray wolves to thrive under a variety of land uses, the U.S. Fish and Wildlife Service concluded that successful wolf recovery in the northern Rocky Mountains does not depend on land-use restrictions, with the possible exception of temporary restrictions around active den sites on federally managed lands (USDI Fish and Wildlife Service 2003). However, the project activities could potentially temporarily cause a disturbance or displacement of wolves.

The implementation of any of the action alternatives, in conjunction with past actions, ongoing activities and reasonably foreseeable actions discussed above, would trend the project area toward providing more effective wolf habitat by reducing the miles of drivable roads and motorized trails, and reducing road densities. Alternative 4B would be most beneficial because it would have the largest reduction. Therefore, the implementation of any of the action alternatives ***may affect, but is not likely to adversely affect*** the gray wolf.

Consistency with Forest Plan and Other Regulations

All alternatives are consistent with the Forest Plan to manage the habitat of species listed under the Endangered Species Act (USDA Forest Service 1987, Forest Plan, p. II-6). Therefore, these actions would be consistent with the National Forest Management Act requirements to provide for the diversity of plant and animal communities across the Forest.

Canada Lynx

Canada lynx are medium-sized cats with large feet adapted to walking on snow, long legs, tufts on the ears and black-tipped tails (Ruediger et al. 2000). Snowshoe hare are the primary prey of lynx, compromising the majority of their diet throughout most of their distribution, especially in the winter.

Lynx occur in mesic coniferous forests that have cold, snowy winters and provide a prey base of snowshoe hare (Ruediger et al. 2000, USDA Forest Service 2007). In North America, the distribution of lynx is nearly coincident with that of snowshoe hare. Both snow conditions and vegetation type are important factors to consider in defining lynx habitat. Crusting and compaction of snow may reduce the competitive advantage that lynx have in soft snow, with their long legs and low foot loadings.

Most lynx occurrences in the western United States are associated with Rocky Mountain conifer forests. In northern Idaho and northwestern Montana, lynx generally occur above 4,000 feet in elevation. Primary vegetation that contributes to lynx habitat is comprised of lodgepole pine, subalpine fir, and Engelmann spruce, with cedar-hemlock habitat types also considered primary vegetation in extreme northern Idaho (Ruediger et al. 2000, USDA Forest Service 2007). Lynx have been shown to be very closely tied spatially to this primary vegetation. However, secondary vegetation, when interspersed within subalpine forests, may also contribute to lynx habitat and includes cool, moist Douglas-fir, grand fir, western larch and aspen forests. Dry forest types (e.g., ponderosa pine, climax lodgepole pine) do not provide lynx habitat (USDA Forest Service 2007). Like most wild cats, lynx require cover for security and stalking prey, and avoid large openings.

The conservation of lynx populations is of concern in the western mountains of the United States because of the peninsular and disjunct distribution of suitable habitat at the southern periphery of the species' range. Both historic and recent lynx records are relatively scarce, which makes identifying range reductions and determining historical distribution of populations in the region difficult (Koehler and Aubry 1994).

The primary risk factors impacting lynx populations are largely based on the alteration of forest habitats through vegetation management, fire or grazing and the resulting impact on its ability to provide snowshoe hare habitat, particularly in winter. Their primary prey, snowshoe hare, reach their highest densities in young, dense, coniferous forests or multi-storied stands consisting of mature forests with dense understories.

Another risk factor for lynx is a potential increase in competition from other predators, particularly coyotes and bobcats, due to activities that result in snow compaction in the winter. Snow compacting activities include snowmobiling, cross-country skiing, and snowshoeing, particularly when these activities occur on groomed routes. Lynx have a competitive advantage over other carnivores in deep snow, but winter access along compacted routes may allow competing carnivores to hunt in areas traditionally considered the lynx's sole domain (USDA Forest Service 2007). Although some research indicates an increased use of deep snow areas by other predators in areas with compacted snow, there has been no conclusive evidence of competition between lynx and other predators that resulted in a population level threat to lynx (USDA Forest Service 2007).

Roads in general represent a risk factor to lynx; however, paved roads and highways, which are not found in the project area, account for the majority of the impacts to lynx from roads. There is no evidence that lynx avoid or are displaced by unpaved roads, therefore unpaved roads are not considered a threat to lynx movement. Similarly, road density does not appear to affect lynx habitat selection (Ruediger et al. 2000). Lynx may tolerate some level of human disturbance, including roads, and most research indicates that lynx do not alter their behavior to avoid humans (Staples 1995, Roe et al. 1999, Aubry et al. 2000, Mowat et al. 2000). Lynx may use little-traveled roadways for travel and foraging in good snowshoe hare habitat, but they prefer to move through continuous forests frequently using ridges, saddles and riparian areas (Ruediger et al. 2000).

However, while displacement by humans does not appear to be a major factor, access via roads may increase the mortality risk to lynx from incidental trapping or illegal shooting. Roads can also directly affect the amount of denning and foraging habitat by removing forest cover (USDA Forest Service 2007). Forest roads, and to a lesser extent trails, can also make snow compacting activities more likely to occur.

In March 2000, Canada lynx were officially listed as a threatened species. In that same year, the Canada Lynx Conservation Assessment and Strategy (LCAS) was developed to provide a consistent and effective approach to conserve Canada lynx on federal lands. In 2007, the Forest Service completed the Northern Rockies Lynx Management Direction (NRLMD), which adopted many of the recommendations from the LCAS, but incorporated more recent research findings to develop standards and guidelines to protect lynx and their habitat within designated LAUs and linkage zones. See the wildlife project file for a complete list of how the project complies with the NRLMD standards and guidelines.

Additionally, the IPNF has remapped lynx habitat on the Forest and as a result has redelineated LAU boundaries. At the time of Federal listing, Canada lynx primary habitat in North Idaho was broadly characterized to include areas with site potential to produce subalpine fir, mountain hemlock, cedar and moist grand fir climax habitats. Dry forest communities (ponderosa pine and Douglas-fir habitat types) and upper subalpine habitat types (alpine larch and whitebark pine cover types) were considered non-lynx habitat. As the available knowledge on lynx habitat requirements has increased, lynx habitat in North Idaho has been more narrowly defined to include only subalpine fir/Engelmann spruce habitats as primary habitat (except on the Priest Lake Ranger District, where moist cedar-hemlock is also considered primary habitat) and cool/moist habitat types occurring immediately adjacent to primary habitat to create a transition between lynx habitat and non-lynx habitat. Based on research findings, the distance agreed upon by the IPNF and the Canada Lynx Biology Team for this transition zone is generally limited to secondary habitat within 200 meters of primary habitat.

Primary and secondary lynx habitat was determined using a combination of habitat type data from stand exams and a vegetation response unit (VRU) model, which incorporates other factors such as soils, hydrologic function and landform, and is considered a more accurate method of classifying the potential natural vegetation of a given stand.

Existing Condition

The IPNF has remapped LAU boundaries based on the Canada Lynx Biology Team recommendations to have LAUs of 16,000 to 25,000 acres in size with at least 6,400 acres of primary habitat within each LAU. Approximately 87 percent of the Lightning Creek Restoration project area is within the remapped Lightning, Trestle, Scotchman, and Lunch LAUs. Approximately 31 percent of the project area is within the Lightning LAU, 30 percent is within the Trestle LAU, 20 percent is within the Scotchman LAU and seven percent is within the Lunch LAU (see Figure 3 and Table 12).

Because project activities would be limited to existing road prisms, there would be no direct impact to vegetation in lynx habitat within the project area. Since there would be no change in the vegetative condition of lynx habitat from any of the alternatives, this document will not discuss the existing condition or environment consequences of lynx habitat with respect to the vegetative condition.

Some road segments within the Lightning Creek watershed are within or in close proximity to lynx habitat, with many of them occurring within riparian areas. However, the majority of the main roads within the drainage such as Forest Road 419 (main Lightning Creek Road), 642 (Porcupine Lake Road), 1184 (East Fork Creek Road) and 489 (Wellington Creek Road) are not in lynx habitat (see Project File - Wildlife). Although lynx may travel on or cross drivable roads, they are not considered lynx habitat. However, the use of these roads and the associated activities do impact lynx habitat security and may cause disturbance or temporary displacement of lynx.

See Table 12 for the miles of groomed snowmobile routes and miles of roads and motorized trials within each LAU.

Table 12. Existing condition of LAUs that are entirely or partially within the Lightning Creek Restoration project area

	Lightning LAU	Trestle LAU	Scotchman LAU	Lunch LAU
LAU Acres	23,794	31,558	22,107	17,089
Acres of Lynx Habitat in LAU	16,201	19,296	10,936	15,043
Acres of Lynx Habitat in Project Area	16,201	14,343	7,277	4,976
Miles of Groomed Snowmobile Routes Pre-flood	17.6	1.9	3.7	6.7
Miles of Groomed Snowmobile Routes Post-flood	3.1	0	1.0	6.6
Miles of Drivable Roads and Motorized Trails Pre-Flood	27.5	18.0	3.7	17.1
Miles of Drivable Roads and Motorized Trails Post-Flood	20.3	18.0	3.5	17.1

The Lightning Creek watershed receives a diversity of recreational uses throughout the year such as driving for pleasure, berry picking, hunting and snowmobiling. These recreational activities currently impact lynx habitat security and activities such as snowmobiling on and off groomed routes may facilitate an increase in competition between lynx and other predators not typically able to utilize the area in the winter (e.g., coyote and bobcat).

Lynx presence has been historically documented throughout much of the IPNF, although their population numbers were not thought to be abundant. The majority of the trapping and sighting reports of lynx in the most northern portion of the state come from the Priest Lake area. There are sporadic unverified sightings reported on the Sandpoint Ranger District, with the last such sighting in the Lightning Creek drainage occurring in 1998 in Upper Quartz Creek within the Lunch LAU. Although there is no reliable information to determine if there is a currently a resident lynx population in northern Idaho, if lynx are present it is believed to be at low numbers.

No portion of the Lightning, Trestle, Scotchman, or Lunch LAUs is within the proposed critical habitat designated by the U.S. Fish and Wildlife Service in February 2008 (USDI Fish and Wildlife Service 2008c).

Environmental Consequences

Methodology

Because the project would not affect vegetation, the appropriate method to determine the impact of this project on lynx and their habitat is to analyze the change in habitat security as measured by the change in miles of groomed snowmobile routes, miles of drivable roads and the level of disturbance or displacement during and following project activities as a result of each alternative.

Direct, Indirect and Cumulative Effects of Alternative 1

This alternative would have no effect on lynx or lynx habitat because there would be no new management activities within the project area such as road decommissioning, road reconstruction and bridge removal and construction. Consequently, there would also be no disturbance or displacement of lynx during management activities because there would be no use of mechanized equipment, explosives, or helicopters.

Alternative 1 does represent about a 7 mile decrease in miles of drivable roads and motorized trails and a decrease in groomed snowmobile routes of approximately 19 miles from the pre-flood condition because of access problems related to flood damage. This alternative would maintain this change in access. As a result, the existing condition has increased the security of lynx habitat and decreased the possibility of competition from other predators within the project area compared to pre-flood conditions.

Because there would be no road decommissioning or conversion of roads and motorized trails to non-motorized trails under this alternative, there would be no additional decrease in drivable roads and motorized trails or increase in security of lynx habitat.

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Most of the type of project activities that have the potential to impact lynx would be the same under each of the action alternatives. These activities include the use of mechanized equipment (e.g., excavators, chainsaws), explosives, and helicopters for tasks such as road decommissioning, road maintenance, culvert replacement or removal, and associated activities. However, the extent and location of these activities varies between alternatives based on the desired access management for a particular road segment after project implementation. A few key differences between the alternatives from a lynx analysis standpoint are that Forest Roads 1030, the majority of 1184, more of Forest Road 473 and the Lake Darling trail would be converted to non-motorized trails in Alternatives 4A and 4B. See Table 13 for a comparison of the alternatives with respect to miles of drivable roads and motorized trails under each alternative for each affected LAU. See Table 14 for a comparison of the alternatives with respect to the miles of groomed snowmobile routes under each alternative for each affected LAU. Chapter 2 of the EA contains a detailed description and comparison of the specific actions to be taken under each alternative. The maps in Appendix D of the EA also illustrate the differences in the extent of the proposed activities under each alternative. In addition, refer to the grizzly bear analysis for a more detailed description of specific project activities and their potential impact on wildlife with respect to disturbance and displacement during project implementation.

Although lynx are described as being generally tolerant of humans and anecdotal reports suggest that lynx are not displaced by human presence (Ruediger et al. 2000), the increased noise and activity levels above natural conditions within or in close proximity to lynx habitat during the implementation of the project could potentially temporarily displace lynx from the affected area. The probability of this occurring is expected to be low because of the low density or absence of lynx within the affected area. The project design features discussed in the grizzly bear section and in the Design Features would also limit the scale and noise level of project activities, which would be expected to further reduce the chance of negative impacts on lynx.

The implementation of any of the action alternatives would not alter vegetation in any way and would therefore not have a direct impact on lynx habitat or the standards for key lynx habitats established by the NRLMD. There would be no increase in miles of drivable roads, motorized

trails or groomed snowmobile routes in any of the LAUs within the project area above the pre-flood condition under any of the action alternatives.

Many of the roads to be decommissioned or converted to nonmotorized trails are entirely or partially within riparian areas and a few are on ridgelines. These areas represent likely travel corridors for lynx and the decrease of roads, motorized trails and groomed snowmobile routes within these areas would reduce the mortality risk to lynx from trapping or poaching and would increase the security of lynx habitat.

All of the action alternatives would have the same impacts on the Scotchman LAU. Under all action alternatives, there would be a slight increase in miles of road and an increase in the miles of groomed snowmobile routes over the existing condition within this LAU, but only back to the pre-flood condition.

Roads and Motorized Trails - Under Alternative 3, there would be an increase in road miles over the existing condition in the Lightning LAU, but it would still be well below the pre-flood condition. Under Alternative 4A and 4B, there would be a substantial decrease in the miles of roads and motorized trails in the Lightning and Lunch LAUs when compared to the pre-flood and existing condition. In addition, Alternative 4B would also decrease the miles of roads and motorized trails in the Trestle LAU over both the pre-flood and existing condition.

Because Alternatives 4A and 4B would substantially reduce the miles of drivable roads and motorized trails within the Lightning and Lunch LAUs, there would be an increase in secure habitat available to lynx following project activities. Alternative 4B represents the biggest gain in secure habitat and Alternative 3 represents the smallest gain.

Along with the increase in the security of lynx habitat, the decrease in road and motorized trail miles would increase the connectivity of lynx habitat, allowing lynx to more easily travel between areas with the appropriate habitat characteristics.

Table 13. Comparison of drivable roads and motorized trails (miles) within each LAU

Pre-Flood Condition and Alternatives	Lightning LAU	Trestle LAU	Scotchman LAU	Lunch LAU
Pre-Flood	27.5	18.0	3.7	17.1
Alt 1 (Existing)	20.3	18.0	3.5	17.1
Alt 3	23.1	18.0	3.7	17.1
Alt 4A	12.3	18.0	3.7	11.6
Alt 4B	12.3	15.5	3.7	11.6

Groomed Snowmobile Routes - In the Trestle, Scotchman, and Lunch LAUs, the miles of groomed snowmobile routes would increase over the existing condition, but would only be restored back to the pre-flood levels under all of the action alternatives.

In the Lightning LAU, there would be an increase in miles of groomed snowmobile routes over the existing condition, but it would remain below the pre-flood condition. As a result, there would be a decrease in the miles of groomed snowmobile routes within the Lightning LAU under any of the action alternatives, largely due to the loss of a portion of Forest Road 473 (Rattle

Creek) as groomed snowmobile route. Alternatives 4A and 4B would result in the largest reduction in groomed snowmobile routes.

Table 14. Comparison of groomed snowmobile routes (miles) within each LAU

Pre-Flood Condition and Alternatives	Lightning LAU	Trestle LAU	Scotchman LAU	Lunch LAU
Pre-Flood	17.6	1.9	3.7	6.7
Alt 1 (Existing)	3.1*	0	1.0**	6.6
Alt 3	13.5*	1.9	3.7	6.7
Alt 4A	10.7*	1.9	3.7	6.7
Alt 4B	10.7*	1.9	3.7	6.7

*These figures include the upper portion of Forest Road 473 (Rattle Creek Road) that remains an open, drivable road, the length of which is different under each alternative, as being groomed from the Montana side. Although this assumption may be incorrect, it is used here to analyze for the maximum amount of groomed snowmobile routes under each alternative.

**This section was designated as a groomed route before the flood and although the existing condition of this section remains an open, drivable road, it is unlikely to be groomed under this alternative because it is a short segment not connected to any other groomed routes.

Cumulative Effects Common to Alternatives 3, 4A and 4B

Because the implementation of any of the action alternatives would improve the security of lynx habitat after project implementation, cumulative impacts would be negligible or discountable. The activities discussed below are the past, present and reasonably foreseeable actions identified in the project file that are within the Canada lynx cumulative effects area and are relevant to the Canada lynx cumulative effects analysis. For a brief description of each of these actions see the Cumulative Effects Analysis section.

Supplemental Forest Plan Motorized Access Amendment – Because of the significant overlap between the grizzly bear recovery area and lynx habitat, the actions that stem from the amendment decision would provide benefits to lynx through road management that is designed to increase grizzly bear habitat security.

Wildfire Suppression – Over the past century, there has been an ongoing policy of fire suppression within the analysis area, which has led to an increase in tree density in stands that historically would have been thinned and modified by periodic wildfires. The lack of periodic wildfire has kept these stands in a more advanced successional state, which has decreased the availability of forage for snowshoe hare. The implementation of any of the action alternatives would not measurably increase or decrease the amount of forage available to snowshoe hare. Therefore, there would be no cumulative effects on the vegetative condition of lynx habitat of the proposed alternatives with fire suppression activities.

The effects on lynx from fire suppression activities and any changes to the environmental baseline as a result of them are analyzed and addressed during emergency consultation with the Fish and Wildlife Service. If fire suppression activities such as described previously were to occur within the Lightning Creek drainage, there would potentially be cumulative impacts to lynx from the disturbance depending on the spatial and temporal specifics of the suppression activities and project activities in relation to one another.

Exploratory Mining in the Lightning Mountain Area – Due to the use of heavy machinery in lynx habitat, this project would possibly result in the short-term disturbance or displacement of lynx within a short distance from the activity areas during implementation. It has not been determined

whether the exploratory mining would occur during the implementation of the Lightning Creek Restoration project. If Lightning Creek Restoration activities proposed for the Rattle Creek drainage and the exploratory mining were to take place simultaneously, it would result in a temporary increase in the likelihood of disturbance or displacement of lynx. However, the exploratory mining would not result in a long-term loss of lynx habitat or displacement of lynx and the implementation of any of the Lightning Creek Restoration action alternatives would result in an increase in the security of lynx habitat over the pre-flood condition after project completion.

Snowmobiling – Snowmobiling can impact lynx from a direct disturbance standpoint or through the compaction of snow that could potentially allow for an increase in competition between lynx and other predators such as bobcat and coyote. The changes in access as a result of the Lightning Creek Restoration project would increase the security of lynx habitat after project completion based on a decrease in the miles of groomed snowmobile routes in the Lightning LAU.

Hunting and Trapping – Canada lynx could potentially be taken during hunting or trapping activities targeting bobcat because of the overlap in range between the two. However, the likelihood of this occurring is extremely low due to the rarity of lynx and the limited amount of hunting or trapping for bobcat known to occur. The changes in access would increase the security of lynx habitat after project completion.

All reasonably foreseeable activities described above that may affect lynx or their habitat would be subject to separate analyses and possible consultation with the U.S. Fish and Wildlife Service in accordance with applicable laws and regulations prior to their implementation to avoid adverse effects to lynx.

Conclusion of Effects

No portion of the Lightning, Trestle, Scotchman or Lunch LAUs is within proposed critical habitat designated by the U.S. Fish and Wildlife Service in February 2008. Consequently, there would be no adverse modification of proposed critical habitat for lynx.

Although the proposed action would not negatively impact vegetation within lynx habitat, increase access or mortality risk, and would increase habitat connectivity, there would be a possibility of disturbance and temporary displacement of lynx during project implementation. Following implementation of Alternatives 4A or 4B there would be no change or a decrease in miles of drivable roads and motorized trails within each LAU, and no change or a decrease in the miles of groomed snowmobile routes over the pre-flood condition within each LAU. Therefore, there would be an increase in the availability of secure habitat for lynx as compared to the existing and pre-flood conditions. Alternative 3 would result in an increase in miles of roads, motorized trails, and groomed snowmobile routes over the existing condition in the Lightning LAU, but a decrease over the pre-flood condition.

Consequently, the implementation of any of the action alternatives, in conjunction with the past actions, ongoing activities and reasonably foreseeable actions discussed above, ***may affect, but is not likely to adversely affect*** Canada lynx.

Consistency with Forest Plan and Other Regulations

All alternatives are consistent with the Forest Plan to manage the habitat of species listed under the Endangered Species Act (USDA Forest Service 1987, Forest Plan, p. II-6) and direction provided within the Northern Rockies Lynx Management Direction (USDA Forest Service 2007). The NRLMD amended the Forest Plan to incorporate management direction, based on the LCAS

and recent research findings that conserve and promote the recovery of Canada lynx with specific measures to protect lynx habitat and comply with existing rules and policies. The implementation of the NRLMD across the landscape of identified lynx habitat is designed to enhance or maintain lynx habitat and lynx population viability. See the wildlife project file for a complete list of how the project complies with the NRLMD standards and guidelines. Therefore, these actions would be consistent with the National Forest Management Act requirements to provide for the diversity of plant and animal communities across the Forest.

Sensitive Species

Wolverine

Wolverine are listed as a “sensitive” species by Region One of the Forest Service (USDA Forest Service 2005) and are listed as a “species of concern” by the State of Idaho. Although wolverine were petitioned to become listed as a threatened or endangered species, in 2008 the U.S. Fish and Wildlife Service determined that wolverine occurring in the contiguous United States did not warrant listing under the Endangered Species Act (USDI Fish and Wildlife Service 2008d).

The wolverine is a low density, wide-ranging species that are found in a variety of open and forested habitats at all elevations, usually associated with remote mountain areas. As is the case with other forest carnivores, the wolverine requires large, remote areas to roam and forage. They are generally described as opportunistic omnivores and travel long distances during daily searches for prey. Preferences for some forest cover types, aspects, slopes or elevations have been primarily attributed to food abundance (Ruggerio et al. 1994). However, an important feature of their habitat is high elevation cirque basins that provide reproductive security and year-round foraging, particularly for females.

Refugia or the presence and stability of ecosystems lacking broad-scale human influence are an important life history requirement for wolverine (Copeland 1996). Primary risk factors that can threaten local population viability of the species include reduction of wilderness “refugia” through access and management practices that degrade the presence and opportunity for food availability (Copeland 1996). Ruggerio et al. (1994) showed through previous studies that the availability of large mammals and large mammal carrion is of paramount importance to the distribution, survival and reproductive success of wolverine.

The protection of potential maternal den sites is also vital for the persistence of wolverine. Wolverine appear to be very sensitive to human disturbance, particularly at maternal dens (Magoun and Copeland 1998). Intense human disturbance may impair kit survival if females are displaced into less secure habitat or to use less secure den sites (Banci 1994). When viewed in conjunction with potential displacement and disturbance by winter recreation activities, denning habitat may be a limited and critical component of wolverine habitat (Copeland 1996). A study in Idaho found that wolverine select den sites associated with large boulder talus in high elevation, subalpine cirque basins (Copeland 1996). Wolverine occurrence appears to be strongly correlated with areas of snow cover that typically persists through the spring denning period (Aubry et al. 2006). They typically begin denning in early February or March and abandon their dens in late April or May due to snowmelt (Banci 1994).

Land use activities that fragment habitat or increase human access into habitat also appear to negatively affect wolverine. These impacts are considered likely to be similar to those that have been described for grizzly bears (Ruggiero et al. 1994). Krebs et al. (2007) suggested that wolverines negatively responded to human disturbance and that human use, particularly winter

recreation, helicopters and the presence of roads, reduced the value of habitat for wolverines. Mountain ranges with high densities of roads are also less likely to contain sufficient refugia to support wolverine (Squires et al. 2007).

Existing Condition

The wolverine is considered scarce or rare in north Idaho, however, the actual status and range remains uncertain. The scarcity of information is largely due to the difficulty and expense in studying a solitary and secretive animal found mostly in remote locations. Occasional observations have been reported and tracks documented in recent decades. In central Idaho, Copeland (1996) found that the average home range for females and males were 148 square miles and 588 square miles, respectively.

Little information exists on wolverine distribution in northern Idaho, but the presence of wolverine has been historically documented in the northern portion of the IPNF. Although there have been no confirmed recent sightings of wolverine anywhere on the Sandpoint Ranger District, there have been sporadic reports of sightings or tracks within the Lightning Creek drainage, with the most recent sighting occurring in the Trestle Ridge area in 1997. There are a minimum of 16 cirque basins within the project area that have the potential to be used as denning areas for wolverine (see project file – Wildlife).

Prior to the flood there were a little less than 116 miles of motorized access in the Lightning Creek drainage, which correlates to a road density of approximately 0.98 miles per square mile over the entire drainage. Due to flood damage and the subsequent access management restrictions, the miles of motorized access after the flood decreased to a little over 108 miles, which correlates to a road density of approximately 0.92 miles per square mile. See Table 10 for a more detailed breakdown of the motorized access types before and after the flood.

Environmental Consequences

Methodology

Because wolverines use a wide variety of habitats and the alternatives analyzed do not propose any vegetation management activities, the alternatives analyzed would not alter the suitability of habitat within the project area for wolverine. Therefore the potential effects on wolverine were determined by analyzing the change in miles of motorized roads and trails and road density as a result of each alternative and the potential impacts to habitat security for wolverine from disturbance or displacement during project implementation.

Direct, Indirect and Cumulative Effects for Alternative 1

This alternative would have no effects on wolverine or their habitat because there would be no new management activities within the project area such as road decommissioning, road reconstruction and bridge removal and construction. Consequently, there would also be no disturbance or displacement of wolverine during management activities.

Alternative 1 does represent about a 7 mile decrease in drivable miles of roads and trails and a slight decrease in road density over the pre-flood condition, which corresponds to increased security of wolverine habitat within the project area.

Since Alternative 1 would have no effect on wolverine or their habitat, there is no need to consider the impacts of the project from a cumulative effects standpoint because this alternative would not be an additional impact on wolverine.

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Most of the type of project activities that have the potential to impact wolverine would be the same under each of the action alternatives. These activities include the use of mechanized equipment (e.g., excavators, chainsaws), explosives, and helicopters for tasks such as road decommissioning, road maintenance, culvert replacement or removal and the associated activities. However, the extent and location of these activities varies between alternatives based on the desired access management for a particular road segment after project implementation. A few key differences between the alternatives from a wolverine analysis standpoint are that Forest Roads 1030, the majority of 1184, more of the upper portion of Forest Road 473 and the Lake Darling trail would be converted to non-motorized trails in Alternatives 4A and 4B. See Table 11 for a comparison of the alternatives with respect to miles of road and road densities under each action alternative. Chapter 2 of the EA contains a detailed description and comparison of the specific actions to be taken under each alternative. The maps in Appendix D of the EA also illustrate the differences in the extent of the proposed activities under each alternative.

There are no roads within potential wolverine denning habitat within the project area. All project activities, including possible helicopter flights, are expected to occur in late spring, summer, and fall, which is outside the wolverine denning period. Consequently, there would be no disturbance to wolverine dens or denning habitat as a direct result of the implementation of project activities.

Project activities may have a temporary disturbance or displacement impact on wolverine within close proximity to project activities during their implementation. As stated above, the impacts of disturbance on wolverine are considered similar to those documented for grizzly bears. As such, refer to the grizzly bear analysis for a more detailed description of specific project activities and their potential impact on wolverine with respect to disturbance and displacement during project implementation.

The likelihood of wolverine presence within the proposed action area during project activities is relatively low due to the characteristics of wolverine populations (i.e., large home range sizes and current low numbers). However, the use of mechanized equipment (e.g., chainsaws and helicopters) and explosives, which are considered high-intensity activities and the presence of crews conducting project activities in fairly remote mountainous areas have the potential to temporarily disturb or displace wolverines that may be utilizing the area. Alternative 3 would have a higher probability of disturbance or temporary displacement over Alternatives 4A and 4B because the intensity and length of time needed to complete the activities associated with reconstructing Forest Road 1184 and more of Forest Road 473 would be greater than what would be required under Alternatives 4A and 4B.

Due to the large area covered by the proposed activities, the need to stagger activities from a contracting standpoint, and the desire to not have disturbance occurring throughout the entire Lightning Creek drainage simultaneously, the project is designed to be implemented in series of steps (see Project Design Features – Grizzly Bear Protection, for a more detailed description and Figure 4 for a map of the proposed area restrictions). These measures would limit project activities to smaller geographic areas and would therefore decrease the amount of potential disturbance or temporary displacement of wolverine across the landscape. In addition, the areas adjacent to the sites with active project activities would retain the ability to support wandering or foraging wolverine, particularly since wolverine exhibit a high degree of mobility.

There would be a decrease in miles of road and motorized trails and road density under any of the action alternatives as compared to the pre-flood condition. Alternatives 4A and 4B would not

only substantially reduce the miles of drivable roads and motorized trails, and road density over the pre-flood condition, but also over the existing condition. As a result of the project activities, there would be an increase in secure habitat available to wolverine following project activities. Alternative 4B represents the biggest gain in secure habitat and Alternative 3 represents the smallest gain.

Cumulative Effects Common to Alternatives 3, 4A and 4B

Because the implementation of any of the action alternatives would improve the security of wolverine habitat after project implementation, cumulative impacts would be negligible or discountable. The activities discussed below are the past, present and reasonably foreseeable actions identified in the project file that are within the analysis area and are relevant to the wolverine cumulative effects analysis. For a brief description of each of these actions see the Cumulative Effects Analysis section.

Supplemental Forest Plan Motorized Access Amendment – Because of the significant overlap between the grizzly bear recovery area and wolverine habitat, the actions that stem from the amendment decision would provide benefits to wolverine through road management that is designed to increase grizzly bear habitat security.

Exploratory Mining in the Lightning Mountain Area – Due to the use of helicopters and heavy machinery in potential wolverine habitat, this project would represent a short-term impact to wolverine within a short distance from the project area. It has not been determined whether the exploratory mining would occur during the implementation of the Lightning Creek Restoration project. If Lightning Creek Restoration activities proposed for the Rattle Creek drainage and the exploratory mining was to take place simultaneously, it would result in a temporary increase in the likelihood of disturbance or displacement of wolverine from the area. However, the exploratory mining would not result in a long-term loss of wolverine habitat or displacement and the implementation of any of the Lightning Creek Restoration action alternatives would increase the security of wolverine habitat and decrease road densities over the pre-flood condition after project completion.

Snowmobiling – The presence of winter recreation activities, particularly motorized activities, within potential wolverine denning habitat may result in habitat being avoided by wolverine during the initial denning period or may result in displacement of wolverine with young if activity occurs during the active denning period. The changes in access as a result of the Lightning Creek Restoration project would increase the security of wolverine habitat after project completion based of a decrease in the miles of groomed snowmobile routes and drivable roads in the drainage.

Wildfire Suppression – The increase in tree density and lack of wildfire as a result of fire suppression has decreased the availability of browse forage for ungulates and therefore has likely reduced the availability of prey and carrion available to wolverine. The implementation of any of the action alternatives would not have a measurable impact on browse forage for ungulates. However, the decrease in motorized access and road density within the drainage would likely lead ungulates to forage in areas that they may have previously avoided due to human activity, which could increase prey and carrion available to wolverine.

If fire suppression activities such as described previously were to occur within the Lightning Creek drainage, there would potentially be cumulative impacts to wolverine from the associated

disturbance depending on the spatial and temporal specifics of the suppression activities and project activities in relation to one another.

Hunting and Trapping – Wolverine could potentially be taken during trapping activities. However, the likelihood of this occurring is extremely low due to the rarity of wolverine and the limited amount of trapping known to occur within the analysis area. The changes in access would increase the security of wolverine habitat after project completion.

Conclusion of Effects

There would be no direct impact on high elevation cirque basins or potential denning habitat within the project area. Although there is a possibility of disturbance or displacement of wolverine during project activities, the risk would be reduced because it only has the potential to impact wandering or foraging wolverine. There would be no increased access into remote areas as a result of the project. The project area would also be expected to recover from human disturbance after the completion of project activities since there would be no permanent increase in human presence or development within the project area due to of the implementation of any of the action alternatives. In addition, there would be an increase in the availability of secure habitat for wolverine as a result of road decommissioning within the project area with Alternative 4B having the greatest increase in secure habitat.

Therefore, the implementation of any of the action alternatives, in conjunction with the past actions, ongoing activities and reasonably foreseeable actions discussed above, ***may impact individuals or habitat, but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species***.

Consistency with Forest Plan and Other Regulations

All alternatives comply with the Forest Plan direction to manage the habitat of species listed in the Regional Sensitive Species lists to prevent further declines in populations, which could lead to federal listing under the Endangered Species Act because there would be no increase in access within the project area or degradation of wolverine habitat. These actions would also be consistent with the National Forest Management Act requirements to provide for the diversity of plant and animal communities across the Forest.

Harlequin Duck

Harlequin ducks are rare, seasonal residents of whitewater streams in the northern Rocky Mountains. They are small sea ducks that winter in coastal areas and migrate inland to northern Idaho, western Wyoming, and western Montana to breed and rear young. Harlequins nest along clear, clean, swiftly flowing remote mountain streams with vegetated streambanks, which are located away from concentrated human activities. The presence of harlequin ducks is considered an indicator of high water quality. Harlequins arrive in northern Idaho between March and May. After nesting begins in mid-May, the males migrate back to the Pacific coast. Nesting continues through July with females rearing the young through late August or September, after which they return to the coast for winter (Cassirer et al. 1996).

Harlequin ducks are listed as a “sensitive” species by Region One of the Forest Service (USDA Forest Service 2005) and are listed as a “species of concern” by the State of Idaho. Management activities that impact stream quality, including those that could increase water yield beyond the stream’s capability, have the potential to impact harlequin ducks. Sedimentation in streams used for breeding may alter the species composition of macroinvertebrates (which are the main prey species of harlequin ducks) or reduce their ability to locate prey (Cassirer et al. 1996).

Consequently, water quality relative to harlequins is vital to protect their prey base and for the maintenance of hydrologic function within the stream setting. Flood events, such that occur periodically within the Lightning Creek drainage, can decrease the suitability of streams as nesting habitat, particularly in the short term due to increases in sedimentation and changes in water flow.

Disturbances that alter the seclusion or isolation that mountain streams provide to breeding pairs and their young can also impact the species (Cassirer et al. 1996). Streams that are removed from human disturbance show the greatest success in harlequin duck breeding rates (Wallen and Groves 1988). Human activities that have the potential to disturb breeding pairs of harlequin duck include roads, trails, campsites, and recreational activities that occur within riparian areas of suitable harlequin duck streams.

Existing Condition

The presence of harlequin duck has been documented within the Lightning Creek drainage since the late 1970s and periodic sightings were reported in the early 1980s. However, it was not until Idaho Fish and Game and the Forest Service began surveying for harlequin ducks in the drainage in the late 1980s that their use of the drainage was more clearly defined. The majority of observations of harlequin ducks and documentation of the appropriate habitat for breeding pairs was concentrated on East Fork Creek between Thunder Creek and Lightning Creek (see Table 15).

Suitable habitat for breeding harlequin ducks is comprised of second order or larger streams that contain reaches with riffle habitat, clear water, gravel to boulder-sized substrate, forested bank vegetation, and an average gradient of 1 to 7 percent (Cassirer et al. 1996).

Table 15. Harlequin duck observations within the project area

Stream Name	Suitable Habitat[3]	Observations of Harlequin Ducks
Lightning Creek	Yes	1984, 1985, 2002, 2007, 2008
Spring Creek	Yes (limited)	1982
Cascade Creek	Yes (limited)	--
East Fork Creek	Yes	1976, 1989, 1990, 1995, 1996, 2002, 2003
Savage Creek	Yes	--
Porcupine Creek	Yes	--
Wellington Creek	Yes	--
Rattle Creek	Yes (limited)	2003

Harlequin duck surveys were conducted by Forest Service personnel in East Fork Creek in 2002, 2003 and 2007. One adult female was observed during the 2002 survey and three ducks were observed together in 2003, presumably an adult female and two juveniles. No harlequin ducks were seen in East Fork Creek during the 2007 survey, but an adult male was observed in the main stem of Lightning Creek by the surveyors after completion of the East Fork Creek survey.

[3] Streams identified as containing suitable habitat means that some of the reaches of that stream contain the appropriate habitat characteristics to potentially support breeding harlequin ducks. However, not all reaches of a particular stream identified as having suitable breeding habitat are suitable.

The Lightning Creek flood event in the fall of 2006 altered stream and riparian habitat characteristics of many stream reaches within the drainage. East Fork Creek, which appears to be the most significant stream for harlequin ducks within the drainage, has likely decreased in its suitability to support breeding harlequin duck, at least in the short term, because of the loss of streambank vegetation and probable changes in macroinvertebrate populations and water flow as a result of the flood. In contrast, the damage to roads by the flood and the resulting decrease in human access into the drainage has likely increased the suitability of some stream reaches because of the decrease in human disturbance and activities.

The existing condition of harlequin duck habitat is evaluated using miles of roads and trails within the riparian areas of harlequin duck breeding streams, where the greatest potential for disturbance occurs. The conservation assessment and strategy for protecting harlequin ducks recommends avoiding roads in drainage bottoms and locating roads in areas not visible from the stream at least 2 sight distances away or 100 meters from the greenline vegetation (Cassirer et al. 1996). Both of these measures are based on detailed site-specific information for each stream and reach. However, using a distance of 150 meters from the stream centerline to determine the amount of roads and trails within the riparian area is likely to account for all roads and trails impacting harlequin ducks and meet the intent of the recommendations, particularly given the propensity of harlequin ducks to use stream reaches with more highly vegetated banks.

The amount of roads and trails currently within 150 meters of streams with potential harlequin duck breeding habitat based on the condition of roads after the flood are approximately 13.3 miles of open road, 14.3 miles of motorized trail and 3.2 miles of nonmotorized trails.

Environmental Consequences

Methodology

The potential effects on harlequin duck were determined by analyzing the change to streams used for breeding as a result of the alternatives based on the miles of roads within the RHCA of breeding streams, the direct disturbance and displacement of harlequin ducks during project implementation, and changes to water quality.

Direct and Indirect Effects of Alternative 1

Under this alternative, there would be no direct impact to harlequin ducks or their breeding streams within the project area because there would be no new management activities, such as road decommissioning, road reconstruction and bridge removal and construction. Consequently, there would be no direct effects or disturbance and displacement of harlequin ducks from this alternative.

However, there would continue to be an indirect effect to the watershed from stream crossings and roads identified as existing or potential threats to aquatic resources. Under this alternative, none of the identified threats such as failing culverts, mass failures, or unstable road prisms would be eliminated or improved and the existing sediment delivery from these sources would continue to negatively impact water quality. As a result, there could be a decrease in the effectiveness of some breeding streams to support harlequin ducks.

Alternative 1 does represent a decrease of about 17 miles of open road and an increase of about 13 miles of motorized trail over the pre-flood condition within 150 meters of streams with potential harlequin duck breeding habitat. This overall decrease of about 4 miles of motorized roads and trails decreases the likelihood of disturbance or displacement of harlequin ducks on streams potentially used as breeding habitat.

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Most of the type of project activities that have the potential to impact harlequin ducks would be the same under each of the action alternatives. These activities include the use of mechanized equipment (e.g., excavators, chainsaws), explosives, and helicopters for tasks such as road decommissioning, road maintenance, culvert replacement or removal, and associated activities. However, the extent and location of these activities varies between alternatives based on the desired access management for a particular road segment after project implementation. A key difference between the alternatives from a harlequin duck analysis standpoint is that the majority of Forest Road 1184 would be converted to nonmotorized trail in Alternatives 4A and 4B. See Table 16 for a comparison of the alternatives with respect to amount of roads within harlequin duck breeding streams. Chapter 2 of the EA contains a detailed description and comparison of the specific actions to be taken under each alternative. The maps in Appendix D of the EA also illustrate the differences in the extent of the proposed activities under each alternative. In addition, refer to the grizzly bear analysis for a more detailed description of specific project activities and their potential impact on wildlife with respect to disturbance and displacement during project implementation.

Table 16. Comparison of roads and trails (miles) within 150 meters of potential harlequin duck breeding streams, including roads on private lands

Roads and Trails	Pre-Flood	Alt 1 (Existing)	Alt 3	Alt 4A and Alt 4B
Open Roads	30.3	13.3	26.5	23.9
Motorized Trails	1.1	14.3	1.1	0.9
Total Motorized Roads/Trails	31.4	27.6	27.6	24.9
Non-motorized Trails	4.1	4.1	4.5	7.2
Total	35.5	31.7	32.1	32.1

Implementation of any of the action alternatives may result in the temporary disturbance of harlequin ducks and portions of the suitable breeding stream that are within close proximity of project activities. This disturbance would be relatively short term in nature, lasting only as long as project activities occur. Harlequin duck activity would likely resume in the area after project activities are completed within 150 meters of stream reaches. The reaction of harlequin ducks to nearby disturbances can range from no reaction, to swimming away, to flying away (Hunt 1998, Smith 2000). The breeding success of harlequin ducks present during project activities could potentially be depressed during the year of implementation, but would not be expected to be impacted beyond that breeding season.

Indirect effects could potentially occur if there was an increase in sediment delivery to wetlands and waterways as a result of project activities, which could potentially degrade harlequin duck breeding habitat. However, a large part of the purpose and need of the project is to improve the condition of the aquatic habitat within the drainage by conducting restoration activities such as removing failing culverts, decommissioning roads within the riparian habitat conservations areas, and shoring up roads in spots where they are currently contributing or have the potential to contribute sediment into streams. Although there may be some small, localized increases in sediment delivery to streams during project activities, there will be a corresponding immediate reduction in the risk of additional sediment delivery from crossing failures, mass failures and flood-damaged road prisms. This improved watershed condition would better support

macroinvertebrate populations that harlequin ducks rely on. Refer to the Aquatics Report for a detailed analysis of how project activities would improve the aquatic condition of the watershed.

In addition, best management practices (BMPs) would be in place to protect water quality and fish habitat and the implementation of the proposed action would also be in compliance with Inland Native Fish Strategy (INFS) standards, which require that protective measures be implemented to protect waterways and wetlands (see the Aquatics Report for a detailed listing of BMPs and INFS standards applicable to this project). Although their may be an increase in sediment into potential breeding habitat during project activities, the implementation of any of the action alternatives would ultimately improve the aquatic conditions of the drainage and would therefore improve the habitat in streams potentially used by harlequin ducks for breeding.

Cumulative Effects Common to All Alternatives

Because the implementation of Alternative 1 would not address threats to water quality within the drainage, any past, present or reasonably foreseeable actions that also negatively impact water quality would act cumulatively to affect the aquatic resource and harlequin ducks. Because the implementation of any of the action alternatives would improve the security of harlequin duck breeding habitat and improve water quality, cumulative impacts would be negligible or discountable. The activities discussed below are the past, present and reasonably foreseeable actions identified in the project file that are within the analysis area and are relevant to the harlequin duck cumulative effects analysis. For a brief description of each of these actions see the Cumulative Effects Analysis section.

Hope/Sagle Land Exchange – A portion of the acres that would become National Forest land are located within the RHCA of Spring Creek, which is a potential harlequin duck breeding stream that has had previous documentation of harlequin ducks. The lands that would be exchanged out of Federal ownership do not contain harlequin duck breeding habitat. Therefore, the Hope/Sagle Land Exchange and the implementation of any of the action alternatives would act cumulatively to trend the analysis area towards providing a higher quality and quantity of potential harlequin duck breeding habitat on Federal lands within the analysis area.

Activities on Other Ownerships – The majority of the southern portion of Lightning Creek watershed is owned by private individuals or industry. The lower portion of Lightning Creek historically may have represented a harlequin duck breeding area. However, the development of private lands along the creek have limited the suitability of this stream reach for breeding harlequin ducks. Consequently, the potential breeding streams within the project area located on National Forest lands have become more important. Roads located on these other ownerships have been accounted for in determining the amount of motorized roads and trails within the RHCAs of breeding streams. Alternative 1 would continue negative impacts to water quality within the drainage that would be additional to activities on other ownerships that negatively impact water quality. In contrast, the increase in the security of potential harlequin duck breeding streams from the reduction of motorized roads and trails within the RHCAs as a result of the implementation of any of the action alternatives would help to offset the lack of lower Lightning Creek as a secure stream reach for breeding harlequin ducks.

Noxious Weeds Monitoring and Treatment – Effects to the aquatic resource were analyzed in the Sandpoint Noxious Weeds Control EIS and its adaptive strategy. No additional effects to the aquatic resource are expected to occur from noxious weed treatment; therefore, there would be no cumulative effects.

Conclusion of Effects

Alternative 1 could potentially negatively impact harlequin duck since it would not address existing or likely threats to water quality from issues such as mass failures. However, it would decrease the likelihood of disturbance or displacement of harlequin ducks on streams potentially used as breeding habitat because it would retain the decrease in miles of roads and motorized trails within 150 meters of streams potentially used for breeding as compared to the pre-flood condition.

During the implementation of any of the action alternatives, there is the possibility of disturbance to harlequin ducks and a temporary increase in sediment delivery to streams. However, the proposed activities, along with the implementation of the design features, would trend the project area streams toward a better aquatic condition that would be more able to support breeding harlequin ducks because it would provide a lower chance of disturbance from humans and a higher chance of supporting a greater macroinvertebrate population. Alternatives 4A and 4B would be the most beneficial to harlequin ducks and their habitat because they would have the greatest decrease in roads and motorized trails within 150 meters of streams potentially used as breeding habitat.

Therefore, the implementation of any of the alternatives, in conjunction with the past actions, ongoing activities and reasonably foreseeable actions discussed above, ***may impact individuals, but would not contribute to a trend toward federal listing or cause a reduction in the viability of the population or species***.

Consistency with Forest Plan and Other Regulations

Because potential breeding habitat would be protected and on some stream reaches improved, all action alternatives would comply with the Forest Plan direction to manage the habitat of species listed in the Regional Sensitive Species Lists to prevent further declines in populations, which could lead to federal listing under the Endangered Species Act. These actions would also be consistent with the National Forest Management Act requirements to provide for the diversity of plant and animal communities across the Forest. However, under Alternative 1, water quality in some streams used by harlequin duck for breeding would continue to be impacted from existing and potential sediment input as result of flood damage, which could adversely affect habitat suitability.

Western Toad

Western toads can be found in a variety of habitat types depending on the time of year, including forested areas while foraging. Breeding takes place from May to July in shallow areas of large and small lakes, beaver ponds, temporary ponds, slow moving streams, and backwater channels of rivers (Maxell 2000). Western toads have been documented traveling more than four kilometers (approximately 2.5 miles) between terrestrial burrows and breeding sites (Maxell 2000). The diet of western toads includes insects, spiders, mites, millipedes, ants and ground beetles. The western toad is most active at night in lower elevations and diurnal at higher, more northerly aspects. It is inactive during the winter and like other toads, buries itself in loose soils or enters rodent burrows during this period.

Survey results combined with incidental observations suggest that this species is found throughout much of northern Idaho. However, while western toads may be widespread across the landscape, it is unknown in what proportion of suitable habitat they occur. Surveys conducted in the northern Rocky Mountains in the 1990s revealed that western toads were absent from a large

portion of their historic range and occupied only a small proportion of suitable habitat (Maxell 2000).

The loss or alteration of aquatic breeding habitat, migration barriers (e.g., roads) between breeding habitat and terrestrial habitat and mortality risk from roads bisecting migration routes appear to be the primary potential risk factors for western toads. Steep road cuts can be a barrier to toads moving between seasonal habitats, and road prisms can also provide a barrier-free travel corridor that can increase the chance for mortality by vehicles. Juvenile toads are vulnerable to being killed by motorized vehicles while dispersing from their natal ponds.

Existing Condition

Potential breeding habitat for western toads is scattered throughout the Lightning Creek drainage in the form of ponds, wetlands, small lakes and the slower moving portions of streams. During wildlife surveys conducted for this project in 2008, three western toads were observed along Trail 52 (Lake Darling Trail). Although there have been no other documented observations of western toads within the project area, their presence is likely, based on the widespread distribution of the species.

Environmental Consequences

Methodology

The potential effects on western toads were determined by analyzing the change to breeding habitat (ponds, wetlands, streams) as a result of the alternatives and the direct disturbance and displacement of western toads during project implementation.

Direct, Indirect and Cumulative Effects of Alternative 1

This alternative would have no direct impacts on western toad or their habitat because there would be no new management activities within the project area such as road decommissioning, road reconstruction and bridge removal and construction. Consequently, there would also be no disturbance or displacement of western toad during management activities.

However, there would continue to be an indirect effect to the watershed from stream crossings and roads identified as existing or potential threats to aquatic resources. Under this alternative, none of the identified threats such as failing culverts, mass failures or unstable road prisms would be decommissioned or improved and the existing sediment delivery from these sources would continue to negatively impact water quality. As a result, there would likely be a continued decrease in the effectiveness of some potential breeding sites to support western toads.

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Most of the type of project activities that have the potential to impact western toads would be the same under each of the action alternatives. These activities include the use of ground-based mechanized equipment (e.g., excavators) and explosives for tasks such as road decommissioning, road maintenance, culvert replacement and removal, and associated activities. However, the extent and location of these activities varies between alternatives based on the desired access management for a particular road segment after project implementation. A few key differences between the alternatives with respect to western toads is that a bridge would be constructed over East Fork Creek, the Porcupine Bridge would be removed, and the majority of Forest Road 1184 and the Lake Darling trail would be converted to nonmotorized trails in Alternatives 4A and 4B. Chapter 2 of the EA contains a detailed description and comparison of the specific actions to be

taken under each alternative. The maps in Appendix D of the EA also illustrate the differences in the extent of the proposed activities under each alternative.

Implementation of any of the action alternative may result in the temporary disturbance of western toads and western toad terrestrial habitat within the project area. There is a possibility that western toads may be temporarily displaced or killed due to the use of ground-disturbing equipment such as excavators and the use of explosives. This disturbance would be relatively short term in nature, lasting only as long as project activities. It is expected that western toad activity would resume in the area following completion of project activities at each location.

Based on the documented use of the area along the Lake Darling trail by western toads, the conversion of the trail from motorized to nonmotorized under Alternatives 4A and 4B would be beneficial to them. Nonmotorized trails are not associated with the same type of direct mortality risks to western toads that are associated with motorized routes. Also, the presence of western toads along the trail suggests that there is effective breeding habitat within approximately 2.5 miles of the trail. Although the trail may or may not pose a significant threat to that breeding habitat from direct damage by OHV use or from increased chance of sediment input, converting the trail to nonmotorized would reduce the threat level.

Indirect effects could potentially occur if there was an increase in sediment delivery to wetlands and waterways as a result of project activities, which could potentially degrade western toad breeding habitat. However, a large part of the purpose and need of the project is to improve the condition of the aquatic habitat within the drainage by conducting restoration activities such as removing failing culverts, decommissioning roads within the riparian habitat conservations areas, and shoring up roads in spots where they are currently contributing or have the potential to contribute sediment into streams. See the Aquatics Report for a detailed analysis of how project activities would improve the aquatic condition of the watershed.

In addition, best management practices would be in place to protect water quality and fish habitat and the implementation of the proposed action would also comply with INFS standards, which require that protective measures be implemented to protect waterways and wetlands (see Aquatics Report). Consequently, although their may be an increase in sediment into potential breeding habitat during project activities, the implementation of any of the action alternatives would ultimately improve the aquatic conditions of the drainage and would therefore improve western toad breeding habitat.

Cumulative Effects Common to All Alternatives

Because the implementation of Alternative 1 would not address threats to water quality within the drainage, any past, present or reasonably foreseeable actions that also negatively impact water quality would act cumulatively to have a negative affect on the aquatic resource and western toads. Because the implementation of any of the action alternatives would improve potential western toad breeding habitat and decrease mortality risk associated with roads, cumulative impacts would be negligible or discountable. The activities discussed below are the past, present and reasonably foreseeable actions identified in the project file that are within the analysis area and are relevant to the western toad cumulative effects analysis. For a brief description of each of these actions, see the Cumulative Effects Analysis section.

Hope/Sagle Land Exchange – A portion of the acres that would become National Forest land are located within the RHCA of Spring Creek, which is potential western toad breeding habitat. The lands that would be exchanged out of Federal ownership also contain potential western toad

breeding habitat. However, even if all of the parcels currently under Federal ownership that were being considered for exchange were in fact exchanged, which is not likely to be the case, the National Forest would still receive an additional two wetlands and an increase of about 3 acres of wetlands, not including an increased ownership of the Spring Creek RHCA. Therefore, the Hope/Sagle Land Exchange and the implementation of any of the alternatives would act cumulatively to trend the analysis area towards providing a higher quality and quantity of potential western toad breeding habitat on Federal lands within the analysis area.

Activities on Other Ownerships – The majority of the southern portion of Lightning Creek watershed is owned by private individuals or industry. Portions of the lower elevation areas are potential breeding habitat for western toad due to the presence of slower moving streams and ponds. However, the development of private lands has likely impacted, to some degree, the suitability of this area as western toad breeding habitat. Alternative 1 would continue negative impacts to water quality within the drainage that would be additive to activities on other ownerships that negatively impact water quality. Conversely, the improvement in water quality as a result of the implementation of any of the action alternatives would help to offset the negative impacts to western toad breeding habitat on private lands.

Noxious Weeds Monitoring and Treatment – Effects to the aquatic resource were analyzed in the Sandpoint Noxious Weeds Control EIS and its adaptive strategy. No additional effects to the aquatic resource are expected to occur from noxious weed treatment; therefore, there would be no cumulative effects.

Conclusion of Effects

Alternative 1 could potentially negatively impact western toad breading habitat since it would not address existing or likely threats to water quality from issues such as mass failures. However, it would decrease the likelihood direct mortality to western toads because it would retain the decrease in miles of roads and motorized trails when compared to the pre-flood condition.

There is a possibility of displacement and/or mortality to western toads as a result project activities under any of the action alternatives. However, project activities are designed to improve the aquatic condition of the watershed by reducing or eliminating existing or potential sediment sources, which would improve the condition of western toad breeding habitat within the drainage. Although all of the action alternatives would improve the aquatic condition, Alternatives 4A and 4B would more fully benefit western toads because they would decommission or convert to nonmotorized trail more miles of existing roads and motorized trails.

Therefore, the implementation of any of the alternatives, in conjunction with the past actions, ongoing activities and reasonably foreseeable actions discussed above, ***may impact individuals, but would not contribute to a trend toward federal listing or cause a reduction in the viability of the population or species***.

Consistency with Forest Plan and Other Regulations

Because the condition of potential western toad breeding habitat would be improved, all action alternatives would comply with the Forest Plan direction to manage the habitat of species listed in the Regional Sensitive Species Lists to prevent further declines in populations, which could lead to federal listing under the Endangered Species Act. These actions would also be consistent with the National Forest Management Act requirements to provide for the diversity of plant and animal communities across the Forest. However, under Alternative 1, water quality in some western toad

breeding habitat would likely continue to be impacted from existing and potential sediment input as result of flood damage, which could adversely affect habitat suitability.

Management Indicator Species and Others

Northern Goshawk

The northern goshawk is a forest habitat generalist that uses a wide variety of forest age classes, structural conditions and successional stages, inhabiting mixed-conifer forests in much of the northern hemisphere (Reynolds et al. 1992). Nesting habitat appears to be the most critical and limiting factor for goshawks. Throughout North America, goshawk nest sites have consistently been associated with the later stages of succession (mature and old growth forests) having moderate to high tree densities located on the lower one-third or bottom of the hillslope in areas with less than a 40 percent slope (Hayward and Escano 1989, Warren 1990, Squires and Reynolds 1997, Graham et al. 1999). Foraging habitat entails a general relaxation of habitat requirements involving a wider range of forest age classes and structures that provide a relatively open forest environment for unimpeded movement or flight through the understory.

Historic numbers of goshawks were likely higher than they are today because many of the species they prey upon were more numerous. Historically, the Lake Pend Oreille drainage contained a greater proportion of old growth than it does currently. Old growth is important for northern goshawks, not only for prey species habitat, but also for the large trees that provide substrate for their substantial nest structures.

Another factor influencing goshawk habitat is the amount of understory vegetation that this generally mesic (moist) area produces. Because northern goshawks require a combination of adequate overstory to provide prey species and adequate clearance for flight maneuverability, some stands that historically were suitable for foraging are no longer suitable due to an increased density of understory vegetation.

At the landscape scale, at least three suitable nest areas should be provided per home range (5,000 to 6,000 acres) to provide long-term nesting habitat for goshawks. The minimal stand size for goshawk nest sites is considered approximately 30 acres with nest sites typically within 0.5 mile of each other (Reynolds et al. 1992). However, based on research conducted in Montana and the subsequent recommendations from the Regional Office, nest stands should be a minimum of 40 acres in size (Clough 2000). The goshawk nesting period is typically from around mid-March through August, with the impacts from disturbance greatest during the courtship, incubation and hatchling stages.

Although the primary risk factor to goshawks is forest management activities that reduce the amount of old forests and their associated structures, another risk factor is human disturbance near nest sites. Disturbance from activities such as heavy equipment operation and timber harvest in close proximity to the nest during the nesting season, particularly during the incubation period can cause nest failure (Boal and Mannan 1994). Recreation activities, such as camping, have also reportedly caused nest failures (Squires and Kennedy 2006). However, there has also been documentation of some level of tolerance by goshawks to human disturbance and cases of repeated nesting attempts by goshawks in an area despite “extreme disturbance” (Squires and Kennedy 2006). Reynolds et al. (1992) recommends managing for road densities as low as possible to minimize disturbance in nest areas.

In 2005, the Regional Forester updated the sensitive species list for the Northern Region and removed the northern goshawk, which up to that point had been designated as a sensitive species

(USDA Forest Service 2005). However, later in 2005, the Regional Forester placed the northern goshawk back on the list while a further review and evaluation was ongoing. The northern goshawk was again removed from the R1 Sensitive Species list in 2007 after review of its status was completed. It remains on the list of IPNF management indicator species (MIS).

Existing Condition

The Lightning Creek drainage encompasses a wide variety of habitat types, aspects and elevations. Consequently, the suitability of the drainage for goshawks varies from area to area. For example, there are several areas with steep topography and dry habitat types, which are not considered suitable for goshawk nesting. In addition, fire exclusion, insects, and diseases have changed the species composition and structure of many stands, reducing their suitability for goshawk habitat. Much of the capable habitat within the project area is occupied either by immature forest stands, younger stands, or mature stands that contain a high density of smaller stems in the understory. As the secondary canopy layer becomes more congested, these stands lose their effectiveness as goshawk foraging areas.

Forest changes have also adversely affected habitat suitability for goshawks by obstructing flight corridors used by goshawks to obtain prey, by suppressing tree growth that would produce large-diameter trees for nesting, and by reducing the herbaceous understory that supports potential prey species. However, suitable goshawk nesting stands are distributed throughout the Lightning Creek watershed, particularly in the East Fork Creek and Rattle Creek subdrainages, and along portions of main Lightning Creek.

Surveys to locate goshawk nest territories within the Lightning Creek watershed and the project area were conducted during the 2003, 2004, 2005 2006 and 2007 nesting seasons by a qualified wildlife biologist and technicians (see project file – Wildlife). Habitat information, slope, aerial photos, and information on the historic use of the area by goshawks were used to determine the most appropriate areas to conduct goshawk nest surveys. Broadcast surveys were conducted from 117 calling stations. On two separate occasions in 2006, a goshawk response was elicited along the south side of East Fork Creek. However, extensive searches of the area were unable to locate a nest. This response was in the same general area as a documented goshawk territory in the early 1990s and an observation of a goshawk in 2002. Surveys in this area in 2007 did not elicit a response and no goshawks were observed. Although a specific nest site has never been located, the level of activity in this area by goshawks indicates that it is likely an active goshawk territory. No other goshawks were observed or heard during surveys throughout the Lightning Creek drainage and no nests were located.

Environmental Consequences

Methodology

Because project activities would be limited to existing road prisms, there would be no direct impact to vegetation in goshawk habitat within the project area and there would be no effect on habitat suitability for goshawks. However, there is potential for disturbance to goshawks during project activities and the potential for increases in goshawk habitat security following project implementation. Consequently, the appropriate method to determine the impact of each alternative on goshawks and their habitat is to analyze the change in habitat security as measured by the level of disturbance and displacement during and following project activities.

Direct, Indirect and Cumulative Effects of Alternative 1

There would be no impacts to northern goshawks from this alternative because there would be no new management activities such as road decommissioning, road reconstruction or bridge removal and construction within the project area. The quantity, quality and distribution of nesting habitat would continue to change over time as natural disturbances, fire suppression and stand development influence habitat suitability for northern goshawks.

Alternative 1 does represent about a 7 mile decrease in drivable miles of road and trails and a slight decrease in road density over the pre-flood condition, which corresponds to a decreased likelihood of disturbance or displacement of goshawk nesting habitat within the project area.

Since Alternative 1 would have no impact on goshawks or their nesting habitat, there is no need to consider the impacts from a cumulative effects standpoint because this alternative would not be an additional impact on northern goshawks.

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Most of the type of project activities that have the potential to impact northern goshawks would be the same under each of the action alternatives. These activities include the use of mechanized equipment (e.g., excavators, chainsaws), explosives and helicopters for tasks such as road decommissioning, road maintenance, culvert replacement or removal and the associated activities. However, the extent and location of these activities varies between alternatives based on the desired access management for a particular road segment after project implementation. A few key differences between the action alternatives from a goshawk analysis standpoint are that a bridge would be built over East Fork Creek and the majority of Forest Road 1184 would be converted to non-motorized trail in Alternatives 4A and 4B. Chapter 2 of the EA contains a detailed description and comparison of the specific actions to be taken under each alternative. The maps in Appendix D of the EA also illustrate the differences in the extent of the proposed activities under each alternative. In addition, refer to the grizzly bear analysis for a more detailed description of specific project activities and their potential impact on wildlife with respect to disturbance or displacement during project implementation.

All action alternatives would decommission the lower and middle portions of Forest Road 473 in the Rattle Creek drainage. Although there has been no documented use of this area by goshawks, some suitable habitat exists along the old road prism in the portion of the drainage that was washed out by the flood.

Activities associated with road decommissioning, reconstruction and conversion may have short-term impacts (during the season of project activities) on goshawks through disturbance, but would have long-term benefits by reducing human access and disturbance over time, and increasing the potential habitat acres (e.g., natural revegetation of previously cleared roadbeds).

Direct and Indirect Effects of Alternative 3

Under this alternative, Forest Road 1184 would be rebuilt as an open drivable road. This road is within the likely goshawk territory associated with East Fork Creek. During the flood of 2006, Forest Road 1184 was damaged in several locations, including two areas with major damage. To return this road to an open, drivable condition would require extensive heavy machine work, along with the need for additional culverts, fill and rip rap. Consequently, the extent of project activities that would be required would have a higher intensity and longer length of time for completion compared to the other action alternatives. It would be necessary for project activities to occur during the summer months, meaning some activities would occur during the goshawk

nesting season. The proposed level of activity would represent an increase in disturbance potential to nesting goshawks above the pre-flood condition or existing condition and could negatively impact nesting goshawks during the year that project activities were conducted in the East Fork Subdrainage. Many factors such as the distance of a nest site from project activities, topography between the two and the behavioral traits of the individual goshawks, affect the extent that project activities might impact nesting goshawks.

Although potential goshawk nesting habitat in other areas of the drainage, such as the lower portions of Rattle Creek, would become more secure under this alternative, the potential for disturbance to nesting goshawks associated with the reconstruction of Forest Road 1184 and subsequent road use within the likely goshawk territory would not be reduced.

There would be no bridge constructed over East Fork Creek under this alternative, so there would not be any potential disturbance to goshawks from its construction within the likely goshawk territory.

Direct and Indirect Effects of Alternative 4A and 4B

Under these alternatives, the first approximately 0.5 mile of Forest Road 1184 would remain as an open road, but the remaining 1.3 miles would be converted to a non-motorized trail. Converting the road to a non-motorized trail would require use of heavy equipment to remove existing culverts and recontour portions of the road prism to render the road more hydrologically inert. These activities could potentially cause disturbance to nesting goshawks depending on the distance from the nest to the road prism. However, the intensity and length of time needed to complete the activities would be substantially less than what would be required for Alternative 3 and therefore alternatives 4A and 4B would have less potential for disturbance or displacement of nesting goshawks. As with Alternative 3, activities would be conducted during the summer months and there is potential for negative impacts to nesting goshawks during the year when project activities are conducted within the East Fork Subdrainage.

A bridge would be constructed over East Fork Creek under these alternatives. The area where the bridge is proposed for construction is on an existing open road where there is currently a water ford. Although no nest site has been found in the East Fork goshawk nest territory, the area of proposed bridge construction is on the outer edge of what may be a goshawk nesting area based on survey data and historical information.

The activities associated with the bridge construction (e.g., heavy equipment operation, rip rap installation, crane operation) could potentially cause disturbance or displacement of goshawks nesting in close proximity to the activities. The construction is expected to occur over the course of one summer and due to the extent of the construction, the noise and activity levels are expected to exceed what would typically be present on this open, drivable road.

Although the bridge construction and conversion of Forest Road 1184 activities could cause nest failure or abandonment (depending on the location of a potential nest site), the impacts are not expected to continue beyond the year of the project activities. However, the majority of activities associated with the conversion of the road to a motorized trail and the bridge construction would likely occur during low water flow (e.g., mid-June through September), therefore they would likely not be ongoing during the courtship, incubation and hatchling stages when goshawks are most sensitive to disturbance.

After project completion, there would be an increase in secure nesting habitat for goshawks under these alternatives within the suspected goshawk territory because of the conversion of the road to a non-motorized trail.

Cumulative Effects Common to Alternatives 3, 4A, and 4B

Because the implementation of any of the action alternatives would improve the security of goshawk nesting habitat, cumulative impacts from this project would be negligible. The activities discussed below are the past, present and reasonably foreseeable actions identified in the project file that are within the analysis area and are relevant to the northern goshawk cumulative effects analysis. For a brief description of each of these actions see the Cumulative Effects Analysis section.

Wildfire Suppression – An increase in tree density as a result of fire suppression has propagated understory overcrowding in goshawk habitat and decreased the ability of goshawk to forage due to the loss of flight paths. The implementation of any of the action alternatives would not have a measurable impact on the vegetative structure of potential goshawk breeding habitat, so it would not be additive with the negative habitat impacts form the lack of wildfires. In fact, although the action alternatives would not change the habitat itself, the implementation of any of the action alternative would increase the security of goshawk nesting habitat through a reduction in disturbance resulting from a decrease in roads and motorized trails.

If fire suppression activities such as described previously were to occur within the Lightning Creek drainage, there would potentially be cumulative impacts to goshawk from the associated disturbance depending on the spatial and temporal specifics of the suppression activities and project activities in relation to one another and in relation to the location of a goshawk nest.

Activities on Other Ownerships – The majority of the southern portion of Lightning Creek watershed is owned by private individuals or industry. These lower elevation areas historically would be considered capable or suitable habitat for northern goshawks. However, the development of private lands has severely limited the suitability of these lands as goshawk nesting habitat. Consequently, National Forest lands have become even more important as a source of habitat for northern goshawks. The increase in the security of goshawk nesting habitat within the project area as a result of the implementation of any of the action alternatives would help to offset the lack of suitable nesting habitat on private land.

Conclusion of Effects

The suitability of the vegetative characteristics for goshawk nesting habitat would not be directly impacted by project activities. However, during project implementation, there is the potential for the disturbance and short-term (one nesting season) displacement of nesting goshawks, particularly in the suspected territory in the East Fork Creek subdrainage. After project implementation, goshawk nesting habitat in the areas receiving road decommissioning (particularly those areas where roads are changing from drivable roads and motorized trails) would become more secure and have a substantially decreased chance of disturbance or displacement to nesting goshawks into the future. Although there may be a short-term impact to nesting goshawks, there would be a benefit in the long term because of the increase in secure nesting habitat. Alternatives 4A and 4B would be the most beneficial to goshawks and their habitat.

In addition, Samson (2006) concluded the following with regard to the short-term viability of the northern goshawk in the Northern Region of the Forest Service:

- No scientific evidence exists that the northern goshawk is decreasing in numbers.
- Increases in the extent and connectivity of forested habitat have occurred since European settlement.
- Well-distributed and abundant northern goshawk habitat exists on today's landscape.
- Level of timber harvest in the Northern Region (8,581 ha of 9,045,255 ha or 0.09% of the forested landscape) is insignificant.
- Suppression of natural ecological processes has increased and continues to increase amounts of northern goshawk habitat.

In 1998, the U.S. Fish and Wildlife Service (USDI Fish and Wildlife Service 1998) concluded that the northern goshawk was not warranted for listing as a threatened or endangered species in the western United States because, based on the best available information:

- There was no evidence of a declining population trend for goshawks in the western U.S.
- There was no evidence that goshawk habitat is limiting the population, or that significant curtailment of the species' habitat or range is occurring.
- The goshawk continues to be well-distributed throughout its historical range.
- There are no significant areas of extirpation.
- While the goshawk uses stands of mature and older forests, it is not dependent on old-growth, and uses a variety of forest habitats in meeting its life history requirements.

Consequently, the implementation of any of the action alternatives, in conjunction with the past actions, ongoing activities and reasonably foreseeable actions discussed above, ***may impact individuals or habitat, but would not indicate a local or regional change in habitat quality or population status***.

Consistency with Forest Plan and Other Regulations

All alternatives comply with the Forest Plan direction to manage the habitat of species listed in the Regional Sensitive Species List to prevent further declines in populations, which could lead to federal listing under the Endangered Species Act (USDA Forest Service 1987). These alternatives would also be consistent with the National Forest Management Act requirements to provide for a diversity of plant and animal communities across the Forest.

The IPNF Forest Plan (USDA Forest Service 1987) selected the northern goshawk as a management indicator species for old growth habitats and established guidance for managing old growth to provide for viable populations of this species. It states, "*Approximately 10 percent of the Forest will be maintained in old growth as needed to provide for viable populations of old growth dependent and indicator management species.*" To obtain the desired distribution, each designated old growth unit would be managed to maintain approximately five percent old growth where it exists. Since there are no old growth stands in the analysis area that would be affected by project activities, the proposed actions would not likely indicate a local or regional change in population status or distribution.

Rocky Mountain Elk

Rocky Mountain elk are widely distributed within the Idaho Panhandle National Forests. Elk move seasonally in response to weather patterns and food availability. Because of their greater foraging ability and mobility, elk use higher elevations more than deer during the winter period. During the summer period, there is a general relaxation of habitat requirements and a broader use

of available habitats. Elk are regarded as a focal species within the project area because of their high social, cultural, and economic importance.

Early records indicate that Rocky Mountain elk occurred throughout most of Idaho. However, large herds were apparently absent from the narrow, northern portion of the state (Thomas and Toweill 1982). The discovery of gold in Pierce, Idaho in 1860 and the subsequent settlement and exploitation of the area led to a reduction in elk numbers down to a few isolated herds in the State. A translocation program was initiated in 1915 and continued through 1946. In 1938, the Bonner Sports Association (later renamed Bonner County Sportsman Association) restocked areas of northern Idaho with elk from Yellowstone National Park. Today, elk populations exceed their distribution and population levels of a century ago (Thomas and Toweill 1982, IDFG 2004).

Risk factors for elk include a high degree of roads that increases the vulnerability of elk to poaching, stress, hunting loss, accidents and displacement (USDI Bureau of Land Management and USDA Forest Service 1997) and the loss of winter range.

Existing Condition

The Lightning Creek drainage encompasses as wide variety of habitat types, aspects and elevations. Consequently, the suitability of the drainage for elk varies from area to area and from season to season. Past activities or events that have shaped the landscape and influenced habitat for Rocky Mountain elk within the analysis area include road construction, the development of private land, fire suppression and timber harvest.

The Lightning Creek Restoration project area lies within the Idaho Department of Fish and Game's Game Management Unit 1. Game Management Unit 1 covers the entire northern portion of the Idaho panhandle from the north shore of Lake Pend Oreille to the border with Canada. The elk population in this management unit has experienced substantial growth during the last decade and herd sizes are expanding (IDFG 2007).

Prior to the flood there was a little less than 116 miles of motorized access in the Lightning Creek drainage, which correlates to a road density of approximately 0.98 miles per square mile over the entire drainage. Due to flood damage and the subsequent access management restrictions, the miles of motorized access after the flood decreased to a little over 108 miles, which correlates to a road density of approximately 0.92 miles per square mile. See Table 10 for a more detailed breakdown of the motorized access types before and after the flood.

Environmental Consequences

Methodology

Because the alternatives analyzed do not propose any vegetation management activities and would therefore not alter the amount of forage or cover, the potential effects to elk will be determined by analyzing the change in miles of motorized roads and trails and change in road density as a result of each alternative. In addition, potential impacts to habitat security for elk from disturbance and displacement during project implementation will be analyzed.

Direct, Indirect and Cumulative Effects for Alternative 1

This alternative would have no impacts on elk or big game winter range because there would be no new management activities within the project area such as road decommissioning, road reconstruction and bridge removal and construction. Consequently, there would also be no disturbance or displacement of elk.

Alternative 1 does represent about a 7 mile decrease in drivable miles of road and trails and a slight decrease in road density over the pre-flood condition, which corresponds to increased security of elk habitat within the project area.

Since Alternative 1 would have no impact on elk or their habitat, there is no need to consider the impacts from a cumulative effects standpoint because this alternative would not be an additional impact on elk.

Direct and Indirect Effects Common to Alternatives 3, 4A and 4B

Most of the type of project activities that have the potential to impact elk would be the same under each of the action alternatives. These activities include the use of mechanized equipment (e.g., excavators, chainsaws), explosives and helicopters for tasks such as road decommissioning, road maintenance, culvert replacement and removal and the associated activities. However, the extent and location of these activities varies between alternatives based on the desired access management for a particular road segment after project implementation. The main difference between the action alternatives from an elk analysis standpoint is the road densities resulting from the implementation of the different action alternatives (see Table 11). Chapter 2 of the EA contains a detailed description and comparison of the specific actions to be taken under each alternative. The maps in Appendix D of the EA also illustrate the differences in the extent of the proposed activities under each alternative. In addition, refer to the grizzly bear analysis for a more detailed description of specific project activities and their potential impact on wildlife with respect to disturbance and displacement during project implementation.

Roads in elk habitat that are open for public use with motorized vehicles have a significant influence on elk by reducing the use of adjacent habitat (Leege 1984). Despite these lower elk densities along open roads, there is a much higher harvest rate in these areas. Almost twice as many elk are killed within a quarter of a mile of open roads as compared to areas further from roads (Leege 1984). Accordingly, the potential of an area to be used by elk increases as road densities decrease (Leege 1984). All of the action alternatives represent a decrease in road densities over the pre-flood watershed condition.

The proposed activities would likely cause a short-term disturbance to elk during project implementation. This disturbance could range from a physiological response (e.g., increased heart rate, stress) to being displaced from the activity area. A typical elk response to mechanized equipment use would be to move only as far as is necessary to cross a topographic barrier into an area free of disturbance. Due to the numerous project activities to be accomplished and the desire to not have project activities occurring throughout the entire watershed simultaneously, the project would be implemented in a series of steps (see Design Features – Grizzly Bear Protection). This would limit project activities within secure habitat to one subdrainage at a time and only for a period of one operating season (e.g., late spring, summer, early fall), which would decrease the amount of disturbance to elk across the landscape and retain the ability of adjacent areas to support elk displaced from areas with active project activities. Some research has shown that elk return shortly after people and equipment leave an area if the activities did not last longer than one operating season (Lyon 1979).

Although there would likely be an impact to elk while the project activities are occurring, there would be an increase in the security of elk habitat within the Lightning Creek drainage following the implementation of any of the action alternatives. Alternative 4B represents the lowest post-project road density and therefore affords the greatest degree of secure habitat for elk.

Cumulative Effects Common to Alternative 3, 4A and 4B

Because the implementation of any of the action alternative would ultimately improve the security of elk and big game habitat, cumulative impacts from this project would be negligible. The activities discussed below are the past, present and reasonably foreseeable actions identified in the project file that are within the analysis area and are relevant to the Rocky Mountain elk cumulative effects analysis. For a brief description of each of these actions see the Cumulative Effects Analysis section.

Supplemental Forest Plan Motorized Access Amendment – Because of the significant overlap between the grizzly bear recovery area and elk habitat, the access management actions that stem from the amendment decision would provide benefits to elk through road management that is designed to increase grizzly bear habitat security.

Hope/Sagle Land Exchange – Due to the elevation, aspect and habitat type of the land that would be acquired and the elimination of the lands potential for residential development should it become National Forest land, the land exchange would enhance elk winter range and security. Therefore, the Hope/Sagle Land Exchange and the implementation of any of the action alternatives would act cumulatively to trend the analysis area towards providing a higher quality and quantity of elk winter range.

Activities on Other Ownerships – The majority of the southern portion of Lightning Creek watershed is owned by private individuals or industry. These lower elevation areas historically likely represented some the best elk winter range, particularly during severe winters, which is a vital component of habitat for elk. However, the development these private lands has severely limited the suitability of these lands as elk winter range habitat. Consequently, the lower elevation portions of the project area located on National Forest lands have become even more critical as elk winter range habitat. Roads located on these other ownerships have been accounted for in determining the amount of motorized roads and trails and the road densities for the drainage. The increase in elk security and reduction in road densities as a result of the implementation of any of the action alternatives would help to offset the lack of secure elk habitat on private land.

Wildfire Suppression – The lack of periodic wildfire has kept stands in a more advanced successional state, which has decreased the availability of forage for elk. The implementation of any of the action alternatives would not further decrease forage for elk or measurably increase forage for elk or other big game. However, the decrease in motorized access and road density within the drainage would likely allow elk to forage in areas that they may have previously been unlikely to use due to a lack of habitat security.

If fire suppression activities such as described previously were to occur within the Lightning Creek drainage, there would potentially be cumulative impacts to elk from the associated disturbance depending on the spatial and temporal specifics of the suppression activities and project activities in relation to one another.

Hunting –The Idaho Department of Fish and Game regulates the legal hunting of elk and systematically determines the number and type of elk permits available to the public in order to maintain a healthy and productive elk population. The changes in access would increase the security of elk habitat and likely the use of the area by big game after project completion.

Noxious Weeds Monitoring and Treatment – Effects to big game species were analyzed in the Sandpoint Noxious Weeds Control EIS and its adaptive strategy. No additional effects to big

game are expected to occur from noxious weed treatment; therefore, there would be no cumulative effects.

Other activities that may affect elk or elk habitat within the cumulative effects analysis area include prescribed burning, recreation activities (e.g., berry picking, dispersed camping, horseback riding, rock permits, firewood gathering), road maintenance, helispot maintenance, climatic station maintenance and the maintenance of communication sites. The potential impact of these activities on elk and habitat security would be the short-term displacement or avoidance of the activity area by elk. The degree of impact would vary greatly depending on the duration, intensity, timing and probability of elk presence in the area of activity at the time of the disturbance. However, because the implementation of any of the action alternatives would represent an increase in elk habitat security within the cumulative effects analysis area when compared to the pre-flood condition, the Lightning Creek Restoration project when viewed in conjunction with these other activities would trend the analysis area toward a higher degree of habitat security for elk.

Conclusion of Effects

Although there is potential for the disturbance and displacement of elk during project implementation, under any of the action alternatives, the decrease in motorized road and trail miles and in road density would benefit elk in the short term (upon completion of project implementation) and long term (foreseeable future). Alternative 4B represents the largest decrease in motorized routes and road density and therefore the greatest benefit to elk in terms of habitat security. Alternative 4A would result in a slightly higher amount of motorized routes and road density than Alternative 4B, but still represents a substantial increase in habitat security for elk. Alternative 3 would result in a slight increase in motorized routes and road density over the exiting condition, but it does represent a decrease when compared to the pre-flood condition.

Therefore, the implementation of any of action alternatives, in conjunction with the past actions, ongoing activities and reasonably foreseeable actions discussed above, ***may impact individuals or habitat, but would not indicate a local or regional change in habitat quality or population status***.

Consistency with Forest Plan and Other Regulations

All alternatives are consistent with the Forest Plan standards and guidelines dealing with the management of big game species (USDA Forest Service 1987, p. II-16). Elk are not considered a Management Indicator Species on the North Zone of the IPNF, and therefore there are no Forest Plan standards regarding elk or their habitat. Elk are analyzed and discussed because they have important social and economic value to the surrounding communities. There are no other laws or regulations specific to elk management.

Summary of Effects to Wildlife

Table 17. Comparison of alternatives to pre-flood and existing condition for species analyzed in detail based on the effects to the species after implementation of the alternative is complete

Species	Alternative 1	Alternative 3		Alternative 4A		Alternative 4B	
	Change Compared to…	Change Compared to…		Change Compared to…		Change Compared to…	
	Pre-Flood Condition	Pre-Flood Condition	Existing Condition	Pre-Flood Condition	Existing Condition	Pre-Flood Condition	Existing Condition
Threatened and Endangered Species							
Grizzly Bear	+*	+	-	+	+	+	+
Gray Wolf	+	+	-	+	+	+	+
Canada Lynx	+	+	-	+	+	+	+
Sensitive Species							
Harlequin Duck	-	+	-	+	+	+	+
Wolverine	+	+	-	+	+	+	+
Western Toad	-	+	-	+	+	+	+
Management Indicator Species and Others							
Northern Goshawk	+	+	-	+	+	+	+
Rocky Mountain Elk	+	+	-	+	+	+	+

*A '+' sign indicates a positive effect to the species after the implementation of that alternative and a '–' sign indicates a negative effect to the species after the implementation of that alternative.

Table 18. Summary of effects determinations by alternative for all wildlife species considered, including those not analyzed in detail. Determinations are given in language established by the regulatory framework. For species where the overall effect of the project after completion would be beneficial to that species, but may affect and is either not likely to adversely affect or is likely to adversely affect that species during project implementation, the effects determination must reflect the highest degree of likely negative effects.

Species	Alternative 1	Alternative 3	Alternative 4A	Alternative 4B
Threatened and Endangered Species				
Grizzly Bear	No effect	Likely to adversely affect	Likely to adversely affect	Likely to adversely affect
Woodland Caribou	No effect	No effect	No effect	No effect
Gray Wolf	No effect	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Canada Lynx	No effect	May affect, not likely to adversely affect	May affect, not likely to adversely affect	May affect, not likely to adversely affect
Sensitive Species				
Bald Eagle	No impact	No impact	No impact	No impact
Flammulated Owl	No impact	No impact	No impact	No impact
Black-backed Woodpecker	No impact	No impact	No impact	No impact

Species	Alternative 1	Alternative 3	Alternative 4A	Alternative 4B
Black Swift	No impact	No impact	No impact	No impact
Harlequin Duck	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species
Peregrine Falcon	No impact	No impact	No impact	No impact
Pygmy Nuthatch	No impact	No impact	No impact	No impact
Common Loon	No impact	No impact	No impact	No impact
Fisher	No impact	No impact	No impact	No impact
Wolverine	No impact	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species
Northern Bog Lemming	No impact	No impact	No impact	No impact
Townsend's Big-eared Bat	No impact	No impact	No impact	No impact
Fringed Myotis	No impact	No impact	No impact	No impact
Coeur d'Alene Salamander	No impact	No impact	No impact	No impact
Western Toad	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species	May impact individuals or habitat, but would not likely contribute to a trend towards federal listing or cause a loss of viability to the population or species
Management Indicator Species and Others				
Northern Goshawk	No impact	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status
Pileated Woodpecker	No impact	No impact	No impact	No impact
American Marten	No impact	No impact	No impact	No impact
White-tailed Deer	No impact	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status
Rocky Mountain Elk	No impact	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status	May impact individuals and habitat, but would not indicate a local or regional change in habitat quality or population status

Design Features

Road Decommissioning – All road decommissioning would be accomplished with techniques appropriate to site-specific conditions. Decommissioned roads would be recontoured for one sight distance from the beginning of the road and a permanent closure structure, such as large boulders, would be put in place to eliminate the unauthorized, motorized use of the road.

Estimated Effectiveness: High; Limiting the motorized use of forest roads has been shown to increase the effectiveness of habitat for wildlife and decrease the risk of mortality for species such as grizzly bears (USDI Fish and Wildlife Service 1993, 1995 and Interagency Grizzly Bear Committee 1994).

Preventing Public Use of Closed Roads During the Project – To prevent establishment of motorized public use patterns on currently undrivable roads that are opened for project activities, the roads would be managed as follows:

- If roads are reopened prior to use for the project, they would be closed to public motorized use with a gate or other effective closure device.
- Once project activities start, the roads would remain closed to public use with a gate. Gates would be closed behind project vehicles and would remain closed during periods of inactivity.
- After completion of project activities, the roads would remain closed to public motorized use with a gate or other effective closure device until the road is decommissioned or put into storage.
- Decommissioning or storage activities would occur as soon as possible after completion of project activities.

Estimated Effectiveness: High; limiting the motorized use of forest roads has been shown to increase the effectiveness of habitat for wildlife and decrease the risk of mortality for species such as grizzly bears (USDI Fish and Wildlife Service 1993, 1995 and Interagency Grizzly Bear Committee 1994). Under contract provisions, administration of contract provisions and compliance monitoring of these measures would be implemented.

Preventing Public Use of Restricted Roads During the Project – To prevent the unauthorized motorized use of roads that are currently managed as restricted, gates would be closed behind project vehicles and would remain closed during periods of inactivity.

Estimated Effectiveness: High; limiting the motorized use of forest roads has been shown to increase the effectiveness of habitat for wildlife and decrease the risk of mortality for species such as grizzly bears (U.S. Fish and Wildlife Service 1993, 1995 and Interagency Grizzly Bear Committee 1994). Under contract provisions, administration of contract provisions and compliance monitoring of these measures would be implemented.

Reducing Disturbance from Explosives – Explosives would be used wherever feasible, particularly on currently impassible roads, to reduce or eliminate the need for opening up these roads to motorized vehicles and potential unauthorized motorized use. The number of explosions per site would be kept to the minimal amount necessary and methods of reducing the noise level during explosions would be incorporated on a site-by-site basis to achieve the lowest level of noise possible while accomplishing the objective. Specific measures include:

- Explosives would not be used between two hours before sunset and two hours after sunrise.

- Limit the use of surface shots. Confine shots to augered holes, where feasible.
- Use the nonel system whenever possible. The nonel system is a non-electronic system, which is the most versatile and safest way to detonate explosives. The advantage from a noise perspective is that it allows for millisecond delays between multiple shots, thereby reducing the peak noise level and debris thrown by the explosion.
- All holes would be individually primed with a nonel cap.
- Ensure the proper loading and stemming of augered holes. Proper loading means that the correct type of explosives for the site characteristics (e.g. type of rock, depth of culvert) would be used without overloading with too much explosives and creating more noise. Stemming of the hole refers to placing the explosives in a hole or culvert and then filling in the hole or culvert with dirt or sandbags. It allows for more effective denotations with less explosives and less noise because the energy of the shot is absorbed by the dirt or sandbags and not transferred directly to the air.
- For sites requiring multiple shots, utilize the nonel system to detonate the shots with millisecond delays.

Estimated Effectiveness: High; these measures would diminish negative impacts to wildlife by reducing the amount of drivable roads and by substantially shortening the length of time noise disturbance would be present at a particular site, as compared to the use of ground disturbing equipment such as excavators. These measures have also been shown to substantially reduce the noise level during the use of explosives, thereby affecting a smaller area and reducing the disturbance effect on wildlife in the vicinity of the blasting (USDA Forest Service, unpublished report).

Wildlife Habitat Security Measures – Equipment, including explosives, needed for project activities on currently impassible roads would be packed in by project personnel or pack animals, wherever feasible, to reduce or eliminate the need for helicopter flights or motorized vehicle transportation of equipment.

Estimated Effectiveness: Moderate to High; Nonmotorized activities such as hiking and horseback riding generally elicit a reduced disturbance or displacement response by wildlife species (Naylor 2006, Rowland et al. 2004, Wisdom et al. 2004).

Helicopter Use – The use of helicopters would be kept to a minimum and would only be used for tasks requiring their use or when their use poses a lower level of disturbance to wildlife than alternative methods of accomplishing the same task, such as opening up a currently undrivable road to motorized use. For example, whenever possible, multiple culverts would be flown out simultaneously to reduce the number of trips and all helicopter flights within each subdrainage would be conducted over as short a time period as possible. Whenever possible, helicopters would remain a minimum of 500 meters above ground level and follow a flight path that stays directly above open or restricted roads, in that order. All helicopter landings should be placed along open roads. Bears observed from helicopters would not be approached and the flight path would be altered to either gain an altitude of at least 500 meters above ground level or go around the bear by at least a half a mile. In order to reduce or eliminate disturbance to grizzly bears during the den emergence period, there would be no helicopter flights for project purposes from April 1 to May 15.

Estimated Effectiveness: Moderate; Research shows that flights higher than 500 meters above ground level do not elicit a panic response by bears (Klein 1974). In addition, the intensity of the disturbance and the associated response by bears to a helicopter flight is somewhat moderated by

flights occurring over areas where displacement has already occurred as a result of human use (e.g., open road prisms) or other road-related disturbance activities (McLellan and Shackleton 1989). Research within the Cabinet Mountains found that 95 percent of grizzly bears emerge from their dens after April 1, with 82 percent emerging during the month of April (Kasworm et al. 2007).

Grizzly Bear Protection – Project activities within the Scotchman BMU and North Lightning BMU would be designed to reduce or eliminate the impact of activities on grizzly bears.

- No project activities would occur in core habitat within spring habitat in the Scotchman or North Lightning BMUs during the spring bear season, April 1 to June 15.
- Project activities requiring the use of motorized equipment (e.g., excavators, chainsaws, helicopters) or explosives within core habitat would only take place in one subwatershed per year and would move systematically throughout the Lightning Creek watershed.
- The following chart represents a likely scenario on the timing of how project activities would be implemented:

Year of Project	Subdrainage (6th code HUC)	Activities within Core Habitat?	Roads/Trails with Ground Disturbance Activities
1	- Lightning Creek below East Fork Lightning Creek - Middle Lightning Creek - Lightning Creek above Rattle Creek	No	419, 419B, 642
1	- Middle Lightning Creek (Porcupine Creek)	Partially	642, 2759, 399, Section 26 Roads
2	- Middle Lightning Creek (Rattle Creek)	Partially	473, 473A, 473UA, 473UB, Section 36 Roads
3	- East Fork Lightning Creek	Partially	1030, 1184, Trail 61, Trail 212
4	- Middle Lightning Creek (Wellington Creek)	Partially	1006, 1016, 1053
5	- Middle Lightning Creek (Mud Creek)	Partially	340
5	- Middle Lightning Creek	No	1054A, 1054B
6	- Lightning Creek above Rattle Creek	Partially	1022A, 1091A, 1091UB, 419A, 419H

Estimated Effectiveness: High; the timing and spatial limitations would be implemented as part of the contract. Providing core habitat within a grizzly bear's home range that can be relied upon to be free of disturbance minimizes the effects of their displacement from areas where human activities are occurring (USDI Fish and Wildlife Service 2001). Similar design features have been used in past projects such as the Kirby's Wildlife Habitat Improvement Project and have been effective in keeping project activities from impacting the entire landscape simultaneously

Food and Garbage Storage - The Grizzly Bear Management Protection Plan (Attachment A) would be included in all contracts and would be adhered to by all Forest Service employees, contractors, and subcontractors.

Estimated Effectiveness: High; improperly stored food and garbage is identified as a principle cause of grizzly bear mortality and following established food and garbage storage guidelines has been shown to substantially reduce or eliminate conflicts between humans and wildlife, particularly bears (Wakkinen and Kasworm 2004, U.S. Fish and Wildlife Service 1993, Harms 1977).

Gray Wolf Protection – To limit disturbance to wolves during denning, there would be no project activities within one mile of an active den site or rendezvous site between April 15 and June 30.

Estimated Effectiveness: High; Through the monitoring of the recovering wolf population it appears that although there have been very little land use restrictions imposed for the benefit of wolves, restrictions around active den sites on federally managed lands have been successful (USDI Fish and Wildlife Service 2003).

Literature Cited

Aubry K.B., L.F. Ruggiero, J.R. Squires, K.S. McKelvey, G.M. Koehler, S.W. Buskirk, and C.J. Krebs. 2000. Conservation of lynx in the United States: a systematic approach to closing critical knowledge gaps. Pages 455–470 *In* Ecology and conservation of lynx in the United States. University Press of Colorado. Boulder, CO.

Aubry K.B., K.S. McKelvey and J.P. Copeland. 2007. Distribution and broadscale habitat relations of the wolverine in the contiguous United States. Journal of Wildlife Management 71(7):2147-2158.

Aune, and W.F. 1989. East Front grizzly bear study; final report. Montana Department of Fish, Wildlife and Parks. Helena, MT. 332 pp.

Ballard, W.B., J.S. Whitman and C.L. Gardner. 1987. Ecology of an exploited wolf population in south-central Alaska. Wildlife Monographs, Number 98. 54 pp.

Banci, V. 1994. Wolverine. *In* Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, L. J. Lyon and W. J. Zielinski, tech. eds. The scientific basis for conserving forest carnivores: American marten, fisher, lynx and wolverine in the western United States. General Technical Report RM-254. Fort Collins, Colorado: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 184 pp.

Cassirer, E.F., J.D. Reichel, R.L. Wallen, and E.C. Atkinson. 1996. Harlequin duck (*Histrionicus histrionicus*) United States Forest Service/Bureau of Land Management Habitat Conservation Assessment and Conservation Strategy for the U.S. Rocky Mountains. 60 pp.

Christensen, A.G. and M.J. Madel. 1982. Cumulative effects analysis process: grizzly habitat component mapping. USDA Forest Service. Kootenai National Forest.

Clough, L.T. 2000. Nesting habitat selection and productivity of northern goshawks in west-central Montana. Missoula, MT. University of Montana. M.S. Thesis. 87 pp.

Copeland. 1996. Biology of the wolverine in Central Idaho. M.S. Thesis, University of Idaho, Moscow, ID. 138 pp.

Efroymson, E.A., W.H. Rose, S. Nemeth and G.W. Suter. 2000. Ecological risk assessment framework for low-altitude over flights by fixed-wing and rotary-wing military aircraft. U.S. Department of Defense Strategic Environmental Research and Development Program, Environmental Sciences Division. Publication Number 5010.115.

Galen Carol Audio. 2007. Decibel (Loudness) Comparison Chart. Available online at http://www.gcaudio.com/resources/howtos/loudness.html. (Last accessed on October 12, 2008).

Graham, R. T., R. L. Rodriquez, K. M. Paulin, R. L. Player, A. P. Heap and R. Williams. 1999. The northern goshawk in Utah: habitat assessment and management recommendations. General Technical Report RMRS-GTR-22. USDA Forest Service. Rocky Mountain Research Station. Ogden, UT. 48 pp.

Harms, D.R. 1977. Black bear management in Yosemite National Park. *In* Bears – Their Biology and Management. A selection of papers from the Fourth International Conference on Bear Research and Management. Volume 4, 1980. Kalispell, MT.

Hayward, G. D. and R. E. Escano. 1989. Goshawk nest-site characteristics in western Montana and northern Idaho. *In*: The Condor. 91:476-479.

Heidorn. 1999. Thunder: A Child of Lightning. Available online at http://www.islandnet.com/~see/weather/elements/thunder2.htm. (Last accessed on October 12, 2008).

Idaho Department of Fish and Game (IDFG). 2004. Progress Report: Elk. Project W-170-R-28. B. Compton, ed. Boise, ID.

Idaho Department of Fish and Game. 2007. Progress Report: Elk. Project W-170-R-31. B. Compton, ed. Boise, ID.

Interagency Grizzly Bear Committee (IGBC). 1987. Grizzly bear compendium. National Wildlife Federation. Washington, D.C. 540 pp.

Interagency Grizzly Bear Committee. 1994. Taskforce Report: Grizzly Bear/Motorized Access Management. IGBC.

Interagency Grizzly Bear Committee. 1998. Taskforce Report: Grizzly Bear/Motorized Access Management. IGBC.

Kasworm, W.F. and T.L. Manley 1990. Road and trail influences on grizzly bears and black bears in northwest Montana. International Conference on Bear Research and Management. 8:79-84.

Kasworm, W.F., H. Carriles, T.G. Radandt, and C. Servheen. 2007. Cabinet-Yaak grizzly bear recovery area 2006 research and monitoring progress report. USFWS. Univ. of MT, Missoula, MT. 69 pp.

Klein, D.R. 1974. The reaction of some northern mammals to aircraft disturbance. Pages 377-383 *In* Eleventh International Congress of Game Biologists. National Swedish Environment Protection Board, Stockholm.

Koehler, G. M. and K. B. Aubry. 1994. Lynx. *In* Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, L. J. Lyon and W. J. Zielinski, tech. eds. The scientific basis for conserving forest carnivores: American marten, fisher, lynx and wolverine in the western United States. General Technical Report RM-254. Fort Collins, Colorado: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 184 pp.

Krebs, J., E.C. Lofroth and I. Parfitt. 2007. Multiscale habitat use by wolverines in British Columbia, Canada. Journal of Wildlife Management 71(7):2180-2192.

Larkin, R. 1996. Effects of Military Noise on Wildlife: A Literature Review. Center for Wildlife Ecology, Illinois Natural History Survey. CERL Technical Report. Champaign, Il.

Leege, T.A. 1984. Guidelines for evaluating and managing summer elk habitat in northern Idaho. Wildlife Bulletin No. 11, Idaho Department of Fish and Game. 41 pp.

Lyon, L.J. 1979. Influences of logging and weather on elk distribution in western Montana. Research Paper INT-236. Ogden, UT: USDA Forest Service, Intermountain Forest and Range Experiment Station. 18 pp.

MacCallum, B. 2001. Status of harlequin duck (*Histrionicus histrionicus*) in Alberta. Alberta Sustainable Resource Development, Fisheries and Wildlife Management Division, Resource Status and Assessment Branch , and Alberta Conservation Association. Alberta Wildlife Status Report No. 36. Edmonton, AB. 38 pp.

Mack, C.M. and K. Laudon. 1988. Idaho wolf recovery project: recovery and management of gray wolves in Idaho. Annual Report 1995-1998. Nez Perce Tribe, Department of Wildlife Management. Lapwai, ID. 19 pp.

Magoun, A.J. and J.P. Copeland. 1998. Characteristics of wolverine reproductive den sites. Journal of Wildlife Management 62(4):1313-1320.

Martin, S.A., A. Leung, P. Pallini. 2005. California Off-Highway Vehicle Noise Study: A Report to the California Legislature as Required by Public Resources Code Section 5090.32(o). Wyle Laboratories. El Segundo, CA.

Mattson, D.J., R.R. Knight and B.M. Blanchard. 1987. The effects of developments and primary roads on grizzly bear habitat use in Yellowstone National Park, Wyoming. International Conference on Bear Research and Management. 7:259-273.

Maxell, B.E. 2000. Management of Montana's amphibians: a review of risk factors to population viability; species accounts: identification, distribution, taxonomy, habitat use/ natural history, and status and conservation. Report to USDA Forest Service Region One, Contract number: 43-0343-0-0224. University of Montana, Wildlife Biology Program. Missoula, MT. 161 pp.

McLellan, B.N. and D.M. Shackleton. 1988. Grizzly bears and resource extraction industries: effects of roads on behavior, habitat use and demography. Journal of Applied Ecology 25:451-460.

McLellan, B.N. and D.M. Shackleton. 1989. Grizzly bears and resource extraction industries: habitat displacement in response to seismic exploration, timber harvesting and road maintenance. Journal of Applied Ecology 26:371-380.

Mech, L.D. 1995. The challenge and opportunity of recovering wolf populations. Conservation Biology. 9:270-278.

Mowat, G., K.G. Poole and M. O'Donoghue. 2000. Ecology of lynx in northern Canada and Alaska. Pages 265-306 *in* Ecology and conservation of lynx in the United States. University Press of Colorado. Boulder, CO.

Nadeau, M.S., C. Mack, J. Hoylan, J. Husseman, M. Lucid, B. Thomas, D. Spicer. 2008. Wolf conservation and management in Idaho: progress report 2007. Idaho Department of Fish and Game, Boise, ID; Nez Perce Tribe, Lapwai, ID. 73 pp.

Naylor, L.M. 2006. Behavioral responses of Rocky Mountain elk (Cervus elaphus) to recreational disturbance. Corvallis, OR. Oregon State University. M.S. Thesis. 117 pp.

Philip Williams and Associates, Ltd (PWA). 2004. Lightning Creek Watershed Assessment. Prepared for Avista Corporation and Lightning Creek Technical Committee by Philip Williams and Associates, Ltd. PWA Ref No. 1621, Boise, ID.

Quigley, T.M. and S.J. Arbelbide, tech eds. 1997. An assessment for ecosystem components in the Interior Columbia Basin and portions of the Klamath and Great Basins. Volume III. USDA Forest Service General Technical Report PNW-GTR-405. Pacific Northwest Research Station. Portland, OR.

Reynolds, P.E., H.V. Reynolds and R.H. Follmann. 1986. Responses of grizzly bears to seismic surveys in northern Alaska. Bears: Their Biology and Management, Volume 6, A Selection of Papers from the Sixth International Conference on Bear Research and Management, Grand Canyon, AZ, February 1983. p. 169-175.

Reynolds, R. T., R. T. Graham, M. H. Reiser, R. L. Bassett, P. L. Kennedy, D. A. Boyce, Jr., G. Goodwin, R. Smith and E. L. Fisher. 1992. Management recommendations for the northern goshawk in the southwestern United States. USDA Forest Service, Southwestern Region. 184 pp.

Roe, A.N., K.G. Poole and D.L. May. 1999. A review of lynx behavior and ecology and its relation to ski area planning and management. Unpublished Report, IRIS Environmental Systems. Calgary, AB. 67 pp.

Rowland, M.M., M.J. Wisdom, B.K. Johnson and M.A. Penninger. 2004. Effects of roads on elk: implications for management in forested ecosystems. Transactions of the 69th North American Wildlife and Natural Resources Conference. Spokane, WA. p. 491-508.

Ruediger, B., J. Claar, S. Gniadek, B. Holt, L. Lewis, S. Mighton, B. Naney, G. Patton, T. Rinaldi, J. Trick, A. Vandehey, F. Wahl, N. Warren, D. Wenger and A. Williamson. 2000. Canada Lynx Conservation Assessment and Strategy. USDA Forest Service, USDI Bureau of Land Management and USDI National Park Service. Forest Service Publication #R1-00-53. Missoula, MT. 142 pp.

Ruggiero, L. F., K. B. Aubry, S. W. Buskirk, L. J. Lyon and W. J. Zielinski, tech. eds. 1994. The scientific basis for conserving forest carnivores: American marten, fisher, lynx and wolverine in the western United States. General Technical Report RM-254. Fort Collins, CO: USDA Forest Service, Rocky Mountain Forest and Range Experiment Station. 184 pp.

Samson, F.B. 2006. A conservation assessment of the northern goshawk, black-backed woodpecker, flammulated owl and pileated woodpecker in the Northern Region, USDA Forest Service. Forest Service Northern Region, Missoula, MT.

Schoen, J.W., L.R. Beier, J.W. Lentfer and L.J. Johnson. 1986. Denning ecology of brown bears on Admiralty and Chichagof Islands. International Conference of Bear Research and Management. 7:293-304.

Squires, J.R. and R.T. Reynolds. 1997. Northern goshawk (Accipter gentiles). *In* The birds of North America, Number 298. A. Poole and F. Gill, eds. Philadelphia, PA.

Squires, J.R. and P.L. Kennedy. 2006. Northern goshawk ecology: an assessment of current knowledge and information needs for conservation and management. Studies in Avian Biology 31:8-62.

Squires, J.R., J.P. Copeland, M.K. Schwartz and L.F. Ruggiero. 2007. Sources and patterns of wolverine mortality in western Montana. Journal of Wildlife Management 71(7):2213-2220.

Staples, W.R. 1995. Lynx and coyote diet and habitat relationships during a low hare population on the Kenai Peninsula, Alaska. M.S. Theses, University of Alaska, Fairbanks. Quoted in Ruediger, B., J. Claar, S. Gniadek, B. Holt, L. Lewis, S. Mighton, B. Naney, G. Patton, T. Rinaldi, J. Trick, A. Vandehey, F. Wahl, N. Warren, D. Wenger and A. Williamson. 2000. Canada Lynx Conservation Assessment and Strategy. USDA Forest Service, USDI Bureau of Land Management and USDI National Park Service. Forest Service Publication #R1-00-53. Missoula, MT. 142 pp.

Thiel, R.P., S. Merrill and L.D. Mech. 1998. Tolerance by denning wolves, Canis lupus, to human disturbance. Canadian Field-Naturalist 122 (2):340-342. Jamestown, ND.

Thomas, J.W. and D.E. Toweill, eds. 1982. Elk of North America: ecology and management. Wildlife Management Institute. Stackpole Books. Harrisburg, Pennsylvania. 698 pp.

Tucker, P.A., D.L. Davis and R.R. Ream. 1990. Wolves: Identification, Documentation, Population Monitoring and Conservation Considerations. Northern Rockies Natural Resource Center. Missoula, MT. 27 pp.

USDA Forest Service. unpublished report. Guidelines for blasting on National Forest land in relation to disturbance to wildlife. Mount Baker Snoqualmie National Forest.

USDA Forest Service. 1982. Cumulative effects analysis process: grizzly habitat component mapping. USDA Forest Service, Northern Region, Kootenai National Forest.

USDA Forest Service. 1987. Idaho Panhandle National Forests Forest Plan. Coeur d'Alene, Idaho.

USDA Forest Service, Idaho Department of Fish and Game, Washington Department of Wildlife, USDI Fish and Wildlife Service, and Montana Department of Fish, Wildlife, and Parks. 1988. Cumulative effects analysis process for the Selkirk/Cabinet-Yaak grizzly bear ecosystems.

USDA Forest Service. 1998. Sandpoint Noxious Weed Control Project Environmental Impact Statement. Idaho Panhandle National Forests, Sandpoint Ranger District.

USDA Forest Service. 2002. Final Environmental Impact Statement Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Areas: Kootenai, Lolo and Idaho Panhandle National Forests. Libby, MT.

USDA Forest Service. 2005. Region One sensitive species list update. Missoula, MT.

USDA Forest Service. 2007. Northern Rockies Lynx Management Direction for National Forests in Montana, and parts of Idaho, Wyoming, and Utah. Missoula, MT.

USDI Bureau of Land Management and USDA Forest Service. 1997. Upper Columbia River Basin Draft Environmental Impact Statement (UCRB DEIS). Volume 1.

USDI Fish and Wildlife Service. 1987. Northern Rocky Mountain Wolf Recovery Plan. U.S. Fish and Wildlife Service. Denver, CO. 119 pp.

USDI Fish and Wildlife Service. 1993. Grizzly bear recovery plan. Missoula, MT. 181 pp.

USDI Fish and Wildlife Service. 1995. Amended biological opinion on the 1987 Kootenai Forest Plan. U.S. Department of Interior Fish and Wildlife Service. Helena, MT.

USDI Fish and Wildlife Service. 1998. Endangered and Threatened Wildlife and Plants; Notice of 12-month finding on a petition to list the northern goshawk in the contiguous United States west of the 100th Meridian. Federal Register Volume 63(124). 50 CFR Part 17. June 29, 1998.

USDI Fish and Wildlife Service. 2001. Amended Biological Opinion for the Continued Implementation of the Idaho Panhandle National Forests Land and Resource Management Plan. FWS Reference No. 1-9-00-F-1 (105.0000). Upper Columbia Fish and Wildlife Office, Spokane, WA.

USDI Fish and Wildlife Service. 2003. Endangered and Threatened Wildlife and Plants; Final Rule to Reclassify and Remove the Gray Wolf From the List of Endangered and Threatened Wildlife in Portions of the Conterminous United States; Establishment of Two Special Regulations for Threatened Gray Wolves; Final and Proposed Rules. Federal Register Volume 68(62). 50 CFR Part 17. April 1, 2003.

USDI Fish and Wildlife Service. 2006. Biological Opinion on the Effects to Grizzly Bears, Bull Trout, and Bull Trout Critical Habitat from the Implementation of Proposed Actions Associated with Plan of Operations for the Revett RC Resources Incorporated Rock Creek Copper/Silver Mine. U.S. Fish and Wildlife Service. Montana Ecological Services Field Office. Helena, MT.

USDI Fish and Wildlife Service. 2008a. Biannual Species List for the Idaho Panhandle National Forests, FWS Reference No. 1-9-08-SP-0067 (105.0100). Upper Columbia Fish and Wildlife Office. Spokane, WA.

USDI Fish and Wildlife Service. 2008b. Mountain-Prairie Region, Endangered Species Program, Grizzly Bear Recovery, Cabinet-Yaak. Available online at http://www.fws.gov/mountain%2Dprairie/species/mammals/grizzly/cabinet.htm. (Last accessed on October 12, 2008).

USDI Fish and Wildlife Service. 2008c. Endangered and Threatened Wildlife and Plants; Revised Critical Habitat for the Contiguous United States Distinct Population Segment of the Canada Lynx (*Lynx canadensis*); Proposed Rule. Federal Register Volume 73(40). 50 CFR Part 17. February 28, 2008.

USDI Fish and Wildlife Service. 2008d. Endangered and Threatened Wildlife and Plants; 12-month finding on a petition to list the North American wolverine as endangered or threatened. Federal Register Volume 73(48). 50 CFR Part 17. March 11, 2008.

USDI National Park Service. 2003. Environmental assessment to conduct additional administrative helicopter and fixed wing flights in 2003. USDI National Park Service, Glacier National Park. West Glacier, MT. 49 pp.

Wakkinen, W.L. and W.F. Kasworm. 2004. Demographics and populations trends of grizzly bears in the Cabinet-Yaak and Selkirk ecosystems of British Columbia, Idaho, Montana, and Washington. Ursus 15:65-75.

Wallen, R.L. and C.R. Groves. 1988. Status and distribution of harlequin ducks (*Histrionicus histrionicus*) in northern Idaho. Idaho Department of Fish and Game and Idaho Panhandle National Forests. 38 pp.

Warren, N., tech. ed. 1990. Old growth habitats and associated wildlife species in the northern Rocky Mountains. Northern Region Report #R1-90-42. USDA Forest Service. Missoula, Montana. 47 pp.

Wisdom, M.J., H.K. Preissler, N.J. Cimon, and B.K. Johnson. 2004. Effects of off-road recreation on mule deer and elk. Transactions of the 69th North American Wildlife and Natural Resources Conference. Spokane, WA. p. 531-551.

Attachment A - Grizzly Bear Management Protection Plan

IPNF employees, volunteers, contractors, and subcontractors will comply with the following requirements in the conduct of any activities conducted in or adjacent to BMUs. This protection plan will be made available to all personnel conducting activity within or adjacent to BMUs and will be displayed in a conspicuous location at any contractor/subcontractors place of business and in each camp. This plan will be reviewed during a pre-work meeting with contractors; and with Forest Service employees/volunteers in conjunction with Job Hazard Analysis reviews.

1. All personnel involved in activities within grizzly bear habitat on National Forest land will be given information relating to identification of bear species and human conduct prior to the start of activities. Brochures concerning human use in grizzly country and bear identification are available at Forest Service offices. The contractor is responsible for making employees aware of the following information:

a. The grizzly bear is classified as threatened under the Endangered Species Act.

b. The Forest Service is mandated to conduct management activities in a manner that promotes recovery of all threatened and endangered species.

c. The areas they are working in are within grizzly bear habitat and are essential to the recovery of the bear.

d. Grizzly bear/human encounters are possible.

e. Proper techniques of food handling and storage, travel, camping, and other such activities are required to reduce opportunities for conflict.

f. Penalties for illegal killing of grizzly bears include up to $100,000 fine and one year in jail.

2. The contractor will adhere to all restrictions as outlined in current Idaho Panhandle National Forests Travel map.

3. The responsible party shall report the death and location of livestock to a Forest Service official within 24 hours of discovery.

4. The responsible party shall report any human/bear conflicts or grizzly bear observations.

Camping Provisions

Human, pet and livestock *food* (except baled or cube hay without additives), and garbage shall be attended or stored in a *bear-resistant manner* when not attended.

Burnable attractants (such as food leftovers or bacon grease) shall not be buried, discarded, or burned in an open campfire.

Dispose of human waste and gray water in a pit or hole, well away from campsites. Cover with sod or topsoil.

Sleeping areas (tents) will be located at least 50 yards away from cooking facilities. Food will not be stored, cooked, or consumed in tents used for sleeping.

Follow “Leave no Trace” techniques. Pack out all leftover food, refuse, and garbage.

Human Safety Provisions

1. If you observe a grizzly bear - detour or leave the area. A sow with cubs is particularly dangerous, as is a bear that has been surprised.

2. Use caution in approaching carcasses or gut piles.

Definitions

Food - Any nourishing substance, which includes human food and drinks, livestock feed, and pet food.

Bear-resistant manner - Any attractants, including food and garbage, must be stored in any combination of the following ways, if unattended:

1. secured in a hard-sided camper, vehicle, dwelling, or storage building.
2. suspended at least 10 feet (from the bottom of item) and 4 feet out from any upright support (e.g. tree, pole).
3. stored in an approved bear-resistant container.