U.S. Fish & Wildlife Service

Biological Opinion and Conference Opinion for the

Modified Idaho Roadless Rule

USDA Forest Service

Regions 1 and 4

14420-2008-F-0586

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Acronyms and Abbreviations Used in this Document

2001 Roadless Rule	2001 Roadless Area Conservation Rule
ACS	Aquatic Conservation Strategy
Act	Endangered Species Act
BCR	Backcountry Restoration
BLM	Bureau of Land Management
BMAA	Bear Management Analysis Areas
BMUs	Bear Management Units
BRZ / BE	Bitterroot Grizzly Bear Recovery Zone / Ecosystem
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CMU	Caribou Management Units
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CPZ	Community Protection Zone
CYRZ / CYE	Cabinet-Yaak Grizzly Bear Recovery Zone / Ecosystem
DPS	Distinct Population Segment
FEIS	Final Environmental Impact Statement
FMO	Foraging, Migrating and Overwintering
Forest Capital	Forest Capital Partners, LLC
GFRG	General Forest, Rangeland, or Grassland
GYA	Greater Yellowstone Area
HFRA	Healthy Forests Restoration Act
HUC	Hydrologic Unit Code
ICBEMP	Interior Columbia Basin Ecosystem Management Plan
ICBTRT	Interior Columbia Basin Technical Recovery Team
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Lands
IDT	Interdisciplinary Team
ITD	Idaho Transportation Department
IGBC	Interagency Grizzly Bear Committee
INFISH	Interim Strategy for Managing Fish-Producing Watersheds in Eastern Oregon, Washington, Idaho, Western Montana, and Portions of Nevada
IRA	Idaho Roadless Area
IRR	Idaho Roadless Rule
KNF	Kootenai National Forest
LCA	Lynx Conservation Agreement
LCAS	Lynx Conservation Assessment and Strategy
LNF	Lolo National Forest
LRMP	Land and Resource Management Plan
MIRR	Modified Idaho Roadless Rule

MS	Management Situation
NCDRZ / NCDE	Northern Continental Divide Grizzly Bear Recovery Zone / Ecosystem
NCRZ / NCE	North Cascades Grizzly Bear Recovery Zone/ Ecosystem
NEP	Nonessential Experimental Population
NF	National Forest
NFS	National Forest System
NIDGS	Northern Idaho Ground Squirrel
NMFS	National Marine Fisheries Service
NRLA	Northern Rockies Lynx Amendment
NSO	No Surface Occupancy
NWMT	Northwestern Montana gray wolf recovery area
OMRD	Open Motorized Route Density
Opinion	Biological Opinion
PACFISH	Interim Strategy for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon, Washington, Idaho, and Portions of California
PCE	Primary Constituent Elements
PHD	Probable Historical Distribution of NIDGS
PRA	Pack River Area
RACNAC	Roadless Area Conservation National Advisory Committee
ROD	Record of Decision
RPMs	Reasonable and Prudent Measure
SAHTS	Special Areas of Historic and Tribal Significance
Service	U.S. Fish and Wildlife Service
Services	USFWS and NMFS
SLC	Stimson Lumber Company
SRZ / SE	Selkirk Grizzly Bear Recovery Zone / Ecosystem
SWIE	Southwest Idaho Ecogroup
TEPC	Threatened, Endangered, Proposed and Candidate
TMRD	Total Motorized Route Density
USDA	U.S. Department of Agriculture
USDI	U.S. Department of Interior
USFS	U.S. Forest Service
WLR	Wildland Recreation
YNP	Yellowstone National Park
YRZ / YE	Yellowstone Grizzly Bear Recovery Zone / Ecosystem

CHAPTER I: INTRODUCTION

A. Background – The Fish and Wildlife Service (Service) has prepared this Biological Opinion (Opinion) on the effects of the USDA Forest Service (USFS) Modified Idaho Roadless Rule (MIRR) on eight listed species (see Table 1), as well as a Conference Opinion addressing proposed critical habitat for Canada lynx. On August 27, 2008, the USFS submitted a Biological Assessment (Assessment) documenting that the MIRR is likely to adversely affect eight listed species, and is likely to adversely affect, but is not likely to result in the destruction or adverse modification of proposed revised designated critical habitat for the contiguous United States distinct population segment of the Canada lynx. The Assessment and letter requesting formal consultation under section 7 of the Endangered Species Act (Act) was received by the Service on August 28, 2008. The Assessment was revised and re-submitted to the Service on September 12, 2008. As described in this Opinion, and based on the Assessment and other information, the Service has concluded that the MIRR, as proposed, is not likely to jeopardize the continued existence of these species. In the Conference Opinion addressing proposed critical habitat for Canada lynx, the Service has concluded that the MIRR, as proposed, is not likely to result in the destruction or adverse modification of proposed revised designated critical habitat for the contiguous United States distinct population segment of the Canada lynx. Table 1 lists the threatened and endangered species and proposed and designated critical habitat that are addressed in this Opinion regarding the MIRR.

B. Previous Consultations Involving Idaho Roadless Areas – Many broad-scale consultations have occurred across the National Forests encompassing the Idaho Roadless Areas (IRAs) prior to development of the MIRR. Seven National Forest Plans in Idaho were consulted upon individually and the years in which the consultations took place were Clearwater (1987); Idaho Panhandle (1987); Nez Perce (1987); Salmon-Challis (1987); Wallowa-Whitman (1990); Targhee (1997); and Caribou (2003). All of these plans anticipated some adverse impacts to listed species and were conducted formally with the Service. All of these plans were modified to include the Interim Strategy for Managing Fish-Producing Watersheds in Eastern Oregon, Washington, Idaho, Western Montana, and portions of Nevada (INFISH) and/or the Interim Strategy for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) in 1998. A biological opinion was issued by the Service in 1998 regarding PACFISH and INFISH, which concluded that continued implementation of land and resource management plans (LRMPs) as amended by INFISH, would not jeopardize the continued existence of bull trout, and provided non-discretionary Terms and Conditions. The consultation resulted in the same outcome for anadromous species addressed by PACFISH. In 2003, the Southwest Idaho Ecogroup (SWIE), which includes the Boise, Payette, and Sawtooth National Forests, consulted on Forest Plans with a new Aquatic Conservation Strategy (ACS) that replaced PACFISH on those forests, and on May 30, 2003, the Service issued a biological opinion for their revised LRMPs.

The Idaho Panhandle National Forest (IPNF) Management Plan (USFS 1987) was developed after the final listing package for the Selkirk Mountains woodland caribou was published in 1984. The original section 7 consultation was conducted as part of the forest planning and environmental compliance process in 1986. An Amended Biological Opinion for

Table 1. List of Threatened, Endangered, Proposed, and Candidate (TEPC) Species and Proposed Critical Habitat Considered in this Biological Opinion; including their Listing Status, Critical Habitat Status, and Effects Determination.

Common and Scientific Name	Status	Designated Critical Habitat?	Determination of Effects and Rationales from Assessment*
Terrestrial Wildlife			
Woodland Caribou (*Rangifer tarandus*)	Endangered	No	LAA – Potential for new roads & tree cutting to cause short-term habitat degradation & exposure of individuals to disturbance & mortality.
Grizzly Bear (*Ursus arctos horribilis*)	Threatened	No	LAA – Potential for new roads & tree cutting to cause short-term habitat degradation & exposure of individuals to disturbance & mortality.
Canada lynx (*Lynx canadensis*)	Threatened	Proposed	LAA – Potential for new roads & tree cutting to cause short-term habitat degradation & exposure of individuals to disturbance & mortality. NAM – Extremely limited (5,668 acres or .08%) amount of Canada lynx critical habitat overlap with MIRR activities.
Gray Wolf (*Canis lupus*) – North of I-90 in Idaho	Endangered	No	LAA – Potential for new roads & tree cutting to cause short-term habitat degradation & exposure of individuals to disturbance & mortality.
Northern Idaho ground squirrel (*Spermophilus brunneus brunneus*)	Threatened	No	LAA – Potential for new roads & tree cutting to cause short-term habitat degradation & exposure of individuals to disturbance & mortality.
Fish			
Bull trout (*Salvelinus confluentus*)	Threatened	Yes	LAA – Potential for new roads & tree cutting to cause short-term habitat degradation & exposure of individuals to disturbance & mortality; NLAA – Critical habitat.
Plants			
MacFarlane's four-o-clock (*Mirabilis macfarlane*i)	Threatened	No	LAA – Effects from new roads & tree cutting may cause short-term habitat degradation & exposure of individuals to adverse effects resulting in mortality of individuals.
Ute ladies'-tresses (*Spiranthes diluvialis*)	Threatened	No	LAA – Effects from new roads & tree cutting may cause short-term habitat degradation & exposure of individuals to adverse effects resulting in mortality of individuals.

*Definitions: NLAA = *May affect, not likely to adversely affect*, LAA = *May affect, likely to adversely affect*, NAM = *No adverse modification* (of proposed critical habitat).

the IPNF Forest Plan (Service 2001) was developed to specifically address updated information regarding the woodland caribou and grizzly bear. This formal consultation includes mandatory Terms and Conditions intended to minimize harm and harassment of woodland caribou and grizzly bear within the IPNF.

Following the listing of Canada lynx in March 2000, the USFS signed a Lynx Conservation Agreement (LCA) with the Service in 2001 agreeing to consider the Lynx Conservation Assessment and Strategy (LCAS) during project analysis and the USFS agreed not to proceed with projects that would be likely to adversely affect lynx until their plans were amended. The SWIE completed revising their Forest Plans in 2003 and incorporated all necessary provisions of the LCAS to protect lynx and lynx habitat which was confirmed in the 2003 Biological Opinion issued by the Service for these revised plans (Service 2003). The Caribou National Forest also completed a LRMP revision in 2003. The LCA was renewed in 2005 and added the concept of occupied mapped lynx habitat. In 2006 the LCA was amended to define occupied habitat and to list those National Forests that were occupied. In 2006 it was also extended for 5 years (until 2011), or until all relevant Forest Plans were revised to provide guidance necessary to conserve lynx (USFS and Service 2000, 2005, 2006a, 2006b). The Wallowa-Whitman NF remains subject to the conditions of the LCA, pending revision of its LRMP.

The 2007 decision documented in the Northern Rockies Lynx Management Direction Final Environmental Impact Statement, commonly referred to as the Northern Rockies Lynx Amendment (NRLA), fulfilled the agreement to amend the plans for all National Forests in the Northern Rockies Lynx Planning Area (see Table 30), with exception of the SWIE (Payette, Boise, and Sawtooth National Forests) which had completed revising their Forest Plans in 2003. The NRLA incorporated the goals, objectives, standards and guidelines of the selected alternative (Alternative F, Scenario 2) to manage and conserve lynx and lynx habitat. If a conflict exists between the NRLA management direction and an existing Forest Plan, the more restrictive direction will apply. Appendix B of the Assessment for the MIRR provides a description of the standards and guidelines relevant to management of lynx habitat in the LCAS, LRMPs for the SWIE, and the NRLA. On March 16, 2007, the Service issued its Biological Opinion on the NRLA and determined that the management direction would not jeopardize the continued existence of lynx. The extent of take and up to 6 percent of mapped lynx habitat associated with fuel management projects were exempt through that Opinion. The Service also provided non-discretionary terms and conditions and reasonable and prudent measures in the Opinion, and these are incorporated into the NRLA Record of Decision (ROD).

C. Consultation History – Following is a summary of meetings and correspondence primarily between the USFS, the Service, and National Marine Fisheries Service (NMFS) in the course of this formal consultation for the MIRR. A complete record of this consultation is on file at the Service's Snake River Fish and Wildlife Office in Boise.

In addition and separate from this formal consultation, the USFS determined that implementing the MIRR is *not likely to adversely affect* Kootenai River white sturgeon (*Acipenser transmontanus*), Kootenai River white sturgeon designated critical habitat, bull trout (*Salvelinus confluentus*) designated critical habitat, and the candidate plant species Christ's Indian paintbrush (*Castilleja christii*). A separate letter dated September 26, 2008 acknowledges receipt

of the USFS's Assessment and addresses the informal consultations for the MIRR by providing the Service's concurrence with the USFS's *not likely to adversely affect* determinations. The USFS also determined that the MIRR will have *no effect* on the threatened water howellia (*Howellia aquatilis*), threatened Spalding's catchfly (*Silene spaldingii*), threatened slickspot peppergrass (*Lepidium papilliferum*), and candidate southern Idaho ground squirrel (*Spermophilus brunneus endemicus*). The USFS also determined the MIRR *may affect, and is likely to adversely affect* but *not likely to result in jeopardy* for the gray wolf (*Canis lupus*) non-essential experimental population south of Interstate 90 and the candidate yellow-billed cuckoo (*Coccyzus americanus*). The Service also acknowledged these determinations in the September 26, 2008 letter.

June 21, 2007	Conference call with USFS, Service, and NMFS to discuss the Idaho Roadless Rule alternatives and possible approaches to consultation. Participants included: David Mabe, NMFS (Boise, Idaho); Bill Lind, NMFS (Boise, Idaho); Ted Koch, Service (Boise, Idaho); Danielle Chi, USFS (Ogden, Utah); and Ann Carlson, USFS (Missoula, Montana).
February 7, 2008	Conference call with USFS, Service, and NMFS to discuss the upcoming changes to the Idaho Roadless Rule preferred alternative including the bifurcation of the Backcountry Restoration (BCR) theme into BCR, and Backcountry Community Protection Zone (BC-CPZ). Participants included: Bill Lind, NMFS; Dale Brege, NMFS (Grangeville, Idaho); Michael Morse, Service (Boise, Idaho); Johnna Roy, Service (Boise, Idaho); Brad Gilbert, USFS (Coeur d'Alene, Idaho); Joan Dickerson, USFS (Missoula, Montana); Danielle Chi, USFS; Teresa Prendusi, USFS (Ogden, Utah); Ann Carlson, USFS; and Shanda Dekome, USFS (Coeur d'Alene, Idaho).
May 5-8, 2008	Meeting in Ogden, Utah with the Idaho Roadless Interdisciplinary Team (IDT) and representatives from the regulatory agencies. Discussed the MIRR, assumptions, projections and possible avenues for consultation. Reviewed current species information and information/data needs for the Assessment for the Final Environmental Impact Statement (FEIS). Participants included: Dale Brege, NMFS; Johnna Roy, Service; Paul Moroz, contractor and Retired USFS; Brad Gilbert, USFS; Joan Dickerson, USFS; Ken Karkula, USFS (Washington, D.C.); Danielle Chi, USFS; Teresa Prendusi, USFS; and Ann Carlson, USFS.
May 9, 2008	Conference call to discuss level of analysis needed for the Assessment and what Service and NOAA-Fisheries needs for a biological opinion, if one is needed. Follow-up on data needs and map requests, including municipal water sources map. Participants included: Dale Brege, NMFS; Johnna Roy, Service; Paul Moroz, contractor; Danielle Chi, USFS; Teresa Prendusi, USFS; and Ann Carlson, USFS.

May 16, 2008	Meeting in Orofino, Idaho to discuss the Idaho Roadless Rule preferred alternative, options for consultation, and suggested analysis. The focus of this meeting was listed anadromous fish. Participants included: Dale Brege, NMFS; Paul Moroz, contractor; Dave Schoen, USFS; and Ann Carlson, USFS. And by phone: Johnna Roy, Service; Danielle Chi, USFS; and Shanda Dekome, USFS.
May 20-21, 2008	Meeting in Boise, Idaho to discuss approaches to consultation and analysis of effects to terrestrial listed species. Participants included: Johnna Roy, Service; Suzanne Audet, Service (Spokane, Washington); Bryon Holt, Service (Spokane, Washington); Michael Morse, Service; Danielle Chi, USFS; Paul Moroz, contractor. And by phone: Larry Salata, Service (Portland, Oregon); Mark Wilson, Service (Spokane, Washington); Dale Brege, NMFS; and Ann Carlson, USFS.
May 22, 2008	Internal Service (Snake River Fish and Wildlife Office only) meeting to update Jeff Foss on individual species determinations and overall status of MIRR section 7 consultation. Participants included: Jeff Foss, Service; Johnna Roy, Service; Paul Moroz, contractor.
May 23, 2008	Letter from the USFS to the Service Boise and Spokane Offices requesting species lists for the Idaho Roadless Rule project.
May 23, 2008	Meeting in Coeur d' Alene between Brad Gilbert, Paul Moroz and Joan Dickerson (by phone) regarding individual species determinations and overall status of MIRR section 7 consultation to date. Paul received lap-top computer, other hardware and printed documents as requested. Participants included: Brad Gilbert, USFS; Joan Dickerson, USFS; Paul Moroz, contractor.
June 3, 2008	Conference call regarding regulatory agencies considerations for conducting MIRR section 7 consultation. Participants included: Larry Salata, Service; Bryon Holt, Service; Michael Morse, Service; Johnna Roy, Service; Dale Brege, NMFS; and Paul Moroz, contractor.
June 4, 2008	Technical assistance letter (14420-2008-TA-0416) and species lists (14420-2008-SL-0356 and 14420-2008-SL-0357) from the Service Office (Boise) to the USFS Regional Office (Missoula) for the proposed MIRR.
June 5, 2008	Conference call regarding draft biological assessment determinations of effects for listed species and considerations of options for MIRR section 7 consultation. Participants included: Brad Gilbert, USFS; Joan Dickerson, USFS; Vince deWitt (Office of General Counsel, Washington, D.C.); Eric Nagle (Service, Solicitor's Office, Portland, Oregon); Johnna Roy, Service; Suzanne Audet, Service; Bryon Holt, Service; Danielle Chi, USFS; Paul Moroz, contractor; Larry Salata, Service; Rich Torquemada, Service (Spokane, Washington); Jeff Foss, Service; Dale Brege, NMFS; and Ann Carlson, USFS.
June 11, 2008	Species list (SP #1-9-08-SP-0067) for the FEIS for the Idaho Roadless Rule was received from the Service Office, Spokane, Washington.

June 23, 2008	Meeting in Boise for agency managers and biologists to reach shared understanding of the MIRR proposed action and preliminary effect determinations for listed species. Also discussed section 7 consultation pathways and time lines. Participants included: Tom Tidwell, USFS (Missoula, Montana); Johnna Roy, Service; Mark Robertson Service; Rich Torquemada, Service; Bryon Holt, Service; Jeff Foss, Service; Tom Perry, Idaho Governor's Office of Species Conservation (OSC, Boise, Idaho); Danielle Chi, USFS; Paul Moroz, contractor; Larry Salata, Service; Dave Mabe, NMFS; Dale Brege, NMFS; Ann Carlson, USFS; Doug Laye, Service (Chubbuck, Idaho); Sandi Arena, Service (Chubbuck, Idaho).
July 18, 2008	USFS Regions 1 & 4 receive separate Semi-annual Species List Update Addendums (14420-2008-SL-0448 & 14420-2008-SL-0449 respectively) from the Service adding slickspot peppergrass as a species proposed for listing as endangered to each Region's species list.
July 18, 2008	United States (U.S.) Federal District Court in Missoula, Montana issued a preliminary injunction that immediately reinstated the Act protections for gray wolves in Montana, Idaho, Wyoming, the eastern-third of Washington and Oregon and portions of north-central Utah.
July 21-22, 2008	The Service informs the USFS of the preliminary injunction that immediately reinstated the Act protections for gray wolves in Idaho and several other states.
July 22, 2008	Conference call to discuss the following: 1) implications of the July 18th, 2008 court injunction on the delisting of the northern Rocky Mountain Distinct Population Segment (DPS) of the gray wolf; 2) potential approaches for ensuring no adverse effects to grizzly bears on the IPNF; 3) scope of analysis for caribou; and 4) Service review timeline for the draft Assessment to be submitted electronically by the USFS to the Service. Participants included: Johnna Roy, Service; Bryon Holt, Service; Paul Moroz, contractor; Suzanne Audet, Service; and Danielle Chi, USFS.
July 30, 2008	Conference call to provide MIRR agency managers with a status check on the section 7 consultation, including unresolved issues, consultation time lines and potential obstacles to completion. Conference call participants included: Ann Carlson, USFS; Danielle Chi, USFS; Teresa Prendusi, USFS; Jeff Foss, Service; Rich Torquemada, Service; Johnna Roy, Service; Suzanne Audet, Service; Eric Nagle, Service; Dave Mabe, NMFS; Dale Brege, NOAA-Fisheries; Brad Gilbert, USFS; Tom Perry, OSC; Joan Dickerson, USFS; Shanda Dekome, USFS; and Paul Moroz, contractor.
August 4, 2008	Internal Service conference call held to discuss citing existing Forest Plan standards and guides applicable to MIRR and consultation options for candidate species. Conference call participants included: Johnna Roy, Service; Larry Salata, Service; and Paul Moroz, contractor.

August 5, 2008	Conference call to provide Consultation Technical Team (Tech Team) update and discussion on status of grizzly bear environmental baseline letter for IPNF. Participants included: Danielle Chi, USFS; Jeff Foss, Service; Rich Torquemada, Service; Johnna Roy, Service; Suzanne Audet, Service; Brad Gilbert, USFS; Joan Dickerson, USFS; Shanda Dekome, USFS; Larry Salata, Service; and Paul Moroz, contractor.
August 7, 2008	IPNF issues letter to clarify the environmental baseline for grizzly bear management in Idaho Roadless Areas (Panhandle & Kootenai National Forests) for MIRR. Letter received by Service on August 11, 2008.
August 11, 2008	Tech Team conference call held to discuss Service comments on second draft MIRR Assessment, conference/consultation for candidate species and grizzly bear letter from IPNF. Conference call participants included: Danielle Chi, USFS; Ann Carlson, USFS; Teresa Prendusi, USFS; Johnna Roy, Service; Suzanne Audet, Service; and Paul Moroz, contractor.
August 18, 2008	USFS Regions 1 & 4 receive separate Semi-annual Species List Update Addendums (14420-2008-SL-0523 & 14420-2008-SL-0528, respectively) from the Service confirming reinstatement of protections for gray wolves under the Act. Gray wolves south of I-90 will be managed as experimental nonessential population, and gray wolves north of I-90 are listed as endangered under the Act.
August 20, 2008	Email exchanges occur between Paul Moroz, contractor; Suzanne Audet, Service; and Danielle Chi, USFS regarding increased concerns on effects of proposed MIRR to woodland caribou, particularly in Selkirk and Salmo-Priest Inventoried Roadless Areas (IRA's).
August 21, 2008	Conference call between agency managers and Tech Team to discuss major tasks remaining and timeline for completion of the Assessment and Opinions. Final Assessment to be signed next week (8/27/2008). Service (Boise) developed a work schedule to get the Opinion work done. Conference call participants included: Johnna Roy, Service; Jeff Foss, Service; Mark Robertson, Service; Sandra Brewer, Service; Rich Torquemada, Service; Suzanne Audet, Service; Bryon Holt, Service; Larry Salata, Service; Paul Moroz, contractor; Dale Brege, NOAA-Fisheries; David Mabe, NOAA-Fisheries; Danielle Chi, USFS; Bradley Gilbert, USFS; Ann Carlson,. USFS; and Teresa Prendusi, USFS.
August 22, 2008	Project Assignment Description (PAD) developed by Jeff Foss and agreed to by agency managers and Tech Team. Tech Team is expanded to include additional Service members including Clay Fletcher, Service (Boise, Idaho); Ben Matibag, Service (Boise, Idaho); Ray Vizgirdas, Service (Boise, Idaho); and Shanda Dekome, USFS.
August 22, 2008	Conference call regarding lack of documented amendments to IPNF 1987 Forest Plan that afford greater protection to woodland caribou. Existing Standards and Guidelines remain in place, informally updated by new scientific information project by project. Conference call participants included: Brad Gilbert, USFS; Shanda Dekome, USFS; Danielle Chi, USFS; and Paul Moroz, contractor.

August 25, 2008	Conference call among Service Tech. Team members included discussion of species/chapter assignments to each biologist. Concerns shared over lack of specificity of proposed action hampering analysis of effects upon species, particularly woodland caribou. Participants included Mark Robertson, Johnna Roy, Larry Salata, Clay Fletcher, Suzanne Audet, Bryon Holt, Ray Vizgirdas; and Paul Moroz, contractor.
August 27, 2008	USFS transmits letter requesting initiation of formal consultation with Service on eight listed species, plus formal conference on proposed revised critical habitat for lynx.
August 28, 2008	Service (Boise office) receives USFS August 27, 2008 letter requesting initiation of formal consultation.
September 2, 2008	Meeting/conference call among Service biologists regarding status of draft Opinion and analysis for each of eight species plus proposed critical habitat for lynx. Discussion on specific tasks, time frames and challenges to complete Opinion. Service participants included Mark Robertson, Johnna Roy, Ray Vizgirdas, Suzanne Audet, Bryon Holt; and Paul Moroz, contractor.
September 3, 2008 [0900-1030 MST]	Conference call involving expanded Tech Team, Danielle Chi and Joan Dickerson to share status of Opinion, and to discuss uncertainty over which Forest Plan components are "not inconsistent" with MIRR, and which might be. Participants included: Johnna Roy, Service; Joan Dickerson, USFS; Danielle Chi, USFS; Ray Vizgirdas, Service; Paul Moroz, Service; Mark Robertson, Service; Suzanne Audet, Service; and Bryon Holt, Service.
September 3, 2008 [1640-1730 MST]	Conference call regarding Larry Salata's review of draft woodland caribou analysis in MIRR Opinion discusses factors considered in jeopardy analysis. Participants included: Larry Salata, Service; Johnna Roy, Service; Joan Dickerson, USFS; Danielle Chi, USFS; Paul Moroz, contractor; Suzanne Aude, Service; and Bryon Holt, Service.
September 4, 2008	Conference call between agency managers and Tech Team to discuss major tasks remaining and timeline for completion of the Opinion. Discussion on Larry Salata's review of caribou analysis in draft Opinion, factors considered in jeopardy analysis, Service data needs to support analysis, and relationship of MIRR themes to existing Forest Plan direction. USFS also relayed need to do Assessment addendum due to errors in 8/27/08 document. Participants included: Johnna Roy, Service; Jeff Foss, Service; Mark Robertson, Service; Suzanne Audet, Service; David Mabe, NMFS; Danielle Chi, USFS; Bradley Gilbert, USFS; Joan Dickerson, USFS.
September 5, 2008 [1100-1200 MST]	Conference call with Boise and Spokane Service managers and Tech Team to brief Service Regional managers regarding status of MIRR consultation and of caribou Opinion. Process check for timeline and review/signature procedures. Service participants included Jeff Foss, Mike Roy, Larry Salata, Terry Rabot, Mark Wilson, Suzanne Audet, Mark Robertson, Johnna Roy; and Paul Moroz, contractor.

September 5, 2008 [1600-1730 MST]	Conference call with Tech Team to discuss caribou Opinion and additional data received from IPNF per Service request. Continued discussion to clarify MIRR language and existing management guidance for caribou in relation to biological data. Discussion on proposed language to clarify relationship of MIRR to existing Forest Plan standards and guidelines. Participants included: Brad Gilbert, USFS; Jeff Foss, Service; Suzanne Audet, Service; Mark Robertson, Service; Johnna Roy, Service; Danielle Chi, USFS; Shanda Dekome, USFS; Paul Moroz, contractor.
September 8, 2008	Conference call with Tech Team to discuss status of caribou Opinion, language to clarify relationship of MIRR to existing Forest Plan standards and guidelines, Assessment addendum needs, and consultation timeline. Participants included: Brad Gilbert, USFS; Jeff Foss, Service; Suzanne Audet, Service; Mark Robertson, Service; Johnna Roy, Service; Danielle Chi, USFS; Shanda Dekome, USFS; Paul Moroz, contractor; Dale Brege, NOAA-Fisheries; Rich Torquemada, Service; Joan Dickerson, USFS.
September 11, 2008	Draft Opinion transmitted to the Service Regional Office and Solicitor for internal Service review.
September 15, 2008	Conference call with Service Regional Office reviewers to discuss questions/comments on the draft Opinion. Participants include Larry Salata, Johnna Roy, Eric Nagle.
September 16, 2008 [0930-1000 MST]	Internal Service conference call with Service Regional Office reviewers and Boise and Spokane staff to discuss questions on draft Opinion and additional information needs from USFS for Opinion. Participants included: Jeff Foss, Service; Bryon Holt, Service; Mark Robertson, Service; Johnna Roy, Service; Rich Torquemada, Service; Mark Miller, Service; Larry Salata, Service; Eric Nagle, Solicitor.
September 16, 2008 [1000-1100 MST]	Conference call with Service Regional Office reviewers, Tech Team, and agency managers to discuss questions from Service review of draft Opinion and to request additional information from USFS related to the proposed action and caribou analysis. Participants included: Brad Gilbert, USFS; Jeff Foss, Service; Mark Robertson, Service; Johnna Roy, Service; Danielle Chi, USFS; Shanda Dekome, USFS; Ranotta McNair, USFS; Chuck Mark, USFS; Rich Torquemada, Service; Joan Dickerson, USFS; Bryon Holt, Service; Mark Miller, Service; Larry Salata, Service; Eric Nagle, Solicitor.
September 17, 2008	Brad Gilbert transmits e-mail to Service stating that he assures the Service that the updated Assessment submitted to the Service on 9/12/08 under Tom Tidwell's signature accurately reflects the Idaho Roadless Rule as it currently stands and as it has been submitted for clearance in Washington, D.C..

September 17, 2008 [2:30 – 3:00 MST]	Internal Service conference call with Service Regional Office reviewers and Boise and Spokane staff to discuss USFS comments/edits to caribou analysis and additional information needs from USFS for Opinion. Participants included: Suzanne Audet, Service; Bryon Holt, Service; Mark Robertson, Service; Johnna Roy, Service; Sandra Brewer, Service; Larry Salata, Service; Eric Nagle, Solicitor.
September 17, 2008 [3:00 – 4:00 MST]	Conference call with Service Regional Office reviewers and Tech Team, to discuss USFS comments/edits to caribou analysis and additional information needs from USFS for Opinion. Decision to pursue a USFS letter from IPNF Forest Supervisor regarding caribou management under MIRR. Participants included: Brad Gilbert, USFS; Mark Robertson, Service; Johnna Roy, Service; Danielle Chi, USFS; Shanda Dekome, USFS; Joan Dickerson, USFS; Bryon Holt, Service; Mark Miller, Service; Larry Salata, Service; Eric Nagle, Solicitor.
September 18, 2008	Meeting at Spokane Service Office to negotiate and draft the USFS letter to the Service regarding caribou management under the MIRR. Participants included Suzanne Audet, Service; Bryon Holt, Service; Brad Gilbert, USFS; Shanda Dekome, USFS. Letter signed by Ranotta McNair, USFS and transmitted to Service at 1:45 MST.
September 19, 2008	Service transmits Draft Opinion to USFS for review.
September 24, 2008	USFS transmits comments on the Draft Opinion to the Service.
September 24, 2008	Conference call with Service and USFS to discuss comments/edits to draft Opinion. Agreement reached in how to address the comments. Participants included: Mark Robertson, Service; Johnna Roy, Service; Danielle Chi, USFS; Joan Dickerson, USFS; Bryon Holt, Service; Larry Salata, Service; Ray Vizgirdas, Service; Sandra Brewer, Service; Paul Moroz, contractor.
September 26, 2008	Service signs the Letter of Concurrence.
September 29, 2008	Service transmits the Letter of Concurrence to USFS.
September 30, 2008	Service signs and transmits the Final Opinion to the USFS.

D. Purpose and Organization of this Biological Opinion – Because the USFS has determined activities may occur pursuant to the MIRR that are *likely to adversely affect* eight listed species, the USFS requested formal consultation with the Service. Formal consultation culminates in the Service issuing a Biological Opinion as to whether the proposed action is likely to jeopardize the continued existence of the listed species. The requirement for all Federal actions to avoid jeopardy is described in section 7(a)(2) of the Act. The regulatory definition of jeopardy and a description of the formal consultation process are provided at 50 CFR 402.02 and 402.14, respectively.

The jeopardy analysis relies on the following four components: (1) the Status of the Species, which evaluates the species range-wide condition, the factors responsible for that condition, and its survival and recovery needs; (2) the Environmental Baseline, which evaluates the condition of the species in the action area, the factors responsible for that condition, and the role of the action area in the species survival and recovery; (3) the Effects of the Action, which determines the direct and indirect impacts of the proposed Federal action and the effects of any interrelated or

interdependent activities on the species; and (4) Cumulative Effects, which evaluates the effects of future, non-Federal activities in the action area on the listed species.

In accordance with the implementing regulations for section 7 and Service policy, the jeopardy determination is made in the following manner: the effects of the proposed Federal action are evaluated with the aggregate effects of everything that has led to the species current status and, for non-Federal activities in the action area, those actions likely to affect the species in the future, to determine if, given the aggregate of all these effects, implementation of the proposed action is likely to cause an appreciable reduction in the likelihood of both survival and recovery of the species in the wild.

Formal Conference for Proposed Critical Habitat for Canada Lynx –
In the Assessment addressing the MIRR, the USFS has determined that the proposed action *is likely to adversely affect, but is not likely to result in the destruction or adverse modification* of proposed revised designated critical habitat for the contiguous United States distinct population segment of the Canada lynx. Federal action agencies may request a conference with the Service on any proposed action that may affect proposed critical habitat. This biological/conference opinion does not rely on the regulatory definition of "destruction or adverse modification" of critical habitat at 50 C.F.R. 402.02. Instead, we have relied upon the statutory provisions of the ESA to complete the following analysis with respect to critical habitat. If the proposed critical habitat becomes designated, the Service may adopt the conference opinion as the biological opinion issued through this formal consultation if no significant changes have occurred in the proposed action or the information used in this formal Conference Opinion.

Critical habitat includes those physical and biological features essential to the conservation of listed species that may require special management considerations or protection. If an action affects proposed critical habitat, but does not appreciably diminish the value of constituent elements essential to the species' conservation, the adverse modification threshold is not exceeded. For conference purposes, constituent elements described in the proposed critical habitat rule are used to determine likely jeopardy or adverse modification. This Conference Opinion addressing proposed revised designated critical habitat for the contiguous United States distinct population segment of the Canada lynx considers the entire proposed critical habitat area, not just the IRAs or even just the Idaho portion. The following framework is applied to help determine if a proposed action is likely to destroy or adversely modify proposed critical habitat:

1. The "Status of the Species/Critical Habitat" analysis in the biological opinion discusses the entire designated critical habitat area in terms of the biological and physical features that are essential to the conservation (discussion of "survival" in this and other sections of the adverse modification analysis is not appropriate) of the species.
2. The "Environmental Baseline" analysis discusses the current condition of the critical habitat unit(s) in the action area, the factors responsible for that condition, and the conservation roles of the unit(s) with appropriate supporting documentation.
3. The "Effects of the Action" analysis characterizes the direct and indirect effects of the action and those of interrelated and interdependent actions on the proposed or designated critical habitat.
4. The "Cumulative Effects" analysis characterizes the effects of future, non-Federal actions reasonably certain to occur in the action area in terms of how the primary constituent

elements or habitat qualities essential to the conservation of the species are likely to be affected and, in turn, how that will influence the function and conservation role of the affected critical habitat unit(s).

5. The "Conclusion" section presents the reasons for reaching the 7(a)(2) conclusion.

Table of Contents –
Portions of this Opinion are excerpted in whole or in part from the Assessment, and have been coordinated between the Service and USFS. These excerpts are not identified by quotations in this Opinion.

While most of the headings comprising the Table of Contents of this Opinion are self-explanatory, several section headings are highlighted with a brief explanation of their content below:

Introduction – provides the background and purpose of the Opinion, species being addressed and consultation history.

Description of the Proposed Action – describes what action(s) the Federal agency proposes to undertake.

Status of the Species – describes the legal status and general information about the species condition at the range-wide and local scale.

Environmental Baseline – describes the environmental setting, historical impact of past actions and condition of the species at the action area scale.

Effects of the Proposed Action – describes how the proposed action is likely to impact the species.

Conclusion – contains the Service's conclusion as to whether the effects of the proposed Federal action, taken together with any cumulative effects, is likely to jeopardize the species (or adversely modify or destroy critical habitat).

Incidental Take Statement – discusses the amount or extent of any anticipated incidental take of the species likely to be caused by the proposed action and any non-discretionary reasonable and prudent measures that may be necessary to minimize the impacts of that taking on the species.

Conservation Recommendations – identifies the Services' non-binding suggestions to minimize or avoid adverse effects of the proposed action, develop new information on listed or proposed species or how the action agency can assist species conservation.

Reinitiation - Closing Statement – outlines four general conditions that can trigger the need for the action agency to re-consult on the action considered in the biological opinion.

Literature Cited – identifies the scientific or commercial data used in the development of the biological opinion.

CHAPTER II: DESCRIPTION OF THE PROPOSED ACTION

A. Action Area – The MIRR proposes direction for management of 250 roadless areas in Idaho[1], establishing prohibitions and permissions related to road construction/reconstruction, timber cutting, and discretionary mining. There are some IRAs that cross administrative boundaries resulting in 281 roadless areas, if considered by individual Forests. Consequently, the project area for this Federal action consists of 281 IRA's which are dispersed across portions of 12 National Forests in Idaho.

There are more roadless acres in Idaho than any other state in the lower 48 States. IRAs comprise approximately 9,304,300 acres of public lands managed by the USFS that stretch from the Selkirk Mountains on the Canadian border to the Wasatch Range that Idaho shares with Utah. IRAs occur on portions of twelve National Forests including the Boise, Caribou, Clearwater, Idaho Panhandle, Kootenai, Nez Perce, Payette, Salmon, Challis, Sawtooth, Targhee, and Wallowa-Whitman[2]. Acreages of roadless area by Forest are listed in Table 2.

Table 2. Acres of Roadless Area by Forest

Forest	**Acres of Roadless Area**
Boise	1,108,900
Caribou	741,700
Challis	1,437,600
Clearwater	984,400
Idaho Panhandle	797,100
Kootenai	35,100
Nez Perce	497,000
Payette	908,200
Salmon	827,700
Sawtooth	1,194,900
Targhee	149,600
Wallowa-Whitman	35,400

[1] There are 250 roadless areas in Idaho, however, several of these roadless areas cross administrative boundaries resulting in 281 roadless areas, if considered by individual Forests.
[2] Although the Salmon-Challis and Caribou-Targhee are administered as combined National Forests, they are considered separate in this Opinion because each area is guided by its own LRMP.

IRAs encompass a wide variety of terrestrial and aquatic habitats (Figure 1). Roadless area characteristics include:

- High quality or undisturbed soil, water and air.
- Sources of public drinking water.
- Diversity of plant and animal communities.
- Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land.
- Primitive, Semi-Primitive Non-motorized, and Motorized classes of dispersed recreation.
- Reference landscapes.
- Natural appearing landscapes with high scenic quality.
- Traditional cultural properties and sacred sites.
- Other locally identified unique characteristics.

B. Purpose and Need of the Proposed Action – The purpose of the Idaho Roadless Rule is to provide State-specific direction for the conservation and management of inventoried roadless areas within the State of Idaho. The MIRR integrates local management concerns with the national objectives for protecting roadless area values and characteristics noted above. The management direction is based on a range of individual roadless characteristics for lands: (1) containing outstanding or unique features, where there is minimal or no evidence of humans; (2) containing culturally significant areas; (3) containing general roadless characteristics, where human uses may or may not be more apparent; and (4) displaying high levels of human use, while:

- protecting communities, homes, and property from the risk of severe wildfire or other risks existing on adjacent Federal lands;
- protecting forests from the negative effects of severe wildfire and insect and disease outbreaks; or
- protecting access to property, by ensuring that States, Tribes, and citizens owning property within roadless areas have access to that property as required by existing laws.

The Secretary of Agriculture, aware of the long, unresolved debates over the management of inventoried roadless areas in the absence of wilderness legislation for the State of Idaho, considered the State's 2006 Petition, the advice, and recommendations of the Roadless Area Conservation National Advisory Committee (RACNAC), and associated public comments. The Secretary determined that there is a need to develop roadless area management direction specific to the State of Idaho.

C. The Proposed Action – The USFS is proposing to promulgate a State-specific rule in response to the Idaho State Petition presented by Governor Risch on November 29 and 30, 2006, to the RACNAC. The MIRR is one of the alternatives presented in the final FEIS which is herein considered the Proposed Action for consultation purposes. The Proposed Action also provides for the ability to accommodate necessary corrections and modifications in the future. The Service's analysis and conclusions in this Opinion are predicated on the proposed action as described in the final Assessment of September 12, 2008 and reflected in this Opinion, and the USFS assurance that the MIRR rule will be consistent with this action.

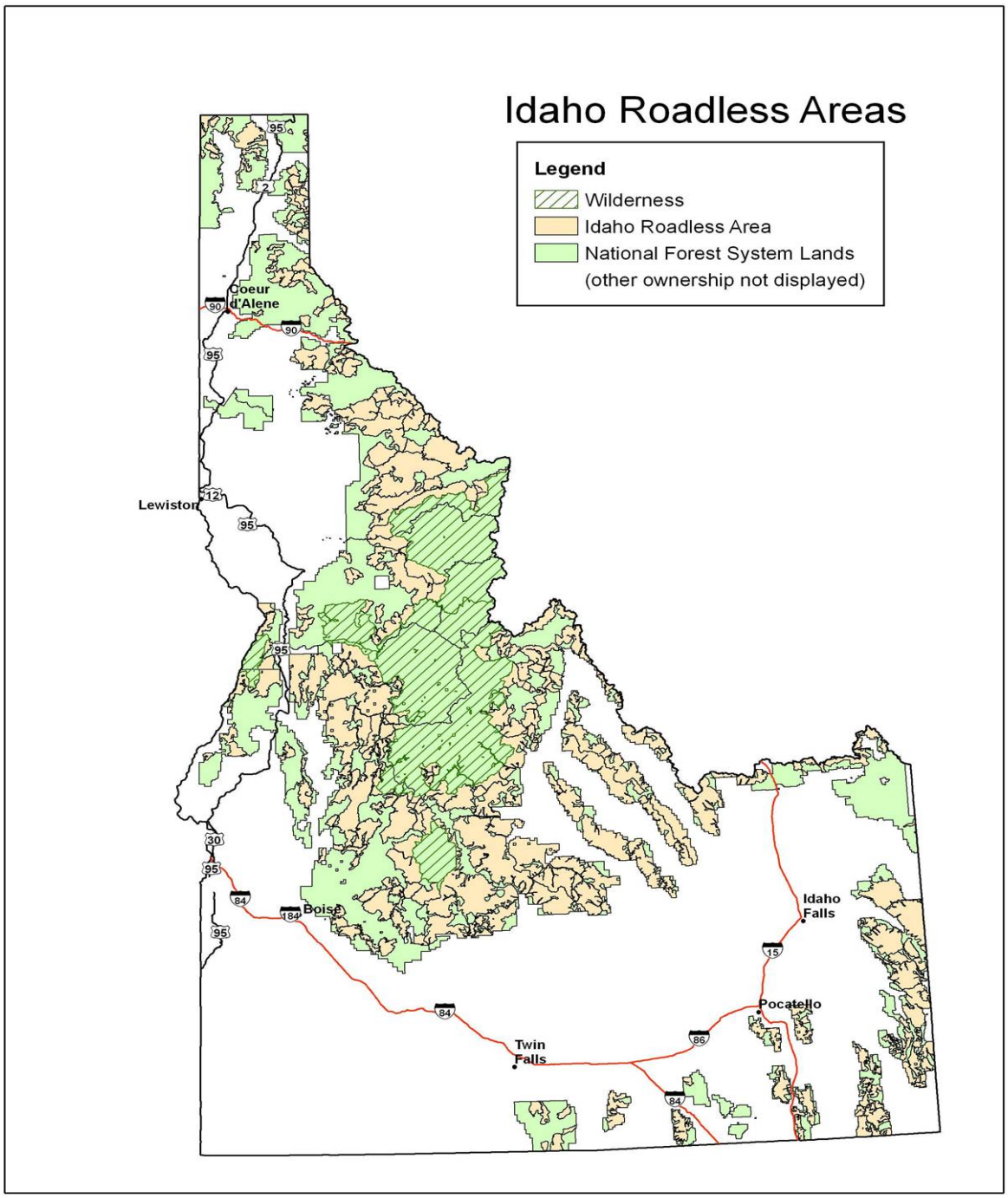

Figure 1. Map of Idaho Roadless Areas

The following description of the Proposed Action is summarized from the USFS Assessment, which contains specific details pertinent to the MIRR, not all of which are provided in this Opinion. The MIRR would designate a system of lands called Idaho Roadless Areas and establish five management area themes for individual roadless areas: Wild Land Recreation (WLR); Primitive (PRIM); Special Areas of Historic and Tribal Significance (SAHTS); Backcountry/Restoration (BCR); and General Forest, Rangeland, and Grassland (GFRG). The proposed themes span a continuum that includes both prohibitions and permissive allocations. This continuum accounts for stewardship of the uniqueness of each individual roadless area's landscape and the quality of roadless characteristics in that area.

Allocation of roadless acres to a specific theme is not intended to mandate or direct the USFS to propose or implement any specific land management action. Instead, the themes provide an array of permitted and prohibited activities regarding timber cutting, sale, or removal; road construction and reconstruction; and discretionary mineral activities. The following paragraphs describe the themes comprising the MIRR.

Wild Land Recreation (WLR) – A classification of an Idaho Roadless Area assigned to lands that were generally identified during the forest planning process as recommended for wilderness designation. About 1,479,700 acres are classified as Wild Land Recreation.

Road construction/reconstruction – Prohibited unless provided for by statute or treaty, or pursuant to reserved or outstanding rights, or other legal duty of the United States.

Timber cutting, sale, or removal – Prohibited except for personal or administrative use (36 CFR §223); or when incidental to the implementation of a management activity not otherwise prohibited (e.g., trail clearing).

Mineral activities – No recommendation, authorization, or consent to surface occupancy, or road construction or reconstruction associated with new mineral leases. The sale of common variety minerals would be prohibited. Locatable mineral activities pursuant to the General Mining Law of 1872, including road construction and reconstruction, would not be affected.

Primitive (PRIM) and Special Areas of Historic and Tribal Significance (SAHTS) – About 1,722,700 acres are classified as Primitive, and 48,600 acres are classified as SAHTS.

PRIM and SAHTS Road construction and reconstruction – Prohibited, unless provided for by statute or treaty, or pursuant to reserved or outstanding rights, or other legal duty of the United States.

PRIM and SAHTS Timber cutting, sale, or removal – Prohibited except:

1. To improve threatened, endangered, proposed, or sensitive species habitat;
2. To maintain or restore the characteristics of ecosystem composition, structure, and processes;
3. To reduce the risk of uncharacteristic wildland fire effects to an at-risk community or municipal water supply system (Figures 2 and 3);
4. For personal or administrative use, as provided for in 36 CFR 223; or

5. Where such cutting, sale or removal is incidental to the implementation of a management activity not otherwise prohibited by this subpart.

Timber cutting, sale and removal shall be limited to situations that will:

- Maintain or improve one or more of the roadless characteristics over the long term;
- Use existing roads or aerial harvest systems;
- Maximize the retention of large trees as appropriate for the forest type;
- Be consistent with applicable land management plan components; and
- Be approved by the Regional Forester.

PRIM and SAHTS Mineral activities – No recommendation, authorization, or consent to surface occupancy or road construction or reconstruction associated with new mineral or energy leases. The sale of common variety minerals would be prohibited. Locatable mineral activities pursuant to the General Mining Law of 1872 including road construction and reconstruction would not be affected.

Assumptions related to activities in the PRIM theme –

- Timber harvest in PRIM – would rarely be done and would maintain one or more of the roadless characteristics. Timber harvest would primarily be associated with fuel reductions needed to reduce uncharacteristic wildland fire effects to communities or municipal water supply systems. About 150,000 acres of the Primitive theme are within 1½ miles from a community (Figure 2). Communities are based on the definition found in the Healthy Forests Restoration Act (HFRA) and are generally represented in areas with more than 16 housing units per square mile. Municipal water supply systems can be fed by either ground or surface water. However threats from wildland fire are to surface waters, not ground water; therefore hazardous fuel reduction projects would be done to reduce wildland fire risk to surface waters (Figure 3). Large trees would be retained.
- Timber cutting in PRIM – without removal of a commercial product would likely be the tool used further away from at-risk communities or municipal water supply systems (e.g. slashing for white bark pine restoration and burning).

<u>Backcountry/Restoration (BCR)</u> – About 5,312,900 acres are classified as Backcountry, of which about 442,000 acres are within the community protection zone (BCR-CPZ).

Within BCR, construction/reconstruction of temporary roads would be permitted under certain circumstances. Temporary roads could be constructed within the CPZ to facilitate hazardous fuel reduction projects. Temporary roads could also be constructed outside the CPZ where needed to reduce significant adverse effects of wildland fire on at-risk communities or municipal water supply systems. If these purposes applied, activities would be further subject to certain conditions for implementation which would likely reduce the likelihood that temporary roads would be constructed.

Similarly, timber cutting activities from existing roads or using aerial systems are permitted in BCR to improve TEPC habitat, restore or maintain characteristics of ecosystem composition and structure, and to reduce the risk of uncharacteristic wildland fire effects to the BCR theme.

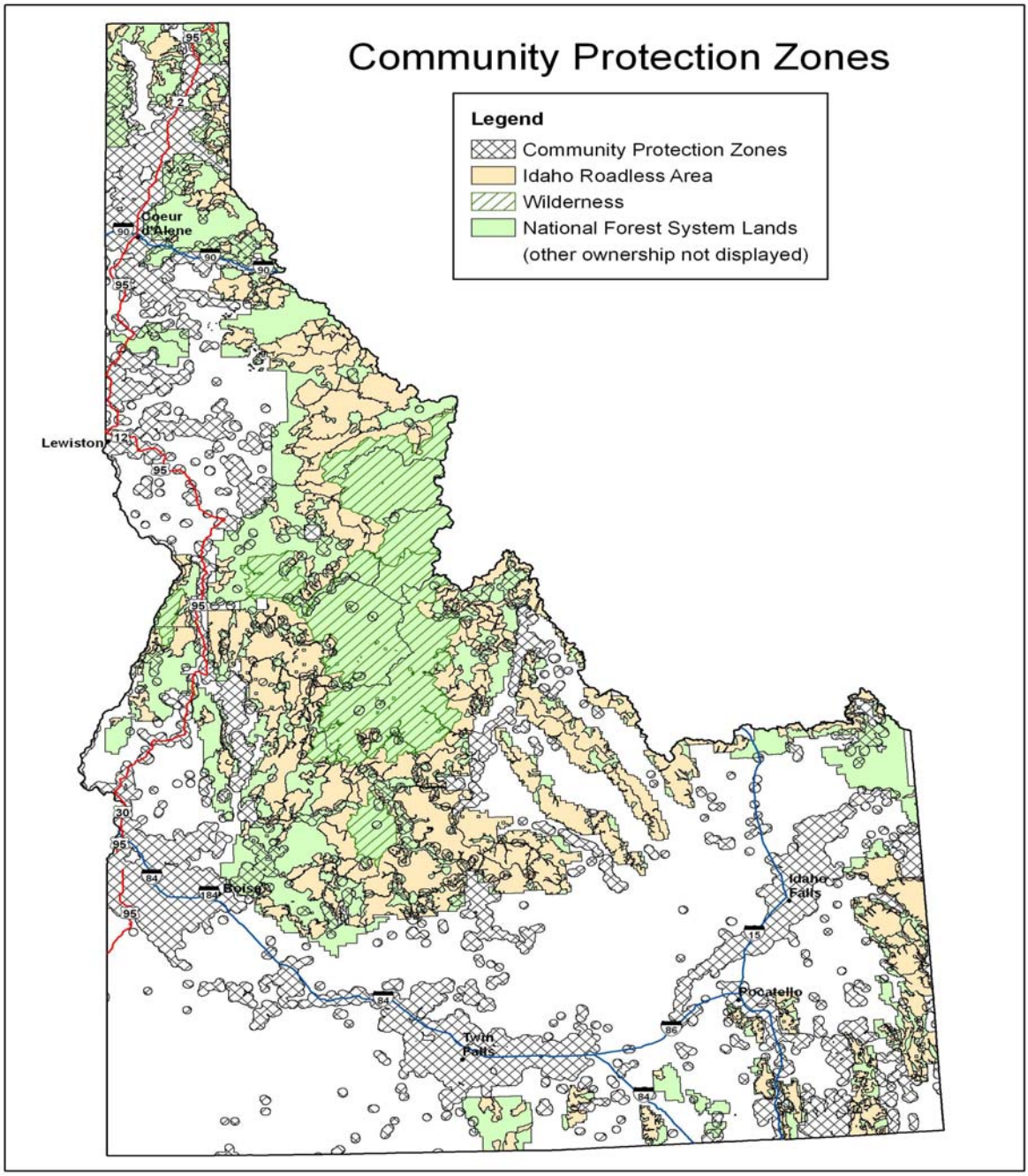

Figure 2. Overlap of Idaho Roadless Areas with Community Protection Zones

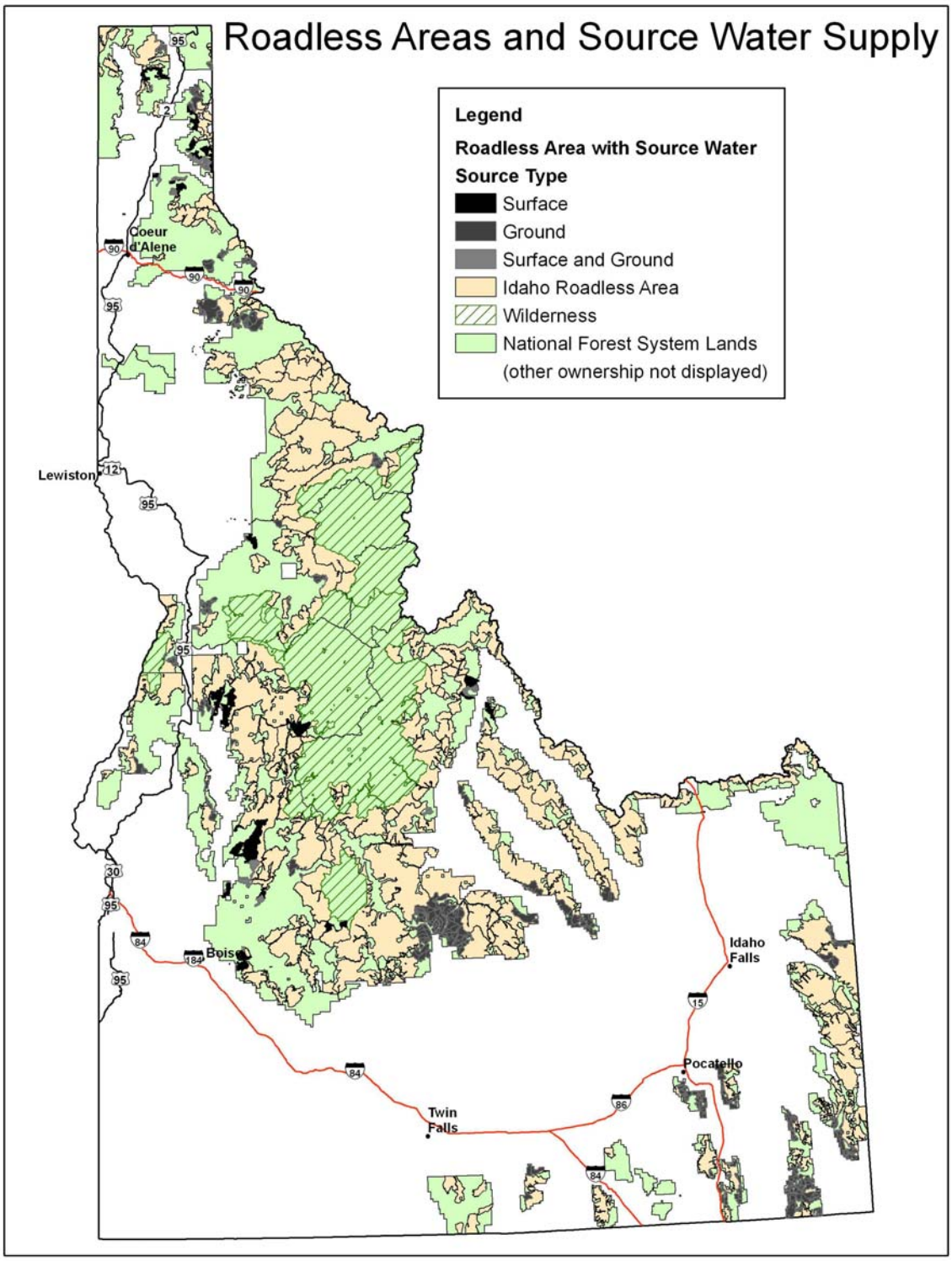

Figure 3. Overlap of Idaho Roadless Areas With Water Supply Systems

BCR Road construction/reconstruction – Permissible:

1. Where the Regional Forester determines:
    a. A road is needed to protect public health and safety or imminent threat of flood, wildland fire, or other catastrophic event that, without intervention, would cause the loss of life or property;
    b. A road is needed to conduct a response action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to conduct a natural resource restoration action under CERCLA, section 311 of the Clean Water Act, or the Oil Pollution Act;
    c. A road is needed pursuant to statute, treaty, reserved or outstanding rights, or other legal duty of the United States;
    d. Road realignment is needed to prevent irreparable resource damage that arises from the design, location, use, or deterioration of a road and cannot be mitigated by road maintenance. Road realignment may occur under this paragraph only if the road is deemed essential for public or private access, natural resource management, or public health and safety;
    e. A road (re)construction is needed to implement a road safety improvement project on a road determined to be hazardous based on accident experience or accident potential on that road; or
    f. The Secretary of Agriculture determines that a Federal Aid highway project, authorized pursuant to Title 23 of the United States Code, is in the public interest or is consistent with the purpose for which the land was reserved or acquired and no other reasonable and prudent alternative exists.
2. A responsible official may authorize temporary road construction or road reconstruction for CPZ activities if the activity cannot be reasonably accomplished without a temporary road.
3. The Regional Forester may approve temporary road construction or road reconstruction on an infrequent basis for the forest type to reduce hazardous fuel conditions outside the CPZ where:
    a. There is a significant risk that wildland fire disturbance event could adversely affect an at-risk community or municipal water supply system. A significant risk exists where the history of fire occurrence and fire hazard and risk indicate a serious likelihood that a wildland fire disturbance event would present a high risk of threat to an at-risk community or municipal water supply system.
    b. The activity cannot be reasonably accomplished without a temporary road and;
    c. The activity will maintain or improve one or more roadless area characteristics over the long-term.

BCR Timber cutting, sale, or removal[3] – Permitted if one of the following circumstances (conditions) exists:

1. To reduce hazardous fuel conditions within the CPZ if in the responsible official's judgment the project generally retains large trees as appropriate for the forest type and is consistent with applicable land management components;
2. To reduce the hazardous fuel conditions outside the CPZ where there is a significant risk that a wildland fire disturbance event could adversely affect an at-risk community or municipal water supply system. A significant risk exists where the history of fire occurrence and fire hazard and risk indicate a serious likelihood that a wildland fire disturbance event would present a high risk of threat to an at-risk community or municipal water supply system.
3. To improve threatened, endangered, proposed, or sensitive species habitat;
4. To maintain or restore the characteristics of ecosystem composition and structure.
5. To reduce uncharacteristic wildland fire effects;
6. For personal or administrative use, as provided for in 36 CFR 223;
7. Where incidental to the implementation of a management activity not otherwise prohibited by this subpart; or
8. In a substantially altered portion of an Idaho Roadless Area designated as BCR, which has been altered due to the construction of a forest road and subsequent timber cutting. Both the road construction and subsequent timber cutting must have occurred prior to the effective date of this rule.

Any action authorized pursuant to conditions 2-5 shall be limited to situations that will:

- Maintain or improve one or more of the roadless characteristics over the long term,
- Maximize the retention of large trees as appropriate for the forest type, to the extent the trees promote fire-resilient stands,
- Be consistent with land management plan components,
- Be approved by the Regional Forester.

The activities above may use any forest roads or temporary roads, including those authorized for hazardous fuel reduction projects within the CPZ and outside the CPZ (road construction/reconstruction conditions 2 and 3 until decommissioned).

BCR Mineral activities[4] – No recommendation, authorization, or consent for road construction or reconstruction associated with new mineral or energy leases. Surface use and ccupancy is permitted if allowed in the LRMPs. Locatable mineral activities pursuant to the General Mining Law of 1872, including road construction and reconstruction, would not be affected. Surface use and occupancy without road construction is permissible for all mineral leasing unless prohibited in the applicable land management plan.

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[3] Exceptions found for timber cutting, sale, or removal #3-8 are the same as the 2001 Roadless Rule.

[4] The permissions and prohibitions for mineral activities in the BCR theme are the same as the 2001 Roadless Rule, except the MIRR clarifies that prohibitions for surface use and occupancy established in Forest Plans would apply.

The USFS may authorize the use or sale of common variety minerals, and associated road construction or reconstruction to access these minerals if the use of these minerals only is incidental to activity allowed under the rule.

Assumptions related to activities in the BCR theme –

- Timber cutting in BCR in CPZ – would focus on reducing hazardous fuels in the CPZ (about 442,000 acres of the 5,312,900 acres (8 percent)) of the BCR. Timber cutting would be done on a limited basis in this area. Temporary road construction could be done to facilitate timber cutting in the CPZ and would be associated with timber harvest. Activities in the CPZ would not have to show they would retain roadless character, but often would be designed to maintain or improve one or more roadless character. The intent is to limit the amount of additional analysis in the CPZ.
- Timber cutting in BCR for significant risk outside the CPZ – timber cutting, including timber harvest could be done to reduce significant risk. Timber harvest outside the CPZ would be more limited than within the CPZ because of additional conditions (i.e. have to show significant risk to an at-risk community or municipal water supply system, temporary roads can only be constructed when the activity cannot be otherwise reasonably accomplished, and must maintain or improve one or more roadless area characteristic over the long-term, and requires Regional Forester approval). It is anticipated that temporary road building in BCR outside of CPZ would be done infrequently.
    - Timber cutting for TEPC habitat or ecosystem composition and function could be done, but no new roads can be constructed unless the activity is done in conjunction with a fuel reduction project; therefore it is likely timber harvest (removal of commercial product) would be limited outside the CPZ; and timber cutting (e.g. slashing in preparation for prescribed burning) would most likely be the selected treatment.
    - Any timber cutting done outside the CPZ would be done on a limited basis and would be done to retain roadless characteristics. Timber cutting would be light on the land (focusing on what is left behind, not what is removed). Clearcuts or seedtree harvests would not occur because these systems are generally inconsistent with retaining one or more roadless area characteristics and maximizing the retention of large trees. Shelterwoods, uneven-age management or intermediate harvests could occur. All would retain some structure and canopy and would be less evident on the landscape, especially over time. No cutting just for timber purposes.
    - Intent for timber cutting, sale, or removal is to only do what is necessary to address the need (threatened or endangered species habitat improvement, fuel reduction, ecosystem restoration, etc.), not for timber production.
- Road construction/reconstruction in the BCR theme – Temporary roads constructed for timber harvest must minimize effects on resources, may only be used for specified purposes, and must be decommissioned as part of the contract package. This condition may not be waived and would be part of the contract costs. Any road construction/reconstruction would be designed based on applicable Forest Plan components.

<u>General Forest, Rangeland, or Grassland (GFRG)</u> – About 405,900 acres are classified as GFRG.

GFRG Road construction/reconstruction – Permitted for a forest permanent or temporary road, except those roads associated with new mineral leases other than phosphate. Forest roads

constructed or reconstructed must be conducted in a manner that minimizes effects on surface resources and must be consistent with applicable land management plan components.

GFRG Timber cutting, sale, or removal – Permitted, at the discretion of the responsible official when consistent with the applicable land management plan components.

GFRG Mineral activities – No recommendation, authorization, or consent to road construction or reconstruction associated with new mineral leases, except such road construction or reconstruction may be authorized in association with phosphate deposits as noted in Figure 4.

Leasing instruments that allow surface use or occupancy are permissible if they do not require road construction or reconstruction and surface use and occupancy is allowed in the Forest Plan. Locatable mineral activities pursuant to the General Mining Law of 1872 would not be affected, including road construction and reconstruction.

The USFS may authorize the use or sale of common variety minerals, and associated road construction or reconstruction to access these minerals only if the use of these minerals is incidental to activity allowed under this rule.

Road construction or reconstruction associated with mining activities permissible under this subsection must be conducted in a manner that minimizes effects on surface resources, prevents unnecessary or unreasonable surface disturbances, and may only be used for the specific intended purpose. Roads constructed or reconstructed must be decommissioned when no longer needed or upon expiration of the lease, or permit, or other authorization whichever is sooner. Decommissioning shall consider public safety, costs, and potential impacts to land and resources.

Assumptions related to activities in the GFRG theme –
In GFRG, roadless characteristics would not have to be retained – however these areas would remain in the roadless area inventory. Full range of silvicultural techniques could be used, including clearcutting when the situation warrants it.

<u>Guidance that Applies to all Idaho Roadless Areas</u>

Permanent Roads – Where permanent roads are allowed under statute, treaty, or pursuant to reserved or outstanding rights, or other legal duty of the United States or under the six exceptions (see *Assumptions - Road Construction* section) provided to the Regional Forester construction and reconstruction must follow Forest Plan standards.

Temporary Roads – Temporary road construction must be conducted in a manner that minimizes effects on surface resource, is consistent with applicable land management plan components, and may only be used for the specific intended purpose.

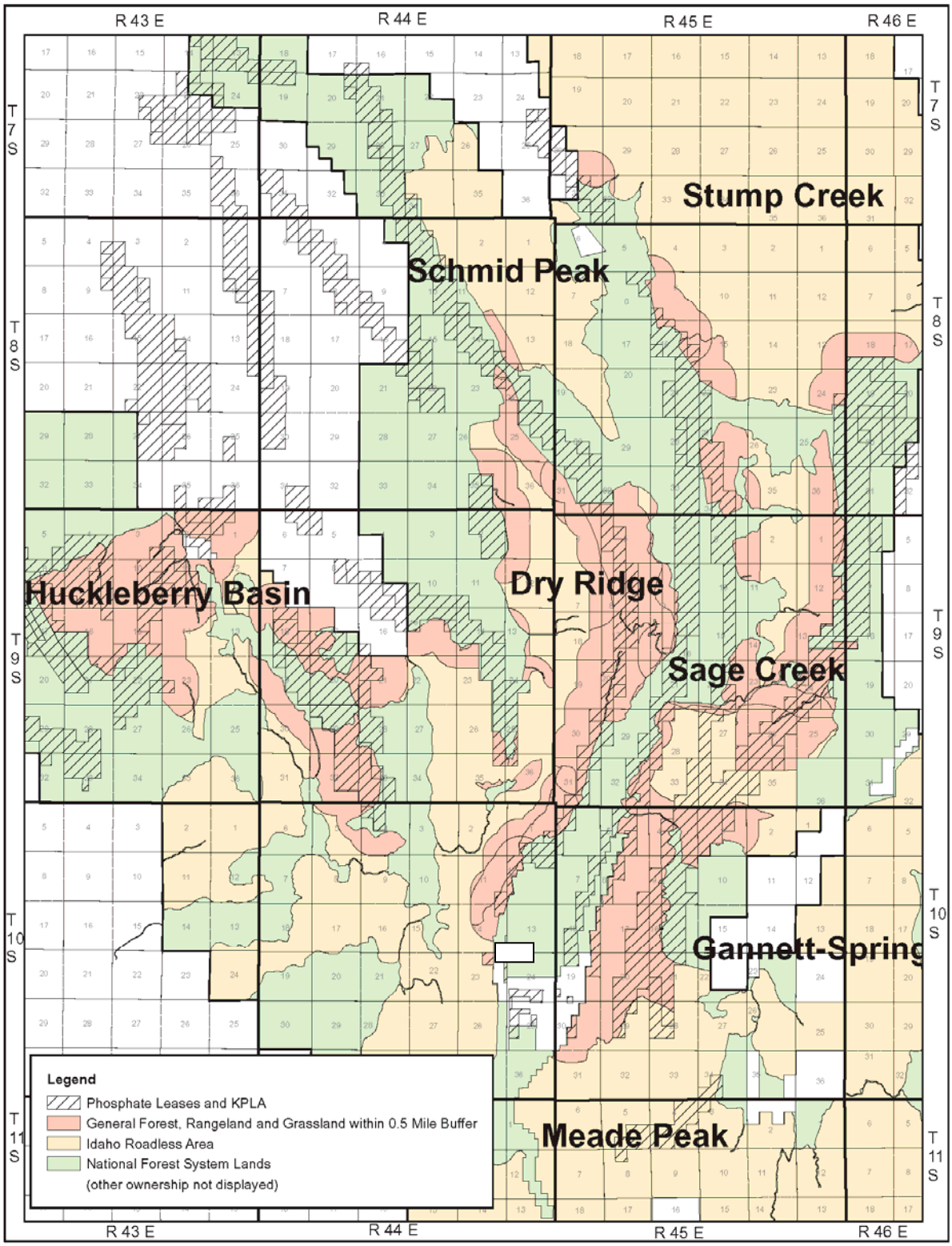

Figure 4. GFRG where road construction/reconstruction is allowed on the Caribou portion of the Caribou-Targhee National Forest to access unleased phosphate deposits.

Road maintenance – Road maintenance of authorized roads is permissible in Idaho Roadless Areas.

Discretionary Mining – Surface occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal, phosphates) would be allowed where it is consistent with applicable forest plan components. There is no potential for oil and gas in Idaho Roadless Areas other than on the Caribou-Targhee National Forest. The Forest Supervisor on the Targhee National Forest issued an oil and gas leasing decision in 2000. The decision made much of the forest either unavailable for leasing or available for leasing with a no surface occupancy (NSO) stipulation. The large expanse of the designated NSO renders them virtually impossible to economically explore and develop (FEIS, section 3.15 Minerals and Energy). Surface use and occupancy, and associated infrastructure could be granted in some areas for geothermal development although there is a low likelihood of new leases in IRAs without the ability to build new roads.

Other Forest Plan Special Areas – The Idaho Roadless Rule identified approximately 334,500 acres of roadless areas that are already part of other land classification systems - such as research natural areas, wild and scenic rivers, special interest areas, and the like (FEIS Appendix Q, Table Q-1) - that are governed by specific Agency directives and Forest Plan direction (USFS 2008). These Forest Plan special areas are included for the sake of completeness; however, the MIRR does not recommend management direction for these lands, which would continue to be governed by Forest Plans.

Other Activities in Idaho Roadless Areas –

- Motorized Travel – Nothing in the MIRR rule shall be construed as affecting existing roads or trails in Idaho Roadless Areas. Decisions concerning the future management and/or status of existing roads or trails in Idaho Roadless Areas under this rule shall be made during the applicable travel management processes.
- Grazing – Nothing in the MIRR rule shall be construed as affecting the existing grazing permits in Idaho Roadless Areas. Future road construction associated with grazing operations shall conform to this rule.
- Motorized Equipment and Mechanical Transport – Nothing in the MIRR rule shall be construed as affecting the current or future management status of the existing use of motorized equipment and mechanical transport in Idaho Roadless Areas.

Special Considerations for Grizzly Bear and Woodland Caribou on the IPNF

Grizzly Bear Considerations –
The Idaho Roadless Rule includes a requirement that land management plan components that are not inconsistent with the MIRR rule will continue to provide guidance for projects and activities within IRAs. Land management plan components will shape and guide the actual implementation of the rule. These would include standards for grizzly bear protection, and any necessary consultation with the Service if any adverse effects to grizzly bears are anticipated. These conditions would still apply, and if the project cannot meet these requirements, the proposed project would have to be modified, abandoned, or the plan amended.

The USFS is currently amending its Forest Plans for the Idaho Panhandle, Kootenai, and the Lolo National Forests relative to Wheeled Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones (Access Amendment), which include portions of the area covered by the Idaho Roadless Rule. The purpose of the amendment is to establish standards and guidelines which will apply to all future site-specific decisions regarding wheeled, motorized use and contribute to the conservation and recovery of the species within these National Forests. A Record of Decision for the Access Amendment is anticipated in 2009.

Although there are no foreseeable projects that could result in increased risk of mortality to grizzly bears, the programmatic nature of the Idaho Roadless Rule decision allows for such projects. To provide additional assurance to the consultation process, the Idaho Panhandle has agreed to defer decisions that would have a *likely to adversely affect determination*, except when the project benefits grizzly bears, until the ROD for the Access Amendment is signed (McNair 2008) (Appendix C).

This commitment pertains to road construction, reconstruction, or timber cutting, sale, or removal activities in Idaho Roadless Areas that are in core habitat within grizzly bear management units. Currently, there are no such activities in the foreseeable future that would be undertaken pursuant to the Idaho Roadless Rule in these areas prior to the expected date of the Access Amendment decision.

The above restriction applies only to USFS-initiated activities; activities on Federal lands within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones that are initiated by third parties will continue to be governed by normal consultation procedures and requirements for such activities under the Act.

Selkirk Mountains Woodland Caribou Considerations –
Although there are no planned projects that would result in adverse effects upon woodland caribou on the IPNF, the programmatic nature of the MIRR allows for projects that could result in adverse effects and potentially increased risk of mortality to woodland caribou. To provide additional assurance to this consultation on the MIRR, the IPNF has agreed to use the best science in the design and implementation of projects in the Caribou Recovery Zone. The IPNF has provided a letter with assurances not to implement projects that remove allocated old growth stands of trees (USFS 2008b) (Appendix B). The Forest commits to using the best science to manage and maintain old-growth stands in suitable caribou habitat, which exceed 60,000 acres within the Caribou Recovery Area. Their 2005 and 2006 Forest Plan Monitoring Report provides a complete discussion of the management of old growth on that Forest. The commitment from the IPNF applies only to USFS-initiated activities; activities on Federal lands within woodland caribou habitats that are initiated by third parties will continue to be governed by normal consultation procedures and requirements for such activities under the Act.

D. Time Frames, Scope and Applicability for the Proposed Action –

- After the effective date of the MIRR rule, the rule promulgated on January 12, 2001 (66 F.R. 3244) shall have no effect within the State of Idaho.

- This subpart does not revoke, suspend, or modify any permit, contract, or other legal instrument authorizing the occupancy and use of National Forest System (NFS) land issued prior to the effective date of the MIRR rule.
- The provisions set forth in this subpart shall take precedence over any inconsistent land management plan component. Land management plan components that are not inconsistent with the rule will continue to provide guidance for projects and activities within Idaho Roadless Areas. This subpart does not compel the amendment or revision of any land management plan. In the USFS review of existing management direction for threatened and endangered species they have determined that none of the species specific direction is inconsistent with the permissions or prohibitions provided in the management themes. The existing management direction provides specific criteria for designing projects or activities; therefore existing management direction for threatened and endangered species is still applicable.
- This subpart does not supersede specific Agency directives and Forest Plan direction for Forest Plan Special Areas imbedded in whole or in part within Idaho Roadless Areas.
- This subpart does not revoke, suspend, or modify any project or activity decision made prior to the effective date of the MIRR rule.
- The prohibitions and permissions set forth in the subpart are not subject to reconsideration, revision, or rescission in subsequent project decisions or land and resource management plan amendments or revisions undertaken pursuant to 36 CFR part 219.
- Nothing in this section waives any applicable responsibility regarding site-specific environmental analysis, public involvement, consultation with Tribes and other agencies or compliance with applicable laws.
- If any provision of the rules in this subpart or its application to any person or to certain circumstances is held invalid, the remainder of the regulations in this subpart and their application remain in force.
- This subpart does not modify the unique relationship between the United States and Indian Tribes that requires the Federal government to work with federally recognized Indian tribes on a government-to-government basis as provided for in Executive Order 13175. Nothing herein limits or modifies prior existing Tribal rights, including those involving hunting, fishing and gathering.

E. Administrative Corrections – Correction or modification of designations made pursuant to this rule may occur under the following circumstances:

The Chief of the USFS may issue administrative corrections to the maps at any time. At least 30 days public notice and opportunity to comment shall be given prior to the effective date for any administrative corrections. Administrative corrections include, but are not limited to, adjustments that remedy clerical, typographical, mapping errors, or improvements in mapping technology.

F. Modifications – The Chief of the USFS may add to, remove from, or modify the designations and management classifications based on changed circumstances or public need. The Chief shall provide at least 45 days public notice and opportunity to comment for all modifications. It is possible that consultation would need to be re-initiated depending on the scope of the modification.

G. Applicability of Previous Consultations to Proposed Action – Existing land management plan components that are not inconsistent with the MIRR will continue to provide guidance for projects and activities within Idaho Roadless Areas. The MIRR does not compel the amendment or revision of any land management plan, nor does it supersede specific USFS directives and Forest Plan direction for Forest Plan Special Areas imbedded in whole or in part within IRAs.

For bull trout and bull trout critical habitat, the use of PACFISH, INFISH, the SWIE ACS, and other Forest Plan land management components consulted on previously and their respective Biological Opinions are still in effect. For Canada lynx, the *Northern Rockies Lynx Management Direction Final Environmental Impact Statement* (USDA FS 2007) direction applies to mapped lynx habitat on National Forest System lands presently occupied by Canada lynx, as defined by the *Amended Lynx Conservation Agreement between the Forest Service and the FWS* (USFS and Service 2006). If and when unoccupied NFS lands become occupied, based on criteria and evidence described in the LCA, the direction shall then be applied to those Forests.

The conservation measures and the terms and conditions of those opinions were intended to reduce or avoid adverse effects on listed species and their habitats. The Service regards these measures as integral components of the proposed action and expects that all site-specific (project) proposed actions that are brought forward under authorization of the MIRR will be designed and completed consistent with those measures. The Service has completed our effects analysis accordingly, and any deviation from these measures will be beyond the scope of this consultation. Future section 7 consultation will be required to determine what effects site-specific proposed actions will have on listed species and their habitats.

H. Relationship of Existing Forest Plans to Proposed Action – The MIRR makes it clear that applicable LRMP components (desired conditions, objectives, suitability, guidelines, and standards) must be adhered to during the planning and implementation of a project. For example, in the GFRG theme, LRMP components generally permit road construction. However, some components set sideboards or conditions for road construction (e.g., roads may not be constructed in riparian areas unless certain conditions are met or may not be constructed in grizzly bear habitat unless certain road densities are met). These conditions would still apply to actions permissible under the final rule and if the project cannot comply with the plan requirements, the proposed project would have to be modified, abandoned, or the LRMP amended. There are some roadless areas where the management theme direction established in the MIRR (see discussion below) would be more permissive than existing LRMPs, for example allowing the use of a temporary road for fuels treatment within a CPZ while the existing LRMP does not allow for roads in the area. In these few instances, the rule would override the plan's general allocation and road construction could be permitted. However, any such road building must still be consistent with all LRMP direction that provides specific criteria for designing projects or activities. In the example above, the road must still meet requirements found in INFISH, PACFISH, SWIE-wide requirements, the Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area, the NRLA, or other species-specific direction.
In addition, the USFS has reviewed the management direction in existing plans and associated amendments that provide species-specific management direction. The USFS has determined that none of the species-specific standards and guidelines are inconsistent with the MIRR; therefore they would be applied during project implementation.

The MIRR would prohibit road construction on 3,251,000 acres (WLR, PRIM, and SAHTS), as compared to 3,224,600 acres in existing Forest Plans. Road construction (permanent and temporary) is generally permitted under existing Forest Plans in prescriptions equivalent to the BCR theme (4,482,000 acres). Under the MIRR only temporary road construction would be permitted to facilitate timber cutting in the BCR-CPZ (442,000 acres) and under very specific circumstances and conditions outside CPZ (4,870,900 acres). There are 1,263,200 acres in existing Forest Plans that allow most activities to occur (see Table II-2 in the Assessment). These areas are generally equivalent to the GFRG theme in the MIRR. In the MIRR there are 405,900 acres in GFRG where timber cutting and road construction would be allowed (see Table II-2 in the Assessment). The MIRR precludes road construction/reconstruction to access new mineral leases in the GFRG theme.

There are portions of several roadless areas, listed below, where the management direction in the MIRR would be more permissive than in the existing Forest Plans. In these areas the MIRR is inconsistent with the existing Forest Plan and the MIRR would supersede the permissions and prohibitions for road construction in the existing Forest Plans. Temporary road construction would be permitted on these 18,260 acres, where it is not permitted now. Even though additional activities could occur in these roadless areas than what is permitted in the existing Forest Plans, those activities must be consistent with Forest Plan direction that provides general criteria for designing projects or activities, such as direction found in INFISH, PACFISH, SWIE Forest-wide requirements; grizzly bear or lynx requirements because these provide species-specific direction and are not inconsistent with the MIRR. These areas include the following:

- Boise/Payette National Forests, Poison Creek Roadless Area, 5,300 acres; this area has been in a prescription that prohibits road construction except to access outstanding existing rights, but is proposed in the BCR-CPZ.
- Clearwater National Forest, Moose Mountain; 160 acres are in the BCR-CPZ where temporary roads could be constructed. No road construction is permitted in the existing Forest Plan on these 160 acres.
- Idaho Panhandle National Forest; the following roadless areas have lands in the BCR-CPZ where temporary roads could be constructed. No road construction is permitted in the existing Forest Plan, but would be permitted in the proposed revised plan.
  - *Beetop* Roadless Area, 6,900 acres of the CPZ
  - *Scotchmans Peak* Roadless Area, 1,300 acres of the CPZ
  - *Selkirk* Roadless Area, 300 acres of the CPZ
  - *Spion Kop* Roadless Area, 700 acres of the CPZ
  - *Trestle Peak* Roadless Area, 300 acres of the CPZ.
- Salmon National Forest; the following roadless areas are have lands in the BCR-CPZ where temporary roads could be constructed. No road construction is permitted in the existing Forest Plan.
  - *Goldbug Ridge* Roadless Area, 1,200 acres of the CPZ
  - *Jesse Creek* Roadless Area, 1,900 acres of the CPZ.
- Targhee National Forest, *West Slope of the Tetons*; 200 acres are in BCR-CPZ where temporary roads could be constructed. No road construction is permitted in the existing Forest Plan on these 200 acres.

- Challis National Forest, Railroad Ridge; 300 acres are in BCR-CPZ where temporary roads could be constructed. The existing Forest Plan permits road construction for mineral activities, but does not anticipate timber harvest, or road construction would occur.

There are five instances where the MIRR would deviate from existing Forest Plans with respect to recommended or potential wilderness. In general, more lands within each of these roadless areas would be under the WLR theme than in existing plans; but the land areas are different. These differences are based on pending legislation and ongoing collaborative efforts during Forest Plan revision. Under existing Forest Plans no roads could be constructed in these areas, nor would timber harvest occur. Under the MIRR, roads would not be constructed in areas that are in the PRIM theme, but could be constructed in the BCR theme and timber cutting could occur in both themes.

- *Boulder-White Clouds*: Existing Forest Plans 194,100 acres, MIRR 231,300 acres, net gain 37,200 acres. All areas not included in the WLR theme are in PRIM.
- *Mallard-Larkins*: Existing Forest Plans 141,600 acres; MIRR 131,200 acres. The portion on the Clearwater National Forest is PRIM (6,400 acres) and the Idaho Panhandle National Forest is BCR (4,000 acres); however, no road construction is anticipated in this area because there are no communities or municipal water supply systems nearby.
- *Selkirk*: Existing Forest Plans 25,400 acres; MIRR 42,000 acres – but includes a different set of lands than existing Forest Plans (about 7,000 acres is in BCR).
- *Scotchman Peaks*: Existing Forest Plans 9,800 acres; MIRR 10,800 acres – but includes a different set of lands than existing Forest Plans (about 1,300 acres is in BCR).
- *Winegar Hole*: Existing Forest Plans, 2600 acres. MIRR all 2,600 acres in PRIM.

I. Assumptions Pertaining to the Proposed Action –
Numbers used in the Assessment:

- Idaho contains 52,961,000 total acres (Curley et al. 2004)
- 7 percent or 4,005,653 acres is in designated wilderness (Curley et al. 2004)
- 9.3 million acres of Idaho Roadless Areas are National Forest System lands (Petition of Governor James E. Risch 2006)
- 250 Inventoried Roadless Areas in Idaho (281 when considering IRAs by National Forest)

Assumptions – General:
The MIRR proposes direction for the conservation and management of roadless areas in Idaho. This direction establishes prohibitions and permissions related to road construction/reconstruction, timber cutting, and discretionary mining across Idaho Roadless Areas, based on management area 'themes'. Although the MIRR does not authorize any projects on the ground, it does geographically designate certain management area 'themes' to IRAs, and thus dictates the nature of activities that could take place within these IRAs.

Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR alternative does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur pursuant to the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed

under the MIRR versus an analysis of on-the-ground activities, and therefore has no direct effects.

The Idaho Roadless Rule would designate a system of lands (Idaho Roadless Areas) and establish five management themes as described in Section II of the Assessment. The proposed themes span a continuum that includes both prohibitions and permissive allocations. Allocations to a specific theme are not intended to mandate or direct the USFS to propose or implement any action; rather the themes provide an array of permitted and prohibited activities regarding:

- Timber cutting, sale, or removal;
- Road construction and reconstruction;
- Discretionary mineral activities.

The effects analyses in the Assessment and Opinion include a description of the nature of potential effects that could occur given the prohibitions and permissions in the MIRR.

Road construction, reconstruction, and timber harvest in IRAs over the past five years has been minimal and has not resulted in a change to the roadless character of the IRAs (trend and projection data provided by the Forests, Spring 2007). This trend is largely due to implementation of the 2001 Roadless Rule. Given roadless area values, current and projected future budgets it is likely that road construction, reconstruction, and timber harvest will continue in IRAs at low rates similar to the past five years. However, there is always a chance road and timber activities could increase if budgets and/or needs for vegetation management increased in the future.

The following projections in Tables 3 and 4 are not included in the proposed action but are provided to help with understanding of the anticipated scope of actions that could occur under the MIRR given the permissions and prohibitions included in proposed action. These projections are based on what occurred or what was projected to occur in IRAs prior to the 2001 Roadless Rule (under existing Forest Plans) and modified based on the permissions and prohibitions under the MIRR; therefore these projections account to some degree for fluctuating budgets and differing priorities for vegetative treatments.

Table 3. Projected Timber Cutting - MIRR

	Projected Timber Cutting
Timber harvest yearly average (million board feet)	5.04
Timber harvest yearly average (acres)	1,000
Timber harvest over planning horizon 15 years (million board feet / acres)	75.6 / 15,000

Table 4. Projected Road Construction/Reconstruction - MIRR

	Projected road construction/ reconstruction activities	
	Yearly Average	**Over 15 Year Planning Horizon**
Permanent - other	0.8	12.0
Temporary - other	0.2	3.0
Reconstruction - other	0.0	0.0
Total	1.0	15.0
Permanent – timber	0.0	0.0
Temporary – timber	1.2	18.0
Reconstruction - timber	1.1	16.5
Total	2.3	34.5
Grand totals- yearly average		
Permanent Total	0.8	12.0
Temporary Total	1.4	21.0
Reconstruction Total	1.1	16.5
Total	**3.3**	**49.5**

Assumptions – Timber Cutting:
Any timber cutting would be designed based on applicable land management plan components (e.g. protection of riparian areas, habitat needs for species, etc). Vegetation management practices use many techniques to help maintain ecosystem composition. Techniques may include:

- Timber cutting in the broader sense, which could include slashing, chipping or mulching and cutting of vegetation, or limbing of trees to break the laddering effect of fuels;
- Timber harvest which removes a commercial product;
- Prescribed burning and wildland fire use.

Assumptions – Road Construction:

- Road projections include numbers for other activities and for actions such as access to rights-of way, locatable minerals and phosphates. They may also include an incidental amount for recreation or other needs.
- About one mile of yearly road construction/reconstruction would be done for reasons other than timber harvest (see the 2001 Roadless Rule exceptions listed below for road construction/reconstruction). About 80 percent would be new construction, of which 20 percent would be temporary in nature (Table 3).
- Includes the six exceptions from the 2001 Rule plus temporary roads to facilitate timber harvest in CPZ or for significant risk:
    1. A road is needed to protect health and safety in cases of imminent threat of flood, fire, or other catastrophic event that without intervention would cause the loss of life or property; or

2. A road is needed to conduct a response action under the CERCLA, or to conduct a natural resource restoration action under CERLA, section 311 of the Clean Water Act, or the Oil Pollution Act; or
3. A road is needed pursuant to reserved or outstanding rights or as provided for by statute, treaty; or
4. Road realignment is needed to prevent irreparable resource damage that arises from the design, location, use or deterioration of a road and cannot be mitigated by road maintenance. Road realignment may occur under this paragraph only if the road is deemed essential for public or private access, natural resource management, or public health or safety; or
5. Road construction is needed to implement a road safety improvement project on a classified road determined to be hazardous based on accident experience or accident potential on that road; or
6. The Secretary of Agriculture determines that a Federal aid highway project, authorized pursuant to Title 23 of the U.S. Code (23 USC), is in the public interest or is consistent with the purpose for which the land was reserved or acquired and no other reasonable and prudent alternatives exists.

Note: Maintenance of classified roads is permissible in inventoried roadless areas.

Today, approximately 2,050 miles of roads currently exist on less than 5 percent of the land area in IRAs (Table 5). Some of these roads pre-date the roadless area inventories, while others have been constructed where Forest Plans permitted development. This current inventory may include forest roads, other public roads, private roads, and unauthorized roads. The unauthorized roads include but are not limited to "jammer roads," user-created routes, and other roads that were never authorized through contract or permit.

Table 5. Miles of Road Within Idaho Roadless Areas by National Forest

Forest	Road Miles
Boise	89
Caribou	184
Challis	511
Clearwater	14
Idaho Panhandle	51
Kootenai	3
Nez Perce	12
Payette	62
Salmon/Challis	596
Sawtooth	225
Targhee	279
Wallowa-Whitman	24
TOTAL	**2,050**

Over the past decade and a half, NFS road construction in Idaho has declined by 90 percent, from a high of 1,315 miles in 1991 to 129 miles in 2006. Most of these roads were built to support timber harvest. During the period 1991 to 1999, about 2,660 miles of road were decommissioned each year (USFS 2000k). From 2000 to 2006, about 1,560 miles of road were decommissioned each year. More than 13 miles of road are decommissioned for every mile of new road constructed (USFS 2006b).

Assumptions – Discretionary Minerals:
Discretionary minerals activities under the MIRR include only road construction/reconstruction related to access for new phosphate leases in the GFRG theme. Although surface use and occupancy may be permitted in the BCR and GRFG theme it is unlikely mineral resources (oil and gas, geothermal, or phosphate) would be explored or developed because: (1) the very limited amount of oil and gas in IRAs and past experience of no directional drilling; (2) the amount of geothermal resources outside of IRAs where existing infrastructure exists; and (3) inability to mine without road access.

About 5,770 acres of phosphate are projected to be developed over the long term (50 or more years) based on the amount of lands placed in the GFRG theme with known phosphate deposits. The MIRR limits road construction/reconstruction to these areas. Based on past experience an additional 810 acres could be mined in areas adjacent to known reserves. There are no aquatic TEPC species located in areas where phosphate could be developed.

CHAPTER III: BULL TROUT

A. Status of the Species

1. Listing History

Declining trends due to the combined effects of habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, angler harvest and poaching, entrainment into diversion channels and dams, and introduced nonnative species (e.g., brook trout, *Salvelinus fontinalis*) have resulted in declines in rangewide bull trout distribution and abundance (Bond 1992; Schill 1992; Thomas 1992; Ziller 1992; Rieman and McIntyre 1993; Newton and Pribyl 1994; Idaho Department of Fish and Game in litt. 1995). Several local extirpations have been reported, beginning in the 1950s (Rode 1990; Ratliff and Howell 1992; Donald and Alger 1993; Goetz 1994; Newton and Pribyl 1994; Berg and Priest 1995; Light et al. 1996; Buchanan and Gregory 1997; Washington Department of Fish and Wildlife 1997).

Land and water management activities such as dams and other diversion structures, forest management practices, livestock grazing, agriculture, road construction and maintenance, mining, and urban and rural development continue to degrade bull trout habitat and depress bull trout populations (Service 2002).

The coterminous United States population of the bull trout was listed as threatened on November 1, 1999 (64 FR 58910). The threatened bull trout occurs in the Klamath River Basin of south-central Oregon, the Jarbidge River in Nevada, north to various coastal rivers of Washington to the Puget Sound, east throughout major rivers within the Columbia River Basin to the St. Mary-Belly River, and east of the Continental Divide in northwestern Montana (Cavender 1978, Bond 1992, Brewin and Brewin 1997, Leary and Allendorf 1997).

The bull trout was initially listed as three Distinct Population Segments (DPSs) (63 FR 31647, 64 FR 17110). The preamble to the final listing rule for the United States coterminous population of the bull trout discusses the consolidation of these DPSs, plus two other population segments, into one listed taxon and the application of the jeopardy standard under section 7 of the Act relative to this species (64 FR 58930):

> "Although this rule consolidates the five bull trout DPSs into one listed taxon, based on conformance with the DPS policy for purposes of consultation under section 7 of the Act, we intend to retain recognition of each DPS in light of available scientific information relating to their uniqueness and significance. Under this approach, these DPSs will be treated as interim recovery units with respect to application of the jeopardy standard until an approved recovery plan is developed. Formal establishment of bull trout recovery units will occur during the recovery planning process."

The Service completed a 5-year Status Review for bull trout in 2008 (Service 2008). The review concluded that the species should remain listed as threatened and that the designation of multiple DPSs should be reevaluated.

2. Description of the Species

Bull trout *(Salvelinus confluentus*), member of the family Salmonidae, are char native to the Pacific Northwest and western Canada. The bull trout and the closely related Dolly Varden (*Salvelinus malma*) were not officially recognized as separate species until 1980 (Robins et al. 1980). Bull trout historically occurred in major river drainages in the Pacific Northwest from the southern limits in the McCloud River in northern California (now extirpated), Klamath River basin of south central Oregon, and the Jarbidge River in Nevada to the headwaters of the Yukon River in the Northwest Territories, Canada (Cavender 1978; Bond 1992). To the west, bull trout current range includes Puget Sound, coastal rivers of British Columbia, Canada, and southeast Alaska (Bond 1992). East of the Continental Divide bull trout are found in the headwaters of the Saskatchewan River in Alberta and the MacKenzie River system in Alberta and British Columbia (Cavender 1978; Brewin and Brewin 1997). Bull trout are wide-spread throughout the Columbia River basin, including its headwaters in Montana and Canada.

3. Life History and Habitat Requirements

Bull trout exhibit resident and migratory life-history strategies throughout much of the current range (Rieman and McIntyre 1993). Resident bull trout complete their entire life cycle in the streams where they spawn and rear. Migratory bull trout spawn and rear in streams for one to four years before migrating to either a lake (adfluvial), river (fluvial), or, in certain coastal areas, to saltwater (anadromous) where they reach maturity (Fraley and Shepard 1989; Goetz 1989). Resident and migratory forms often occur together and it is suspected that individual bull trout may give rise to offspring exhibiting both resident and migratory behavior (Rieman and McIntyre 1993).

Bull trout have more specific habitat requirements than other salmonids (Rieman and McIntyre 1993). Watson and Hillman (1997) concluded that watersheds must have specific physical characteristics to provide habitat requirements for bull trout to successfully spawn and rear. It was also concluded that these characteristics are not necessarily ubiquitous throughout these watersheds resulting in patchy distributions even in pristine habitats.

Bull trout are found primarily in colder streams, although individual fish are migratory in larger, warmer river systems throughout the range (Fraley and Shepard 1989; Rieman and McIntyre 1993, 1995; Buchanan and Gregory 1997; Rieman et al. 1997). Water temperature above 15°C (59°F) is believed to limit bull trout distribution, which may partially explain the patchy distribution within a watershed (Fraley and Shepard 1989; Rieman and McIntyre 1995). Spawning areas are often associated with cold-water springs, groundwater infiltration, and the coldest streams in a given watershed (Pratt 1992; Rieman and McIntyre 1993; Rieman et al. 1997). Goetz (1989) suggested optimum water temperatures for rearing of about 7 to 8°C (44 to 46°F) and optimum water temperatures for egg incubation of 2 to 4°C (35 to 39°F).

All life history stages of bull trout are associated with complex forms of cover, including large woody debris, undercut banks, boulders, and pools (Oliver 1979; Fraley and Shepard 1989; Goetz 1989; Hoelscher and Bjornn 1989; Sedell and Everest 1991; Pratt 1992; Thomas 1992; Rich 1996; Sexauer and James 1997; Watson and Hillman 1997). Jakober (1995) observed bull

trout overwintering in deep beaver ponds or pools containing large woody debris in the Bitterroot River drainage, Montana, and suggested that suitable winter habitat may be more restrictive than summer habitat. Bull trout prefer relatively stable channel and water flow conditions (Rieman and McIntyre 1993). Juvenile and adult bull trout frequently inhabit side channels, stream margins, and pools with suitable cover (Sexauer and James 1997).

The size and age of bull trout at maturity depend upon life-history strategy. Growth of resident fish is generally slower than migratory fish; resident fish tend to be smaller at maturity and less fecund (Fraley and Shepard 1989; Goetz 1989). Bull trout normally reach sexual maturity in 4 to 7 years and live as long as 12 years. Bull trout are iteroparous (they spawn more than once in a lifetime), and both repeat- and alternate-year spawning has been reported, although repeat-spawning frequency and post-spawning mortality are not well documented (Leathe and Graham 1982, Fraley and Shepard 1989, Pratt 1992, Rieman and McIntyre 1996).

Bull trout typically spawn from August to November during periods of decreasing water temperatures. Migratory bull trout frequently begin spawning migrations as early as April, and have been known to move upstream as far as 250 kilometers (km) (155 miles (mi)) to spawning grounds (Fraley and Shepard 1989). Depending on water temperature, incubation is normally 100 to 145 days (Pratt 1992) and, after hatching, juveniles remain in the substrate. Time from egg deposition to emergence may exceed 200 days. Fry normally emerge from early April through May depending upon water temperatures and increasing stream flows (Pratt 1992; Ratliff and Howell 1992).

The iteroparous reproductive system of bull trout has important repercussions for the management of this species. Bull trout require two-way passage up and downstream, not only for repeat spawning, but also for foraging. Most fish ladders, however, were designed specifically for anadromous semelparous (fishes that spawn once and then die, and therefore require only one-way passage upstream) salmonids. Therefore even dams or other barriers with fish passage facilities may be a factor in isolating bull trout populations if they do not provide a downstream passage route.

Bull trout are opportunistic feeders with food habits primarily a function of size and life-history strategy. Resident and juvenile migratory bull trout prey on terrestrial and aquatic insects, macro-zooplankton and small fish (Boag 1987; Goetz 1989; Donald and Alger 1993). Adult migratory bull trout are primarily piscivores, known to feed on various fish species (Fraley and Shepard 1989; Donald and Alger 1993).

4. Population Dynamics

The draft bull trout Recovery Plan (Service 2002) defined core areas as groups of partially isolated local populations of bull trout with some degree of gene flow occurring between them. Based on this definition, core areas can be considered metapopulations. A metapopulation is an interacting network of local populations with varying frequencies of migration and gene flow among them (Meefe and Carroll 1994). In theory, bull trout metapopulations (core areas) can be composed of two or more local populations, but Rieman and Allendorf (2001) suggest that for a bull trout metapopulation to function effectively, a minimum of between five and 10 local

populations are required. Bull trout core areas with fewer than five local populations are at increased risk of local extirpation, core areas with between five and 10 local populations are at intermediate risk, and core areas with more than 10 interconnected local populations are at diminished risk (Service 2002).

The presence of a sufficient number of adult spawners is necessary to ensure persistence of bull trout populations. In order to avoid inbreeding depression, it is estimated that a minimum of 100 spawners is required. Inbreeding can result in increased homozygosity of deleterious recessive alleles which can in turn reduce individual fitness and population viability (Whitesel et al. 2004). For persistence in the longer term, adult spawning fish are required in sufficient numbers to reduce the deleterious effects of genetic drift and maintain genetic variation. For bull trout, Rieman and Allendorf (2001) estimate that approximately 1,000 spawning adults within any bull trout population are necessary for maintaining genetic variation indefinitely. Many local bull trout populations individually do not support 1,000 spawners, but this threshold may be met by the presence of smaller interconnected local populations within a core area.

For bull trout populations to remain viable (and recover) natural productivity should be sufficient for the populations to replace themselves from generation to generation. A population that consistently fails to replace itself is at an increased risk of extinction. Since estimates of population size are rarely available, the productivity or population growth rate is usually estimated from temporal trends in indices of abundance at a particular life stage. For example, redd counts are often used as an indicator of a spawning adult population. The direction and magnitude of a trend in an index can be used as a surrogate for growth rate.

Survival of bull trout populations is also dependent upon connectivity among local populations. Although bull trout are widely distributed over a large geographic area, they exhibit a patchy distribution even in pristine habitats (Rieman and McIntyre 1993). Increased habitat fragmentation reduces the amount of available habitat and increases isolation from other populations of the same species (Saunders et al. 1991). Burkey (1989) concluded that when species are isolated by fragmented habitats, low rates of population growth are typical in local populations and their probability of extinction is directly related to the degree of isolation and fragmentation. Without sufficient immigration, growth of local populations may be low and probability of extinction high. Migrations also facilitate gene flow among local populations because individuals from different local populations interbreed when some stray and return to non-natal streams. Local populations that are extirpated by catastrophic events may also become reestablished in this manner.

In summary, based on the works of Rieman and McIntyre (1993) and Rieman and Allendorf (2001), the draft bull trout Recovery Plan identified four elements to consider when assessing long-term viability (extinction risk) of bull trout populations: (1) number of local populations, (2) adult abundance (defined as the number of spawning fish present in a core area in a given year); (3) productivity, or the reproductive rate of the population; and (4) connectivity (as represented by the migratory life history form).

5. Distribution

As noted above, in recognition of available scientific information relating to their uniqueness and significance, five population segments[1] of the coterminous United States population of the bull trout are considered essential to the survival and recovery of this species and are identified as: (1) Jarbidge River; (2) Klamath River; (3) Coastal-Puget Sound; (4) St. Mary-Belly River; and (5) Columbia River. Each of these segments is necessary to maintain the bull trout's distribution, as well as its genetic and phenotypic diversity, all of which are important to ensure the species' resilience to changing environmental conditions. IRAs only overlap the Columbia River population segment.

A summary of the current status and conservation needs of the bull trout within these units is provided below. A comprehensive discussion of these topics is found in the draft bull trout Recovery Plan (Service 2002).

Central to the survival and recovery of the bull trout is the maintenance of viable core areas (Service 2002, 2004a,b). A core area is defined as a geographic area occupied by one or more local bull trout populations that overlap in their use of rearing, foraging, migratory, and overwintering habitat, and in some cases in their use of spawning habitat. Each of the population segments listed above consists of one or more core areas. One hundred and twenty one core areas are recognized across the United States range of the bull trout (Service 2002; 2004a,b).

A core area assessment conducted by the Service for the five-year bull trout status review determined that of the 121 core areas comprising the coterminous listing, 43 are at high risk of extirpation, 44 are at risk, 28 are at potential risk, four are at low risk and two are of unknown status (Service 2005).

Jarbidge River

This population segment currently contains a single core area with six local populations. Less than 500 resident and migratory adult bull trout, representing about 50 to 125 spawners, are estimated to occur within the core area. The current condition of the bull trout in this segment is attributed to the effects of livestock grazing, roads, angler harvest, timber harvest, and the introduction of non-native fishes (Service 2004a). The draft bull trout recovery plan (Service 2004a) identifies the following conservation needs for this segment: maintain the current distribution of the bull trout within the core area, maintain stable or increasing trends in abundance of both resident and migratory bull trout in the core area, restore and maintain suitable habitat conditions for all life history stages and forms, and conserve genetic diversity and increase natural opportunities for genetic exchange between resident and migratory forms of the bull trout. An estimated 270 to 1,000 spawning fish per year are needed to provide for the

[1] Population segment will be used in this Opinion rather than interim recovery unit to avoid confusion with recovery units identified in the draft bull trout Recovery Plans (Service 2002, 2004 a,b).

persistence and viability of the core area and to support both resident and migratory adult bull trout (Service 2004a). Currently this core area is at high risk of extirpation (Service 2005).

Klamath River

This population segment currently contains three core areas and 12 local populations. The current abundance, distribution, and range of the bull trout in the Klamath River Basin are greatly reduced from historical levels due to habitat loss and degradation caused by reduced water quality, timber harvest, livestock grazing, water diversions, roads, and the introduction of non-native fishes (Service 2002). Bull trout populations in this unit face a high risk of extirpation (Service 2002). The draft bull trout recovery plan (Service 2002) identifies the following conservation needs for this unit: maintain the current distribution of the bull trout and restore distribution in previously occupied areas, maintain stable or increasing trends in bull trout abundance, restore and maintain suitable habitat conditions for all life history stages and strategies, and conserve genetic diversity and provide the opportunity for genetic exchange among appropriate core area populations. Eight to 15 new local populations and an increase in population size from about 3,250 adults currently to 8,250 adults are needed to provide for the persistence and viability of the three core areas (Service 2002).

Coastal-Puget Sound

Bull trout in the Coastal-Puget Sound population segment exhibit anadromous, adfluvial, fluvial, and resident life history patterns. The anadromous life history form is unique to this unit. This population segment currently contains 14 core areas and 67 local populations (Service 2004b). Bull trout are distributed throughout most of the large rivers and associated tributary systems within this unit. With limited exceptions, bull trout continue to be present in nearly all major watersheds where they likely occurred historically within this unit. Generally, bull trout distribution has contracted and abundance has declined especially in the southeastern part of the unit. The current condition of the bull trout in this population segment is attributed to the adverse effects of dams, forest management practices (e.g., timber harvest and associated road building activities), agricultural practices (e.g., diking, water control structures, draining of wetlands, channelization, and the removal of riparian vegetation), livestock grazing, roads, mining, urbanization, angler harvest, and the introduction of non-native species. The draft bull trout recovery plan (Service 2004b) identifies the following conservation needs for this unit: maintain or expand the current distribution of bull trout within existing core areas, increase bull trout abundance to about 16,500 adults across all core areas, and maintain or increase connectivity between local populations within each core area.

St. Mary-Belly River

This population segment currently contains six core areas and nine local populations (Service 2002). Currently, bull trout are widely distributed in the St. Mary River drainage and occur in nearly all of the waters that were inhabited historically. Bull trout are found only in a 1.2-mile reach of the North Fork Belly River within the United States. Redd count surveys of the North Fork Belly River documented an increase from 27 redds in 1995 to 119 redds in 1999. This increase was attributed primarily to protection from angler harvest (Service 2002). The current

condition of the bull trout in this population segment is primarily attributed to the effects of dams, water diversions, roads, mining, and the introduction of non-native fishes (Service 2002). The draft bull trout recovery plan (Service 2002) identifies the following conservation needs for this unit: maintain the current distribution of the bull trout and restore distribution in previously occupied areas, maintain stable or increasing trends in bull trout abundance, restore and maintain suitable habitat conditions for all life history stages and forms, conserve genetic diversity and provide the opportunity for genetic exchange, and establish good working relations with Canadian interests because local bull trout populations in this unit are comprised mostly of migratory fish whose habitat is mainly in Canada.

Columbia River

The Columbia River population segment includes bull trout residing in portions of Oregon, Washington, Idaho, and Montana. Bull trout are estimated to have occupied about 60 percent of the Columbia River Basin, and presently occur in 45 percent of the estimated historical range (Quigley and Arbelbide 1997). This population segment currently contains 97 core areas and 527 local populations. About 65 percent of these core areas and local populations occur in Idaho and northwestern Montana.

The condition of the bull trout within these core areas varies from poor to good but generally all have been subject to the combined effects of habitat degradation, fragmentation and alterations associated with one or more of the following activities: dewatering, road construction and maintenance, mining and grazing, the blockage of migratory corridors by dams or other diversion structures, poor water quality, incidental angler harvest, entrainment into diversion channels, and introduced non-native species.

The Service has determined that of the total 97 core areas in this population segment, 38 are at high risk of extirpation, 35 are at risk, 20 are at potential risk, two are at low risk, and two are at unknown risk (Service 2005).

The Columbia River population segment has declined in overall range and numbers of fish (63 FR 31647). Although some strongholds still exist with migratory fish present, bull trout generally occur as isolated local populations in headwater lakes or tributaries where the migratory life history form has been lost. Though still widespread, there have been numerous local extirpations reported throughout the Columbia River basin. In Idaho, for example, bull trout have been extirpated from 119 reaches in 28 streams (Idaho Department of Fish and Game in litt. 1995).

The draft bull trout recovery plan (Service 2002) identifies the following conservation needs for this population segment: maintain or expand the current distribution of the bull trout within core areas, maintain stable or increasing trends in bull trout abundance, maintain/restore suitable habitat conditions for all bull trout life history stages and strategies, and conserve genetic diversity and provide opportunities for genetic exchange.

6. Previously Consulted-on Effects

Consulted-on effects are those effects that have been analyzed through section 7 consultation as reported in a biological opinion. These effects are an important component of objectively characterizing the current condition of the species. To assess consulted-on effects to bull trout, we analyzed all of the biological opinions received by the Region 1 and Region 6 Service Offices, from the time of listing until August 2003; this summed to 137 biological opinions. Of these, 124 biological opinions (91 percent) applied to activities affecting bull trout in the Columbia Basin population segment, 12 biological opinions (9 percent) applied to activities affecting bull trout in the Coastal-Puget Sound population segment, 7 biological opinions (5 percent) applied to activities affecting bull trout in the Klamath Basin population segment, and 1 biological opinion (<1 percent) applied to activities affecting the Jarbidge and St. Mary-Belly population segments (Note: these percentages do not add to 100, because several biological opinions applied to more than one population segment). The geographic scale of these consultations varied from individual actions (e.g., construction of a bridge or pipeline) within one basin to multiple-project actions occurring across several basins.

The Service and NMFS have completed section 7 consultations on many programs and actions that benefit bull trout. Many of these are small scale actions such as removing passage barriers, installing 'fish friendly' crossing structures, and restoring habitat conditions in degraded streams and riparian areas. Large scale consultation which benefit bull trout include three primary documents that guide the management of federally listed fish species and their habitats on NFS lands in Idaho. These three documents amend the Forest Plans and provide standards and guidelines for land management related to federally listed anadromous and native inland fish species.

1. Interim Strategy for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH) (USFS and BLM 1995);
2. Inland Native Fish Strategy: Interim strategies for managing fish-producing watersheds in Eastern Oregon and Washington, Idaho, Western Montana, and portions of Nevada (INFISH) (USFS 1995) and;
3. Southwest Idaho Eco-group (Boise, Payette, and Sawtooth National Forests) land management plans (USFS 2003).

Although the aquatic conservation strategies in these three documents were developed for federally listed fish species, the requirements, including standards and guidelines, from these three documents apply to all activities that could occur in IRAs and would result in benefits to all aquatic species and their habitats.

Our analysis showed that we consulted on a wide array of actions which had varying levels of effect. Many of the actions resulted in only short-term adverse effects – some with long-term beneficial effects. Some of the actions resulted in long-term adverse effects. No actions that have undergone consultation were found to appreciably reduce the likelihood of survival and recovery of the bull trout. Furthermore, no actions that have undergone consultation were anticipated to result in the loss of local populations of bull trout.

7. Conservation Needs

Recovery for bull trout will entail reducing threats to the long-term persistence of populations and their habitats, ensuring the security of multiple interacting groups of bull trout, and providing habitat conditions and access to them that allow for the expression of various life-history forms (Service 2002). The draft Bull Trout Recovery Plan identifies the following tasks needed for achieving recovery: (1) protect, restore, and maintain suitable habitat conditions for bull trout; (2) prevent and reduce negative effects of nonnative fishes, such as brook trout (*Salvelinus fontinalis*), and other nonnative taxa on bull trout; (3) establish fisheries management goals and objectives compatible with bull trout recovery; (4) characterize, conserve, and monitor genetic diversity and gene flow among local populations of bull trout; (5) conduct research and monitoring to implement and evaluate bull trout recovery activities, consistent with an adaptive management approach using feedback from implemented, site-specific recovery tasks; (6) use all available conservation programs and regulations to protect and conserve bull trout and bull trout habitats; and (7) assess the implementation of bull trout recovery by management units, and revise management unit plans based on evaluations.

The conservation needs of the bull trout are often expressed as the four Cs: cold, clean, complex, and connected. Cold stream temperatures, clean water quality that is relatively free of sediment and contaminants, complex channel characteristics (including abundant large wood and undercut banks), and large patches of such habitat that are well connected by unobstructed migratory pathways are all needed to promote conservation of bull trout at multiple scales ranging from the coterminous to local populations. The recovery planning process for the bull trout (Service 2002) has also identified the following conservation needs for the bull trout: (1) maintain and restore multiple, interconnected populations in diverse habitats across the range of each interim recovery unit; (2) preserve the diversity of life-history strategies; (3) maintain genetic and phenotypic diversity across the range of each interim recovery unit; and (4) establish a positive population trend. Recently, it has also been recognized that bull trout populations need to be protected from catastrophic fires across the range of each interim recovery unit.

Another threat now facing bull trout is warming temperature regimes associated with global climate change. Because air temperature affects water temperature, species at the southern margin of their range that are associated with cold water patches, such as bull trout, may become restricted to smaller, more disjunct patches or become extirpated as the climate warms (Rieman et al. 2007). Rieman et al. (2007) conclude that climate is a primary determining factor in bull trout distribution. Some populations at high risk already, such as the Jarbidge, may require "aggressive measures in habitat conservation or restoration" to persist (Rieman et al. 2007).

8. Critical Habitat

The Service issued a final rule designating critical habitat for bull trout range-wide on September 26, 2005 (70 FR 56212). The designation includes 4,813 miles of stream or shoreline and 143,218 acres of lake or reservoir. We designated areas as critical habitat that (1) have documented bull trout occupancy within the last 20 years, (2) contain features essential to the conservation of the bull trout, (3) are in need of special management, and (4) were not excluded under section 4(b)(2) of the Act. The Final Rule excluded from designation those federally

managed areas covered under PACFISH (USFS and BLM 1995), INFISH (USFS 1995), the Interior Columbia Basin Ecosystem Management Project (USFS; BLM; Service; Environmental Protection Agency; and NMFS 2003), and the Northwest Forest Plan ACS (USFS and BLM 1994). The Service determined that these strategies provide a level of conservation and adequate protection and special management for the primary constituent elements of critical habitat at least comparable to that achieved by designating critical habitat. Areas managed under these strategies do not meet the statutory definition of critical habitat (i.e., areas requiring special management considerations) and were therefore excluded. The excluded areas include much of the proposed critical habitat in Idaho; the final rule only designates 294 miles of stream/shoreline and 50,627 acres of reservoirs or lakes across the range of the species in Idaho. There is no designated critical habitat within the MIRR action area.

B. Environmental Baseline

1. Status of the Species in the Action Area

Bull trout are found throughout the action area in spawning and early rearing habitat (local populations) as well as in habitat used for feeding, migrating, and overwintering (FMO). Spawning and early rearing habitat is typically found in headwater (often roadless) areas while mainstem rivers provide FMO habitat. Table 6 shows the overlap of bull trout distribution in Idaho with IRAs and with the proposed management themes. Approximately 33 percent of the bull trout range in Idaho overlaps with IRAs.

Table 6. Bull Trout Baseline Information (Modified from Assessment Table IV-19)

	Total	**IRA Overlap**	**WLR**	**PRIM**	**BCR**	**BCR CPZ**	**GFRG**	**SAHTS**
Range in Idaho (ac)	16,746,381	5,581,489 (33%)	963,524 (5.8%)	1,008,287 (6.0%)	2,917,368 (17.4%)	289,931 (1.7%)	139,213 (0.8%)	47,314 (0.3%)
Core Area (ac)	26,494,967	6,714,414 (25%)	1,080,718 (4.1%)	1,275,767 (4.8%)	3,577,047 (13.5%)	332,066 (1.2%)	141,782 (0.5%)	48,582 (0.2%)

** Shaded numbers are indicated under themes that have greater permissions for activities in IRAs*

As the proposed action (i.e., designation of management themes for USFS roadless areas in Idaho) is programmatic in nature and encompasses a large area, the analysis presented in this Opinion will assess bull trout baseline status at the core area level as opposed to the smaller, local population scale. The draft recovery plan (Service 2002) identified a bull trout core area as the closest approximation of a biologically functioning unit for bull trout. By definition, a core area includes a combination of core habitat (*i.e.*, habitat that could supply all elements for the long-term security of bull trout). Core areas contain both spawning and early rearing habitat and FMO. Core areas constitute the basic unit on which to gauge recovery (Service 2002).

Table 7 is derived from Table 3 in the Service's Bull Trout Core Area Conservation Status Assessment (Service 2005) and displays the risk rankings for core areas in Idaho. The information presented on brook trout occupancy and road density, used for risk ranking, is based on available GIS layers. The risk rankings are outputs of the Natural Heritage Ranking process

used in the core area assessment and incorporate input on population size, population distribution, population trend, and threats. Refer to the Service's (2005) core area assessment for more information.

Overall, 25 percent (6,714,414 acres) of bull trout core areas overlap with IRAs (Assessment p. 7, Table IV-19). Specific information on IRAs in each bull trout core area was not presented in the Assessment for the proposed action. We assume that some portion of all core areas in Idaho is within the action area and therefore will be affected by the proposed action.

2. Factors Affecting Bull Trout in the Action Area

As previously described in the Status of the Species section of this Opinion, bull trout distribution, abundance, and habitat quality have declined rangewide primarily from the combined effects of habitat degradation and fragmentation, blockage of migratory corridors, poor water quality, angler harvest, poaching, entrainment, loss or reduction in runs of anadromous salmonids, and the introduction of nonnative fish species such as the brook trout.

Table 7. Bull Trout Habitat Condition by Core Area [adapted from Table 3 in the Service's Bull Trout Core Area Conservation Status Assessment (Service 2005)].

	Management Unit – Core Area – In Idaho	**Brook Trout (% Key streams occupied)**	**Road Density (mi/mi^2)**	**Habitat Condition based on Road Density (<1 mi/sq.mi. = high, 1 – 3 mi/sq.mi. = moderate, and > 3 mi./sq.mi. = low)**	**Risk of extirpation**
1	Coeur d'Alene – Coeur d'Alene Lake	20	1.9	moderate	High risk
2	Clark Fork – Lake Pend Oreille	38	2.2	moderate	Potential risk
3	Clark Fork – Priest Lakes	48	1.7	moderate	High risk
4	Kootenai – Kootenai River	87	2	moderate	At risk
5	Clearwater – NF Clearwater	18	1.4	moderate	At risk
6	Clearwater – Fish Lake (NF)	0	0.2	high	High risk
7	Clearwater – Lochsa R	0	0.7	high	At risk
8	Clearwater – Fish Lake (Lochsa)	0	0.5	high	At risk
9	Clearwater – Selway R.	32	0.2	high	Potential risk
10	Clearwater – SF Clearwater	62	1.4	moderate	At risk
11	Clearwater – Middle-Lower	25	1.9	moderate	At risk
12	Salmon – Upper Salmon	51	0.5	high	Potential risk

13	Salmon – Pahsimeroi R.	12	0.7	high	At risk
14	Salmon – Lake Cr.	0	1	moderate	At risk
15	Salmon – Lemhi R.	41	0.8	high	At risk
16	Salmon – Middle Salmon R. – Panther	26	0.7	high	At risk
17	Salmon – Opal Lake	0	0	high	Potential risk
18	Salmon – Middle Fork Salmon	32	0.2	high	Low risk
19	Salmon – Middle Salmon-Chamberlain	28	0.3	high	Potential risk
20	Salmon – SF Salmon	51	0.5	high	At risk
21	Salmon – Little-Lower Salmon	70	1.6	moderate	High risk
22	SW Idaho – Arrowrock	13	0.9	high	At risk
23	SW Idaho – Anderson Ranch	26	0.8	high	At risk
24	SW Idaho – Lucky Peak	Present	1.8	moderate	High risk
25	SW Idaho – Upper SF Payette R.	12	0.6	high	At risk
26	SW Idaho – MF Payette R.	35	1.3	moderate	At risk
27	SW Idaho – Deadwood R.	0	0.5	high	High risk
28	SW Idaho – NF Payette R.	2	1.6	moderate	High risk
29	SW Idaho – Squaw Creek	19	1.4	moderate	High risk
30	SW Idaho – Weiser R.	39	1.4	moderate	High risk
31	SW Idaho – Little Lost	84	0.4	high	At risk
32	Sheep	0	0.5	high	Unknown
33	Granite	0	0	high	Unknown

Land and water management activities that depress bull trout populations and degrade habitat include dams and other water diversion structures, forest management practices, livestock grazing, agriculture, road construction and maintenance, mining, and urban and rural development. All of these activities have occurred or are occurring in the action area to varying degrees with resulting adverse impacts on bull trout and bull trout habitat. The bull trout draft Recovery Plan (Service 2002) contains detailed discussions on these activities and effects within each core area.

Road building and land management activities have been extensive in some core areas. Roads directly affect natural sediment and hydrologic regimes by altering streamflow, sediment loading, sediment transport and deposition, channel morphology, channel stability, substrate composition, stream temperatures, water quality, and riparian conditions within a watershed (Lee et al. 1997, Jones et al. 2000, Luce et al. 2001). Roads contribute more sediment to streams than

any other land management activity (Gibbons and Salo 1973, Meehan 1991), and most land management activities, such as mining, timber harvest, grazing, recreation and water diversions are dependent on roads.

Because of the numerous ecological effects of road construction, including temporary roads (which present most of the same risks posed by permanent roads, although some may be of shorter duration), and associated activities such as timber harvest (Jones et al. 2000, Trombulak and Frissell 2000) road density can be used as an indicator of watershed condition where less than one mile of road per square mile of watershed indicates high condition, one to three miles indicates moderate condition, and greater than three miles indicates low condition (NMFS 1996). Core area road density ranges from 2.2 miles/square mile for Kootenai River to zero for Opal Lake and Granite Creek. The mean road density for all core areas is approximately 1 mile/square mile, equating with a moderate rating for habitat condition.

There appears to be an inverse relationship between watershed road density and bull trout occurrence in that bull trout typically do not occur where road densities exceed 1.7 miles per square mile (Service 2002). The Service (1998a) found that bull trout are exceptionally sensitive to the direct, indirect, and cumulative effects of roads. Bull trout population strongholds occur most often in roadless areas (Quigley and Arbelide 1997, Kessler et al. 2001). Dunham and Rieman (1999) demonstrated that disturbance from roads was associated with reduced bull trout occurrence. They concluded that conservation of bull trout should involve protection of larger, less fragmented, and less disturbed (lower road density) habitats to maintain important strongholds and sources for naturally recolonizing areas where populations have been lost.

As shown in Table 7, brook trout, an introduced species that competes and hybridizes with bull trout (and is therefore considered a threat factor), are present in all but seven of the core areas. For the core areas with brook trout, the percentage of key streams occupied ranges from 87 percent (Kootenai River) to two percent (Squaw Creek).

Changes in hydrology and temperature caused by changing climate have the potential to negatively impact aquatic ecosystems in Idaho, with salmonid fishes being especially sensitive. Average annual temperature increases due to increased carbon dioxide are affecting snowpack, peak runoff, and base flows of streams and rivers (Mote *et al*. 2003). Increases in water temperature may cause a shift in the thermal suitability of aquatic habitats (Poff *et al*. 2002). For species that require colder water temperatures to survive and reproduce, warmer temperatures could lead to significant decreases in available suitable habitat. Increased frequency and severity of flood flows during winter can affect incubating eggs and alevins in the streambed and over-wintering juvenile fish. Eggs of fall spawning fish, such as bull trout, may suffer high levels of mortality when exposed to increased flood flows (ISAB 2007).

Summary of Environmental Baseline

Of the 33 core areas in Idaho with a designated threat ranking, nine are at High risk, 16 are At Risk, five are at Potential Risk, one is at Low Risk, and 2 are unknown. Core areas at High Risk include Coeur d'Alene, Priest Lakes, Fish Lake (North Fork), Little-Lower Salmon River, Lucky Peak, Deadwood River, North Fork Payette River, Squaw Creek, and Weiser River. Core areas

that are At Risk include Fish Lake (Lochsa), Lochsa River, Middle-Lower Clearwater River, North Fork Clearwater River, South Fork Clearwater River, Kootenai River, Lake Creek, Lemhi River, Middle Salmon River-Panther, Pahsimeroi River, South Fork Salmon River, Anderson Ranch, Arrowrock, Little Lost River, Middle Fork Payette River, and Upper South Fork Payette River. Core areas at Potential Risk include Lake Pend Oreille, Selway River, Middle Salmon-Chamberlain, Opal Lake, and Upper Salmon. The only core area at Low Risk is the Middle Fork Salmon River. The status of Sheep and Granite Creeks is unknown.

C. Effects of the Proposed Action

In the USFS review of the three aquatic conservation strategies for bull trout (INFISH, PACFISH, and the SWIE LRMPs) they have determined that none of the species specific direction is inconsistent with the permissions or prohibitions provided in the management themes. These aquatic conservation strategies provide specific criteria for designing projects or activities; therefore the management direction found in these strategies would be applied during project implementation to assist in conserving bull trout. In these strategies are goals, objectives, delineated riparian habitat conservation areas (RHCAs or RCAs), and specific standards and guidelines. Project and site-specific standards and guidelines apply to projects and activities in RHCAs or RCAs and areas outside of RHCAs or RCAs that have the potential to affect RHCAs or RCAs. The purpose of these various directions is to ensure that actions do not retard the attainment of riparian management objectives or other management objectives. Various standards and guidelines were developed for various programs or management areas which include timber, roads, grazing, recreation, minerals, fire/fuels, and general riparian management. For example, under INFISH, timber harvest is generally prohibited in RHCAs, and road and landing locations are to be minimized in RHCAs. Refer to Appendix A of this Opinion for INFISH standards and guidelines. Other standards and guidelines exist for watershed, habitat, fisheries, and wildlife restoration. Additional strategy components are watershed analysis or a specific unit analysis, watershed restoration (with a restoration priority), and a monitoring component. Based on the Assessment, the Service expects that this direction will still be in place for activities that occur as conjunction of the MIRR. Approximately 33 percent of bull trout habitat in Idaho occurs within the Idaho Roadless Area.

The Service makes the assumption that of the five themes, the WLR, PRIM, and SAHTS themes are the most restrictive because they only allow road construction, road reconstruction or timber cutting under very limited situations. WLR is the most restrictive while PRIM and SAHTS allow more activities. Discretionary mineral activities are prohibited under these three themes. The bull trout range overlaps approximately 2,019,125 acres (12 percent) in Idaho or 9 percent of all bull trout core areas in these three themes. Because of the prohibitions on ground disturbing activities within the WLR, PRIM, and SAHTS themes they should provide for good conditions for bull trout and their habitats. Aquatic ecological values including water quality, channel processes, sediment regimes, instream flows and riparian vegetation should be maintained under these themes.

The BCR theme is divided into two areas: 1) Backcountry/ Restoration (BCR) and 2) Backcountry/ Restoration Community Protection Zone (BCR-CPZ). This overlaps approximately 19 percent of all bull trout areas in Idaho or 15 percent of all bull trout core areas.

The BCR theme (outside of CPZ) is very similar to the 2001 Roadless Rule guidance for land management and has a very low probability of leading to any future activities that would result in adverse effects to bull trout. However, the BCR-CPZ is more permissive and has a higher potential for future actions to occur that could result in adverse effects to bull trout. Emphasis of activities in the BCR-CPZ is fuel reduction near at-risk communities and municipal water supply systems. In both BCR and BCR-CPZ some temporary road construction, road reconstruction, and timber cutting are permissible with requirements. All road construction and reconstruction for timber cutting must minimize surface disturbance, be decommissioned when the contract is closed, and only be used for intended purposes. Outside the CPZ road construction and reconstruction must be approved by the Regional Forester and needs to link to reducing the significant risk of wildland fire. In BCR and BCR-CPZ timber cutting can be conducted to improve threatened, endangered, proposed, or sensitive species habitat or to maintain or restore the characteristics of ecosystem composition and structure, roads would not be constructed or reconstructed for these purposes but existing roads could be used. The USFS would not authorize road construction/reconstruction for new mineral leases, including phosphates, in IRAs managed in the BCR and BCR-CPZ sub-themes.

The majority of the bull trout range within the IRAs overlaps with the BCR theme (2,917,368 acres, 17 percent) while for core areas 13.5 percent occur within the BCR theme. Of the BCR/bull trout overlap 289,931 acres (2 percent, 1 percent for core areas) is within BCR-CPZ which is a fairly permissive theme that could result in future activities, such as timber cutting and temporary road building, adversely affecting bull trout and their habitats. A number of important bull trout areas fall into the BCR and BCR-CPZ areas. Of particular interest are larger IRAs (>100,000 acres) that overlap bull trout because they have a greater potential than smaller areas to provide for interconnected populations (metapopulations) due to their lack of potential population fragmentation factors such as roads and associated culverts.

The GFRG theme is the most permissive of all the themes. Road construction/reconstruction, timber cutting would be permissible in these areas. Road construction to access specific phosphate deposits would also be allowed; however none of the phosphate deposits overlap the range of bull trout. Although areas in the GFRG theme continue to be included in the IRAs, the roadless characteristics and values in GFRG theme areas may not be maintained into the future. The GFRC theme would provide the least protection for aquatic habitats and species. There is little overlap with the GFRG theme and bull trout. According to the Assessment, two percent of bull trout core areas in Idaho overlap the GFRG and BCR-CPZ themes.

Areas in the BCR-CPZ and GFRG are of particular interest because they have more permissions than the other themes and a higher likelihood that activities may be implemented in the future in these areas. The BCR (outside of CPZ) areas have a moderate likelihood of activities occurring in the future that could result in adverse effects to bull trout and their habitats. However, all actions require the implementation of INFISH, PACFISH, and SWIEG plan standards and guidelines to provide for fish and aquatic species and their habitats. Several of the bull trout core areas have a moderate amount of acres (approximate range of 10,000-99,000 ac) in the BCR-CPZ or GFRG themes. Table 8 displays bull trout core areas with moderate acres in the BCR-CPZ or GFRG themes.

Table 8. Bull trout Core Areas with Moderate Acres in the BCR CPZ and GFRG Themes (Modified from Assessment Table IV-21)

Forest	**Core Area Name**	**Risk of Extirpation**
Boise/Payette	South Fork Salmon River	At Risk
Challis/Salmon/Sawtooth	Upper Salmon River	Potential Risk
Idaho Panhandle	Lake Pend Oreille	Potential Risk
Idaho Panhandle	Kootenai River	At Risk
Idaho Panhandle/ Clearwater	Coeur D'Alene Lake	High Risk
Salmon/Challis	Middle Salmon River Panther	At Risk
Nez Perce/Payette	Middle Salmon River Chamberlain	Potential Risk
Nez Perce	South Fork Clearwater River	At Risk

The MIRR applies to 9.3 million acres in Idaho and although the MIRR does not compel actions, it is probable that this decision could lead to future actions of a ground disturbing nature which are not favorable to fish and their habitat. Activities (road construction/reconstruction, timber cutting, sale, removal and discretionary minerals) that could occur under the MIRR are likely to occur on a very small percent of the 9.3 million acres. However, activities on even a small percent of the landscape can result in adverse impacts to a species and its habitat. About 3 million acres of soils that are prone to surface erosion and have a susceptibility to landslides occur within IRAs (FEIS section 3.6 Physical Resources). However, only about 253,500 acres of highly sensitive soils overlap the GFRG and BCR-CPZ areas. The areas within the GFRG and BCR-CPZ have the highest likelihood of resulting in future activities and the highest risk of disturbance. LRMP components provide additional direction for minimizing or reducing adverse effects in sensitive soils. Areas in the BCR theme outside of the CPZ have a moderate likelihood of activities occurring depending on location in relation to at-risk communities, municipal water supply systems, CPZ, and the need to improve or restore TEPC habitat or ecosystem composition or structure.

Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR alternative does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur pursuant to the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed under the rule versus an analysis of on-the-ground activities, and therefore has no direct effects. The following section summarizes the general effects that roads, timber cutting, and discretionary mineral development could have on bull trout and their habitats.

Roads

Road construction/reconstruction, maintenance, use, and even the presence of roads in a watershed, can have numerous adverse effects to aquatic ecosystems and the species they support. Roads tend to be a 'press' disturbance which is longer in duration than a 'pulse'

disturbance and are generally associated with habitat alteration (Niemi et al. 1990, Yount and Niemi 1990, Allan and Flecker 1993). Watershed and aquatic habitat recovery tends to be more rapid from pulse than from press disturbances (Allan and Flecker 1993). Gurtz and Wallace (1984) hypothesized that stream biota may not be able to recover from the effects of anthropogenic disturbances, such as roads or timber harvest, because they have no analogues in the natural disturbance regime, and organisms may not have evolved the appropriate breadth of habitat or reproductive requirements. Recent changes in road designs and application of best management practices have been effective in some instances at moderating or avoiding many adverse effects. The discussion in this section captures the principal effects that have been associated with roads, but these are potential effects; furthermore not every road would necessarily exhibit each or even many of these effects. Also, the effects of roads may vary with physical and biological conditions and the physical location of the road (Luce et al. 2001).

Potential effects from roads include (Furniss et al. 1991, USDA, USFS 2000):

- Increasing sediment loads in streams,
- Modifying watershed hydrology and stream flows,
- Altering stream channel morphology,
- Increasing habitat fragmentation and loss of connectivity,
- Degrading water quality, including increasing chance of chemical pollution, and
- Altering water temperature regimes.

These physical alterations can potentially result in a variety of adverse effects to aquatic species including:

- Increased mortality of amphibians, from crushing,
- Loss of spawning and rearing habitat, and deep pools, from excess sediment deposition,
- Increased mortality of eggs and young from lower levels of oxygen in stream gravels,
- Increased susceptibility to disease and predation,
- Increased reproductive failure,
- Shifts in macro invertebrate communities to those tolerating increased sediment or other types of diminished water quality,
- Increased susceptibility to over harvest and poaching,
- Loss of protective cover and resting habitat through changes in channel structure including large woody debris, overhanging banks, and deep pools,
- Competition from nonnative species,
- Loss of habitat caused by reduced habitat quality, barriers to passage, increased gradient, high temperatures, and other factors, and
- Increased vulnerability of subpopulations to catastrophic events and loss of genetic fitness, related to loss of habitat connectivity.

Trombulak and Frissell (2000) concluded that, although all species and ecosystems are not affected to the same degree by roads, in general, the presence of roads in an area is associated with negative effects for both terrestrial and aquatic ecosystems including changes in species composition and population size. While the localized effect of an individual road-stream crossing may not have a substantial adverse effect, the cumulative effect of road networks and multiple crossings increases the potential for major adverse effects to aquatic habitats (USFS

2000). Analysis done for the Interior Columbia Basin Ecosystem Management Project (Lee et al. 1997) indicates that strong fish populations are often associated with low road density. The Sierra Nevada Ecosystem Project documented a negative correlation between the abundance of roads in a watershed and the integrity of native stream biota (Moyle and Randall 1996).

The Service (Service 1998a) found that bull trout are exceptionally sensitive to the direct, indirect, and cumulative effects of roads. Dunham and Rieman (1999) demonstrated that disturbance from roads was associated with reduced bull trout occurrence. They concluded that conservation of bull trout should involve protection of larger, less fragmented, and less disturbed (lower road density) habitats to maintain important strongholds and sources for naturally recolonizing areas where populations have been lost.

Roads contribute more sediment to streams than any other land management activity (Gibbons and Salo 1973, Meehan 1991), and most land management activities, such as mining, timber harvest, grazing, recreation and water diversions are dependent on roads. The majority of sediment from timber harvest activities is related to roads and road construction (Megahan et al. 1978, MacDonald and Ritland 1989, Chamberlin et al. 1991, Furniss et al. 1991) and associated increased erosion rates (Swanson and Dyrness 1975, Swanston and Swanson 1976, Beschta 1978, Gardner 1979, Reid and Dunne 1984, Meehan 1991, Reid 1993). Serious degradation of fish habitat can result form poorly planned, designed, located, constructed, or maintained roads (Furniss et al. 1991, MacDonald et al. 1991).

Roads directly affect natural sediment and hydrologic regimes by altering streamflow, sediment loading, sediment transport and deposition, channel morphology, channel stability, substrate composition, stream temperatures, water quality, and riparian conditions within a watershed (Lee et al. 1997, Jones et al. 2000, Luce et al. 2001). Road-related mass soil movements can continue for decades after the roads have been constructed (Furniss et al. 1991). Megahan et al. (1992) found that 88 percent of landslides within Idaho were associated with roads. Such habitat alterations can adversely affect all life-stages of fishes, including migration, spawning, incubation, emergence, and rearing (Furniss et al. 1991, MacDonald et al. 1991, Henjum et al. 1994).

Road/stream crossings can also be a major source of sediment to streams resulting from channel fill around culverts and subsequent road crossing failures (Furniss et al. 1991). Plugged culverts and fill slope failures are frequent and often lead to catastrophic increases in stream channel sediment, especially on old abandoned or unmaintained roads (Weaver et al. 1987). Unnatural channel widths, slope, and stream bed form occur upstream and downstream of stream crossings (Heede 1980), and these alterations in channel morphology may persist for long periods of time. Because improper culverts can reduce or eliminate fish passage (Belford and Gould 1989), road crossings are a common migration barrier to fishes (Evans and Johnson 1980, Clancy and Reichmuth 1990, Clarkin et al. 2003,).

Temporary roads present most of the same risks posed by permanent roads, although some may be of shorter duration. Many of these roads are designed to lower standards than permanent roads, are typically not maintained to the same standards, and are associated with additional ground disturbance during their removal. Also, use of temporary roads in a watershed to support

timber harvest or other activities often involves construction of multiple roads over time, providing a more continuous disturbance to the watershed than a single, well-designed, maintained, and use-regulated road. While temporary roads may be used temporarily, for periods ranging up to 10 years before decommissioning, their short- and long-term effects on aquatic species and habitats can be extensive.

Roads facilitate increased use of an area by humans, who themselves often cause diverse and persistent ecological effects (Trumbulak and Frissell 2000). New roads increase ease of access into formally remote areas. Perhaps more important, roads often increase the efficiency with which natural resources can be exported. Human uses of the landscape made increasingly possible by roads include hunting and fishing, recreation, and changes in use of the land and water (Trumbulak and Frissell 2000). Native fish populations in previously inaccessible areas are often vulnerable to even small increases in fishing effort (Trumbulak and Frissell 2000).

Roads can provide dispersal of invasive species by: 1) providing habitat by altering conditions, 2) making invasion more likely by stressing or removing native species, and 3) allowing easier movement by wild or human vectors (Trombulak and Frissell 2000). Introductions of nonnative fishes and other aquatic species, whether authorized or unauthorized, have the potential to affect the distribution and abundance of native fishes, amphibians, and other aquatic organisms through competition, hybridization, predation, and introduction of parasites and diseases. Nonnative aquatic plants may also be inadvertently introduced to lakes and streams from boats and boat trailers. Unauthorized releases of aquarium fishes, bait fishes, nonnative amphibians and reptiles, and nonnative plants to streams and lakes are strongly influenced by the presence of roads (Allan and Flecker 1993, Lee et al. 1997, USFS 1999). Illegal introduction and harvest of aquatic species is less likely to occur in inventoried roadless areas due to lack of ready access.

The broad view of the ecological effects of roads reveals a multiplicity of effects, it also suggests that it is unlikely that the consequences of roads will ever be completely mitigated or remediated (Trumbulak and Frissell 2000). Because bull trout strongholds are associated with roadless areas (Quigley and Arbelide 1997, Kessler et al. 2001), it is critical to retain remaining roadless or near-roadless portions of the landscape in their natural state (Trumbulak and Frissell 2000).

For the purpose of this Opinion, existing roads are features that are present on the land, and as such considered under section 7 of the Act to be part of the baseline conditions for bull trout, in cases representing limitations to movement, survival, and recovery of local populations.

However, under the aquatic conservation strategies (e.g., INFISH, Appendix A of this Opinion), standards and guidelines address road construction in RHCAs and are designed to minimize adverse effects. For example, Watershed Analysis must be completed prior to construction of new roads or landings in RHCAs, and road construction activities must avoid disrupting natural hydrographic flow paths.

Timber Cutting

The effects of activities associated with timber cutting (e.g., tree felling, yarding, landings, site preparation by burning or scarification, fuels reduction, brush removal and whip felling, and

forest regeneration) are often difficult to separate from the effects of roads and road construction. The road systems developed to cut/harvest timber are often a significant factor affecting aquatic habitats, as discussed above. Negative effects from timber cutting tend to increase when activities occur on environmentally sensitive terrain with steep slopes comprised of highly erodible soils (Lee et al. 1997).

Some of the potential effects to aquatic habitat from timber harvest can include the following (Beschta et al. 1987, Chamberlin et al. 1991, Hicks et al. 1991):

- Increasing erosion,
- Increasing sediment supply and storage in channels,
- Modifying watershed hydrology and streamflow, including the timing or magnitude of runoff events,
- Decreasing stream bank stability, and altering stream channel morphology,
- Changes in water quality and quantity,
- Decreased recruitment of large woody debris to aquatic habitats,
- Diminishing habitat complexity,
- Altering energy relationships involving water temperature, snowmelt and freezing, and,
- Altering riparian composition and function.

If present, these physical changes in habitat would have many of the same biological effects as previously listed under the effects of roads, above. With the recent increased emphasis on use of best management practices and other protective measures in the design and implementation of timber harvest activities, the effects can often be mitigated to some extent. Cumulatively, however, timber harvest activities within a watershed can have pronounced and lasting effects to aquatic habitat (Chamberlin et al. 1991).

Again, the standards and guidelines of the aquatic conservation strategies (e.g., INFISH, see Appendix A of the Opinion) are designed to minimize the effects of land management actions such as timber harvest. For example, except under certain conditions such as fire or insect damage, no timber harvest is allowed in RHCAs.

Prescribed fire activities associated with timber cutting can affect aquatic and riparian habitats. In general prescribed fire activities do not result in similar physical and ecological impacts to aquatic and riparian systems as wildfire. Prescribed fires that burn within prescription are often smaller in scale (fewer acres) and burn under lower burn intensities than wildfires because of pre-fire fuels treatments and tree retention objectives (Gresswell 1999). Prescribed fires involving riparian areas often result in a patchy burn pattern because of higher humidity and fuel moisture in these areas. Similar to wildfire, prescribed fire can affect riparian vegetation composition, structure and function (Bêche et al. 2005), woody debris abundance and recruitment, shade, and steam/riparian areas temperatures, sediment transport, and aquatic species. The role of prescribed fire in maintaining and restoring aquatic and riparian ecosystems is not well understood (Bêche et al. 2005). Effects from prescribed fire can be both positive and negative to aquatic species and their habitats. For example, if trees in a riparian area are killed from a prescribed fire shade could be reduced and stream temperatures could increase, however tree mortality could also result in woody debris recruitment and increased habitat complexity.

Fire is a natural disturbance element of the aquatic ecosystems in Idaho and helps to maintain important habitat characteristics.

Mineral Activities

IRAs contain salable, leasable, and locatable mineral resources. Discretionary mining includes activities associated with saleable minerals (i.e. sand, stone, gravel, pumice, pumicite, cinders and clay) and leasable minerals (i.e. oil, oil shale, gas, coal, phosphate, potassium, sodium, sulphur, gilsonite, geothermal resources and hardrock minerals). Locatable minerals, such as gold and silver, are subject to the General Mining Law of 1872 and are not discretionary. The MIRR does not seek to impose limits regarding activities undertaken regarding locatable minerals and therefore will not be discussed further in this document. Mining for these materials occurs as surface mining or underground mining. Often mining operations need road access involving road construction and reconstruction. Ground disturbance, such as road and equipment pad construction, associated with mining activities can result in adverse impacts to aquatic habitats and species (Meehan 1991). Although any mining activity may have negative effects on aquatic ecosystems, the largest impacts have generally been associated with surface mining (Lee et al. 1997).

Mining activities can affect aquatic ecosystems in a number of ways: through the addition of large quantities of sediments; the addition of solutions contaminated with metal or acids; the acceleration of erosion; increased bank and streambed instability; changes in channel formation and stability; and removal of riparian vegetation (Lee et al. 1997). The MIRR prohibits road construction and reconstruction to access any new mineral lease areas, except specific phosphate deposits in the GFRG theme. The phosphate deposits do not overlap bull trout habitat. Surface use and occupancy is permissible, unless prohibited in the LRMP. It is unlikely mineral resources in IRAs would be explored or developed because (1) there is very limited oil and gas in IRAs and there is no past experience of directional drilling; (2) there is an abundance of geothermal resources outside of IRAs where existing infrastructure exists; (3) and in general it is very difficult to mine without road access.

In general, surface mining causes higher stream flows and greater storm flow volumes than underground mining due to a greater amount of surface area disturbance with associated removal of vegetation and topsoil, greater amounts of spoils, and general compaction of the area (Southern Appalachian Man and the Biosphere 1996). While stream channels can adjust to increased flows and sediment loads such alterations can have adverse effects on the quality of aquatic habitat.

Sediments can enter streams through erosion of mine tailings (Besser and Rabeni 1987), by direct discharge of mining wastes to aquatic systems, and through movement of groundwater (Davies-Colley et al. 1992). Coarse sediments delivered to channels are likely to be deposited relatively quickly, affecting nearby aquatic habitat. Finer materials settle out more slowly and may create turbid water conditions for long distances downstream, affecting primary production and biomass by reducing the amount of light available to algae and rooted aquatic plants (Lee et al. 1997). Increases in turbidity can cause direct mortality to aquatic species, reduce growth and feeding activity (Nelson et al. 1991), and can affect the abundance and diversity of benthic

invertebrates (Lee et al. 1997). Excessive fine sediment deposition in stream substrates can degrade spawning habitat for salmonids, and eliminate habitat for some bottom dwelling aquatic species by filling in spaces in gravels (Nelson et al. 1991).

As previously stated, the standards and guidelines of the aquatic conservation strategies (e.g., INFISH, see Appendix A of the Opinion) are designed to minimize the effects of land management actions such as timber harvest. For example, INFISH Standard MM-1 requires avoidance of adverse effects to listed species and designated critical habitat from mineral operations.

For aquatic habitats, the indirect effects of disturbances associated with road construction and timber harvest could extend well beyond those areas directly impacted, given the influence that upslope areas and upstream reaches have on the condition of downstream habitat (Chamberlin et al. 1991). The types and extent of impacts on aquatic habitats would depend on road location and design, proximity to accessible habitat, mitigation measures applied, and the activities enabled. For fish populations, habitat alterations can adversely affect all life-stages, from egg to adult, and habitat essential for migration, spawning, incubation, emergence, rearing, feeding, and security (Furniss et al. 1991).

The duration of effects, or recovery time, is dependent on a variety of factors. Site productivity, rainfall, and length of growing season influence the rate and success of vegetation regrowth. The type, location, extent and duration of an activity, magnitude of adverse effects, dominant hydrologic and geomorphic processes within the watershed, overall watershed condition, and the effectiveness of mitigation and reclamation activities are some of the other factors influencing the duration of physical effects on a watershed and associated stream channels. The duration of biological effects can extend beyond the recovery time for the physical environment, and can be irreversible if a species is extirpated from the watershed.

The Service did not identify any interrelated or interdependent actions associated with the proposed Idaho Roadless Rule that have the potential to affect bull trout or bull trout critical habitat. Interrelated and interdependent effects will be considered during future consultations on programs or actions implemented under the various LRMPs.

Summary of Effects

Since the proposed action is rule-making rather than an on-the-ground activity, it should not have direct effects on the bull trout or bull trout habitat. The effects of the MIRR would occur indirectly through subsequent actions proposed by the individual national forests. However, those proposed actions would be subject to project level ESA-consultation and the standards and guidelines of individual Forest Plans. The Forest Plans have been modified to include either the aquatic conservation strategies of PACFISH (USFS and BLM 1995), INFISH (USFS 1995) or the SWIE land management plans (USFS 2003), and the Service expects the USFS to act in accordance with these strategies when bringing forward future projects.

As previously stated, these aquatic conservation strategies provide specific criteria for designing projects or activities; therefore the management direction found in these strategies would be

applied during project implementation to assist in conserving bull trout. In these strategies are goals, objectives, delineated riparian habitat conservation areas (RHCAs or RCAs), and specific standards and guidelines. Project and site-specific standards and guidelines apply to projects and activities in RHCAs or RCAs and areas outside of RHCAs or RCAs that have the potential to affect RHCAs or RCAs. The purpose of these various directions is to ensure that actions do not retard the attainment of riparian management objectives or other management objectives. Standards and guidelines were developed for various programs or management areas which include timber, roads, grazing, recreation, minerals, fire/fuels, and general riparian management. Other standards and guidelines exist for watershed, habitat, fisheries, and wildlife restoration. Additional strategy components are watershed analysis or a specific unit analysis, watershed restoration (with a restoration priority), and a monitoring component.

As such, the Service expects that these strategies will minimize effects to bull trout and bull trout habitat resulting from any future actions implemented under the MIRR.

D. Cumulative Effects

Cumulative effects are the effects of future state, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this Opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Portions of the action area downstream of the IRAs could be affected by non-Federal activities. Roadless areas are unlikely to contain significant non-Federal lands (inholdings) given their current roadless character and thus effects on such intervening non-Federal lands are unlikely within IRAs.

In those areas of the action area downstream of the IRAs, there are numerous state, tribal, local, and private actions that potentially affect bull trout. Many of the categories of on-going activities with potential effects to bull trout and bull trout habitat were identified in the Status of the Species and Environmental Baseline sections of this Opinion. These activities include timber harvest and road building, grazing, water diversion, residential development, and agriculture. Illegal and inadvertent harvest of bull trout is also considered a cumulative effect. Harvest can occur through both misidentification and deliberate catch. Schmetterling and Long (1999) found that only 44 percent of the anglers they interviewed in Montana could successfully identify bull trout. Being aggressive piscivores, bull trout readily take lures or bait (Ratliff and Howell 1992). Idaho Department of Fish and Game (IDFG) report that 400 bull trout were caught and released in the regional (Clearwater administrative region) waters of the Salmon and Snake Rivers during the 2002 salmon and steelhead fishing seasons. In the Little Salmon River, 89 bull trout were caught and released during the same fishing seasons (IDFG 2004). Spawning bull trout are particularly vulnerable to harvest because the fish are easily observed during autumn low flow conditions. Hooking mortality rates range from 4 percent for nonanadromous salmonids with the use of artificial lures and flies (Schill and Scarpella 1997) to a 60 percent worst case scenario for bull trout taken with bait (Cochnauer et. al. 2001). Thus, even in cases where bull trout are released after being caught some mortality can be expected.

U.S. Census data (http://quickfacts.census.gov/qfd/states/16/16035.html) indicates that some counties within the action area have decreasing populations while some have increasing populations; however, between 2000 and 2006, the overall population in the 11 Idaho counties that encompass the range of anadromous salmonids in Idaho increased by approximately 2.4 percent. In that same time period, the population of Idaho grew from 1,293,953 to 1,466,465 people, or a 13.3 percent increase. Thus, population growth within the action area lagged behind that of both Idaho as whole and the nation during that time period. From 1990 to 2000, population density in the action area increased from 3.2 to 3.5 persons per square mile, which remains much lower than either the densities for the State of Idaho as a whole or the nation, 15.6 and 79.6 persons per square mile, respectively. Thus, the Service assumes that future private and state actions will continue within the action area, increasing as population density rises. As the human population in the action area continues to grow, demand for agricultural, commercial, or residential development is also likely to grow. The effects of new development caused by that demand are likely to reduce the conservation value of the habitat within the action area.

Warming of the global climate seems quite certain. Changes have already been observed in many species' ranges, consistent with changes in climate (ISAB 2007; Hansen *et al*. 2001). Future climate change may lead to fragmentation of suitable habitats that may inhibit adjustment of plants and wildlife to climate change through range shifts (ISAB 2007; Hansen *et al*. 2001). Changes due to climate change and global warming could be compounded considerably in combination with other disturbances such as fire. Fire frequency and intensity have already increased in the past 50 years, and especially in the past 15 years, in the shrub steppe and forested regions of the west (ISAB 2007). Larger climate-driven fires can be expected in Idaho in the future.

E. Conclusion

After reviewing the current status of the bull trout, the environmental baseline for the action area, the effects of the proposed action, and the cumulative effects, it is the Service's biological opinion that the MIRR, as proposed, is not likely to jeopardize the continued existence of the bull trout. Although future Federal actions allowed by the MIRR may result in adverse impacts to individual bull trout and local populations, these effects are not likely to be measurable at the core area, interim recovery unit, or rangewide scales primarily due to USFS compliance with INFISH and PACFISH standards in conjunction with the design of those actions. Critical habitat has been designated for the bull trout. However, none occurs in the action area for this consultation and no destruction or adverse modification of that critical habitat is anticipated.

Future actions implemented under the MIRR will be implemented under the continued guidance from PACFISH, INFISH, and the SWIE LRMPs. These aquatic conservation strategies contain riparian goals, riparian management objectives, RHCAs or RCAs, and standards and guidelines designed to provide for the protection of aquatic species and their habitats. Therefore, in the Biological Opinions for these strategies, the Service determined that, at the plan level, implementation of Forest Service management actions in accordance with PACFISH, INFISH, or the SWIE LRMP is not likely to jeopardize the bull trout (Service 1998 , 2003).

F. Incidental Take Statement

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without specific exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of take in the Act means an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

1. Amount or Extent of the Take – No incidental take is exempted herein as a result of the FS adopting the MIRR, although specific actions developed in accordance with the MIRR and associated LRMPs may cause effects that constitute take. The mere potential for take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions developed pursuant to the MIRR and relevant provisions of LRMPs will serve as the basis for determining if an exemption from the section 9 take prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the listed species in accordance with 50 CFR 402.14i.

2. Effect of the Take – Not applicable to this Opinion.

3. Reasonable and Prudent Measures and Terms and Conditions – As there is not take exemption under 7(o) of the Act in this Opinion, the Service is not providing Reasonable and Prudent Measures or Terms and Conditions.

G. Conservation Recommendations

Section 7(a)(1) of the Act requires Federal Agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends that the USFS implement the following conservation measures.

1. Continue to survey and monitor bull trout populations and habitat in the action area to gather baseline and population trend information.

2. In future actions developed under the auspices of the MIRR, the USFS should include the conservation of bull trout and their habitat, as a project objective, with associated design criteria in the planning document for those projects where bull tout may be affected by the action.

3. All projects proposed within IRAs where bull trout might be affected should be brought forward to the interagency Level 1 Teams for adequate pre-consultation with the regulatory agencies.

4. The USFS should compile an annual report documenting what projects by IRA were completed under the MIRR, the scope of activities for those projects, and what management themes the activities occurred in. The report should address watershed conditions after projects are completed, including review of changes to the environmental baseline for bull trout to determine status and trend of habitat conditions.

5. As part of this annual report the USFS should identify whether projections of activities in each of the five themes were accurate. These projections were part of the basis of the effects analysis in this Opinion and are considered key assumptions of the analysis.

6. The USFS should develop a road analysis for every proposed project in MIRR areas that consider (as appropriate) placement of roads, road obliteration, and road improvements at the site-specific level. The USFS should also consider an analysis at a larger scale such as a watershed unit to promote multi-scale analyses to assist in promoting or identifying restoration opportunities for bull trout.

To keep the Service informed of actions that minimize or avoid adverse effects or that benefit listed species or their habitats, the Service requests notification on implementation of any conservation recommendations.

CHAPTER IV: SELKIRK MOUNTAINS WOODLAND CARIBOU

A. Status of the Species

1. Listing History

In 1980, the Service received two petitions to list the Selkirk Mountains population of caribou as endangered under the Act: one from the IDFG and one from Dean Carrier, a USFS staff biologist and former chairman of the International Mountain Caribou Technical Committee (IMCTC). At that time, the population was thought to consist of only 13-20 animals (48 FR 1722-1726). The IDFG petition noted that the agency had been working on the conservation and management of the Selkirk Mountains caribou population under the guidance of the IMCTC since 1971. The IDFG petition also stated that this "is the only known caribou population in the continental United States and with the extremely low numbers it is essential everything possible be done to prevent this species from becoming extinct in the United States." They urged immediate action on the petition to ensure the long-term survival of the caribou (IDFG 1980). Similarly, Mr. Carrier's petition urged prompt action, noting the "precarious state" of the population, the ongoing threats to habitat, and concern that the last remaining caribou population in the coterminous U.S. would soon be extirpated (Carrier 1980).

In response to the two listing petitions and other available information, the Service emergency listed the Selkirk Mountains caribou population in northeast Washington, northern Idaho, and southeast British Columbia (B.C.) on January 14, 1983 (48 FR 1722-1726), and on June 22, 1983 (48 FR 28500-28504), published a proposed rule to list the population as endangered. The first emergency rule expired on September 12, 1983. A second emergency rule was published on October 25, 1983 (48 FR 49245-49249), to extend emergency protection for the Selkirk Mountains caribou population until a final rule could be published. Final listing of the Selkirk Mountains caribou population as endangered in Idaho, Washington, and southeast B.C. occurred on February 29, 1984 (49 FR 7390-7394). Mountain caribou within B.C. are provincially "red-listed" (considered to be threatened or endangered) and listed as threatened under Canada's Species at Risk Act.

2. Description of the Species

Woodland caribou are medium-sized members of the deer family, with adult males approaching 600 pounds and adult females around 300 pounds. Woodland caribou are distinguished from other members of the deer family by their large hooves, broad muzzles, and distinctive antlers developed annually by both sexes. The pelage of the woodland caribou ranges from a deep chocolate brown in midsummer to a grayish-tan during spring. Adult males develop a distinctive white mane during the rut (Service 1994).

All caribou and reindeer in the world are a single species (*Rangifer tarandus*) and are presumed able to interbreed and produce viable, fertile offspring (Committee on the Status of Endangered Wildlife in Canada (COSEWIC) 2002). Woodland caribou are classified as *Rangifer tarandus,* subspecies *caribou.* A variety of terms have been used to refer to different caribou groupings below the subspecies level (e.g., ecotypes, subpopulations, local populations, herds, etc.).

Definition of such terms is essential in distinguishing between different caribou groups, but the definition of some of these terms has been arbitrary and variable among authors (COSEWIC 2002, Zittlau 2004). However, the concept of ecotypes has gained acceptance. Ecotypes are described as classes of populations adapted to different landscapes or environments as expressed by their movements and feeding behavior (COSEWIC 2002). There are three recognized ecotypes of woodland caribou: mountain, northern, and boreal; each ecotype is differentiated by the type of habitat occupied, their movement patterns, and feeding behavior.

The mountain ecotype of woodland caribou, to which the Selkirk Mountains population belongs, occurs in high elevation (generally above 4,000 feet elevation), steep terrain of the mountainous southeastern and east-central portions of B.C., and the Selkirk Mountains of northern Idaho and northeastern Washington. This caribou ecotype primarily occupies old-growth cedar/hemlock and spruce/fir forests that typically have high snow levels, and feeds almost exclusively on arboreal lichen during the winter. In contrast to the seasonal, long-distance migrations undertaken by some caribou subspecies, mountain caribou make seasonal elevational movements in response to factors such as snow level, food availability, and predator avoidance.

3. Life History and Habitat Requirements

Woodland caribou (inclusive of the Selkirk Mountains population) have a low reproduction rate; females usually give birth to their first calf at three years of age, and single calves, rather than twins, are the norm. A cow will average six calves over her lifetime. Calf mortality is high for the first few months of life and can be as much as 50 percent or higher. This low reproductive rate is a major limiting factor to stabilizing or increasing woodland caribou populations (Paquet 1997).

Mountain caribou are closely tied to old-growth coniferous forests of the Interior Wet-belt ecosystem of B.C. and the United States. Their survival depends on their ability to spread out over large areas of suitable habitat where it is difficult for predators to find them. Suitable habitat is defined as old-growth forests (at least 150 years old) which support abundant arboreal lichens, the key winter food source of mountain caribou (Stevenson et al. 2001).

Old-growth forests are essential to maintaining a caribou population. Arboreal lichens, specifically *Bryoria* spp., comprise a critical winter food source, as the caribou diet is almost entirely lichen at this time of the year (USFS 2004). These lichens are extremely slow-growing, occurring in abundance typically in mature/old-growth forests 150 years or older. They require stable, mature subalpine environments and rarely flourish in second-growth forests, although under the right conditions, maturing seral stands can provide abundant lichen growth (Service 2001). Factors such as relative humidity, wetting and drying cycles and amount of light are ultimately the controlling factors. Subalpine fir trees and snags tend to support higher densities of these lichens than other tree species because most other conifer species in this region tend to lose their branches as they age, which provides less substrate for arboreal lichens (Detrick 1984). During the spring and summer, woodland caribou forage on succulent forbs and graminoids in subalpine meadows, and on huckleberry leaves.

Selkirk Mountains woodland caribou habitat is typically represented by a combination of two vegetation zones: the cedar/hemlock zone at lower elevations, the subalpine fir/Engelmann spruce zone at higher elevations, and the transition zone between these two vegetation zones. Seasonal habitats consist of early winter, late winter, spring, calving, and summer habitats primarily within these two vegetation zones. Early winter and late winter habitats are considered to be the most important habitats to caribou and are the most limiting on the landscape within the recovery area (USFS 2004) (see description of woodland caribou recovery area in the *Status and Distribution* section below).

Caribou habitat can be further differentiated as capable habitat and suitable habitat. Capable habitat refers to the inherent potential of a site to produce the essential habitat requirements of a species. Vegetation on the site may not be currently suitable for a given species because of variable stand attributes such as seral stage, cover type, or stand density. Capable habitat is defined on the basis of fixed attributes such as slope, elevation, and habitat type. Capable habitat, while not in target condition, can still be utilized by caribou for travel between suitable feeding sites, movement within the ecosystem, and as lower quality feeding sites. Suitable caribou habitat currently has both the fixed (noted above) and variable stand attributes. Variable attributes change over time and may include seral stage, cover type, and overstory canopy cover. Table 12 displays the relative suitability of the various seasonal habitats within the caribou recovery area. In this table, habitat acreages designated as high or moderate would typically be considered currently suitable, while those acreages designated as low would typically considered as capable. As displayed in Table 12, 41%, 43%, and 35% of the capable summer, early winter, and late winter habitat, respectively, within the Selkirk recovery area is currently suitable.

Early winter habitat consists of mature to old-growth cedar/hemlock forests and the lower limits of the subalpine fir/Engelmann spruce forests. Suitable habitats are multi-storied and have an overstory canopy cover greater than 70 percent. Early winter is a period of rapid snow accumulation and generally extends from November through January. During this period, caribou seek out these more closed timber stands where they feed on a combination of arboreal lichens and shrubs until the snow pack consolidates and the caribou can move to higher elevations (USFS 2004). Components such as a high degree of overstory canopy cover, the presence of arboreal lichens and an understory shrub component are very important. The early winter period is generally identified as a period of rapid snow accumulation. Caribou seek out these stands during this period before the snow pack consolidates and they are able to move more freely atop the snow pack.

Late winter habitat consists of subalpine fir and Engelmann spruce forests on the upper portion of ridge systems. Suitable habitat consists of immature to mature stands of subalpine fir and Engelmann spruce that are relatively open canopied (10 to 50 percent overstory canopy) and have high levels of arboreal lichen. The late winter period extends from the end of early winter in January until April or May (USFS 2004).

The overall quantity of habitat within the recovery area is not currently considered to be limiting to caribou in terms of food because of the low number of caribou presently occupying the area. However, the patchy distribution of the habitat on the landscape likely presents other issues, such as compromising the caribou's ability to avoid predators.

4. Status and Distribution

Historically, caribou were widely distributed throughout the northern tier of the coterminous United States from Washington to Maine, as well as throughout Canada. In the northwestern U.S., mountain caribou occurred in Washington, Idaho, Montana and perhaps Wyoming (Cringan 1957, Flinn 1956, Evans 1960, Layser 1974). In Idaho, they occurred as far south as Salmon, Idaho (Service 1994). Historical accounts gathered from trappers, early settlers, prospectors, and forest workers, as compiled by Flinn (1956), Layser (1974), and others indicate that caribou were plentiful in the northwestern U.S. in the 1800s, and, more specifically, that caribou in northern Idaho, northeastern Washington, and southern B.C. were abundant in the late 1800s to early 1900s (Layser 1974). However, as a result of habitat loss and fragmentation, over-hunting, and predation, caribou numbers have decreased, and their range has declined by approximately 60% (Mountain Caribou Technical Advisory Committee (MCTAC) 2002, Apps and McLellan 2006). Caribou were extirpated from New England by about 1916 and disappeared from the Great Lakes region by about 1940, although a few individuals have been observed in northeast Minnesota as recently as the early 1980s (Service 1984). Today, mountain caribou are completely absent from Minnesota, mainly due to changes in plant composition since the last glaciers receded 10,000 years ago. Currently, the entire global population of mountain caribou occurs within B.C., Idaho, and Washington (Figure 5).

When the Selkirk caribou population was first listed in 1983, the population consisted of less than 30 individuals whose distribution centered primarily around Stagleap Provincial Park in British Columbia. The Selkirk population has fluctuated over the last two decades, but has shown modest increases (7%) in the last five years. These increases have been attributed, in part, to more effective predator management efforts in the Selkirk ecosystem. The Selkirk population, based on the most recent 2008 survey, is the highest it's been in almost a decade (Wakkinen and Johnson 2008). The population is now estimated at 46 animals (Wakkinen and Johnson 2008), most of which typically occupy habitat in the B.C. portion of the recovery area (Wakkinen and Johnson 2006). A small number of woodland caribou occur within the U.S. portion of the recovery area, and there is continual movement of animals back and forth across the U.S./B.C. border.

The recovery area for the Selkirk Mountains caribou population encompasses a total of 959,923 acres across the U.S. and Canada (Figure 6): 319,860 acres in Idaho (33%), 138,229 acres in Washington (15%) and 501,166 acres in B.C. (52%). As currently delineated, the recovery area includes lands above 4,000 feet in elevation within B.C. and on the Colville National forest, and lands above 4,500 feet on the IPNF and on areas administered by the Idaho Department of Lands (Service 1994). Some lands below 4,500 feet in elevation on the IPNF are included within the recovery area based on caribou utilization, target stand condition and habitat connectivity. Conservation and recovery efforts for the Selkirk Mountains population of woodland caribou in the B.C. portion of the recovery area compliment efforts taken in the U.S., and vice versa.

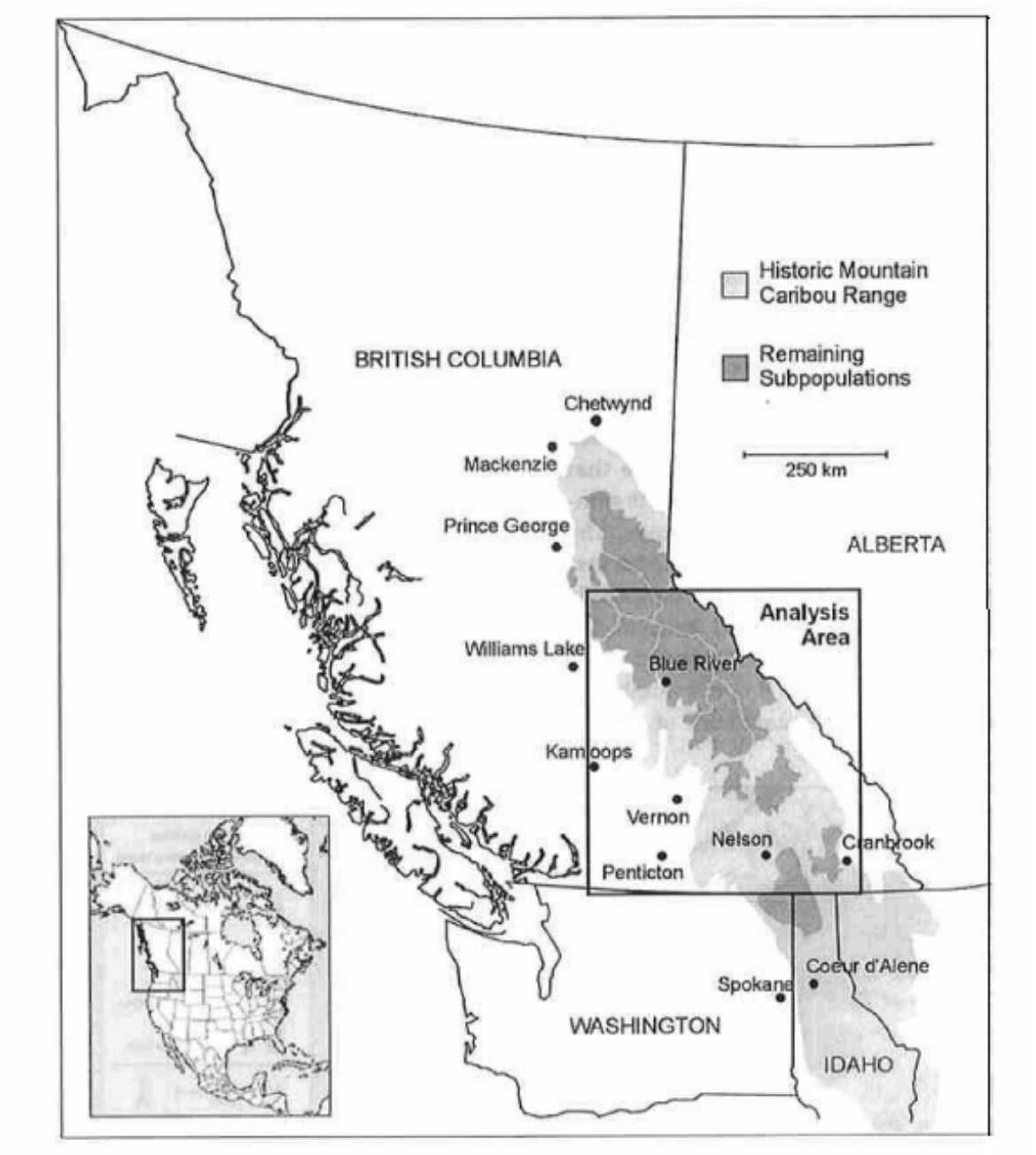

Figure 5. Historic and current range of mountain caribou in British Columbia and the U.S. (Apps and McLellan 2006).

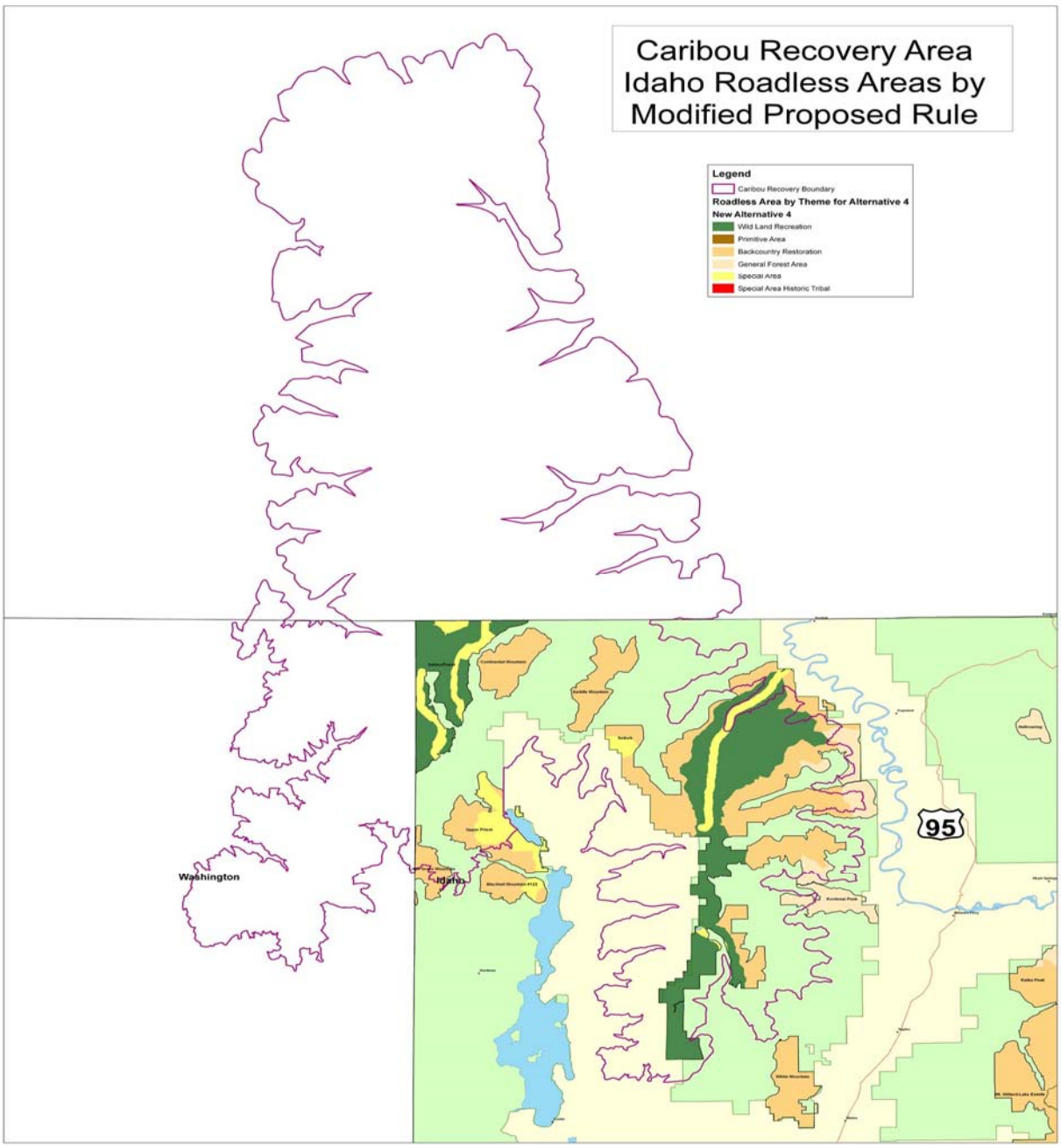

Figure 6. Overlap between the caribou recovery area and Idaho Roadless Areas.

5. Factors Influencing the Current Condition of Caribou

Habitat Loss/Fragmentation

As discussed above, mountain caribou are closely tied to old-growth coniferous forests of the Interior Wet-belt ecosystem in B.C. and the United States. Their survival depends on their ability to spread out over large areas of suitable habitat where it is difficult for predators to find them. Suitable habitat is defined as old-growth forests (at least 150 years old) that support abundant arboreal lichens, which are their key winter food source (Stevenson et al. 2001).

The primary long-term threat to mountain caribou is the ongoing loss and fragmentation of contiguous old-growth forests due to timber harvesting and wildfires (MCTAC 2002, Cichowski et al. 2004, Wittmer 2004, Apps and McLellan 2006). Mountain caribou habitat requirements for extensive stands of old-growth timber place them in direct competition with most current forest management practices. Timber harvesting within the range of the mountain caribou has been a concern for over 25 years (Stevenson et al. 2001). In 2002, the MCTAC estimated a 38% reduction in caribou habitat suitability from historic levels.

As noted above, the range of mountain caribou in B.C. and the U.S. has declined by approximately 60%, primarily as a result of the loss, alteration, and fragmentation of old-growth forests due to a combination of human and natural causes (MCTAC 2002). Habitat loss or modification has the following effects on caribou: (1) it reduces the amount of useable space available for caribou to carry out their life cycle and limits the ecological carrying capacity of their habitat; (2) it reduces the arboreal lichen supply, affecting the caribou's key winter food source; (3) it may affect caribou movement patterns; (4) it may affect the caribou's use of remaining fragmented habitat because suitable habitat parcels will be smaller and discontinuous; and (5) it can make caribou more susceptible to predation as available habitat is compressed and fragmented (Cichowski et al. 2004).

Wildfires are a natural phenomenon within the range of mountain caribou that represent another threat to caribou habitat. Historically, caribou were able to tolerate this natural adverse impact because there were other non-fragmented stands of old-growth forest available for displaced caribou to occupy. However, the cumulative effects of logging, road building, and wildfires have eliminated a significant amount of historic caribou habitat to the extent that at a landscape scale, stand-replacing fires are more likely to change the configuration and availability of caribou-occupied forested stands in a manner that reduces the cover and security these stands provide to caribou from predators, human disturbance, and extreme weather conditions (Courtois et al. 2007, Shepherd et al. 2007).

Predation

Predation has become an increasing threat to caribou populations and is considered to be a proximal cause of most mountain caribou mortalities (Paquet 1997, Simpson et al. 1997, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004). Wittmer et al. (2005) evaluated the role of predation in the decline of mountain caribou and found that the primary cause of mortalities in 11 of 13 caribou subpopulations was predation. He suggested that the loss of

mature forests within the mountain caribou range may compromise their predator avoidance strategy.

As discussed above, the ultimate cause of increased predation pressure is thought to be related to the high degree of habitat modification and fragmentation within the ecosystem, which has led to an altered predator/prey dynamic (COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004). Habitat modification/fragmentation has the following effects that could cause increased predation pressure on caribou:

- Throughout the ecosystem on which the caribou depends, an increase in early-seral stands provides for enhanced production of understory shrubs and forbs, which attracts other ungulates (deer, elk, and moose) to shift their distribution into landscapes previously occupied primarily by caribou. Caribou usually occur at much lower densities than other ungulates, they have larger home ranges, and do not normally use the same habitats used by moose and deer. Therefore, this shift in ungulate distribution can, in turn, lead to an expansion in the distribution of predators, such as cougars and wolves, into caribou habitat where they opportunistically prey on caribou along with the other ungulates.

- Restricting caribou to remaining old-growth habitat patches may increase the search efficiency of predators. As discussed above, one of the survival strategies of mountain caribou is to maintain a sparse distribution across large expanses of contiguous old-growth forest, making it more difficult for predators to find them. As these habitats become more fragmented into smaller, disconnected patches, caribou are forced to concentrate more heavily in these remaining habitat patches, thereby facilitating an increase in predation levels.

- Increased road densities caused by timber-harvesting activities facilitate the movement of predators, such as wolves and cougars, into the caribou's range. Similarly, snowmobile trails may also facilitate predator access to caribou habitat.

Land Management Planning

Since the caribou was listed, the IPNF adopted a LRMP that included general standards some of which pertain to the caribou. The application of these standards by the IPNF has resulted in the design of all vegetation management projects on the Forest since 2001 that are not likely to adversely affect the caribou. Although certain caribou relevant LRMP components are outdated to a varying extent based on available information developed since the LRMP was adopted, the IPNF affirmed in a September 18, 2008, letter to the Service that individual project-level planning and analysis considers the best available science, providing a mechanism through which updated and emerging information on caribou habitat needs can be used (USFS 2008b) (See Appendix B).

Relative to human access within caribou habitat, the IPNF's LRMP currently includes generic standards calling for motorized use restrictions when needed to protect caribou, although these standards do not address how, when, and where to impose such restrictions given the

programmatic nature of the LRMP (USFS 1987). There is growing evidence that increasing levels of winter recreation activities (e.g., snowmobiling, heli-skiing, snow-cat skiing, etc.) within caribou winter range represent a significant threat to mountain caribou (Simpson and Terry 2000, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Powell 2004, Seip et al. 2007). The IPNF is working on development of a winter travel plan to address snowmobile activities in the Selkirk Mountains. However, there is currently no plan in place to address this issue throughout the IPNF portion of the caribou recovery area, although pursuant to a Court injunction, winter travel within caribou habitat on the IPNF is restricted in portions of the caribou recovery area until the travel plan is finalized and any appropriate ESA consultation completed.

A significant amount of State and private lands (approximately 79,000 acres) occurs within the caribou's range as well (Service 1994). The Idaho Department of Lands (IDL) administers approximately 51,000 acres within range of the mountain caribou. These lands are managed primarily for timber harvest, which, as discussed above, has significant impacts on caribou and their habitat. A recent habitat assessment of IDL lands within the Selkirk ecosystem indicated that one of the largest blocks of high priority caribou habitat in the Selkirk Ecosystem is centered on IDL property and adjacent USFS lands. On that basis, IDL property is considered to contribute significantly to caribou habitat within the Selkirk Ecosystem (Kinley and Apps 2007). For several years, the IDL has been working on a Habitat Conservation Plan (HCP) to protect caribou and other listed species on their lands. However, development of this HCP is still in the preliminary information gathering stage and has not yet resulted in any definitive conservation measures for caribou and their habitat.

Caribou habitat on lands owned and managed by the States of Idaho and Washington remains at risk of further degradation and/or fragmentation due to inadequate regulatory mechanisms to address timber management on these lands. Most private lands within caribou habitat in the U.S. are managed for timber values, and there are currently no regulatory mechanisms, guidelines or standards addressing caribou habitat management/protection in place for these lands to protect suitable caribou habitat, except as the take prohibitions under section 9 of the Act may apply.

In B.C., caribou habitat management direction is contained in Land and Resource Management Plans and Higher Level Plans both at the regional scale. These various plans provide caribou habitat requirements for timber harvesting on Provincial lands, but they do not apply to private lands in B.C. (DeGroot, BCMoE, pers. com. 2007).

Human Disturbance

A growing threat to mountain caribou is increasing human access into their habitat and the associated disturbance that it causes (Paquet 1997, Simpson and Terry 2000, Stevenson et al. 2001, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Seip et al. 2007). Increasing road densities in caribou habitat may facilitate poaching opportunities, movement of predators within the caribou's range, and road kills. For instance, a number of caribou in the Selkirk population have been killed in collisions with motor vehicles along Trans-Canada Highway 3 at Kootenay Pass about 5 miles north of the international boundary. Two studies of caribou in Alberta have

reported that caribou avoid habitats near linear features and human activity such as roads, seismic lines, and drilling sites (MCTAC 2002, Cichowski et al. 2004).

As discussed above, there is growing evidence that increasing levels of winter recreation activities (e.g., snowmobiling, heli-skiing, snow-cat skiing, etc.) within the caribou's winter range represent a significant threat to mountain caribou. Winter recreation can increase the stress levels of caribou, displace them from suitable winter habitat, or preclude them from using such habitat (Simpson and Terry 2000, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Powell 2004, Seip et al. 2007).

Simpson and Terry (2000) evaluated several different forms of winter recreation relative to their effects on mountain caribou and found that snowmobiling represents the greatest perceived threat. Although caribou appear able to tolerate some level of motorized winter recreation within their range, the rising interest in recreational snowmobiling, combined with better access via roads to high elevation caribou habitats and improved snowmobile technology that has produced more powerful machines that can travel through mountain caribou habitat, have created a significant threat to some mountain caribou populations (MCTAC 2002). Deep snow, open forests, and scenic vistas make caribou late winter habitat very attractive to recreational snowmobilers. However, because this habitat is critically important to mountain caribou, their disturbance or displacement from such habitats by snowmobilers, especially given the current fragmented nature of mountain caribou habitat, can have severe effects on affected animals (MCTAC 2002).

Snowmobiling activities have the potential to displace caribou from suitable habitat, resulting in additional energy expenditure by caribou when they vacate an area to avoid disturbance (Tyler 1991 as cited in USFS 2004a), and an effective loss of habitat availability temporarily, and potentially in the long-term where caribou abandon areas characterized by chronic disturbance. Short-term reindeer or caribou displacement due to direct snowmobile approaches has been reported by Tyler (1991) and Mahoney et al. (2001).

Simpson (1987) concluded that large groups of fast-moving snowmobile machines in combination with human scent caused mountain caribou to abandon an area previously used as winter habitat. Areas of high quality winter habitat in the Quesnel Highland, such as the Mica Mountain and Yanks Peak areas receive minimal use by caribou during late winter when heavy use by snowmachines becomes an almost daily occurrence.

Kinley (2003) noted that during the period in which snowmobile activity has increased in extent and intensity within the range of the mountain caribou, caribou have clearly abandoned or been extirpated from some formerly used areas, and declined in numbers within some areas that are still occupied. Where suitable winter range is scarce, disturbance to caribou may cause them to shift into less preferred habitat, which increases the risk of mortality from malnutrition, predation, and avalanches.

"Snowmobile trails provide hard-packed travel corridors for predators to move into caribou habitat (Bloomfield 1979, Neumann & Merriam 1972). Wolf predation is often responsible for adult caribou mortality and low recruitment in caribou populations within Canada (Bergerud &

Ballard 1988, Gasaway et al 1983, Seip 1991, Stevenson & Hatler 1985). Although there is normally minimal overlap between wolf and caribou winter ranges, these trail networks allow easy access to alpine and forested winter range areas, potentially increasing predation rates on caribou and upsetting the delicate predator/prey relationship so critically relevant to conservation strategies for woodland caribou" (excerpted from USFS 2004, pg. 26).

Seip et al. (2007) evaluated caribou and snowmobile use on 6 mountain ranges of similar habitat quality in B.C. over a 3-year period. They found caribou use on all 5 mountain ranges with little or no snowmobile activity and no caribou use of the sixth mountain range that had intensive snowmobile activity. Based on their evaluation, they concluded that intensive snowmobile activity had displaced caribou from suitable habitat and recommended that snowmobiling be restricted from all or most high quality caribou habitat.

Powell (2004) studied the effects of recreational snowmobile use on caribou in the southern Yukon and found that: (1) caribou moved away from this disturbance; (2) maternal groups responded more than did male groups, being twice as likely to flee from an approaching snowmobile and spending more time moving and being vigilant after the disturbance; (3) caribou did not display habituation or sensitization to the disturbance; and (4) wolves frequently used snowmobile trails, possibly leading to increased predation on caribou.

Other Factors

Climate change is another potential threat to mountain caribou. Certainly, climate change has the potential to affect the quantity, quality, and distribution of caribou habitat, both at a broad regional scale as well as at the local stand level. Some forest types are likely to expand, while others may retreat or shift. Because the annual cycle of mountain caribou is so closely tied to changing snow depths, changes in snow levels may also have significant effects on caribou. However, because of the uncertainty associated with climate change modeling, it is impossible to reliably predict the potential impacts of climate change on mountain caribou at this time (Utzig 2005).

Finally, the contracting range of the Selkirk population, the small number of animals in the population, and the limited genetic exchange between the Selkirk population and adjacent populations threaten population viability (Hatter 2000).

6. <u>Previously Consulted-on Effects to the Caribou within the Action Area</u>

The IPNF's 1987 LRMP underwent consultation when it was developed (USFS 1987). This LRMP provides programmatic guidance and direction for activities occurring on the IPNF. Goals, objectives, standards, and guidelines were incorporated into the 1987 LRMP to minimize adverse effects to threatened, endangered, proposed, and sensitive species resulting from Forest activities such as timber management, fire management, and recreation. The LRMP outlined 19 management areas on the IPNF, each with different management goals, resource potential and limitations.

At the Forestwide scale, the IPNF's goal for federally listed species is to provide for recovery as outlined in species recovery or management plans. To address this goal for woodland caribou, the IPNF has committed to cooperating in implementation of the Selkirk Mountain Caribou Management/Recovery Plan. This commitment is provided in the form of a Forestwide LRMP standard, to be applicable to projects regardless of management area. The IPNF LRMP outlines additional general standards that may also benefit caribou as they emphasize management for ESA listed species and retention of old-growth forests, a habitat type of particular importance to caribou.

With respect to caribou, the 1987 LRMP specifically identified Management Area (MA) 7 (117,200 acres) as being designated for caribou management and included specific goals and standards to contribute to the recovery of caribou. Additionally, portions of several other management areas were identified as containing caribou habitat and also included goals and standards to manage for caribou in these areas. At the programmatic level, these measures, although relatively general, provide the overarching direction to reduce impacts to woodland caribou and contribute to their recovery. For example, management area standards include, but are not limited to measures such as:

- Seasonal closures motorized vehicles where necessary to reduce disturbance to caribou;
- Control or containment of fire to reduce further loss of caribou habitat;
- Maintenance of caribou travel corridors in mature timber;
- Management of roads and other human travel corridors to minimize impacts to woodland caribou, where possible;
- Cooperate in implementation of the Selkirk Mountain Caribou Management Plan/Recovery Plan.

At the programmatic level, the Service reached a finding that the USFS's adoption of the LRMP is not likely to jeopardize the continued existence of the Selkirk Mountains woodland caribou (Service 1986).

In 2001, the Service issued an Amended Biological Opinion for the 1987 LRMP (Service 2001) that also concluded no jeopardy for the caribou. The primary purpose of this amended Opinion was to provide an Incidental Take Statement. The amended Opinion included mandatory Terms and Conditions intended to minimize the impacts of harm and harassment on the woodland caribou caused by the adoption of plan standards and guidelines for the IPNF. However, as a result of recent litigation regarding snowmobile activities on the IPNF, the Service withdrew the portion of this amended Opinion addressing winter recreation activities; that withdrawal occurred on March 3, 2006 (USFS 2006a). As a result, there are currently no terms and conditions or incidental take coverage in place on the IPNF for take of caribou caused by snowmobile activities. The USFS has reinitiated consultation on the management of winter recreation. Until an IPNF winter travel plan is completed, a Court injunction on snowmobile activities within the IPNF portion of the caribou recovery area is in place.

7. Conservation Needs

Based on consideration of the above threats, the primary conservation needs of the Selkirk caribou population can be summarized as follows:

1. Expand the size and distribution of the existing population.

2. Protect and restore large blocks of old-growth conifer forests preferred by woodland caribou on public lands.

3. Manage caribou predators in occupied habitat on an as needed basis until sufficient amounts of old-growth conifer forest are restored.

4. Manage human access to caribou habitat to avoid and minimize adverse effects to caribou caused by disturbance and increased levels of predation, especially during the winter when caribou are especially vulnerable to these impacts.

5. Maximize the resiliency of the caribou population to the adverse effects of climate change by achieving (1)-(4) above.

8. Recovery Plan

The Selkirk Mountain Woodland Caribou recovery plan was first approved in 1985 and revised in 1994 (Service 1994). Recovery objectives outlined in this plan include managing for an increasing caribou population that is well distributed throughout the recovery area, and for securing and enhancing sufficient caribou habitat in the Selkirk ecosystem to support a self-sustaining caribou population. The recovery strategy includes addressing the impacts of road-related mortalities, reducing the impacts of timber management, and reducing or eliminating the impacts of recreational activities on caribou and their habitat. Although the recovery plan is somewhat dated, the threats and conservation needs outlined in the plan are fully supportive of those discussed above.

9. Critical Habitat

No critical habitat is currently designated for caribou; therefore none will be affected by the MIRR.

B. Environmental Baseline

1. Status of the Species in the Action Area

Census efforts for the Selkirk Mountains caribou population were initiated in 1991 under the lead of Idaho Department of Fish and Game. The winter census effort is conducted during the late winter period, usually between the months of February and April. A fixed-wing aircraft is used initially to locate areas where caribou occur. If necessary, a helicopter is then used to obtain a more accurate count of the total number of caribou within each detected group. The most recent

winter census of the Selkirk Mountains caribou subpopulation yielded an estimated minimum of 46 individuals in 2008, three of which were detected as a group in the United States portion of the recovery area (Wakkinnen and Johnson 2008). Table 9 presents caribou survey results since 1999. The results of the last five years of surveys reflect an increasing trend in individuals detected (Wakkinnen and Johnson 2008). It is important to note that these surveys represent a point-in-time approach to documenting occurrences and distribution. Consequently, they provide good evidence for presence in certain locations during winter, but not necessarily presence or distribution during other seasons throughout the year.

Table 9. Results of winter censuses of the Selkirk Mountains woodland caribou: 1999-2008.[1]

Year	Area	# Adults US/BC	# Calves US/BC	% Calves	Area Total US/BC	Grand Total
1999a	U.S.	---	---	---	6	48
	B.C.	---	---	---	6/42	
2000	U.S.	2	1	33	3	34
	B.C.	26	5	16	31	
2001	No census conducted due to low snowpack conditions.					
2002	U.S.	2	0	0	2	34
	B.C.	23	9	28	32	
2003	U.S.	1	0	0	1	41
	B.C.	27b	3b	10b	40	
2004	U.S.	3	0	0	3	33
	B.C.	28b	2b	7b	30	
2005	U.S.	--	--	--	2	35c
	B.C.	--	--	--	33	
2006	U.S.	---	---	---	1e	34-37e
	B.C.	---	---	---	33e	
	B.C.-heli	24d	5d	17d		29-38d
2007	U.S.	---	---	---	2e	43-44e
	B.C.	---	---	---	42-43e	
	B.C.-heli	39d	4d	9d		43d
2008	U.S.	3	0	0	3d	46d
	B.C.	38	5	11	43d	

[1] Excerpted in full from Wakkinnen and Johnson 2008.
a 11 animals released in late winter 1998.
b Classification flight did not include a total count.
c Not a complete census. Must be considered a minimum population estimate.
d Based on helicopter count in B.C. portion of ecosystem.

In addition to the above census results, which reflect caribou locations during a period within the late winter season, there are periodic anecdotal reports of caribou throughout the U.S. portion of the recovery area throughout the year. Table 10 below presents some of the more recent sightings. A number of these sightings were in or near IRAs.

Table 10. Anecdotal caribou reports within the U.S. portion of the recovery area since 2000.

Date	Season	Year	Observer	Location	Comments
	Spring	2000	Loyd Renfro (IDL)	Squawman Mtn; Wigwams Gate (IDL)	Dead caribou found behind gate, female?
	Spring	2000	Ed Wingard	Lookout Mtn. (IDL)	Found dead male caribou (Rob has antlers) Dead female caribou with radio collar also found by IDFG in area when investigating
4/21/2000	Spring	2000	Kevin Davis	Pack River	Tracks northeast of Silver Dollar Peak
3/8/2000	Spring	2000	Lucas Wingart	Two Mouth drainage	Tracks seen at Standard Lakes
10/15/2000	Fall	2000	Kevin Davis	Two mouth Lake	Tracks seen between both lakes.
10/28/2001	Fall	2001	Unknown (CDC)	Lime Creek	Tracks along road and Creek
5/1/2001	Spring	2001	John Doot	Kalispell Basin	One animal seen 1.3 miles north of Ranger Station
	Winter	2002	Ed Wingard	Standard Lakes (IDL)	2 caribou seen when skiing within area.
	Summer	2004	Luke Peterson	Two Mouth Lake	Tracks of 1 to 2 caribou, reliable but unconfirmed
11/1/2005	Winter	2005	Hunters	Gypsy Meadows (Sullivan Creek)	Three hunters reported seeing a caribou just below Gypsy Meadows this morning. They figured out it was a caribou from the silhouettes posted on some informational signs nearby. They thought it was a bull but sounded less sure when they found out that the females also have antlers. They described it as very "rangy" and odd looking. They were very excited.
10/31/2005	Fall	2005	Mark Koboush	Upper Priest Lake	Animals see on shore from boat north of Plowboy campground. No antlers on animal.
	Winter	2005	Sam Coushman	Smith Creek	Track of 1 to 2 caribou, Reliable
	Winter	2005	Member of local snowmobile Group	Chimney Rock Area (IPNF)	Reported seeing single animal while snowmobiling
	Spring	2005	Recreational ist	Chimney Rock Area (IPNF)	Female caribou seen at trailhead lading to Chimney rock.
	Spring	2006	Mike Sudnikovich	Mosquito Bay (Priest Lake)	Two animals reported with Mosquito Bay around cabins, report relayed by Mike Sudnikovich.
	Summer	2006	Ed Wingard	Standard Lakes (IDL)	Dead caribou found along edge of lake by IDL employee, Melting out of snow. Follow up a few weeks later only found a few bones. Carcass evidently fed on by possibly bears.

7/25/2007	Summer	2007	Khanh Tran	Salmo Mtn. Trailhead (Salmo Mountain)	Khanh Tran of Portland who was doing a boreal bird tour of our area. He says he saw a caribou fairly close to the Salmo trailhead.
10/29/2007	Fall	2007	Dan Debernardi	Pass Creek Road (CNF)	Potential caribou observation from a Dan Debernardi on the Pass Creek Pass Road in T38, R44, Sec. 2 or thereabouts. This was a single animal with smaller antlers (female?) that crossed the road in front of him. He was certain it was not an elk or a deer and said it looked like the photos of caribou showed him. The light colored rump, small size in relation an elk, and "weird" antlers stood out to him. It did not have a collar or ear tags.
8/6/2008	Summer	2008	Todd Randall	Upper Priest River	Single animal identified as caribou (no antlers) likely a female along Upper Priest River. Animals seen crossing road (RD1013 near junction with RD655). Sighting on 8/6/200 16:00. Close to where sighting of recent wolf activity. Sighting is low in elevation for this time of year. Showed observers photos of caribou and they became more sure that what they saw was a caribou.

Approximately 255,456 acres of the Selkirk Ecosystem caribou recovery area (27%) fall on the IPNF, of which 131,813 acres (~14% of the recovery area) are in IRAs. Seven IRAs fall within or overlap the caribou recovery area: (1) Continental Mountain; (2) Kootenai Peak; (3) Little Grass Mountain; (4) Saddle Mountain; (5) Salmo/Priest; (6) Selkirk; and (7) Upper Priest (Table 11).

Table 11. Idaho Roadless Areas that overlap the South Selkirk Ecosystem caribou recovery area.

Roadless Name	**#**	**Acres overlapping caribou recovery area**	**% overlap with caribou recovery area**
Continental Mountain	004	7,525	100%
Kootenai Peak	126	943	18.87%
Little Grass Mountain	121	2,319	59.46%
Saddle Mountain	154	7,766	100%
Salmo/Priest	981	20,021	100%
Selkirk	125	84,569	86.30%
Upper Priest	123	8,669	68.26%
Total		**131,813**	

Efforts to map the distribution and condition of caribou habitat within the Selkirk Ecosystem caribou recovery area were initiated in 1997 as a cooperative project between the B.C. Ministry of Environment, the Colville National Forest, Washington Department of Fish and Wildlife, IDFG, and the IPNF. Recent habitat modeling by Kinley and Apps (2007) builds upon early cooperative efforts and further classified the relative suitability of seasonal habitats. Based on habitat suitability scores applied to seasonal habitats, high or moderate categories encompass those areas that are currently considered 'suitable'; those habitats categorized as 'low' are those capable of providing for caribou, but are not currently 'suitable' (J. Almack, USFS, pers. com. 2008). An estimated 14% of caribou habitat (all seasons) in the Selkirk Mountains Ecosystem recovery area (in both B.C. and the U.S.) overlaps IRAs (Table 12). In general, caribou habitat for all seasons is fairly coincident with the boundaries of the recovery area, which is to be expected based on environmental criteria used to delineate the current recovery area. Although all potential seasonal habitats for the caribou have been mapped, a focus is placed on the recovery area boundaries to generally represent the distribution of caribou and its habitat.

Movement corridors for woodland caribou were mapped based on historical information on movement corridors, topographic features, caribou habitat, and recent observations and telemetered locations of caribou (See USFS 2004, pg. 22 for detailed description of methods). Primary corridors were those that connected local herd groups whereas secondary corridors represented seasonal movement patterns. Approximately 28 miles of primary corridor and 62 miles of secondary corridor intersect IRAs, including the Salmo-Priest, Continental Mountain, Saddle Mountain, Selkirk, Kootenai Peak, and Upper Priest IRAs (Figure 7).

As discussed above, recent surveys conducted for woodland caribou have detected a number of individuals within the U.S. In 2007, the winter census identified two caribou in Idaho that appear to have been in or within close proximity to two IRAs: the Salmo-Priest Roadless Area and the Selkirk Roadless Area (Wakkinnen and Johnson 2008).

Telemetry locations of radio-collared caribou provide an additional record of caribou occurrence within IRAs. Over the past 20 years, over 2,500 caribou telemetry points have been documented within IRAs. As with the winter census information, these points reflect caribou locations at a single point in time, but do provide useful information on the relative use of these areas by caribou. Of all the IRAs within the caribou recovery area, caribou occurrence was highest in the Selkirk and Salmo/Priest roadless areas (Table 13).

Table 12. Caribou seasonal habitats[1] within the South Selkirk Ecosystem caribou recovery area.

	Total in recovery area	**Overlap with IRA (acres)**	**% of total habitat in IRA**
Calving			
High	78,791	12,729	16.16%
Moderate	324,559	56,203	17.32%
Low	505,788	59,259	11.72%
Total	*909,138*	*128,191*	*14.10%*
Summer			

High	59,656	11,310	18.96%
Moderate	314,878	58,589	18.61%
Low	534,709	58,705	10.98%
Total	*909,243*	*128,604*	*14.14%*
Spring			
High	81,108	17,220	21.23%
Moderate	384,132	66,454	17.30%
Low	434,820	41,499	9.54%
Total	*900,060*	*125,174*	*13.91%*
Early Winter			
High	72,116	10,155	14.08%
Moderate	324,229	54,598	16.84%
Low	513,880	64,422	12.54%
Total	*910,224*	*129,174*	*14.19%*
Late Winter			
High	74,157.37	11,883.08	16.02%
Moderate	210,488.27	39,412.85	18.72%
Low	524,486.81	67,181.27	12.81%
Total	*809,132.45*	*118,477.20*	*14.64%*

[1]Habitat suitability based on HSI scores: Low = 0-.29, Moderate = .30-.69, High = .70-1.00.

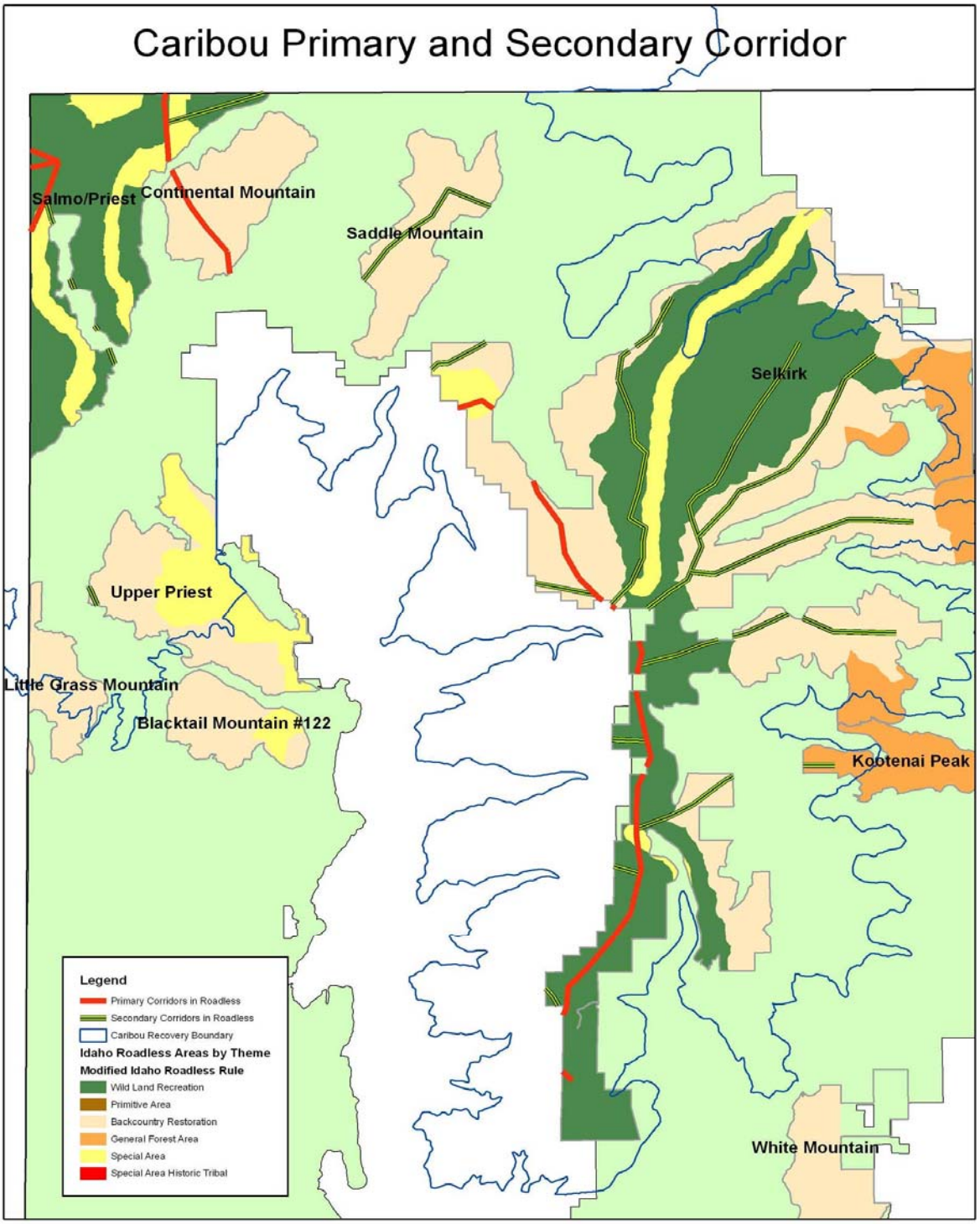

Figure 7. Primary and secondary caribou movement corridors in northern Idaho.

Table 13. Documented woodland caribou telemetry points in Idaho Roadless Areas by theme.

Roadless Name	#	# of woodland caribou telemetry points in IRA	Roadless area theme assigned to IRA within caribou recovery area
Blacktail Mountain #122	122	1	Backcountry Restoration
Blacktail Mountain #122	122	1	Backcountry Restoration CPZ
Blacktail Mountain #122	122	5	Special Area
Continental Mountain	004	19 (>1%)	Backcountry Restoration
Kootenai Peak	126	4	General Forest
Little Grass Mountain	121	3	Backcountry Restoration
Saddle Mountain	154	42 (2%)	Backcountry Restoration
White Mountain	127	1	Backcountry Restoration
Salmo/Priest	981	19	Special Area
Salmo/Priest	981	183	Wild Land Recreation
Selkirk	125	1,136 (45%)	Backcountry Restoration
Selkirk	125	1	General Forest
Selkirk	125	110 (4%)	Special Area
Selkirk	122	988 (39%)	Wild Land Recreation
Upper Priest	122	4	Backcountry Restoration
Upper Priest	122	1	Backcountry Restoration CPZ
Upper Priest	122	5	Special Area
Total Telemetry Points		**2523**	

2. Factors Affecting the Caribou in the Action Area

The conservation of the Selkirk Mountains woodland caribou population continues to be threatened by ongoing as well as new emerging threats. Current threats to the woodland caribou include habitat loss and degradation due to timber harvest and fire, predation, and human access (Service 1994, IDFG 2005).

Habitat Loss/Fragmentation

As previously discussed under the "Status of the Species" section, the primary long-term threat to mountain caribou is the ongoing loss and fragmentation of contiguous old-growth forests due to timber harvesting, wildfires, and other human activities (MCTAC 2002, Cichowski et al. 2004, Wittmer 2004, Apps and McLellan 2006). A substantial amount of caribou habitat within the recovery area has been harvested, roaded, and/or burned by wildfires in the past, leaving habitat within the recovery area fragmented. Habitat loss has the following effects on caribou: (1) it reduces the amount of useable space available for caribou, which limits the ecological carrying capacity of remaining habitat for the caribou; (2) it reduces the arboreal lichen supply, affecting the caribou's key winter food source; (3) it may affect caribou movement patterns; (4)

it may affect the caribou's use of remaining fragmented habitat because suitable habitat parcels will be smaller and discontinuous; and (5) it can make caribou more susceptible to predation as available habitat is compressed and fragmented (Cichowski et al. 2004). Given the mountain caribou's strong ties to extensive stands of mature and old-growth forests, these fragmented habitat conditions adversely affect the Selkirk caribou population.

Much (289,000 acres out of approximately 458,000) of the caribou habitat within the U.S. is managed by the USFS. While caribou habitat has been heavily modified and fragmented in the past, most current timber management on federal lands within the caribou recovery area occurs in unsuitable or low quality caribou habitat with the objective of bringing the habitat into a condition of suitable caribou habitat more quickly (Layser, USFS, pers. comm. 2007).

Past wildfires have affected large amounts of Selkirk Mountains woodland caribou habitat within the action area. For example, the 1967 Sundance, Kaniksu Mountain, and Trapper Peak fires in the Selkirk Mountains destroyed almost 80,000 acres of caribou habitat (Layser 1974). As stated earlier, historically, caribou were able to tolerate this natural adverse impact by moving into adjacent unfragmented stands of old-growth forest; this option is less likely today due to the cumulative effects of logging, road building, and wildfires that have eliminated a significant amount of historic caribou habitat.

Predation

Predation has become an increasing threat to caribou populations and is considered to be a proximal cause of most mountain caribou population declines (Paquet 1997, Simpson et al. 1997, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004). For example, in the Selkirk population, 63 caribou mortalities were reported between 1987 and 2001. Of these 63 mortalities, 14 were documented as predator kills, and many of an additional 28 mortalities of unknown cause were attributed to possible predation (Wakkinen et al. 1992, Almack 2002). As suggested above, the ultimate cause of increased predation pressure is thought to be related to the high degree of habitat modification and fragmentation within the ecosystem, which has led to an altered predator/prey dynamic (COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004).

Human Access

As previously discussed, a growing threat to mountain caribou is increasing human access into their habitat and the associated disturbance (Paquet 1997, Simpson and Terry 2000, Stevenson et al. 2001, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Seip et al. 2007). Increasing road densities in caribou habitat could facilitate poaching opportunities, movement of predators within caribou range, and road kills. For example, a number of caribou in the Selkirk population have been killed in collisions with motor vehicles along Trans-Canada Highway 3 at Kootenay Pass about 5 miles north of the international boundary.

Woodland caribou can be displaced from important habitats like calving grounds (Joly et al 2006) due to their avoidance of roads (Dyer et al. 2002). Weir et al. (2007) documented avoidance by caribou in response to construction and operation of a mine during five seasons, illustrating the exceptional sensitivity of caribou to anthropogenic activities. Apps and McLellan

(2006) found that 'remoteness from human presence, low road densities, and limited motorized access' were important factors in explaining habitat occupancy in current caribou subpopulations.

There is growing evidence that increasing levels of winter recreation activities (e.g., snowmobiling, heli-skiing, snow-cat skiing, etc.) within caribou winter range represent a significant threat to mountain caribou. Winter is a particularly stressful time for caribou. Their mobility is restricted by deep snow, and, since they feed entirely on arboreal lichen during this period, nutritional intake is seriously limited. Additional stress at this time of year can significantly affect their normal behavior, including feeding, breeding, and sheltering, and could ultimately affect their survival capability.

Recent literature, as discussed above, provides evidence that winter recreation can increase the stress levels of caribou, displace them from suitable winter habitat, or preclude them from using such habitat (Simpson and Terry 2000, COSEWIC 2002, MCTAC 2002, Cichowski et al. 2004, Powell 2004, Seip et al. 2007). The potential to displace caribou from suitable habitat can result in additional energy expenditure by caribou when they vacate an area to avoid disturbance (Tyler 1991 as cited in USFS 2004).

The numbers and distribution of recreational snowmobilers within the caribou recovery area has increased over the last 10-15 years, due in part to improved snowmobile technology and the increasing popularity of the sport (Wakkinen and Johnson 2008). In the early 1990s, there were several instances in which snowmobile activity in the IPNF portion of the Selkirk recovery area resulted in harassment and displacement of caribou from occupied habitat. As a result of these instances, an area snowmobile closure was implemented on the IPNF along the Selkirk Crest in 1994. However, snowmobile use within the recovery area continued to grow, and in August 2005, a number of environmental groups filed suit against the Forest Service and the Service. As a result of this litigation, there is currently a Court injunction on snowmobile activities within the IPNF portion of the caribou recovery area. While this injunction does not entirely prohibit snowmobile use, it limits the locations and timing of such activities in an effort to minimize impacts to caribou. This injunction remains in place until the IPNF develops a winter travel plan to address the issue and completes consultation with the Service on this plan.

Other Factors

As noted previously, climate change is an ongoing factor which represents potentially serious threats to caribou within the action area as well as rangewide. Additionally, the contracting range of the Selkirk caribou population, the small number of animals in the population, and the limited genetic exchange between the Selkirk population and adjacent populations threaten population viability (Hatter 2000).

C. Effects of the Proposed Action

The previous section presented factors and activities that can affect the species in the action area, some of which (particularly road construction, road reconstruction, timber cutting and discretionary mining) may also result from future actions undertaken as allowed by the MIRR.

To minimize duplication, these potential effects are not reiterated in their entirety below. The analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of implementing a rule and the indirect and cumulative effects that could occur from actions that might occur under the rule. It is an analysis of what is allowed under the rule versus an analysis of on the ground activities, and therefore has no direct effects (USFS 2008a).

The MIRR establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across IRAs, based on management area 'themes'. These are not the same management areas identified in the 1987 LRMP. This section begins with a general discussion of the potential effects that these management activities can have on woodland caribou, describes existing IPNF LRMP conservation direction for caribou intended to minimize the effects of these activities on the caribou, and then explores the effects of the management area themes proposed by the MIRR on the species. Use of prescribed fire is not prohibited or permitted by the MIRR. However, this activity is typically paired with timber cutting activities intended to reduce fuels, which is addressed by the MIRR. Consequently, prescribed fire is considered interrelated and interdependent to timber cutting, and thus we also consider its impacts on woodland caribou. We do not discuss the impacts of phosphate mining on woodland caribou as none may occur within the range of the species as a result of the MIRR – all phosphate mining within IRAs will be restricted to known phosphate lease areas on the Caribou portion of the Caribou-Targhee National Forest in southeastern Idaho under the MIRR (Abing 2008).

1. General Discussion of Effects

Timber Harvest

As discussed in previous sections, timber harvest can have the following effects on caribou: (1) it reduces the amount of useable space available for caribou, limiting the ecological carrying capacity of the habitat for the caribou; (2) it reduces the arboreal lichen supply, affecting the caribou's key winter food source; (3) it can affect caribou movement patterns; (4) it can affect the caribou's use of remaining fragmented habitat because suitable habitat parcels will be smaller and discontinuous; and (5) it can make caribou more susceptible to predation as available habitat is compressed and fragmented (Cichowski et al. 2004).

Timber harvest can affect caribou habitat at both the stand and landscape scales. At the stand level, timber harvest can destroy or damage arboreal lichens. Since lichen regeneration is slow, this effect can have long-term implications on caribou late winter habitat. Given the currently low caribou population level, forage is not currently considered to be a limiting factor for caribou. However, caribou require a supply of lichens across the landscape to allow for rotation of winter ranges. Therefore, effects to the lichen supply can have cumulative, long-term impacts by forcing caribou to focus their foraging efforts in restricted portions of their range, thereby depleting lichen reserves (Cichowski et al. 2004).

At a landscape scale, timber harvesting may fragment caribou habitat, resulting in a patchwork of early seral and mature forest which can have several different adverse effects on caribou.

Fragmented habitat can lead to caribou avoidance or abandonment of the area. Such forest structure may also enhance the habitat for other ungulates such as moose, white-tailed deer, and elk, which can lead to increased predator numbers and, in turn, increased predation on caribou. The distribution of both summer and winter habitat on the landscape and the ability of caribou to remain spatially separated from potential predators are essential to caribou survival. Fragmented habitat linked by a network of roads may contain sufficient forage to support a caribou population, but does not provide an environment where caribou can effectively avoid predators (Cichowski et al. 2004). Given the caribou's requirement for extensive stands of mature and old-growth forest (150 years +), timber harvest can result in long-term adverse effects to caribou because of the length of time required for the habitat to regain old-growth characteristics.

Road Construction

In general, woodland caribou appear relatively sensitive to the effects of roads, particularly the activities they facilitate. Roads contribute to changes in habitat quality and availability by fragmenting habitats in previously intact landscapes. Even temporary roads create a long-term impact, given the caribou's need for large expanses of mature and old-growth forest. Once a temporary road has been constructed, it will take years for the fragmented habitat in the area to regenerate to a suitable mature/old-growth forest condition. As road densities increase, edge habitats increase and interior patches decrease, reducing habitat available to species requiring interior habitats. As fragmentation increases, patches of remaining habitat may become sufficiently small in size and/or isolated to the point that they are no longer be used by caribou, thus resulting in effective habitat loss. This has been demonstrated in numerous species, including woodland caribou (Joly et al. 2006).

Reduced use of habitat in response to roads has been exhibited in numerous ungulate species, including the woodland caribou. Woodland caribou can be displaced from important habitats like calving grounds (Joly et al. 2006) due to their avoidance of roads (Dyer et al. 2002). Caribou in Alberta avoided habitats near linear features and human activity such as roads, seismic lines, and drilling sites (MCTAC 2002, Cichowski et al. 2004). Weir et al. (2007) documented avoidance by caribou in response to construction and operation of a mine during five seasons, illustrating the exceptional sensitivity of caribou to anthropogenic activities. Apps and McLellan (2006) found that 'remoteness from human presence, low road densities, and limited motorized access' were important factors in explaining habitat occupancy in current caribou subpopulations.

The effect of winter recreation, particularly snowmobiling, on woodland caribou is a concern. Although these activities are typically addressed through travel management and planning on National Forests and are not the subject of prohibitions or permissions outlined in the MIRR, their impacts on the caribou are discussed in relation to the construction or reconstruction of new roads which, as outlined in the MIRR, may facilitate such activities.

As mentioned previously, there is growing evidence that increasing levels of snowmobiling within caribou winter range represent a significant threat to mountain caribou. Much of that discussion is incorporated here by reference (Simpson and Terry 2000, COSEWIC 2002, MCTAC 2002, Kinley 2003, Cichowski et al. 2004, Powell 2004, Seip et al. 2007). Winter

recreation can increase the stress levels of caribou, displace them from suitable winter habitat, or preclude them from using such habitat. Snowmobile activity in caribou winter range increases the amount of energy expended as the animals react to avoid close contact with machines and riders. The amount of energy expended depends on many factors including the following: the degree of previous harassment; animal activity prior to disturbance; snow depth and compaction; visibility; wind speed and direction; and topographical features. Hard running in deep snow for extended periods of time not only leaves caribou in an exhausted state, susceptible to predation, but also contributes to a loss in body fat crucial for winter survival (USFS 2004).

To the extent that new and/or reconstructed roads under the MIRR facilitate the encroachment of snowmobiles into caribou habitat, the indirect adverse effects of these activities (as discussed above) can be significant for caribou. There is some evidence that caribou can tolerate a low level of snowmobile use within their habitat (Simpson and Terry 2000), but increasing levels of use, including dispersed use throughout the Selkirk recovery area are a concern.

Discretionary Mining

Discretionary mining activities would be allowed under the MIRR. However, new road construction and reconstruction associated with development of geothermal, oil, or gas reserves is prohibited in roadless areas under the MIRR regardless of theme. Surface use and occupancy in the BCR and GFRG themes would be permitted if allowed in the LRMP. There are no known oil and gas deposits on the IPNF, and geothermal energy potential is very low. As such, little commercial interest in leasing for such resources is anticipated as development would essentially be precluded in the absence of new roads and there is low potential for the resource. Activities related to phosphate leasing in IRAs would be restricted to areas in and adjacent to specific Known Phosphate Leasing Areas (KPLAs) on the Caribou portion of the Caribou-Targhee National Forest. Consequently, the likelihood that discretionary mining activities will take place in IRAs related to discretionary mining on the IPNF is exceptionally low.

As stated previously, the MIRR provides direction for activities associated with discretionary mining in IRAs. Mineral resources are typically classified into three categories: locatable minerals, leaseable minerals, and salable minerals (Abing 2008). Development of locatable minerals (e.g., gold, silver, uranium, etc.) is subject to the General Mining Law of 1872. Although future development of locatable minerals on NFS lands, including IRAs, would require environmental analysis and approval of a plan of operations, the Forest Service's discretion to restrict access to mining claims is limited. Consequently, activities related to development of locatable minerals are not included as part of the proposed action, and their effects on Federally-listed terrestrial species are not addressed in this document.

Development of salable or common variety minerals (e.g., sand, stone, gravel, soil, clay, etc.) in IRAs is expected to be very limited given that the volume of these resources extracted from roadless areas historically has been very small even under more permissive authorities (Abing 2008). Further, such development would only be allowed in GFRG and in BCR (see Chapter II of the Assessment) where it is in conjunction with another allowable activity. Within these two themes, we can not predict in place or time where these minerals might be used. Therefore, we acknowledge that there is the very small potential for impacts on the terrestrial environment, and

thus listed terrestrial species, but do not describe species-specific effects. The remainder of this section addresses the potential effects of leasable minerals.

Although it varies by commodity, surface use associated with the exploration and development of leasable minerals requires access and haul roads, open pits, facilities, power lines, pipelines, and communication sites, all of which can impact habitats for terrestrial species. For example, development of geothermal energy includes the following: exploratory drilling (some ground disturbance, road to access if not already there); if exploratory is favorable, a well pad is constructed (about 3 acres), a power plant is needed within one to two miles, as well as pipelines which are above ground (Abing 2008). Development of oil, coal and gas plants require similar intra-structure components. Physical disturbance associated with mining or oil and gas exploration, such as roads, drilling sites, and seismic lines can result in caribou avoidance of the affected habitat (Cichowski 2004).

Generally, the impacts of discretionary mining on terrestrial wildlife species, including woodland caribou, result from the habitat loss and degradation from the footprint of the mine, required infrastructure (e.g., road construction and development), and human disturbance where individuals are displaced from key habitats, as discussed in previous sections of this document.

No impacts of phosphate mining are anticipated on the woodland caribou as a result of the MIRR because all phosphate mining within IRAs will be restricted to known phosphate lease areas on the Caribou-Targhee National Forest in southeastern Idaho (Abing 2008).

Interrelated and Interdependent Actions - Prescribed Fire

Use of prescribed fire in forested ecosystems has the potential to affect woodland caribou through a number of mechanisms. At the site-specific scale, fire may alter the vegetation composition and abundance within caribou habitat, including arboreal lichens, the primary food source for caribou through the winter months. Impacts of wildfire on caribou habitat have been identified as a concern in the Caribou Recovery Plan (Service 1994). To avoid such impacts, prescribed fire, in combination with mechanical treatments, might assist in protecting and/or restoring caribou habitat in the long-term with the understanding that short-term impacts to forage availability may occur.

2. Applicable IPNF LRMP Components for Caribou

As referenced earlier, goals, objectives, standards, and guidelines have been incorporated into the IPNF LRMP (see Appendix B, Table B-4 of the Assessment for a comprehensive list of applicable plan components) to minimize adverse effects to threatened, endangered, proposed, and sensitive species. The management themes proposed by the MIRR shall take precedence over any inconsistent land management plan component. Land management plan components that are not inconsistent with this rule will continue to provide guidance for projects and activities within IRAs. The USFS reviewed all existing management direction for threatened and endangered species outlined in LRMPs, including that relevant for woodland caribou, and has determined it is not inconsistent with the MIRR; therefore such direction will be applied at the project level under MIRR (USFS 2008a, pg. 17).

For woodland caribou, the primary effects anticipated under the MIRR are increased human disturbance in caribou habitat facilitated by road construction or reconstruction and changes to the quality, quantity, and/or distribution of caribou habitat resulting from vegetation management and/or roads; a general discussion of how human disturbance and timber harvest affect the caribou is presented above. Below we describe specific Forestwide and Management Area (MA) standards from the IPNF LRMP that have, and will continue to minimize these types of effects, including those that could occur as allowed by the MIRR.

IPNF LRMP Standards addressing Human Disturbance:

- Management of habitat and security needs for threatened and endangered (T & E) species will be given priority in identified habitat (Forestwide);
- Roads should be planned to avoid old-growth management stands to maintain unit size criteria (Forestwide);
- Road use will be based on needs identified in project level planning. Additional restrictions and seasonal vehicle closures as needed to assure grizzly bear habitat (MA-2 [lands designated for timber production within grizzly bear habitat], 3 [lands designated for timber production within grizzly bear habitat and big game winter range], see also MA-4 [lands designated for timber production within big game winter range);
- Manage for roaded natural, and, where possible toward semi-primitive motorized and non-motorized recreation. Restrict motorized use when needed to protect caribou (MA-7 [lands designated for caribou management]);
- Seasonal closures of some or all uses may be needed to protect caribou or grizzly bears (MA-7);
- Collector and local roads generally closed to vehicles with physical barriers preferred. Arterial roads may be closed as needed to meet threshold level for each caribou management unit. Additional seasonal closures as needed to protect caribou (MA-7);
- Within grizzly bear and caribou habitat, recreational use may be restricted to provided needed wildlife security during periods of use (MA-10 [lands designated as high value for semi-primitive recreation] and 11 [lands designated as existing and proposed wilderness areas]).

In addition to these standards, the IPNF is also completing a strategy for managing winter recreation in caribou habitat (USFS 2006a) which is intended to reduce snowmobiling impacts on caribou. The IPNFs' *2004 Situation Summary and Management Strategy for Mountain Caribou and Winter Recreation on the IPNF* lays the groundwork for development of this strategy (USFS 2004). While such a strategy could help minimize some of the effects road construction and reconstruction can have on caribou (e.g., facilitation of human access) in the future, the Service is not relying on this strategy as part of its section 7(a)(2) analysis for this consultation. Until an acceptable strategy is developed and undergoes section 7 consultation, a Court injunction on snowmobile activities within the caribou recovery area remains in place.

IPNF LRMP Standards Addressing Impacts on Caribou Habitat

- Consider cumulative effects when evaluating activities within identified [caribou] habitat (Forestwide);
- Maintain at least 10 percent of the forested portion of the IPNF as old growth (Forestwide);
- Roads should be planned to avoid old-growth management stands to maintain unit size criteria (Forestwide);
- Maintain approximately 25,000 acres to support viable populations of old-growth dependent species (MA-1 [lands designated for timber production]);
- Maintain approximately 6,000 acres to support viable populations of old-growth dependent species (MA-2);
- Retain and manage established caribou travel corridors that occur in mature timber (MA-7);
- Provide seasonal habitat requirements in accordance with the Caribou Habitat Management Guidelines (Appendix N in 1987 LRMP) and approved recovery plans (MA-7);
- Timber management regimes will be based on site-specific analysis of caribou habitat needs. Existing all-aged old-growth cedar/hemlock stands are to be retained (MA-7).

As mentioned above, the IPNF LRMP includes caribou habitat management guidelines (USFS 1987, Appendix N), which provide descriptions of seasonal habitat, desired conditions for these habitats, and specific management prescriptions designed to improve habitat conditions with the Caribou Recovery Area. These guidelines, as written in the IPNF LRMP, are outdated. New scientific data on how caribou use their habitat resulted in a revised habitat analysis procedure as noted in the 2005-2006 IPNF monitoring report (USFS 2006b). As of 2008, the IPNF considers Apps and Kinley (2007) to be the best available science on caribou habitat needs. Individual project level planning and analysis will continue to consider the best available science, providing a mechanism through which updated and emerging information can be incorporated (USFS 2008a and b).

Under the IPNF LRMP, the Forest has committed to considering cumulative effects in its evaluation of activities proposed in caribou habitat (see Forestwide standard above). The LRMP references Appendix HH in association with this standard, which consists of a Cumulative Effects Model (CEM). This standard does not necessitate use of this model, but rather includes it in the Appendix as an analytic tool for use in conducting such evaluations. This model currently is considered outdated; certain components, such as the disturbance submodel, are incomplete and, to the Service's knowledge, the model has not been validated as recommended by the Caribou Recovery Plan. Notwithstanding these potential limitations, the IPNF uses the qualitative factors and concepts contained in the CEM, as well as the best available science on caribou, to conduct analyses of cumulative effects on caribou at the project level (USFS 2008a and b).

Although not explicitly stated as a standard in the LRMP, currently the IPNF does not conduct timber harvest that removes allocated old growth stands (USFS 2006b). This practice was

discontinued by 2000. The IPNF LRMP calls for maintaining 10 percent of the forested portion of the IPNF (or 231,000 acres) as old growth (Forestwide standard). To date, the IPNF has identified and allocated approximately 283,727 acres of forest stands to be retained as old growth (12.3% of IPNF forested acres), which includes 241,390 acres of allocated field identified stands that fully meet old growth minimum criteria (as described in USFS 2006b), in addition to allocated potential old growth. There are currently over 60,000 acres of allocated old growth habitat within the caribou recovery area (USFS 2008b). To ensure that all management actions are designed based upon current old growth conditions, whenever any management activity is being considered that could possibly impact old growth, the IPNF examines old growth allocations within the project area. The IPNF's intent is to maintain and manage old growth stands that are suitable caribou habitat within the caribou recovery area (USFS 2008a and b). This practice avoids or minimizes effects to old growth that could result from Forest management which in turn should reduce impacts to caribou on the IPNF.

As noted previously, at the programmatic level, the Service determined in a 2001 Biological Opinion that continued implementation of the LRMP is not likely to jeopardize the continued existence of the woodland caribou, while noting that certain actions implemented under the LRMP could have adverse effects on caribou (Service 2001). These findings were based on a broader set of permissions than the MIRR because part of the Caribou Recovery Area is outside of IRAs.

It is important to note that since 2001, the IPNF, in considering caribou relevant LRMP components, has not proposed any vegetation management projects that were 'likely to adversely affect' the caribou (USFS 2008a). Based on: (1) this history of applying caribou relevant LRMP components, which will still apply to project development with implementation of the proposed action, and (2) the IPNF's stated intent of continuing to use the best available science to maintain and manage old growth stands that are suitable caribou habitat within the caribou recovery area (USFS 2008a and 2008b), it is reasonable to expect that projects proposed under the MIRR are likely to continue to shape vegetation management activities in a manner that considers the needs of the caribou.

3. Implications of the MIRR Themes on Woodland Caribou

Over 131,000 acres (14%) of the South Selkirk Ecosystem recovery area and seasonal caribou habitats overlap IRAs (Tables 14 and 15). As such, it is possible that caribou and/or their habitat could be exposed to management activities, such as road construction and/or reconstruction and timber cutting, within IRAs. Conditions under which road construction/reconstruction and timber cutting could occur within IRAs vary with themes proposed by the MIRR. Generally, these themes rank in restrictiveness as follows (from most restrictive to least): WLR, PRIM, SAHTS, BCR, BC-CPZ), and lastly GFRG. Approximately 1,000 acres of timber harvest (i.e., removal of a commercial product) and 3.3 miles of road construction are projected in IRAs per year across the entire state under the MIRR. Most of these activities are likely to occur within the GFRG theme. Only 1.1 percent (4,545 acres) of all GFRG (405,900 acres) overlaps the caribou recovery area and the seasonal habitats it encompasses; consequently, the likelihood that timber harvest and road construction/reconstruction would occur within caribou habitat under this theme is relatively low. However, because we cannot predict the exact locations of future

projects undertaken as allowed under the MIRR, we cannot discount the potential for adverse effects to caribou. The implications of these themes and projections relative to their effects on the woodland caribou are discussed below. Again, any projects proposed pursuant to the MIRR would be subject to applicable LRMP components, including those relevant to caribou, that should serve to avoid and/or minimize adverse effects to the caribou as described above under *Applicable IPNF LRMP Components for Caribou.*

Table 14. Overlap of the South Selkirk Ecosystem caribou recovery area with the MIRR themes.

	Recovery area (acres)	**% of total**
Wild Land Recreation	54,507	5.68%
Primitive	0	0%
Backcountry Restoration	58,507	6.10%
Backcountry Restoration - CPZ	0	0%
General Forest, Rangeland, Grassland	4,545	0.47%
Special Areas of Historical and Tribal Significance	0	0%
Other Forest Plan Special Areas[1]	14,243	1.48%
Total in IRA	131,802	13.73%
Total South Selkirk Ecosystem Recovery Area	959,923	

[1]These are roadless areas that are already part of other land classification systems; they are not addressed by in the Modified Idaho Roadless Rule. They are only included here for sake of completeness.

Wild Land Recreation

As stated in the Assessment (USFS 2008a), the IRAs within the WLR theme overlap 54,507 acres (5.68%) of the South Selkirk Ecosystem caribou recovery area (Table 14) and caribou seasonal habitats (Table 15): 14,315 acres in the Salmo/Priest IRA and 40,192 acres in the Selkirk IRA. Further, 15.80 miles and 24.69 miles of primary and secondary caribou movement corridors, respectively, intersect this theme (Table 16).

Lands placed in WLR were identified during the forest planning process as recommended for wilderness designation. Consequently, road construction and reconstruction and timber cutting, sale, or removal is generally prohibited with very few exceptions. Activities related to leasable mineral extraction are also prohibited under this theme. Consequently, adverse effects to woodland caribou or its habitat resulting from roads, timber cutting, and discretionary mining as addressed under the MIRR are not anticipated in IRAs managed as WLR. Further, woodland caribou will benefit from prohibitions, particularly on road construction and reconstruction, as such restrictions should help in maintaining habitats that are relatively unfragmented and free from human disturbance. The IPNF has stated that 24,464 acres within the caribou recovery area

have been placed under the more restrictive WLR theme under the MIRR compared to the 1987 LRMP, providing further protection for caribou habitat (Dekome, USFS, September 8, 2008).

Table 15. Overlap of the MIRR 'themes' with caribou seasonal habitats within the South Selkirk Ecosystem caribou recovery area.

	Total in recovery area	**WLR**	**BCR**	**GFRG**	**SAHTS**
Calving					
High	78,791	6,734	5,416	112	467
Moderate	324,559	21,545	31,477	1,512	1,668
Low	505,788	23,723	20,743	2,855	11,938
Total	**909,138**	**52,002**	**57,636**	**4,479**	**14,073**
Summer					
High	59,656	5,454	5610	5	241
Moderate	314,878	23,966	30,361	1,668	2,594
Low	534,709	23,175	21,347	2,627	11,556
Total	**909,243**	**52,595**	**57,318**	**4,300**	**14,391**
Spring					
High	81,108	7,368	9,261	311	280
Moderate	384,132	26,284	31,922	2,319	5,930
Low	434,820	18,308	13,768	1,696	7,726
Total	**900,060**	**51,960**	**54,951**	**4,326**	**13,936**
Early Winter					
High	72,116	3,993	5,919	0	244
Moderate	324,229	18,518	30,791	938	4,351
Low	513,880	30,038	20,911	3,607	9,865
Total	**910,224**	**52,549**	**57,621**	**4,545**	**14,460**
Late Winter					
High	74,157	4,526	6,960	2	395
Moderate	210,488	16,218	20,888	486	1,820
Low	524,487	25,906	28,385	3,084	9,806
Total	**809,132**	**46,650**	**56,233**	**3,572**	**12,021**

Table 16. Overlap of primary and secondary caribou corridors with the MIRR themes.

	Primary corridor (miles)	**Secondary corridor (miles)**
Wild Land Recreation	15.80	24.69
Primitive	0	0
Backcountry Restoration	8.90	33.90
Backcountry Restoration - CPZ	0	0
General Forest, Rangeland, Grassland	0	0.91
Special Areas of Historical and Tribal Significance	0	0
Other Forest Plan Special Areas[1]	3.12	1.57
Total in IRA	27.82	61.93

[1]These are roadless areas that are already part of other land classification systems; they are not addressed by in the MIRR. They are only included here for sake of completeness.

Primitive and SAHTS

As stated in the Assessment (USFS 2008a), there is no overlap of these IRA management themes with the Selkirk caribou recovery area, caribou habitat, or movement corridors.

Backcountry Restoration

The following five paragraphs, excerpted from the Assessment (USFS 2008a), describe activities allowed under the BCR theme:

> "58,507 acres (6.10%) of the South Selkirk Ecosystem caribou recovery area [and the seasonal habitats they contain (Table 16)] overlap BCR (Table V-14) in the following IRAs: Continental Mountain (7,525 acres), Little Grass (2,319 acres), Saddle Mountain (7,766 acres), Selkirk (36,578 acres), and the Upper Priest (4,044 acres). Approximately 8.9 miles and 33.90 miles of primary and secondary caribou movement corridors, respectively, intersect this theme (Table V-15). 1,206 telemetry locations (approximately 48%) for caribou were detected within BCR. No CPZs overlap the recovery area, but two telemetry points were detected within BCR/CPZ.
>
> Within BCR, construction/reconstruction of temporary roads would be permitted (see Chapter II for more details) under certain circumstances. Temporary roads could be constructed within the CPZ to facilitate hazardous fuel reduction projects. However as stated above, there is no overlap of habitat in the Caribou Recovery area and BCR-CPZ. Temporary roads could also be constructed outside the CPZ where needed to reduce significant adverse effects of wildland fire on at-risk communities or municipal water supply systems. If these purposes applied, activities would be further subject to certain conditions for implementation (See Chapter II for more details) which would likely reduce the likelihood that temporary roads would be constructed.

Similarly, timber cutting activities from existing roads or using aerial systems are permitted in BCR to improve TEPS habitat, restore or maintain characteristics of ecosystem composition and structure, and to reduce the risk of uncharacteristic wildland fire effects. Under the MIRR, 1,000 acres of timber harvest (i.e., removal of a commercial product) and 3.3 miles of road are projected in IRAs per year over the next 15 years based on historic trends for developing roadless areas over the past 20 years. Most of these activities are expected to occur within the 405,900 acres of GFRG. However, there is the potential for timber harvest and cutting and road construction/reconstruction (restricted to temporary roads) within BCR, albeit the circumstances under which it would occur are few. Limited construction of temporary roads in caribou habitat could subject caribou to increased levels of human activities, adversely affecting caribou where they are displaced from important habitats. Such temporary roads may also remove vegetation and fragment forested landscapes in the short-term. Although temporary roads could be decommissioned, the effect of constructing a road through caribou habitat may have long lasting effects.

Temporary road construction and timber cutting outside BCR-CPZ must maintain or improve one or more of the roadless area characteristics over the long-term. One roadless area characteristic is to provide habitat for threatened and endangered species. Based on the applicable land management direction, projects in caribou habitat that overlap BCR theme would be designed to maintain or improve caribou habitat.

The South Selkirk Ecosystem contains some municipal water supply systems (Figure 3). Timber cutting activities intended to reduce fuels around these public resources could take place to reduce significant risk from wildland fire effects. However, timber cutting in BCR outside of CPZ must maximize the retention of large trees, applicable to the forest type to the extent the trees promote fire-resilient stands. In addition, management direction specific to old-growth forests would apply (i.e. forest-wide direction and MA 7 (Caribou habitat) direction (Appendix B, Table B-4).”

Temporary roads constructed in BCR may only be used for the specified purpose (i.e. timber cutting, sale, or removal) and not for general public use. In addition, all temporary roads are required to be decommissioned following project completion. However, decommissioning, as defined in the Assessment, does not necessarily equate to recontouring the road back to the original slope and revegetating the area. A temporary road which is simply barricaded and stabilized (i.e. culverts pulled) will remain on the landscape far longer than one that has been fully obliterated, and the resulting potential long-term effects on caribou may be quite different.

The Assessment states that to ensure that all management actions are designed based upon current old-growth conditions, whenever any management activity is being considered that could possibly impact old-growth, the IPNF examines old-growth allocations within the project area. The IPNF has stated that they do not implement timber harvest that removes allocated old growth. Furthermore, they have stated their intent to follow LRMP standards and guidelines and use the best available science to maintain and manage old growth stands that are suitable caribou habitat within the caribou recovery area (USFS 2008a and b). These efforts assist in avoiding impacts to old-growth caribou habitat that could result from Forest management, which should assist in minimizing adverse impacts to the caribou.

Road construction or reconstruction related to discretionary mining is not permitted within the BCR theme. However, surface occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal) would be allowed where it is consistent with applicable LRMP components. The likelihood of new leases for oil, gas, coal or geothermal development in IRAs, particularly outside of the Caribou-Targhee National Forest, is exceptionally low (Abing 2008). This likelihood is further reduced under this theme without the ability to build new roads for such mining activities. However, as this theme does not prohibit surface occupancy for new mines that use existing road systems, there is a small potential for mining-related impacts on woodland caribou via habitat loss, degradation, and disturbance where future activities overlap the range of the caribou.

The Assessment outlines a number of roadless area characteristics and indicates that timber harvest and road construction/reconstruction proposed within several of the MIRR management area themes must maintain at least one of these characteristics. One of these roadless area characteristics is: "Habitat for threatened, endangered, proposed, candidate, and sensitive species and for those species dependent on large, undisturbed areas of land." According to the Assessment, based on the applicable land management direction, projects in caribou habitat that overlap BCR theme would be designed to maintain or improve caribou habitat (USFS 2008a).

General Forest, Rangeland, or Grassland

According to the Assessment (USFS 2008a), there are 4,545 acres (0.47%) of the Selkirk caribou recovery area that overlap the GFRG management theme (Table 14) in the following IRAs: Kootenai Peak (943 acres) and Selkirk (3,602 acres). Approximately 0.91 miles of secondary caribou movement corridors intersect this theme (Table 16). Only 5 of 2,523 telemetry points gathered on caribou within IRAs – or 0.20 percent – were within GFRG, suggesting relatively low use of areas proposed as GFRG in comparison to use documented in BCR and WLR (see Table 13).

Both permanent and temporary roads can be constructed, reconstructed and/or maintained in accordance with the GFRG theme for purposes of timber-cutting, under other exceptions and/or in association with certain phosphate deposits in the IRA on the Caribou-Targhee National Forest, but such roads are not permitted to access other types of mineral leasing such as oil and gas or geothermal. Surface occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal) would be allowed where it is consistent with applicable LRMP components. As indicated above, the likelihood of new leases for oil, gas, coal or geothermal development in IRAs, particularly outside of the Caribou-Targhee National Forest, is exceptionally low (Abing 2008) based on a low potential for occurrence (i.e., oil and gas), lack of industry interest, and difficulties associated with transportation. This likelihood is further reduced by the limitations for road construction/reconstruction associated with mineral activities under the proposed GFRG theme. However, as GFRG does not prohibit surface occupancy for new mines that use existing road systems, there is a small potential for mining related impacts on woodland caribou via habitat loss, degradation, and human access where future activities overlap the range of this species.

All activities that take place in accordance with the GFRG theme would be subject to applicable LRMP components as well as to specific conditions promulgated by the MIRR [See Chapter II of the Assessment (USFS 2008a) for a description of these conditions].

Road construction/reconstruction (3.3 miles/year) and timber cutting (1000 acres/year) projected in IRAs over the next 15 years are most likely to occur within areas subject to the GFRG theme. Given the permissions allotted in GFRG for road construction/reconstruction and timber cutting activities, there is the potential for woodland caribou to be adversely affected in areas subject to the GFRG theme via habitat loss/modification, and human disturbance facilitated by roads. The potential modification of 4,545 acres of caribou habitat, given the existing degree of habitat fragmentation within the Selkirk recovery area and the consideration of habitat fragmentation as a primary threat to caribou, could result in significant adverse effects to the caribou. Most of the potentially affected acres (3,602) fall within the Selkirk IRA, which contains the most caribou habitat of any of the IRAs, and most of the caribou telemetry points (Table 13).

However, as displayed in Table 13, only 0.2 percent (5 points) of all caribou telemetry points documented in roadless areas, and 0.47 percent of the entire caribou recovery area overlap the GFRG theme. Acreages under the GFRG theme within the caribou recovery area are located along the periphery of the recovery area, which may not be used as heavily by caribou (as corroborated by the relative lack of documented telemetry locations in GFRG). Additionally, the Selkirk IRA, which contains the highest number of caribou telemetry points, encompasses the site of the first caribou augmentation effort in the late 1980s, which could explain, to some extent, the higher number of telemetry points in this IRA.

Due to the exceptionally low likelihood of surface occupancy for new energy developments (e.g., oil, gas, geothermal), we do not anticipate effects to caribou from these activities. Additionally, it is unlikely that timber harvesting and road construction allowed in GFRG statewide would be focused within caribou habitat, therefore, the likelihood of potential impacts from these types of actions to caribou and/or their habitat is relatively low. However, given that exact locations of future projects are not known nor are there restrictions on the distribution of effects spatially or temporally, the possibility of adverse effects to caribou cannot be discounted. Although only 0.47 percent of the entire caribou recovery area could be impacted by activities associated with the GFRG theme, as noted above, most of the potentially affected acres (3,602) fall within the Selkirk IRA, which contains the most caribou habitat of any of the IRAs, and most of the caribou telemetry points. The impact of timber-cutting, road construction, and recreation (all recognized threats to the caribou as discussed above under the Status of the Species section) on the caribou is magnified due to the extremely small size of the Selkirk Mountains woodland caribou population. However, as noted above, these areas occur along the periphery of the caribou recovery area, therefore, caribou may not be as likely to occur in these areas, as corroborated by telemetry data on caribou which documented only 5 points (0.2%) of 2,523 points in GFRG. Moreover, the USFS has stated that MIRR-related projects proposed within caribou habitat would incorporate the LRMP standards and guidelines specific to caribou and would be designed to maintain or enhance caribou habitat requirements, as demonstrated by the recent history of projects proposed within caribou habitat on the IPNF (USFS 2008a).

4. Species Response to the Proposed Action

As discussed above in the Environmental Baseline section, although the number of caribou in the recovery area is increasing, the number of caribou occurring in the U.S. portion of the Selkirk Mountains recovery area is currently thought to be relatively low. Recent winter population censuses have located between one and three animals in the U.S. during the winter survey periods over the last few years. Nevertheless, given the mobility of caribou, the Service considers the entire recovery area to be occupied habitat. Additionally, a number of anecdotal caribou sighting reports in various seasons have occurred throughout the U.S. portion of the recovery area since 2000, further demonstrating the likelihood for caribou to occur throughout this area. Given the low number of caribou, the potential for activities allowed by the MIRR to adversely affect individual caribou in the near future is considered to be low. However, given the extremely small size of the Selkirk Mountains woodland caribou population, any adverse effects to individual caribou caused by Federal or non-Federal actions are likely to be significant.

As discussed above in the "Status of the Species" section, habitat loss and fragmentation is one of the factors influencing the current conditions of caribou. Habitat loss/fragmentation has the following effects on caribou: (1) it reduces the amount of space available for caribou, limiting the ecological carrying capacity; (2) it reduces the arboreal lichen supply, affecting the caribou's key winter food source; (3) it may affect caribou movement patterns; (4) it may affect the caribou's use of remaining fragmented habitat because suitable habitat parcels will be smaller and discontinuous; and (5) it can make caribou more susceptible to predation as available habitat is compressed and fragmented (Cichowski et al. 2004).

There are 4,545 acres of caribou habitat that are potentially subject to the most permissive GFRG management theme. An additional 58,507 acres of caribou habitat are also subject to some level of temporary roading and timber cutting or harvest under the more restrictive BCR outside of CPZ theme, albeit the circumstances under which these activities might occur are few. This amounts to approximately 6.6 percent of the Selkirk recovery area that could be affected by these activities. Although this is a relatively small percentage of the overall Selkirk recovery area, the existing level of habitat fragmentation throughout the recovery area makes even small increases in habitat fragmentation a significant adverse effect on the caribou.

As discussed above, projects allowed under the MIRR will be subject to LRMP standards that address caribou needs, as well as Act requirements. Although these standards are general, the IPNF has assured the Service of its intent to use the best available science, in consultation with the Service, to maintain and manage caribou habitat. It is important to note, as discussed above, that the IPNF's compliance with these standards has, since 2001, resulted in all vegetation management projects being designed in a manner that is not likely to adversely affect the caribou.

Based on considering the applicable LRMP components, the prohibitions and permissions associated with the MIRR, the IPNF's record since 2001 of designing vegetation management projects that are not likely to adversely affect the caribou, and their stated intent to continue to use the best available science, in consultation with the Service, to maintain and manage caribou habitat, the Service has determined that vegetation management projects proposed within

caribou habitat pursuant to the proposed action are likely to be designed in a manner that maintains or improves the habitat to meet caribou needs.

Summary of Effects of the Action

- The overlap between the South Selkirk caribou recovery area, totaling 959,923 acres, and the MIRR IRAs is 131,813 acres (14% of the total recovery area). Of these 131,813 acres, 68,750 acres (52%) will be assigned the Wild Land Recreation or Forest Plan Special Areas themes with no road construction or timber cutting permitted under the MIRR. This includes 24,464 acres more than under the existing LRMP.
- The BCR theme that allows for some timber cutting and temporary road construction is assigned to 58,507 acres (6%) of the Selkirk caribou recovery area. However, LRMP standards and guidelines that are protective of caribou and their habitat will be applied to site-specific projects in these areas.
- The GFRG theme that allows for timber harvest and permanent and temporary road construction is assigned to 4,545 acres (0.47%) of the Selkirk recovery area. These acres are located at the periphery of the caribou recovery area where they overlap municipal water supply systems. Again, LRMP standards and guidelines that are protective of caribou and their habitat will be applied to site-specific projects in these areas.
- Of the 4,545 acres that is assigned to the GFRG theme, 3602 acres are located in the Selkirk IRA. Approximately 89% of the woodland caribou telemetry points are located within this IRA. However, only 0.2 percent of the telemetry points occur within the GFRG theme. Additionally, the Selkirk IRA encompasses the site of the first caribou augmentation, which could help explain the higher number of telemetry points that have been documented over the last 20 years.
- Despite having 2,235 telemetry points for woodland caribou documented within the last 15-20 years in the Selkirk IRA alone, the number of woodland caribou thought to occur in the United States portion of the South Selkirk Mountain recovery area remains low.
- Site-specific project proposals developed in association with the MIRR must be consistent with IPNF LRMP standards and guidelines to protect woodland caribou.

As stated above, while the potential exists for activities allowed under the MIRR, including timber cutting and harvest, road construction or reconstruction, and discretionary mining within caribou habitat, the likelihood is low, given the size of the action area (i.e., all IRAs within the state of Idaho). Additionally, the implementation of LRMP standards and guidelines in the design of projects proposed under any of the MIRR themes provides further assurance that caribou habitat requirements will be maintained and that the likelihood of disturbance to caribou would be low. Furthermore, the recent history of projects proposed within the caribou recovery area demonstrates that the IPNF has not proposed any projects likely to adversely affect caribou. The most permissive MIRR theme (GFRG) represents a relatively small portion of the caribou recovery area and occurs along the periphery of the recovery area, where caribou may be less likely to occur. The USFS has stated that any temporary roads constructed in caribou habitat would be gated and restricted to the public and would be decommissioned upon completion of the project. The Service expects that any such road restrictions would be carefully enforced by the IPNF to preclude their use by snowmobilers or other members of the public that could increase the risk of disturbance to caribou.

D. Cumulative Effects

Cumulative effects include the effects of future State, tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the ESA.

We do not anticipate cumulative effects to the Selkirk Mountains woodland caribou resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the MIRR consists of IRAs (see definition in Section II of the Assessment), most of which are unlikely to contain significant inholdings given their current roadless character and thus effects on such intervening non-Federal lands are unlikely;
- Given the broad scope of this Federal Action, it is not possible to determine specific state, private or local government legislation, administrative rules, or policy initiatives that would be reasonably certain to occur in IRAs.

E. Conclusion

After reviewing the current status of the Selkirk Mountains woodland caribou population, the environmental baseline for the action area, the effects of the MIRR, and the cumulative effects, it is the Service's biological opinion that the MIRR, as proposed, is not likely to jeopardize the continued existence of the Selkirk mountain caribou population. No critical habitat has been designated for this species; therefore, none will be affected. We reached this conclusion based on the following rationale.

Based on the analysis of threats in the *Status of the Species* section of this document, the primary conservation needs of the Selkirk caribou population can be summarized as follows:

1. Expand the size and distribution of the existing population.

2. Protect and restore large blocks of old-growth conifer forests preferred by woodland caribou on public lands.

3. Manage caribou predators in occupied habitat on an as needed basis until sufficient amounts of old-growth conifer forest are restored.

4. Manage human access to caribou habitat to avoid and minimize adverse effects to caribou caused by disturbance and increased levels of predation, especially during the winter when caribou are especially vulnerable to these impacts.

5. Maximize the resiliency of the caribou population to the adverse effects of climate change by achieving (1)-(4) above.

Under the MIRR, there will be an additional 24,464 acres of caribou habitat managed under a WLR theme (54,507 acres total), compared to the 1987 LRMP. Under this theme, timber harvest, road construction/reconstruction, and leasable mineral extraction are generally prohibited, therefore, the MIRR should result in a beneficial effect to the caribou in WLR areas that is responsive to the above caribou conservation needs.

Considering the applicable LRMP components, the prohibitions and permissions associated with the MIRR, the IPNF's record since 2001 of designing vegetation management projects that are not likely to adversely affect the caribou, and their assurance that future projects will use the best available science to maintain and manage caribou habitat, the Service has determined that vegetation management projects proposed within caribou habitat allowed by the proposed action are likely to be designed in a manner that maintains or improves the habitat to meet caribou needs, and protects and maintains existing old growth habitat within the caribou's range on the IPNF.

The USFS has reviewed the management direction provided for each species described in the Assessment and have determined that it is not inconsistent with the MIRR. The species management direction provides design criteria to minimize or reduce adverse effects on a species from specific activities; therefore it would be applied during project specific development.

Under the proposed action, roads constructed in caribou habitat will be barricaded, restricted roads, closed to the public to prevent further disturbance of caribou and their habitat. Temporary roads are to be decommissioned following project completion, which will help to minimize the adverse effects of increased habitat fragmentation and human disturbance on the caribou. These aspects of the proposed action are also responsive to the above survival and recovery needs of the caribou.

F. Incidental Take Statement

Due to the general nature of the proposed action, the *Effects of the Action* section of this document does not analytically support a finding that incidental take of the Selkirk Mountains woodland caribou is likely to occur as a result of the proposed action. For that reason, any appropriate take exemption is deferred to the results of future section 7 analysis of individual or batched actions taken. The mere potential for take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions allowed under the MIRR and relevant provisions of LRMPs will serve as the basis for determining if take is likely to occur and an exemption from the section 9 take prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the woodland caribou in accordance with 50 CFR 402.14(i).

G. Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to

minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information.

The Service provides the following conservation recommendations for the caribou:

1. In coordination with the Service, develop a management plan for each Caribou Management Unit (CMU), as called for in the Caribou Recovery Plan, to provide for habitat protection and improvement. Such plans/standards are in place for grizzly bear management units (BMU) and lynx analysis units (LAU), clearly outlining the needs and requirements for habitat protection and management at the BMU or LAU scale. Similar direction is needed for caribou habitat management at the CMU scale. The CMU direction would describe the existing conditions of each CMU, clearly define what (if anything) is needed to improve habitat within these CMUs and connectivity between CMUs, and what activities are compatible with the needs of caribou within each. Analysis at this smaller scale helps ensure adequate distribution of suitable habitat across the recovery area and facilitates cumulative effects analyses.

2. Considering the issue of potentially altered predator/prey dynamics as a result of habitat fragmentation within and adjacent to the caribou recovery area, the Service recommends that the IPNF work cooperatively with other land management entities within the caribou recovery area to address the issue by avoiding/minimizing habitat alterations within and adjacent to the caribou recovery area that might enhance habitat for other large ungulates such as moose, elk, and white-tailed deer.

3. Complete a winter travel plan as soon as possible that is protective of the needs of listed and sensitive species in the Selkirk Ecosystem.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

CHAPTER V: GRIZZLY BEAR

A. Status of the Species

1. Listing History

On July 28, 1975, the grizzly bear was listed as threatened in the conterminous U.S. (Service 1975). In 1991, the Service received petitions to reclassify the five existing grizzly bear populations: 1) the Yellowstone (YRZ); 2) the Northern Continental Divide (NCDRZ); 3) the Cabinet-Yaak (CYRZ); 4) the Selkirk (SRZ); 5) the North Cascades (NCRZ), from threatened to endangered. On April 20, 1992, the Service issued a "not warranted for reclassification" finding for the YRZ and NCDRZ populations (Service 1992). On February 12, 1993 (Service 1993a), the Service found that reclassification of grizzly bears in the CYRZ from threatened to endangered was warranted but precluded by work on higher priority species, but determined that such reclassification was not warranted for the grizzly bear population in the SRZ. On May 17, 1999 (Service 1999), the Service found that reclassification of grizzly bears in the SRZ from threatened to endangered was warranted but precluded by work on higher priority species. Also, in its May 17, 1999 finding, the Service determined that preliminary information suggests that the CYRZ and SRZ grizzly bear populations may be connected through Canada. Therefore, the Service will consider formally recognizing a distinct population segment that would encompass both of these ecosystems. Until a final determination is made on a distinct population segment, the Service still considers the ecosystems to be separate. On March 29, 2007, the Service designated the Greater Yellowstone Area (GYA) population of grizzly bears, which includes the YRZ, as a distinct population segment (DPS), and removed the GYA DPS from the List of Threatened and Endangered Wildlife under the Act. The delisting became effective on April 30, 2007 (Service 2007).

2. Description of the Species

The grizzly bear is one of two subspecies of the brown bear (*Ursus arctos*) which occupy North America. Coloration varies from light brown to almost black, with guard hairs often paled at the tips. Grizzly bears are generally larger than black bears (*Ursus americanus*) and can be distinguished from them by longer, curved claws, humped shoulders, and a more concave face. In the lower 48 States, male grizzlies average 400 to 600 pounds and female grizzlies average 250 to 350 pounds. Adult grizzlies stand 3.5 to 4.5 feet at the hump when on all fours, and can exceed 8 feet in height when standing on their hind legs. Grizzly bears are a wide-ranging species with individualistic behavior, although there is little evidence that they are territorial. Home range sizes vary, and the home ranges of adult bears frequently overlap. Most areas currently inhabited by the species are represented by contiguous, relatively undisturbed mountainous habitat exhibiting high topographic and vegetative diversity. Availability of spring habitat is a concern throughout the current range of the species. A more complete discussion of the biology and ecology of this species may be found in the 1993 Grizzly Bear Recovery Plan (Recovery Plan) (Service 1993b).

3. Life History and Habitat Requirements

The following information is abridged from the Recovery Plan (Service1993b). Although relatively long-lived (20-25 years in the wild), the grizzly bear has a low reproductive rate due to the late age of first reproduction (4-7 years), small litter size (two cubs), long intervals between litters (three years), and limited cub survival (less than 50 percent). Grizzly bears are omnivorous, opportunistic feeders that require foods rich in protein or carbohydrates in excess of maintenance requirements in order to survive seasonal pre-and post-denning requirements. Grizzly bears are homeo-hypothermic hibernators. Their body temperature drops no more than 5 degrees Celsius (approximately 10 degrees Fahrenheit) during winter when deep snow, low food availability, and low ambient air temperatures appear to make winter sleep essential to grizzly bears' survival (Craighead and Craighead 1972a, 1972b). Grizzly bears excavate dens and require environments well-covered with a blanket of snow for up to 5 months, generally beginning in fall (September to November) and extending until spring (March to April) (Craighead and Craighead 1972b; Pearson 1975).

The search for energy-rich food appears to be a driving force in grizzly bear behavior, habitat selection and intra/inter-specific interactions. Grizzly bears historically used a wide variety of habitats across North America, from open to forested, temperate through alpine and arctic habitats, once occurring as far south as Mexico. They are highly dependent upon learned food locations within their home ranges. Adequate nutritional quality and quantity are important factors for successful reproduction. Diverse structural stages that support wide varieties of nourishing plants and animals are necessary for meeting the high energy demands of these large animals. Grizzly bears seek vegetation, tuber, or fruits as they develop and become available, concentrated food sources including carrion, live prey (fish, mammals, insects), and are easily attracted to human food sources including gardens, grain, compost, bird seed, livestock, hunter gut piles, bait, and garbage. Bears that lose their natural fear and avoidance of humans, usually as a result of food rewards, become habituated, and may become food-conditioned. Grizzly bears will defend food and have been known to charge when surprised. Both habituation and food conditioning increase chances of human-caused grizzly bear mortality as a result of real or perceived threats to human safety or property. Nuisance grizzly bear mortalities can be a result of legal management actions, defense of human life, or illegal killing.

Adult grizzly bears are individualistic and normally solitary, with the exceptions of females with cubs and during short breeding relationships. They will tolerate other grizzly bears at closer distances when food sources are concentrated, and siblings may associate for several years following weaning (Murie 1944, 1962; Jonkel and Cowan 1971; Egbert and Stokes 1976; Glenn et al. 1976; Herrero 1978). Across their range, home range sizes vary from about 50 square miles or more for females to several hundred square miles for males, and overlap of home ranges is common. Grizzly bears may have one of the lowest reproductive rates among terrestrial mammals, resulting primarily from the late age at first reproduction, small average litter size, and the long interval between litters. Mating occurs from late May through mid-July. Females in estrus will accept more than one adult male (Hornocker 1962), and can produce cubs from different fathers the same year (Craighead et al. 1995). Age of first reproduction and litter size may be nutritionally related (Herrero 1978; Russell et al. 1978). The average age at first reproduction in the lower 48 States for females is 5.5 years, and litter size ranges from 1 to 4

cubs that stay with the mother up to 2 to 3 years. Males may reach physiological reproductive age at 4.5, but may not be behaviorally reproductive due to other dominant males preventing mating.

Home ranges of collared grizzly bears overlapped extensively in the CYE on a yearly and lifetime basis (Kasworm et al. 2005). Bears typically utilized the same space at different times. This phenomenon was especially true of female grizzly bears and their female offspring. Male home ranges overlap those of several females to increase breeding potential, but males and females consort only during the brief courtship and breeding period. Adult male home ranges also overlap, but males seldom use the same area at the same time, to avoid conflict.

Natural mortality is known to occur from intra-specific predation, but the degree to which this occurs in populations is not known. Parasites and disease do not appear to be a significant cause of natural mortality (Jonkel and Cowan 1971; Kistchinskii 1972; Mundy and Flook 1973; Rogers and Rogers 1976). As animals highly dependent upon learned habitat, displacement into unknown territory (such as subadult dispersal) may lead to submarginal nutrition, reduced reproduction or greater exposure to adult predatory bears or human food sources (which can lead to human-caused mortality). Starvation and loss in dens during food shortages have not been documented as a major mortality factor. Natural mortality is difficult to document or quantify in rare, relatively elusive animals such as grizzly bears.

Human-caused mortality has been slightly better quantified; recent models speculate that reported mortality may be only 50 percent of actual mortality (McLellen et al. 1999). Between 1800 and 1975, grizzly populations in the lower 48 states declined drastically. Fur trapping, mining, ranching, and farming pushed westward, altering habitat and resulting in the direct killing of grizzly bears. Grizzly bears historically were targeted in predator control programs in the 1930s. Predator control was probably responsible for extirpation in many states that no longer support grizzlies. The legal grizzly bear hunting season in Montana was closed in 1991. More recent human-caused mortality includes management control actions, defense of life, defense of property, mistaken identity by black bear or other big game hunters, poaching, and malicious killing.

Grizzly bears normally avoid people, possibly as a result of many generations of bear sport hunting and human-caused mortality. Displacement from essential habitats due to avoidance of human activities may reduce fitness of grizzly bears, affecting survival in some instances.

A number of factors influence the quality and availability of habitat for grizzly bears. However, the primary factors are: habitat effectiveness and access management. Habitat effectiveness is defined as the amount of secure grizzly bear habitat (habitat at least one quarter mile from open roads, developments, and high levels of human activity) remaining within bear management units (BMUs) after impacted areas are subtracted from the total habitat in the BMUs. Habitat security is accomplished largely through the effective management of restricted roads, and the administrative use of such roads.

Access management pertaining to maintenance of grizzly bear habitat within BMUs primarily involves the density of roads within roaded habitat, and the quantity and quality of unroaded

habitat. The effect of roads on grizzly bear behavior [Aune and Stivers 1985; McLellan and Mace (1985 *In* Interagency Grizzly Bear Committee (IGBC) 1987); Kasworm and Manley 1988; McLellan and Shackleton 1988; Aune and Kasworm 1989; and Frederick 1991], grizzly bear populations and patterns of habitat use [IGBC Grizzly Bear Compendium (IGBC 1987); Frederick 1991; Recovery Plan (Service 1993b); Mace and Manley 1993; Mace et al. 1996; Wakkinen and Kasworm 1997; and Mace et al. 1999], and grizzly bear mortality risk [McLellan and Mace (1985 *In* IGBC 1987); Dood et al. (1986 [cited as Dood et al. 1985 in text] of IGBC 1987); Aune and Kasworm 1989] has been thoroughly documented in the scientific literature. This research has clearly indicated the importance of managing three primary elements to avoid bear displacement from important habitats and to reduce bear mortality risk: (1) open road density, (2) total road density, and (3) core habitat (areas free of motorized access and high levels of human use).

Recognizing the need to incorporate this new information into the management of grizzly bears, in July 1994, the IGBC issued a Task Force Report that directed the IGBC subcommittees from each recovery zone to develop recommended parameters for core habitat, open road densities, and total road densities using the best biological information and considering the social and economic impacts of implementing those parameters (IGBC 1994). Core habitat is defined as areas greater than or equal to 0.31 miles from any road (open or restricted), motorized trail, or high intensity use area. Core habitat may contain restricted roads, but such roads must be *effectively* (emphasis added) closed with devices, including but not limited to earthen berms or barriers, or naturally closed by vegetative growth (IGBC 1998a). Additionally, per IGBC direction, core habitat should incorporate all seasonal components of grizzly bear habitat.

4. Historic and Current Distribution

Originally distributed in various habitats throughout North America from central Mexico to the Arctic Ocean, grizzly bears were thought to number approximately 50,000 in the early 1800's. However, westward human expansion and development in the 1800s led to a rapid distributional recession of grizzly bear populations. Bear numbers and distribution in the lower 48 States dropped precipitously during this period, due to a combination of habitat deterioration, commercial trapping, unregulated hunting, and livestock depredation control. On July 28, 1975, the grizzly bear was listed as threatened in the conterminous U.S., at which time the species occupied less than two percent of its former range south of Canada and was distributed in five small populations totaling an estimated 800-1,000 bears (Service 1975). The five remaining self-perpetuating or remnant populations occur primarily in mountainous regions, national parks, and wilderness areas of Washington, Idaho, Montana, and Wyoming.

A Grizzly Bear Recovery Plan was approved on January 29, 1982, and a revised plan was completed on September 10, 1993 (Service 1993b). The Recovery Plan identifies six separate recovery zones: 1) the Yellowstone (YRZ); 2) the Northern Continental Divide (NCDRZ); 3) the Cabinet-Yaak (CYRZ); 4) the Selkirk (SRZ); 5) the North Cascades (NCRZ); and 6) the Bitterroot (BRZ) (Figure 8). These grizzly bear recovery zones are also referred to as grizzly bear “ecosystems” and sometimes as “recovery units.” The Recovery Plan outlines a series of goals and objectives necessary to provide for conservation and recovery of the grizzly bear in selected areas of the conterminous 48 States.

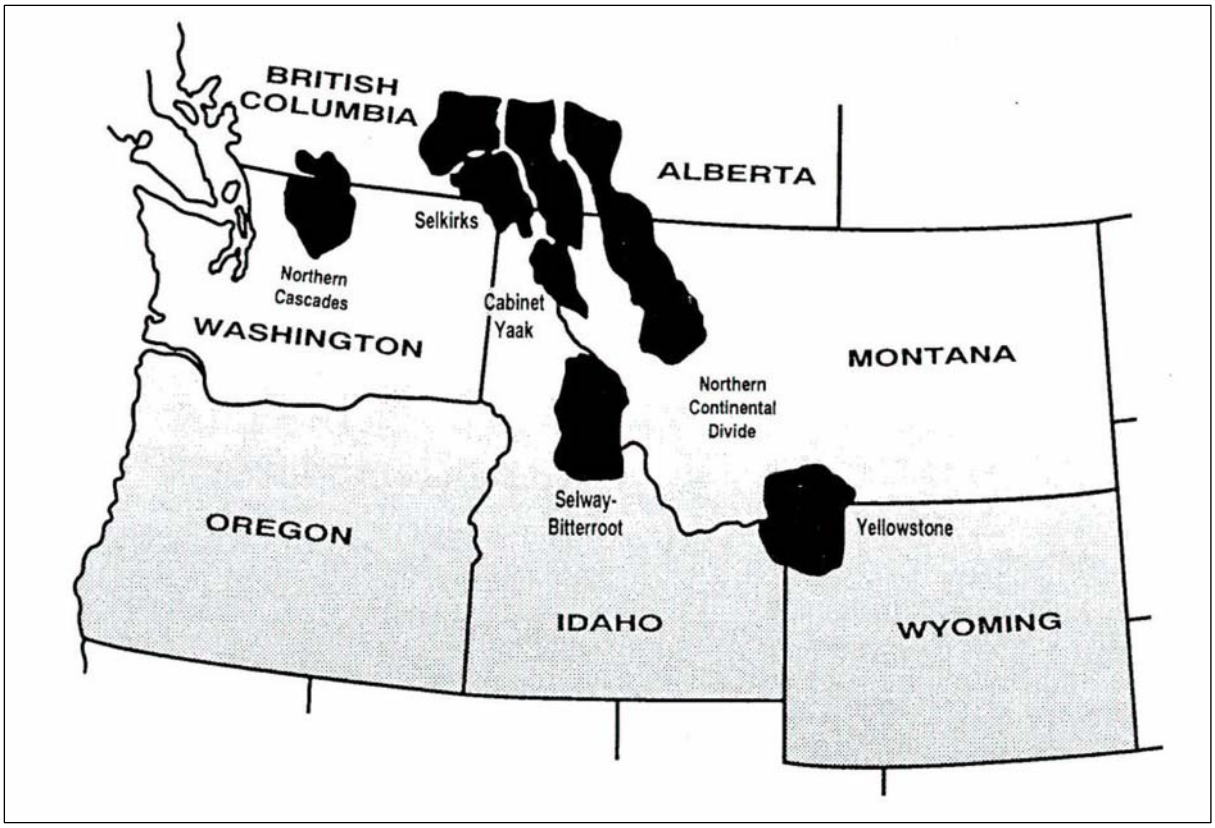

Figure 8. Present grizzly bear ecosystems in the conterminous 48 States, 1990 (the San Juan Mountains area of Colorado is not shown).

The grizzly bear population within the YRZ continues to increase and expand its range. Currently, the population is estimated at more than 500 bears and occupies approximately 7,574,244 acres in the YRZ (Service 2007). All population recovery parameters have been achieved, a conservation strategy has been developed, and on November 17, 2005, the Service proposed to delist the Yellowstone population (Service 2005). On March 29, 2007, the Service designated the Greater Yellowstone Area (GYA) population of grizzly bears, which includes the YRZ, as a distinct population segment (DPS), and removed the GYA DPS from the List of Threatened and Endangered Wildlife under the Act. The delisting became effective on April 30, 2007 (Service 2007). In the Federal Register notice (Service 2007), the Service also announced its intention to initiate a separate 5-year status review under the Act for the remaining listed grizzly bear population in the lower 48 states.

The exact size of the grizzly bear population in the NCDRZ is unknown, but recent data from the northern one third of this ecosystem indicates that there are more bears than previously thought. Grizzly bears occupy approximately 6,128,129 acres within this ecosystem. Monitoring results indicate that through 1999, recovery criteria for several parameters were met, including: 1) numbers of females with cubs; 2) numbers of BMUs with family groups; 3) occupancy requirements for BMUs; and 4) total human-caused grizzly bear mortality. However, the female grizzly bear mortality recovery criterion was not met (Service 2001a).

The status of the NCRZ population is unknown, but bear numbers are suspected to be very low and probably less than 15 grizzly bears. The MIRR action area overlaps with the Bitterroot Ecosystem, but the BRZ is not known to be occupied by a grizzly bear population at this time. In 2000, the Service released a FEIS addressing the restoration of grizzly bears to this ecosystem (Service 2000a). On September 3, 2007, a black bear hunter shot a grizzly bear in the upper Kelly Creek drainage within the BRZ. Results of the DNA analysis conducted on the bear determined that this individual originated in the Selkirk Mountains of North Idaho and that this bear had not been captured before. Prior to this incident grizzly bear occurrence had not been confirmed for more than 60 years in the BRZ. At various times other grizzly bears have been reported in the BRZ but conclusive evidence of their presence has not previously existed. The Kelly Creek bear illustrates that it is possible for a grizzly bear to reach the BRZ through natural dispersal. At this time, the Service does not consider this one male grizzly bear to constitute a population. Future surveys are planned in this area, upon which the Service in conjunction with other agencies, will determine whether the BRZ contains a grizzly bear population. Until that time, section 7 consultation for land management activities is not warranted for the BRZ.

The SRZ represents approximately six percent of the total occupied grizzly bear range remaining within the conterminous 48 States. The Selkirk grizzly bear population is contiguous with Canadian populations. This recovery zone is the only one that includes part of Canada because the habitat in the U.S. portion is not of sufficient size to support a minimum population. Approximately 47 percent of the recovery zone lies within British Columbia, where land ownership is 65 percent crown (public) land and 35 percent is private. Grizzly bear numbers in this ecosystem are estimated at 46 animals. Known human-caused mortalities remain high, with a total of 25 mortalities occurring near roads, fifteen of these since 1993 (Wakkinen and Kasworm 2004). Population trend data are inconclusive. However, recovery plan criteria for bear reproduction, distribution, and mortality have not been met (Wakkinen and Johnson 2008).

The CYRZ represents approximately eight percent of the total occupied grizzly bear range remaining within the conterminous 48 States. Grizzly bear numbers in this ecosystem are estimated at approximately 40 animals (Kasworm et al. 2007). Known bear mortalities in this ecosystem since 1999 have ranged from zero to six bears per year. Although sample sizes are small, existing data indicate a declining population in this ecosystem (Wakkinen and Kasworm 2004; Kasworm et al. 2007). Additionally, recovery plan criteria for grizzly bear numbers, reproduction, distribution, and mortality have not been met (Kasworm et al. 2007).

a. Current Status of the SRZ and CYRZ Grizzly Bear Populations

As depicted in Figure 8 above, the SRZ and CYRZ are the only two currently occupied grizzly bear ecosystems that overlap with IRAs, and therefore are highlighted in this Opinion. The Bitterroot Grizzly Bear Ecosystem (BE) also overlaps several IRAs, but is not considered occupied at this time.

The Recovery Plan identifies three indicators of population status, based on reproduction, numbers, and distribution, to be used as the basis for recovery in each ecosystem: (1) sufficient reproduction to offset the existing levels of human-caused mortality; (2) adequate distribution of breeding animals throughout the area; and (3) a limit on total human-caused mortality. Based on

these indicators, three specific parameters have been developed to monitor the status of grizzlies in each ecosystem: (1) the number of unduplicated females with cubs seen annually; (2) the distribution of females with young or family groups throughout the ecosystem; and (3) the annual number of known human-caused mortalities. To facilitate population monitoring and habitat evaluation within each ecosystem, the recovery zones are divided into areas designated as BMUs. These BMUs, designed to approximate the average home range of a female grizzly (approximately 100 square miles), assist in characterizing grizzly bear numbers and distribution within each ecosystem and in tracking cumulative effects (Christensen and Madel 1982).

As stated previously, the management of three primary elements is considered essential to avoid bear displacement from important habitats and to reduce bear mortality risk: (1) open road density, (2) total road density, and (3) core habitat (areas free of motorized access and high levels of human use). Each grizzly bear recovery zone has specific standards relative to these three elements, and these standards are considered necessary for the conservation of grizzly bears.

b. Current Status of the SRZ

The SRZ encompasses approximately 1,957 square miles (mi^2) in northeastern Washington, northern Idaho, and southern British Columbia. Approximately 47 percent is located within British Columbia, and approximately 53 percent (1,081 mi^2) lies within the U.S. Land ownership in the U.S. portion of the Selkirk recovery zone is approximately 80 percent Federal, 15 percent State, and 5 percent private lands. Forty-two percent of the entire recovery zone is under Federal ownership and therefore could be subject to management for recovery under the Act. The environmental baseline discussion for this biological opinion will include that portion of the SRZ within the U.S.

The U.S. portion of the Selkirk recovery zone is divided into 10 BMUs, ranging in size from approximately 30-160 mi^2. Eight of these BMUs are administered at least in part by the IPNF. Of the remaining areas, one is administered by the Colville National Forest (LeClerc BMU located entirely within Washington state), and the second encompasses approximately 160 mi^2 (roughly 8 percent of the Recovery Zone) owned by Idaho Department of Lands (IDL) east of Priest Lake. The smallest 30 square mile BMU (Lakeshore) lies along the west side of Priest Lake. While providing important grizzly bear habitats regularly occupied by grizzlies, this BMU serves primarily as a buffer for development and high human activity associated with Priest Lake.

According to the Recovery Plan, the minimum population goal for the SRZ is 90 bears (Service 1993b). Grizzly bears also occur in and use areas outside the SRZ recovery zone and population parameters include bears observed up to 10 miles outside the recovery zone boundary (Service 1993b). This biological opinion will use the term SRZ to refer to the SRZ recovery zone and the band of habitat up to 10 miles around the SRZ recovery zone within which Recovery Plan parameters are reported.

The following recovery goals are established in the Recovery Plan (USFWS 1993b):

1. Six unduplicated females with cubs over a running 6-year average both inside the recovery zone and within a 10-mile area immediately surrounding the recovery zone, including Canada;
2. Seven of the 10 BMUs on the U.S. side occupied by females with young on a running 6-year sum of observations; and
3. Known, human-caused mortality may not exceed four percent of the population estimate based on the most recent 3-year sum of females with cubs; furthermore, no more than 30 percent of this four percent mortality limit shall be females. These mortality limits cannot be exceeded during any two consecutive years for recovery to be achieved. Presently grizzly bear numbers are so small in this ecosystem that the mortality goal is zero known human-caused mortality.

The most recent available information on the status of this population relative to the demographic recovery plan parameters is presented in Table 17 (Wakkinen and Johnson 2008). Based on this information, the SRZ is not currently meeting the recovery goals outlined in the Recovery Plan.

Table 17. 2007 status of the Selkirk Ecosystem in relation to the demographic recovery targets (Wakkinen and Johnson 2008).

	TARGET	**2007 STATUS**
Females w/cubs (6-yr avg)	≥6.0	0.5 (3/6)
Mortality limit (4% of minimum estimate)	0	3.3 (6 yr avg)
Female mortality limit (30% of total mortality)	0	1.5 (6 yr avg)
Distribution of females w/young	7 of 10 BMUs	4 of 10[1] BMUs

[1] Myrtle, Sullivan-Hughes, Long-Smith, and Kalispel-Granite BMUs were occupied by family groups in 2007.

The Recovery Plan identifies three indicators of population status, based on reproduction, numbers, and distribution, to be used as the basis for recovery in each ecosystem: (1) sufficient reproduction to offset the existing levels of human-caused mortality; (2) adequate distribution of breeding animals throughout the area; and (3) a limit on total human-caused mortality. Based on these indicators, three specific parameters have been developed to monitor the status of grizzlies in each ecosystem: (1) the number of unduplicated females with cubs seen annually; (2) the distribution of females with young or family groups throughout the ecosystem; and (3) the annual number of known human-caused mortalities.

Table 18 displays the annual status of the SRZ grizzly bear population relative to the recovery plan criteria from 1995 to 2007. Wakkinen and Kasworm (2004) reported that of the 40 known

grizzly bear mortalities which occurred in the SRZ between 1983 and 2002, the majority (32) were human-caused. Mortality causes included a combination of management removals, poaching, hunting, mistaken identity, self-defense, and unknown causes. However, based on the estimated demographic variables for this ecosystem, they indicated a 67.3 percent probability that the SRZ grizzly bear population was increasing.

Table 18. Annual Selkirk recovery zone grizzly bear minimum unduplicated counts of females with cubs and known human-caused mortality, 1995-2007 (after Wakkinen and Johnson 2008)

YEAR	Annual FWS''s	Annual Human Caused Adult Female Mortality	Annual Human Caused All Female Mortality	Annual Human Caused Total Mortality	4% Total Human Caused Mortality Limit [1]	30% All Female Human Caused Mortality Limit [1]	Total Human Caused Mortality 6 Year Average	Female Human Caused Mortality 6 Year Average
1995	1	0	1	2	0	0		
1996	1	0	0	1	0	0		
1997	1	0	0	1	0	0		
1998	1	0	0	1	0	0		
1999	1	0	0	3	0.4	0.1	1.5	0.2
2000	2	0	0	0	0.6	0.2	1.3	0.2
2001	2	0	0	1	0.8	0.2	1.2	0.0
2002	0	1	2	6	0.6	0.2	2.0	0.3
2003	1	1	3	4	0.2	0.1	2.5	0.8
2004	1	0	0	1	0.2	0.1	2.5	0.8
2005	1	0	0	1	0.2	0.1	2.3	0.8
2006	0	1	2	4	0.2	0.1	3.0	1.2
2007	0	2	2	3	0.0	0.0	3.3	1.5

[1] The current mortality goal is zero known human-caused mortality.

On October 2, 2002, a map of the current grizzly bear distribution was finalized through a coordinated effort involving the Service, USFS, IDFG, and Montana Fish, Wildlife, and Parks (Figure 9) (USFS 2003). The map depicts several areas of grizzly bear occupancy outside of, but adjacent to, the Recovery Zones. Two areas of grizzly bear occupancy adjacent to the SRZ have been delineated: 1) Priest; and 2) Pack River. Some grizzly bears are residing, at least

seasonally, in the Pack and Priest River areas. However, as portions of these bears' known movement patterns overlap the recovery zone, they have been included in the population estimate of 46 grizzly bears for the SRZ.

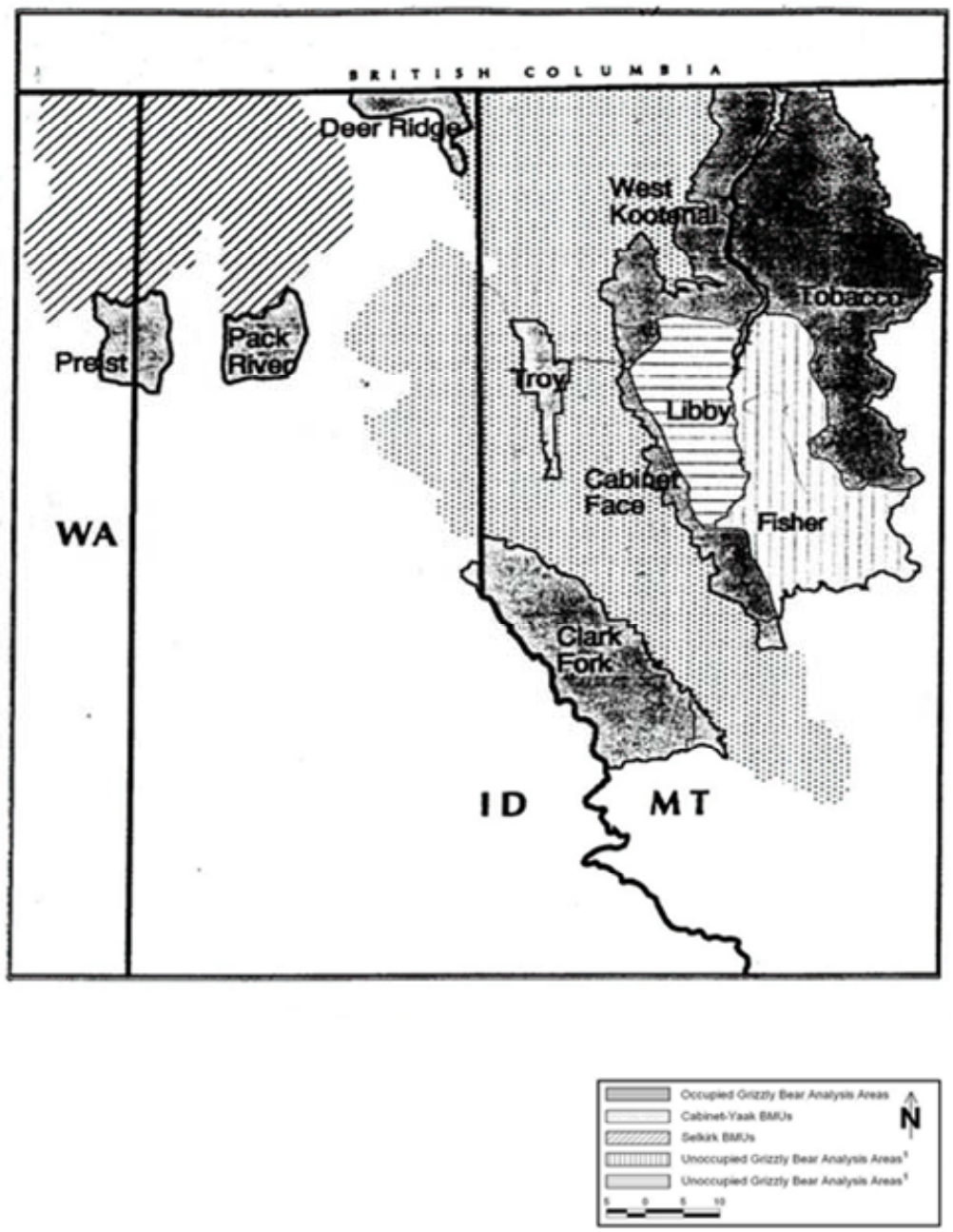

Figure 9. Grizzly Bear Analysis Areas Outside the CYRZ.[1]

c. Factors Affecting the Status of the SRZ Grizzly Bear Population

The Service's 1999 finding concluded that grizzly bears in the SRZ were in danger of extinction due to: 1) habitat alteration and human intrusion into grizzly bear habitat; and 2) a small population facing potential isolation by activities across the border in Canada (Service 1999). The finding also concluded that cumulative impacts of recreation, timber harvest, mining and other forest uses with associated road construction had reduced the amount of effective habitat for grizzly bears. Further, the finding stated that access management plans had the potential to reduce this threat, but had not been fully implemented.

1). Mortality:

Table 19 reports the total known grizzly bear mortality associated with the SRZ from 1982 to 2007. Within the recovery zone or within 10 miles of it over this 25-year period, there were 59 known grizzly bear mortalities, of which 51 were human-caused (9 were radio-collared bears). Based on a population estimate of 46 grizzly bears, the current annual known human-caused mortality rate is approximately 4.4 percent, or about 2.0 bears per year (51 grizzly bear mortalities over 25 years). The current female grizzly bear human-caused annual mortality rate is approximately 1.1 percent, or about 0.5 bears per year (13 known human-caused female mortalities over 25 years). However, actual mortality numbers are likely to be higher, given the remote habitats typically occupied by grizzlies and the low probability of finding a dead bear unless it was radio-collared. A review of known grizzly bear mortalities in British Columbia and Alberta, Canada, Idaho, Washington, and Montana concluded that of the studies reviewed, management agencies would have been unaware of about half of the deaths of radio-collared grizzly bears if not for the radio collars (McLellan et al. 1999). Adjusting for the unknown, unreported mortality by using methods in McLellan et al. (1999) (i.e., removing a total of 19 human-caused grizzly bear mortalities from the calculation because they were only determined because of a radio collar, or resulted from management agency removals or legal kills) results in a total estimate of 70 human-caused mortalities (known and unknown). Based on a population estimate of 46 grizzly bears, this equates to an average annual known and unknown human-caused mortality rate of approximately 6.1 percent, or about 2.8 bears per year (70 grizzly bear mortalities over 25 years).

Over the most recent 6-year period (2002-2007), there were 21 total known human-caused grizzly bear mortalities within the recovery zone or within 10 miles of it; seven of which were females. The total known human-caused grizzly bear mortalities, not including 2007 mortalities, are reflected in the 2006 Recovery Plan goals for this population (Table 17).

Attraction of grizzly bears to improperly stored food and garbage is identified by the Recovery Plan as one of the principal causes of grizzly bear mortality (Service 1993b). In 1995, after becoming habituated to human activities and conditioned to improperly stored food in a campground, a male grizzly bear was collared and relocated. Soon after being relocated, the bear was illegally killed by a hunter. Additionally, improper sanitation procedures may have resulted in the mortalities of several bears in 2006.

Table 19. Known grizzly bear mortalities associated with the SRZ, 1982-2007.

Mortality Date	Tag #	Sex	Age	Location	Mortality Category and Cause	<500 meters from open road
Spring 1982	None	M	AD	Priest River, ID	Human, Poaching	Unk
Autumn 1982	None	Unk	Unk	LeClerc Creek, WA	Human, Unknown	Unk
1985	867-85a[1]	Unk	Cub	N/A	Natural	Unk
Summer 1985	949[1]	M	4.5	US/BC border	Human, Unknown	Unk
Autumn 1986	898[1]	F	1.5	Grass Creek, ID	Human, Unknown[2]	Unk
1986	None	M	Unk	BC Unit 4-8	Human, Management Removal	Yes
Spring 1987	1005[1]	M	10.5	Wall Mtn, BC	Human, Poaching	Unk
Autumn 1987	962[1]	M	7.5	Trapper Creek, ID	Human, Poaching	No
Autumn 1988	1085[1]	F	3.5	Cow Creek, ID	Human, Mistaken Identity	No
Autumn 1988	1050[1]	M	1.5	Porcupine Creek, BC	Natural	No
Spring 1988	None	M	Unk	BC Unit 4-7	Human, Legal Hunt	Unk
Summer 1989	1044[1]	F	20+	Laib Creek, BC	Natural, Conspecific	No
Autumn 1990	1042	F	3.5	Maryland Creek, BC	Human, Malicious	Yes
1990	None	M	Unk	BC Unit 4-8	Human, Management Removal	Yes
Summer 1991	1076[1]	F	20+	Next Creek, BC	Natural	No
1991	876-92a[1]	Unk	1.5	Unknown	Natural	Unk
Summer 1992	None	M	Unk	Lost Creek, BC	Human, Defense of Property	Yes
Summer 1992	1090[1]	M	5.5	Laib Creek, BC	Unknown	Unk
Autumn 1992	1015	F	12.5	Monk Creek, BC	Human, Self Defense	No
Spring 1993	None	M	Unk	BC Unit 4-7	Human, Legal Hunt	Unk
Autumn 1993	867[1]	F	15.5	Willow Creek, WA	Human, Malicious[2]	No
Autumn 1993	867-93a[1]	Unk	0.5	Willow Creek, WA	Human, Malicious[2]	No
Autumn 1993	867-93b[1]	Unk	0.5	Willow Creek, WA	Human, Malicious[2]	No
1993	None	M	Unk	BC Unit 4-8	Human, Management Removal	Yes
Spring 1994	None	M	Unk	BC Unit 4-7	Human, Legal Hunt	Unk
Spring 1994	13	M	AD	BC Unit 4-20	Human, Legal Hunt	Unk
Spring 1995	None	F	1.5	Boundary Creek, ID	Human, Unknown	Yes
Autumn 1995	1100[1]	M	2.5	Granite Pass, WA	Human, Mistaken Identity	Yes
1996	1027-96b[1]	Unk	Cub	Unknown	Natural	Unk
Autumn 1996	1022	M	2.5	Boswell, BC	Human, Management Removal	Yes
Autumn 1997	None	M	1.5	Salmo, BC	Human, Management Removal	Yes
Spring 1998	1023	M	4.5	BC Unit 4-26	Human, Legal Hunt	Unk
Summer 1998	None	M	3.5	Usk, WA	Human, Under Investigation	Yes
Autumn 1999	None	M	22	Wyundel, BC	Human, Depredation	Yes
Autumn 1999	1032	M	18	Procter, BC	Human, Depredation	Yes
Autumn 1999	9810	M	10	Smith Creek, ID	Human, Under Investigation	Unk
Summer 2001	7	F	13	Porcupine Creek, BC	Natural	Yes
Autumn 2001	None	M	Unk	Cottonwood Creek, BC	Human, Management Removal	Yes
Spring 2002	17	M	3.5	Nelway, BC	Human, Depredation	Yes
Autumn 2002	None	F	AD	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	None	Unk	1	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	None	Unk	1	Blewett, BC	Human, Under Investigation	Yes

Autumn 2002	None	Unk	1	Blewett, BC	Human, Under Investigation	Yes
Autumn 2002	19	M	3.5	Lamb Creek, ID	Human, Under Investigation[2]	Yes
Spring 2003	None	Unk	Unk	Apple Orchards lower Smith Ck	Human, Under Investigation	Yes
Summer 2003	30	F	2.5	Salmo, BC	Human, Management Removal	Yes
Autumn 2003	None	F	AD	Blewett, BC	Human, Under Investigation	Yes
Autumn 2003	None	F	1	Blewett, BC (offspring of above)	Human, Under Investigation	Yes
Spring 2004	None	M	AD	Hughes Meadows	Human, Under Investigation	Yes
Autumn 2004	32	M	7	Nordman/Bismark Meadows	Possible mortality, under investigation	Unk
Spring 2005	31	M	5	East of Creston, BC	Human, Legal Hunt	Unk
Spring 2005	None	Unk	Unk	E. Fork Priest River	Likely human caused	Unk
Spring 2006	None	Unk	Unk	Procter, BC	Sanitation (?)	Yes
Fall 2006	None	Unk	Yrlng	Blewett, BC	Sanitation (?)	Yes
Fall 2006	None	Unk	Yrlng	Blewett, BC	Sanitation (?)	Yes
Fall 2006	None	F	AD	Blewett, BC	Sanitation (?)	Yes
Summer 2007	29	F	AD	Kootenay Pass, Highway 3, BC	Vehicle Collision	Yes
Table 19 (continued)						
Fall 2007	1000	F	AD	Pass Creek Pass, Washington	Human, Illegal, Mis ID (?)	Yes
Fall 2007	5393	M	Sub AD	Priest River, Idaho	Sanitation, Habituation	Yes

[1]Part of radio collar sample at time of mortality.
[2]Human caused mortality determined only because of the radio collar on the animal at the time of death.

2). Habitat:

As described previously, habitat effectiveness (aka habitat security) is defined as the amount of secure grizzly bear habitat (habitat at least one quarter mile from open roads, developments, and high levels of human activity) remaining within BMUs after impacted areas are subtracted from the total habitat in the BMUs. Based on work conducted by Christensen and Madel (1982), the IPNF's LRMP requires maintenance of a minimum of 70 square miles (mi^2) of secure habitat in each BMU. The intent of this requirement is to provide the minimum viable habitat needed to avoid grizzly bear displacement.

Table 20 displays the current condition of each BMU relative to the IPNF's LRMP requirement to maintain a minimum of 70 mi^2 of secure habitat. Currently 60 percent (6 of 10) of the BMUs provide at least 70 mi^2 of secure habitat. Of the four BMUs that provide less than 70 mi^2 of secure habitat two (Le Clerc and State Land) are not managed by the IPNF, and one (Lakeshore) is not capable of providing 70 mi^2 of secure habitat as it is only 30 mi^2 in size. The Lakeshore BMU, while being small and primarily serving as a buffer for development and high human activities along Priest Lake, does contain important seasonal grizzly bear habitats regularly occupied by grizzly bears. The BMU currently provides approximately 10 mi^2 of secure habitat. The remaining BMU, managed by the IPNF, not meeting the standard is the Blue Grass BMU, which encompasses 90 mi^2 immediately south of the U.S./Canada border. The Blue Grass BMU is a high priority BMU providing key, year-round habitat for the Selkirk grizzly bear population.

Maintenance of adequate habitat conditions in this BMU is particularly essential because of its importance to the Selkirk grizzly bear population. The Blue Grass BMU currently provides approximately 67 mi^2 of secure habitat.

Table 20. 2006 Status of SRZ BMUs relative to open roads, total roads, and core habitat (Lyndaker, pers.comm. 2008).

BMU[1]	**Percent with Open Roads >1mi/sq.mi**	**Percent with Total Roads >2 mi/sq.mi**	**Percent Core Habitat**	**Habitat Security (sq.mi)**
Blue-Grass	30	28	50	67
Long-Smith	21	14	73	85
Kalispell-Granite	29	29	48	101
Salmo-Priest	30	25	66	76
Sullivan-Hughes	24	19	61	81
Myrtle	30	21	58	72
Ball-Trout	17	11	72	77
Le Clerc[2]	59	27	38	61
Lakeshore	82	54	19	10
State Land	?	?	?	?

[1]The lands managed by the IDL east of Priest Lake are not represented in this table as standards for core habitat, TMRD, or OMRD have not been established for this area.
[2]BMU managed by the CNF

Information on the level of habitat security within the remainder of the SRZ is not available as non-Federal entities do not necessarily manage their lands to maintain secure habitat for grizzly bears. State and private forest management activities occur within the SRZ. As indicated previously, the IDL manages an approximately 160 mi^2 area east of Priest Lake. Table 20 does not contain information for this area relative to core habitat or open motorized route density (OMRD), and total motorized route density (TMRD). The IDL administers these lands primarily for timber production to provide funding for the State school system. This area contains a significant amount of important grizzly bear habitat, and bears are known to occur in this area. Approximately 34 mi^2 of this area fall within the Upper Priest Lake Scenic Area and the Selkirk Crest Scenic Area, managed primarily for recreational and aesthetic purposes.

The remainder of the area is actively managed for timber production. The IDL implements road management with the use of gates to restrict access, however, the Service has no information regarding existing total and open road densities or amount of core habitat within this area. When information on habitat conditions is not available, the Service typically provides the benefit of the doubt to the species and assumes a conservative scenario to provide for protection of the species. Therefore, for purposes of characterizing baseline conditions in the IDL administered area, the Service assumes that, outside of the 34 mi^2 of Scenic Areas mentioned above, open and total road densities exceed those values previously described, and that available core habitat is less than 55 percent of the area.

Stimson Lumber Company (SLC) and Forest Capital Partners, LLC (Forest Capital), the primary private forest managers in the SRZ, manage their ownerships primarily for timber production. The majority of SLC ownership within the SRZ occurs within the LeClerc BMU; approximately 27 percent (21,000 acres) of the land within the LeClerc BMU is owned by SLC. The SLC has entered into a Conservation Agreement with the CNF and the Service to minimize adverse affects to grizzly bears resulting from implementation of activities on its ownership within the LeClerc BMU through road and vegetation management, including but not limited to ensuring: open road density on its ownership does not exceed 1 mi/mi^2 during the non-denning period of April 1 through November 15; no increase in roads open to public motorized use, except where such increase will result in additional available habitats for grizzly bear; administrative use levels on certain roads do not exceed 12 round trips during the spring period (April 1 through June 15); that their land contributes proportionally to the maintenance of a minimum of 40 percent vegetative cover; maintenance of vegetative screening adjacent to open roads; and the distance to cover from any point within harvest units does not exceed 600 feet by limiting the size of harvest units.

Currently, Forest Capital has not entered into an agreement with the Service for grizzly bear management on its ownership within the SRZ. However, recognizing the need to manage for grizzly bears within the SRZ, Forest Capital voluntarily: maintains year-round gate closures on many of their roads; replaces damaged gates promptly; installs road closures on newly constructed roads; closes their land to spring and fall black bear hunting; and conducts logging operations during the winter to the extent practicable within BMUs (McClintock, pers. comm. 2004).

Additional secure habitat is likely to occur within the British Columbia portion of the SRZ, particularly in the Stagleap Provincial Park, located just north of the border. In 1995, the British Columbia provincial government developed a grizzly bear conservation strategy with a stated goal of enhancing habitat protection through land use planning processes (Service 1999). Quantitative information on the amount of secure habitat in the British Columbia portion of the SRZ is not currently available.

Habitat security is accomplished largely through the effective management of restricted roads, and the administrative use of such roads. However, while the IPNF's LRMP does not specifically address administrative use, pursuant to the Service's 2001 Biological Opinion, the IPNF is required to limit administrative use on restricted roads to 57 round trips per active bear year (April 1 through November 15) per road, divided seasonally (Service 2001b). The Service's 2001 Biological Opinion states that such use shall be apportioned as follows: 19 round trips in spring (April 1 thru June 15); 23 round trips in summer (June 16 through September 15); and 15 round trips in fall (September 16 through November 15). Administrative use is defined as passenger vehicle access on a restricted road to conduct non-mechanized activities, such as planting, regeneration surveys, timber sale layout, etc.

As stated previously, the management of three primary elements is considered essential to avoid bear displacement from important habitats and to reduce bear mortality risk: (1) open road density, (2) total road density, and (3) core habitat (areas free of motorized access and high levels

of human use). Each grizzly bear recovery zone has specific standards relative to these three elements, and these standards are considered necessary for the conservation of grizzly bears.

Due to the importance of roads in affecting grizzly bear behavior and habitat quality, the IGBC directed each of the ecosystems to develop grizzly bear habitat management parameters addressing core habitat, and open and total motorized route densities. A detailed discussion related to the effects of roads on grizzly bears and the history associated with developing motorized access standards within the SRZ is contained in the Service's 2004 "Biological Opinion for the Kootenai, Idaho Panhandle, and Lolo National Forests Land and Resource Management Plans Amendment for Motorized Access Management Within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones" (hereafter referred to as 2004 Access BO) (Service 2004a), and is incorporated here by reference. It should be noted that the 2004 Access Opinion was withdrawn by the Service on March 17, 2007 because the USFS action upon which it was based was remanded by the District Court for the District of Montana for further consideration. However, the road-related effects analysis contained within the 2004 Access Opinion is still relevant and therefore applicable to this analysis for the MIRR. Therefore, in addition to managing for secure grizzly bear habitat (aka effective habitat), the current approach to managing motorized access within BMUs in the SRZ also involves the management of core habitat, OMRD and TMRD.

Relative to the IPNF, the Service's 2001 BO established the following standards, based upon Wakkinen and Kasworm's (1997) research on grizzly bears in the SRZ and CYRZ, for core habitat, OMRD, and TMRD: 1) each BMU must contain a minimum of 55 percent core habitat; 2) TMRD greater than 2 miles/square mile (mi/mi^2) must average 26 percent or less of each BMU; and 3) OMRD greater than 1 mi/mi^2 must average 33 percent or less of each BMU (Service 2001b). Table 20 displays the current condition of each BMU, relative to the established standards

Currently, of the nine BMUs managed by the Forest Service, five (55 percent) contain at least 55 percent core habitat, seven (78 percent) have open road densities exceeding 1 mi/mi^2 in 33 percent or less of the BMU, and five (55 percent) have total road densities exceeding 2 mi/mi^2 in 26 percent or less of the BMU (Table 21). The Lakeshore and LeClerc BMUs do not meet any of the standards. However, as discussed earlier, because of the Lakeshore's small size (30 square miles), achievement of the habitat parameters may not be possible. The LeClerc BMU is primarily managed by the CNF, and has a high degree of intermingled private land, which may make achieving all habitat parameters very difficult.

As identified above, grizzly bears are living in areas outside of but adjacent to the Recovery Zones. Relative to the SRZ, grizzly bear occupancy occurs in two separate mapped areas adjacent to the southwestern (Priest Area) and southeastern (Pack River Area) boundaries of the recovery zone. The Priest Area circumscribes an area of approximately 151 mi^2, and the Pack River Area circumscribes an area of approximately 103 mi^2 (Table 21). Both areas contain a mixture of federal and non-federal land.

The status of these areas relative to linear open and total road densities is described in Table 21. We currently do not have any information regarding the quantity of unroaded habitat contained within these areas.

Table 21. 2007 road density status of grizzly bear occupancy areas adjacent to the SRZ (Lyndaker, pers. comm. 2008).

Area	**Size (mi^2)**	**Linear Total Road Density on National Forest Lands Only (mi/mi^2)**	**Linear Open Road Density on National Forest Lands Only (mi/mi^2)**
Priest	151	3.1	3.1
Pack River	103	1.1	1.0

The linear road density information identified in Table 21 is not analogous to, and therefore may not be comparable with, road density information derived using a moving windows analysis technique, upon which the road density standards for the Recovery Zones are based. A moving windows analysis is a spatial analysis of road density distribution, while a linear road density analysis is simply a quantification of the amount (i.e., length) of roads per unit area that exist on the landscape.

3). Other Factors:

The SRZ is one of the smallest grizzly bear recovery zones at approximately 1,957 mi^2, and only 53 percent is contained within the conterminous U.S. The remainder (47 percent) lies within British Columbia. Because a substantial portion of the SRZ lies within British Columbia, grizzly bear management measures and habitat management efforts in that province play a significant role in the status of grizzly bears in this ecosystem. The British Columbia portion of the SRZ is subjected to the same forestry, mining, recreation, and road construction pressures that exist in the U.S., all of which affect grizzly bear habitat. As noted previously, in 1995, the British Columbia provincial government developed a grizzly bear conservation strategy to ensure effective, enhanced protection and management of habitat through land use planning processes, new protected areas, and the Forest Practices Code.

In summary, the Service, in its 1999 administrative finding determined that the Selkirk grizzly bear population was warranted for listing as endangered (Service 1999). This determination was made in large part because of the small size of the SRZ, grizzly bear mortalities, small size of the grizzly bear population, and existing habitat conditions. Grizzly bear mortalities, particularly human-caused mortalities, have affected a significant portion of the grizzly bear population over the last 21 years, with mortalities remaining substantially higher than Recovery Plan goals. None of the Recovery Plan goals (relative to bear reproduction, distribution, and mortality) have been met. It is speculated that, in recent years, the Selkirk grizzly bear population may have experienced growth. However, as annual population trend modeling has been statistically inconclusive, the speculation of population growth is based on the perceptions of some researchers familiar with this recovery zone. Given the foregoing discussion of grizzly bear mortality and habitat conditions within this recovery zone, there is clearly a need for improved protection of grizzly bears and their habitat within this Ecosystem. Past and ongoing habitat

management efforts have resulted in improved habitat conditions within the SRZ, although several BMUs still have unacceptably high road densities and insufficient core habitat.

d. Current Status of the CYRZ

The CYRZ encompasses approximately 2,600 mi^2 (1,728,000 acres), is located in northwest Montana and northeast Idaho, and is administered primarily by three forests: IPNF, Kootenai National Forest (KNF), and Lolo National Forest (LNF). The CYRZ is bordered to the north by the Canadian border, to the south by the Clark Fork River, to the west by the towns of Moyie Springs and Clark Fork, and to the east by the town of Libby, and is bisected by the Kootenai River. Land ownership within the CYRZ is approximately 90 percent Federal (1,555,200 acres), 5 percent State (86,400 acres), and 5 percent private lands (86,400 acres).

The CYRZ is often described in terms of having two portions, the Cabinet Mountains portion forming the southern half of the CYRZ, and the Yaak portion forming the northern half of the CYRZ. The Cabinet Mountains portion covers approximately 978,000 acres, is topographically diverse with a steep mountain range up to 8,700 feet near the center and more definable seasonal habitats, and contains the Cabinet Mountains Wilderness area. The Cabinet Mountains Wilderness area is approximately 34 miles long, varies from 0.5 to 7 miles wide, and consists of 94,272 acres of higher elevation habitat. The Cabinet Mountains portion is connected to the Yaak portion by two relatively narrow corridors of habitat, approximately 7.5 miles wide, separated by a broad, privately owned valley where the town of Troy is located. The Yaak portion is 466,000 acres and has gentler topography and slightly lower elevations, up to 7,700 feet. Seasonal grizzly bear habitats are not as clearly definable in the Yaak portion. More grizzly bear research and telemetry work has occurred in the Yaak than in the Cabinet Mountains portion of the ecosystem.

As mentioned above, recovery zones are divided into BMUs to facilitate grizzly bear management. To this end, 22 BMUs averaging approximately 100 mi^2 have been established in the CYRZ. Fifteen BMUs are managed entirely by the KNF, 4 BMUs are managed entirely by the IPNF, 1 BMU is managed entirely by the LNF, and two BMUs are jointly managed by the KNF and IPNF.

According to the Recovery Plan, the minimum population goal for the CYRZ is 100 bears (Service 1993b). Grizzly bears also occur in and use areas outside the CYRZ, and therefore, population parameters include bears observed up to 10 miles outside the recovery zone boundary (Service 1993b). This biological opinion will use the term CYRZ to refer to the CYRZ and the band of habitat up to 10 miles around the CYRZ within which Recovery Plan parameters are reported.

The following recovery goals for the CYRZ have been established in the Recovery Plan (Service 1993b):

1. Six females with cubs over a running 6-year average both inside the recovery zone and within a 10 mile area immediately surrounding the recovery zone, excluding Canada;
2. Eighteen of 22 BMUs occupied by females with young from a running 6-year sum of verified evidence; and
3. Known, human-caused mortality not to exceed 4 percent of the population estimate based on the most recent 3-year sum of females with cubs. Furthermore, no more than 30 percent of this 4 percent mortality limit shall be females. These mortality limits cannot be exceeded during any 2 consecutive years for recovery to be achieved. Presently, grizzly bear numbers are so small in this ecosystem that the mortality goal shall be zero known human-caused mortalities.

The most recent available information on the status of this population relative to the demographic recovery plan parameters are presented in Table 22 (Kasworm, et al. 2007). Based on this information, none of the recovery goals are currently being met in the CYRZ.

Table 22. Status of the Cabinet-Yaak recovery zone during 2001-2006 in relation to the demographic recovery targets from the grizzly bear recovery plan (Kasworm et al. 2007).

Recovery Criteria	Target	2001-2006
Females w/cubs (6-yr avg)	6.0	1.7 (10/6)
Human Caused Mortality limit (4% of minimum estimate)	0.7	1.7 (6 yr avg)
Female Human Caused mortality limit (30% of total mortality)	0.2	1.3 (6 yr avg)
Distribution of females w/young	18 of 22	13 of 22

As stated previously regarding the SRZ the Recovery Plan identifies three indicators of population status, based on reproduction, numbers, and distribution, to be used as the basis for recovery in each ecosystem: (1) sufficient reproduction to offset the existing levels of human-caused mortality; (2) adequate distribution of breeding animals throughout the area; and (3) a limit on total human-caused mortality. Based on these indicators, three specific parameters have been developed to monitor the status of grizzlies in each ecosystem: (1) the number of unduplicated females with cubs seen annually; (2) the distribution of females with young or family groups throughout the ecosystem; and (3) the annual number of known human-caused mortalities.

Table 23 displays the annual status of the CYRZ grizzly bear population relative to the recovery plan criteria from 1988 to 2006. A total of 41 grizzly bear mortalities are known to have occurred inside or within 10 miles of the CYRZ (including Canada) from 1982-2006, 68 percent (28 of the 41 mortalities) of which were human-caused (Kasworm et al. 2007). Of the 28 known human-caused mortalities, 12 occurred from 1983-1998 and 16 occurred from 1999-2006 (Kasworm et al. 2007). Human-caused mortality included poaching, mistaken identity, unknown, but human-caused, defense, management removal, research, train collision, and

hunting. Based on the estimated demographic variables for this ecosystem, Kasworm et al. (2007) indicated a 94.0 percent probability that the CYRZ grizzly bear population is declining.

Table 23. Annual Cabinet-Yaak recovery zone (excluding Canada) grizzly bear minimum unduplicated counts of females with cubs and known human-caused mortality, 1988-2006 (Kasworm et al. 2007).

YEAR	ANNUAL FWC'S	ANNUAL HUMAN CAUSED ADULT FEMALE MORTALITY	ANNUAL HUMAN CAUSED ALL FEMALE MORTALITY	ANNUAL HUMAN CAUSED TOTAL MORTALITY	4% TOTAL HUMAN CAUSED MORTALITY LIMIT[1]	30% ALL FEMALE HUMAN CAUSED MORTALITY LIMIT[1]	TOTAL HUMAN CAUSED MORTALITY 6 YEAR AVERAGE	FEMALE HUMAN CAUSED MORTALITY 6 YEAR AVERAGE
1988	1	1	1	1	0	0		
1989	0	0	1	1	0	0		
1990	1	0	0	1	0	0		
1991	1	0	0	0	0	0		
1992	1	0	0	0	0	0		
1993	2	0	0	0	0.9	0.3	0.5	0.3
1994	1	0	0	0	0.9	0.3	0.3	0.2
1995	1	0	0	0	0.9	0.3	0.2	0
1996	1	0	0	1	0.7	0.2	0.2	0
1997	3	0	0	1	1.2	0.4	0.3	0
1998	0	0	0	0	0.9	0.3	0.3	0
1999	0	0	0	1	0.7	0.2	0.5	0
2000	2	0	1	1	0.5	0.1	0.7	0.2
2001	1	1	2	2	0.5	0.1	1.0	0.5
2002	4	1	4	5	1.2	0.4	1.7	1.2
2003	2	0	0	0	1.2	0.4	1.5	1.2
2004	1	0	0	0	1.4	0.4	1.5	1.2
2005	1	1	2	3	0.7	0.2	1.8	1.5
2006	1	0	0	0	0.7	0.2	1.7	1.3

[1] Presently grizzly bear numbers are so small in this ecosystem that the mortality goal shall be zero known human-caused mortalities.

As stated previously, a map of the current grizzly bear distribution was finalized through a coordinated effort involving the Service, USFS, IDFG, and Montana Fish, Wildlife, and Parks (Figure 9) (Service 2003). The map depicts several areas of grizzly bear occupancy outside of, but adjacent to, the Recovery Zones. Several areas of grizzly bear occupancy adjacent to the CYRZ have been delineated (Figure 9). The status of these areas relative to linear open and total road densities is described in Table 26. We currently do not have any information regarding the quantity of unroaded habitat contained within these areas.

e. Factors Affecting the Status of the CYRZ Grizzly Bear Population

Similar to the SRZ, the Service's 1999 finding concluded that grizzly bears in the CYRZ were in danger of extinction due to: 1) habitat alteration and human intrusion into grizzly bear habitat; and 2) a small population facing potential isolation by activities across the border in Canada (Service 1999). The finding also concluded that cumulative impacts of recreation, timber harvest, mining and other forest uses with associated road construction had reduced the amount

of effective habitat for grizzly bears. Further, the finding stated that access management plans had the potential to reduce this threat, but had not been fully implemented.

Small populations (50 or fewer individuals) have a high risk of extinction (The World Conservation Union 2003 in Proctor et al. 2004). Simulating a population of 50 animals, and using vital and mortality rates similar to grizzly bears in the CYRZ, Proctor et al. (2004) estimated an 85 percent probability of extinction within 100 years. The grizzly bear population in the CYRZ is estimated at 40 animals (Kasworm et al. 2007). Population augmentation is one management tool that may reduce the threat of extinction (Proctor et al. 2004). Four subadult female grizzly bears were translocated into the Cabinet Mountains between 1990 and 1994 (Kasworm et al. 1998). Three of the four translocated female bears survived and remained in the Cabinets for more the 1 year, and one of the female bears appears to have subsequently produced offspring (Kasworm et al. 2006). Based on the apparent success of the initial augmentation effort, four more female grizzly bears have been recently translocated into the Cabinet Mountains. One female was released 2005, one female in 2006, and two females in 2008. All bears were fitted with GPS radio collars to enable monitoring of their movements; however the first bear released in 2005 lost her collar in 2007, and the second bear released in 2006 may have recently lost her collar as well (Kasworm, pers. comm. 2008).

Potential isolation from grizzly bears in the Canada portion of the greater CYE is identified as a potential threat to grizzly bears in the U.S. portion of the ecosystem. Conditions in Canada and along the international boundary currently allow movement of grizzly bears between Canada and the Yaak portion of the CYE, but grizzly bear habitat is being impacted by highways and associated development in Canada. Additionally, U.S. Highway 2 bisects the ecosystem between the Yaak and Cabinet Mountains portions. To date, the Service has no information documenting movement of grizzly bears from the Yaak area north of Highway 2 to the Cabinet Mountains south of Highway 2 (Servheen, pers. comm. 2008). The combination of the highway, river, railroad and associated development may be or may become a substantive barrier to movement of grizzly bears in the ecosystem.

1). Mortality:

Table 24 reports the total known grizzly bear mortality associated with the CYRZ from 1982 to 2006. Within the recovery zone or within 10 miles of it (including Canada) over this 25-year period, there were 41 known grizzly bear mortalities, of which 28 were human-caused. Based on a population estimate of 40 grizzly bears, the current annual known human-caused mortality rate is approximately 2.8 percent, or about 1.1 bears per year (28 grizzly bear mortalities over 25 years). The current female grizzly bear human-caused annual mortality rate is approximately 1.5 percent, or about 0.6 bears per year (15 known human-caused female mortalities over 25 years). However, actual mortality numbers are likely to be higher, given the remote habitats typically occupied by grizzlies and the low probability of finding a dead bear unless it was radio-collared. A review of known grizzly bear mortalities in British Columbia and Alberta, Canada, Idaho, Washington, and Montana concluded that of the studies reviewed, management agencies would have been unaware of about half of the deaths of radio-collared grizzly bears if not for the radio collars (McLellan et al. 1999). Adjusting for the unknown, unreported mortality by using methods in McLellan et al. (1999) results in a total estimate of 37 human-caused mortalities

(known and unknown). Based on a population estimate of 40 grizzly bears, this equates to an average annual known and unknown human-caused mortality rate of approximately 3.7 percent, or about 1.5 bears per year (37 grizzly bear mortalities over 25 years).

Table 24. Known grizzly bear mortalities associated with the CYRZ, 1982-2002 (after Kasworm et al. 2007).

Mortality Date	**Tag #**	**Sex**	**Age**	**Location**	**Mortality Category and Cause**	**Public Reported**
October 1982	None	M	AD	Grouse Creek, ID	Human, Poaching	Yes
October 1984	None	Unk	Unk	Harvey Creek, ID	Human, Mistaken Identity	Yes
9/21/1985	14	M	AD	Lyons Gulch, MT	Human, Self Defense	Yes
7/14/1986	106	Unk	Cub	Burnt Creek, MT	Natural	No
10/25/1987	None	F	Cub	Flattail Creek, MT	Human, Mistaken Identity	Yes
May 1988	134	M	AD	BC Unit 4-5[1]	Human, Hunting	Yes
10/31/1988	None	F	AD	Seventeen Mile Creek, MT	Human, Self Defense	Yes
7/6/1989	129	F	3.5	Burnt Creek, MT	Human, Research	No
1990	192	M	2.5	Poverty Creek, MT	Human, Poaching	Yes
1992	678	F	37	Trail Creek, MT	Unknown	Yes
7/22/1993	258	F	7.5	Libby Creek, MT	Natural	No
Summer 1993	258-cub	Unk	Cub	Libby Creek, MT	Natural	No
10/4.1995	None	M	AD	Ryan Creek, BC[1]	Human, Management	Yes
5/6/1996	302[1]	M	3.5	Dodge Creek, MT	Human, Under Investigation	No
October 1996	355[1]	M	AD	Gold Creek, BC[1]	Human, Under Investigation	No
May 1997	None	M	AD	Libby Creek, MT	Human, Poaching	Yes
6/4/1999	106	F	21	Seventeen Mile Creek, MT	Natural, Conspecific	No
6/4/1999	106-cub	Unk	Cub	Seventeen Mile Creek, MT	Natural, Conspecific	No
6/4/1999	106-cub	Unk	Cub	Seventeen Mile Creek, MT	Natural, Conspecific	No
10/12/1999	596	F	2.5	Hart Creek, BC[1]	Human, Self Defense	Yes
11/15/1999	358	M	15	Yaak River, MT	Human, Management	No
6/1/2000	538-cub	Unk	Cub	Hawkins Creek, BC[1]	Natural	No
6/1/2000	538-cub	Unk	Cub	Hawkins Creek, BC[1]	Natural	No
7/1/2000	303-cub	Unk	Cub	Fowler Creek, MT	Natural	No

11/15/2000	592	F	3	Pete Creek, MT	Human, Under Investigation	No
5/5/2001	None	F	1.5	Spread Creek, MT	Human, Mistaken Identity	Yes
6/18/2001	538-cub	Unk	Cub	Cold Creek, BC[1]	Natural	No
6/18/2001	538-cub	Unk	Cub	Cold Creek, BC[1]	Natural	No
October, 2001	None	F	AD	Elk Creek, MT	Human, Train collision	Yes
2002	None	Unk	Unk	Bloom Creek, BC[1]	Human, Mistaken Identity	Yes
7/1/2002	577	F	1.5	Marten Creek, MT	Natural	No
10/28/2002	None	F	4	Porcupine Creek, MT	Human, Under Investigation	Yes
11/18/2002	353/584	F	7	Yaak River, MT	Human, Poaching	Yes
11/18/2002	None	F	Cub	Yaak River, MT	Human, Poaching	Yes
11/18/2002	None	Unk	Cub	Yaak River, MT	Human, Poaching	No
11/18/2002	None	Unk	Cub	Yaak River, MT	Human, Poaching	No
10/14/2004	None	F	AD	Linklater Creek, BC[1]	Human, Management	Yes
5/15/2005	31	M	AD	Russell Creek, BC[1]	Human, Hunting	Yes
10/9/2005	None	F	3-4	Government Creek, MT	Human, Train collision	Yes
10/9/2005	694	F	2-3	Pipe Creek, MT	Human, Poaching	Yes
10/19/2005	668	M	4	Yaak River, MT	Human, Mistaken Identity	Yes
5/28/2006	None	F	8	Cold Creek, BC[1]	Human, Research	No
6/1/2006	292	F	5	Rainy Creek, BC	Human, Management	Yes

[1] The recovery plan (Service 1993b) specifies that human-caused mortality or female with young sightings from Canada will not be counted toward recovery goals in this recovery zone.

Excluding mortalities in Canada, over the most recent 6-year period (2001-2006), there were 10 total known human-caused grizzly bear mortalities within the recovery zone or within 10 miles of it within the United States; seven of which were females. The total known human-caused grizzly bear mortality within the recovery zone or within 10 miles of it within the United States is reflected in the 2006 Recovery Plan goals for this population (Table 22). As indicated previously, the improper storage of attractants, such as food items and garbage, may lead to habituation of grizzly bears. Such food conditioning of grizzly bears may require management control actions, consisting of capture and relocation, to reduce the potential for adverse encounters between people and bears. In many instances, however, the ultimate fate of food conditioned grizzly bears is mortality due to their increased vulnerability to illegal shooting or legal defense of life or management control actions. In 1999, a male grizzly bear was euthanized because of adverse interactions with humans precipitated by lax sanitation procedures. In May

2003, a subadult male grizzly bear in the CYRZ had to be captured and relocated due to repeated entrances into a dumpster that was not resistant to grizzly bears.

Within the CYRZ, only two grizzly bear management control actions have been implemented since 1982 as a result of sanitation related problems, which might imply that lax sanitation is not an issue. However, lax sanitation in the CYRZ is a concern. The infrequent need to implement grizzly bear control actions may simply reflect the low density of grizzly bears throughout this ecosystem, rather than indicating sanitation practices are not leading to grizzly bear food-conditioning and/or habituation. For example, black bears are substantially more numerous in this ecosystem and, each year, many must be captured, and removed or destroyed because they have become accustomed and/or attracted to human food and/or garbage. Therefore, unless this potential for habituation is removed, it can be expected that grizzly bear problems related to sanitation will increase as grizzly bear numbers increase in this ecosystem.

2). Habitat:

Parts of three national forests are contained within the CYRZ: IPNF, KNF, and LNF. Each of the Forests developed and implemented LRMPs in the 1980's, incorporating measures addressing management of grizzly bears. The Service completed section 7 consultation on the IPNF, KNF, and LNF LRMPs and issued biological opinions to each of the Forests in 1986 (Service 1986), 1985 (Service 1985), and 1982 (Service 1982), respectively. The Service concluded that implementation of the LRMPs, with measures addressing grizzly bear management, would not be likely to jeopardize the continued existence of the grizzly bear. The measures implemented by the Forests were based upon the existing scientific information available at the time relative to grizzly bear management and behavior. The Forests developed standards and guidelines related to grizzly bear management to: 1) avoid the likelihood of jeopardizing the continued existence of grizzlies in the Selkirk and Cabinet-Yaak Ecosystems; 2) contribute toward grizzly bear conservation; and 3) coordinate Forest activities with the biological needs of the grizzly. However, while the objectives of grizzly bear management were the same across all three Forests, the actual standards adopted and implemented under each of the individual Forest's LRMPs were slightly different.

The LRMPs for the KNF and IPNF require management of security habitat (effective grizzly bear habitat), while the LNF LRMP contains no such requirement. The IPNF LRMP requires maintaining effective grizzly bear habitat of at least 70 mi^2 within each BMU, and the KNF LRMP requires maintaining effective grizzly bear habitat of at least 70 percent within each BMU. However, because BMUs are approximately 100 mi^2 in the CYRZ, the KNF requirement to manage for 70 percent security habitat essentially equates to the maintenance of 70 mi^2 of effective grizzly bear habitat within each BMU, which is similar to the IPNF. While the LNF LRMP does not require management for security habitat, pursuant to its LRMP, in the early 1990s the LNF adopted a requirement for management of displacement habitat within Bear Management Analysis Areas (BMAA; subunits within a BMU that are delineated for cumulative effects analysis).

Currently, 64 percent (14 of 22) of BMUs in the CYRZ provide at least 70 percent or 70 mi^2 of effective grizzly bear habitat (Table 25). Two of the BMUs that currently do not provide 70

percent security habitat are BMUs 10 and 12, which contain 64 and 62 percent security habitat, respectively. As described previously, the northern and southern portions of the CYRZ are connected by two relatively narrow corridors of habitat. This area of connectivity is contained entirely within the boundaries of BMUs 10 and 12. Thus, these two BMUs may play a particularly important role in providing for grizzly bear movement between the Yaak portion (northern) and the Cabinet Mountain portion (southern) of the CYRZ. This may also have implications for maintaining the demographic and genetic stability, and thus overall population sustainability of grizzly bears within the CYRZ. The Grouse BMU currently contains 51 mi^2 of security habitat. However, federal lands comprise less than 75 percent of this BMU. The BMU managed by the LNF (BMU 22) currently provides 67 percent security habitat.

Table 25. 2007 status of CYRZ BMUs relative to open roads, total roads, core habitat, and habitat security (after USFS 2008a; Lyndaker pers. comm. 2008).

BMU	**Percent with Open Roads >1mi/sq.mi**	**Percent with Total Roads >2 mi/sq.mi**	**Percent Core Habitat**	**Habitat Security[1]**
1 Cedar[2]	12	9	83	88
2 Snowshoe[2]	19	16	76	79
3 Spar[2]	27	27	60	73
4 Bull[2]	37	26	62	64
5 Saint Paul[2]	28	23	58	72
6 Wanless[2]	32	33	53	66
7 Silver Butte/Fisher[2]	25	23	62	77
8 Vermillion[2]	33	24	54	77
9 Callahan[2]	27	26	58	76
10 Pulpit[2]	44	28	52	64
11 Roderick[2]	28	29	52	75
12 Newton[2]	42	31	56	62
13 Keno[3]	34	25	59	64
14 Northwest Peak[3]	28	26	55	76
15 Garver[2]	30	32	46	71
16 East Fork Yaak[2]	29	27	53	73
17 Big Creek[2]	30	18	55	74
18 Boulder[4]	29	35	50	73
19 Grouse[4]	59	59	32	51
20 North Lightning[4]	36	19	62	71
21 Scotchman[4]	35	27	63	67
22 Mt. Headley[5]	38	37	51	67

[1]Habitat Security numbers are from 2006 and were obtained from Johnson and Roberts (2007). For the KNF and LMF numbers are reported on a square mile basis of the BMU. For the IPNF numbers are reported on a percentage basis of the BMU.
[2] Managed solely by the KNF
[3]Management is shared between the KNF and IPNF
[4]Managed solely by the IPNF
[5]Managed solely by the LNF

Additionally, while the LNF LRMP does not require management of security habitat, it does require the LNF to manage for displacement habitat within BMAAs. Seventeen BMAAs have been delineated within BMU 22.

The KNF LRMP also requires management for grizzly bears within areas delineated as Management Situation 1 (MS 1). Management Situation 1 grizzly bear habitat is defined as those lands that contain grizzly population centers and/or habitat that is needed for the survival and recovery of the species. In those areas, the needs of the grizzly bear will be given priority over other management considerations. Land uses which can affect grizzly bears and/or their habitat will be made compatible with grizzly needs or such uses will be disallowed or eliminated (IGBC 1987). Within MS 1 habitat, the KNF is required to maintain an average linear open road density at least 0.75 mi/mi^2. The LNF, pursuant to the changes adopted in the early 1990s (referenced above), is required to manage for grizzly bears within MS 1 habitat as well. Within MS 1 habitat, the LNF is required to: 1) maintain an average linear open road density <1 mi/mi^2 within BMAAs; and 2) maintain an average linear open road density of < 0.75 mi/mi^2 within BMAAs with known (a) movement corridors, (b) concentrations of spring/fall feeding components, and/or (c) protein concentrations.

The importance of managing motorized access on restricted roads within grizzly bear habitat was previously discussed. Pursuant to the Service's 2001 Opinion, the IPNF is required to limit administrative use on restricted roads to 57 round trips per active bear year (April 1 through November 15) per road divided seasonally as follows: 19 round trips in spring (April 1 thru June 15); 23 round trips in summer (June 16 through September 15); and 15 round trips in fall (September 16 through November 15). Administrative use is defined as passenger vehicle access on a restricted road to conduct non-mechanized activities, such as planting, regeneration surveys, timber sale layout, etc. (Service 2001). The KNF and LNF LRMPs and the Service's 1985 and 1982 Opinions on the KNF and LNF's LRMPs, respectively, do not specifically require managing administrative access, however, both the KNF and LNF have agreed to manage administrative access on restricted roads in accordance with the levels prescribed in the Service's 2001 Opinion on the IPNF's LRMP.

The three forests (i.e., IPNF, KNF, LNF) also manage for the three primary grizzly bear habitat parameters (core habitat, OMRD, and TMRD) on their ownerships within the CYRZ. Management of core habitat, OMRD and TMRD are considered necessary to avoid the displacement of grizzly bears from important seasonal habitats and to reduce grizzly bear mortality within the CYRZ. The Service's 1995 and 1996 Opinion on the KNF and LNF LRMP's, respectively, require the KNF and LNF to incorporate IGBC recommendations relative to the management of core habitat, and open and total roads densities (Service 1995, 1996). The IGBC recommended the development and establishment of ecosystem specific grizzly bear parameters address the management of core habitat, OMRD, and TMRD. In accordance with IGBC direction, Wakkinen and Kasworm (1997) developed and recommended specific levels addressing the management of these three grizzly bear habitat components within the CYRZ. Thus, pursuant to their LRMPs, and the 1995 and 1996 biological opinions, the KNF and LNF are required to manage for OMRD and TMRD, as well as core habitat. Regarding the IPNF, the Service's 2001 Opinion established the following standards, based upon Wakkinen and Kasworm (1997) research on grizzly bears in the SRZ and CYRZ for core habitat, OMRD, and

TMRD: 1) each BMU must contain a minimum of 55 percent core habitat; 2) TMRD greater than 2 miles/square mile (mi/sq.mi) must average 26 percent or less of each BMU; and 3) OMRD greater than 1 mi/sq.mi must average 33 percent or less of each BMU (Service 2001). The status of the CYE BMUs relative to these three parameters is displayed in Table 25.

Currently 13 BMUs (59 percent) contain at least 55 percent core habitat, 14 (59 percent) have open road densities exceeding 1 mi/mi^2 in 33 percent or less of the BMU, and 11 (50 percent) have total road densities exceeding 2 mi/mi^2 in 26 percent or less of the BMU (Table 25). Only 36 percent (8 of 22) of the BMUs meet or provide better habitat conditions for all three grizzly bear habitat parameters (core habitat, OMRD, TMRD) recommended by Wakkinen and Kasworm (1997).

As stated previously, several areas have been delineated in which grizzly bears are living outside of but adjacent to recovery zones. Figure 2 depicts several of these areas adjacent to the CYRZ. Table 26 displays the status of these areas relative to linear total and open road density and road density on National Forest lands. We currently do not have any information regarding the quantity of unroaded habitat contained within these areas.

Table 26. 2007 Road density status of Grizzly Bear Occupancy Areas adjacent to the CYRZ; (KNF 2008, Lyndaker pers. comm. 2008).

Area	**Size (mi^2)**	**Linear Total Road Density on National Forest Lands (mi/mi^2)**	**Linear Open Road Density on National Forest Lands (mi/mi^2)**
Troy	68	2.5	1.1
Clark Fork	442	2.6	0.9
Cabinet Face	150	3.9	2.2
West Kootenai	326	3.0	1.3
Tobacco	802	3.0	2.0
Libby	290	3.4	1.9
Fisher	559	2.7	1.0
Deer Ridge	64	2.6	2.4

The linear road density information identified in Table 26 is not analogous to, and therefore may not be comparable with road density information derived using a moving windows analysis technique, upon which the road density standards for the Recovery Zones are based. A moving windows analysis is a spatial analysis of road density distribution, while a linear road density analysis is simply a quantification of the amount (i.e., length) of roads per unit area that exist on the landscape.

3). Other Factors:

The CYRZ is long and narrow (see Figure 9). An area of predominantly private land of mixed ownerships, approximately 22 miles long and up to 5 miles wide, occurs near the middle of the

recovery zone. It includes the town site of Troy, Montana, the Kootenai River corridor just east and west of Troy, and the private lands along the Highway 56 corridor. With the exception of the town of Troy, which is not included within the boundaries of the CRYZ, this area is classified as MS-3. In the event of human-bear conflicts, the conflicts are resolved in favor of humans. This area encompasses primarily low elevation spring habitat rendered mostly unsuitable for grizzly bears as a result of the high density of people. As grizzly bear numbers slowly increase in the ecosystem, the area presents a higher risk of grizzly bear mortality due to potential human-bear conflicts. Risks to grizzly bears increase as concentrations of residences, roads, unsecured human-food attractants such as garbage cans, dumpsters, and pet foods, hunting and other recreation increase in and around this area. It also presents an area that likely displaces some bears, particularly some females and females with cubs, away from low-elevation habitat that might be important for their continued survival and development.

The Highway 2 corridor runs east-west across the CYRZ, and includes a major state highway, railroad, the Kootenai River, and private land development and roads. The corridor bisects the ecosystem between the Yaak and Cabinet Mountains portions. Although the impacts of this corridor on grizzly bear movements within the CYRZ have not specifically been investigated, the Service has no information documenting movement of grizzly bears between the Yaak and Cabinet Mountains. The Highway 2 corridor could be or may eventually become a significant barrier to grizzly bear movement between the Yaak and Cabinet Mountains. A total barrier to movement would present a substantive impediment to grizzly bear recovery in the CYRZ, affecting the distribution and demographic and genetic health of CYRZ grizzly bears. Impacts would especially affect those grizzly bears in the Cabinet Mountains, as connectivity with grizzly bear populations in Canada would essentially be severed. Further, the small number of grizzly bears in the Cabinet Mountains amplifies the demographic and genetic concerns related to such a barrier.

The Revett Troy copper/silver mine occurs in BMU 3. The mine has been in operation for over 20 years and affects approximately 50 acres of disturbed area at the mine site on national forest system lands and an additional 400 acres of private lands (Service 2003). The mine is currently operating due to favorable market conditions. Also, maintenance (primarily pumping water from the underground cavities) continues and roads remain gated to the public. Approximately 4 years of additional operation is possible on this ore body (Service 2003). The Revett Minerals Inc. owns the Troy Mine, and intends to complete the unit while the permitting, evaluation adits and development adits are completed at the Rock Creek Mine. Impacts from current activities at the Troy mine are not known to substantially impact bears in the southern portion of the CYRZ. Impacts during additional operation would primarily be associated with additional workers living in the area. However, most of these employees would also work at the Rock Creek Mine. A large ingress of people into the area associated with the Troy Mine in addition to that associated with the Rock Creek mine is not expected (Service 2003).

The Rock Creek copper/silver mine would be located in the southern Cabinet Mountains in BMUs 4, 5, and 6. The mine's permit boundary would encompass 1,560 acres; 483 acres would be directly impacted by mining activity, including 3.5 miles of road construction and 5.4 miles of road reconstruction; 1,078 acres would remain undisturbed. Of the 483 acres directly impacted by mining activity, 323 acres are national forest and 160 acres are privately owned. However,

the area in which grizzly bears would be directly or indirectly influenced by the mine or its activities at some time during the mine's development and operation could equate to as much as 7,044 acres. Construction and operation of the mine could increase mortality risk to grizzly bears, and further exacerbate existing fragmentation problems within the CYRZ. However, the owners of the mine have agreed to incorporate conservation measures and a mitigation plan to reduce potential impacts associated with mine construction and operation on grizzly bears. Additionally, the Service has issued a biological opinion and incidental take statement with accompanying reasonable and prudent measures and terms and conditions to further reduce the effects of the proposed mine upon grizzly bears and/or their habitat (Service 2006).

Several patented mining claims occur along the borders of the Cabinet Mountains Wilderness. Large scale mineral development is unlikely on many of these small patents (Service 2003) due to their size and the nature of the mineral deposits. However, as patented (private) land inholdings, these scattered small parcels increase the risk of adverse grizzly bear-human interactions due to increased potential for contact with people, food and other attractants. The Forest is required to provide reasonable access under current laws and regulations and can influence access across national forest system lands, but has no jurisdiction over activity on private lands. Potential uses of these private lands include timber harvest, residences, cabins or other facilities, and hunting camps. All properties can legally be accessed by foot or horseback, and some have motorized access rights.

Major projects that have affected grizzly bears in the CYRZ include the Bull Lake Estates Subdivision Project in BMU 3 (Subdivision Project), and the Idaho Transportation Department's (ITD) Junction State Highway-1, Northeast Boundary County Project (ITD Highway Project). Regarding the Subdivision Project, the Forest requested consultation on issuance of an access permit across national forest system lands. The Service issued a biological opinion and an incidental take statement on the Subdivision Project in 2000 (Service 2000b). The ITD Highway Project is located in eastern Idaho, between the Yaak portion of the CYRZ and the Selkirks ecosystem (Service 2002). The project will upgrade 16 miles of roadway on United States Highway 95 from the State Highway 1 junction to the Canadian border in Boundary County, Idaho. The purpose of this project is to upgrade the roadway to current engineering and safety standards, increase public safety, replace deteriorating bridges across the Moyie River, and accommodate increasing commercial traffic flow. Design features include wildlife crossing structures. The Service issued a biological opinion and an incidental take statement on the ITD Highway Project in 2002 (Service 2002).

5. Critical Habitat

No critical habitat has been designated for the grizzly bear, therefore, none will be affected.

B. Environmental Baseline

1. Status of the Species within the Action Area

Portions of both the CYRZ and SRZ, and one area of delineated grizzly bear occupancy adjacent to the SRZ (Pack River) are contained within the action area (Figure 10). As described in

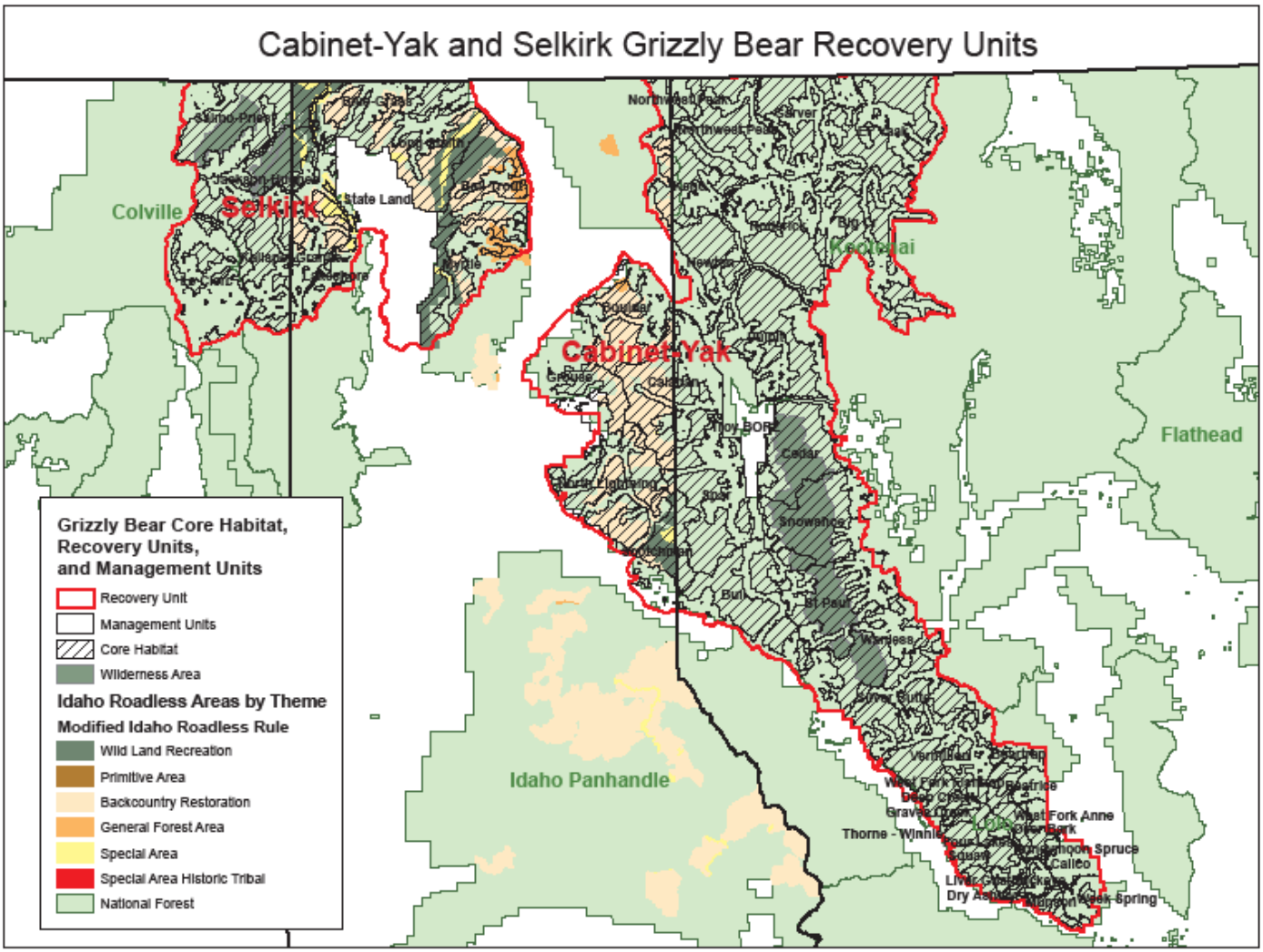

Figure 10. Grizzly bear core habitat, bear management units (BMUs), and IRAs in the Selkirk and Cabinet-Yaak Ecosystems (also called Recovery Units)

Chapter II's "Description of the Proposed Action" Section, the action area essentially comprises roadless areas within Idaho. To that extent, in Idaho, roadless areas are contained and dispersed throughout all 8 BMUs managed by the USFS (i.e. Blue Grass, Long-Smith, Ball-Trout, Myrtle, Lakeshore, Kalispel-Granite, Sullivan-Hughes, and Salmo-Priest) and the single State Land BMU in the SRZ, and 7 BMUs (Northwest Peak, Keno, Boulder, Grouse, North Lightning, Scotchman, Callahan, and Spar) in the CYRZ. Additionally, a portion of the White Mountain IRA is also contained within the Pack River Area (PRA) of reoccurring use by grizzly bears adjacent to the SRZ. Documented sightings and credible reports of individual grizzly bears, female grizzly bears with cubs, and family groups of grizzly bears exist for all BMUs and the PRA within the action area, with the exception of the Grouse BMU in the CYRZ (Wakkinen and Johnson 2008; Kasworm et al. 2007; Kasworm, pers. comm. 2008; Layser, pers. comm. 2008). The Grouse BMU is comprised of a high percentage of non-federal land. The Grouse BMU is only comprised of about 54 percent federal ownership; the other majority landowners are IDL

and Forest Capital LLC. However, while there are no documented sightings from the Grouse BMU, given that documented sightings of grizzly bears exist from BMUs surrounding the Grouse BMU to the north, east, and south, it is highly likely that undocumented/undetected use of habitat within the Grouse BMU by grizzly bears has occurred.

2. Factors Affecting the Species Environment within the Action Area

Within the action area, grizzly bears are affected by the same mechanisms affecting the overall status of the grizzly bear populations in the Selkirk and Cabinet-Yaak Ecosystems, as described above in the "Current Status of the SRZ and CYRZ Population" section.

Roads in grizzly bear habitat pose a serious risk of mortality to grizzly bears. Grizzly bear mortality can result directly from collisions with vehicles, but more commonly, indirectly through increased exposure to and interaction with humans. The specific relationship between roads and the mortality risk to bears is difficult to quantify. The level of human use of roads is one of several factors influencing the mortality risk associated with any road. Forest roads facilitate human access into grizzly bear habitat, which directly or indirectly increases the mortality risk to grizzly bears. Grizzly bears are increasingly vulnerable to illegal and legal harvest as a consequence of increased road access by humans in Montana (Mace et al. 1996) and in the Yellowstone region (Mattson et al. 1992). In southeastern British Columbia, McLellan and Shackleton (1988) reported roads increased access for legal hunters and poachers, the major source of adult grizzly mortality in that area. McLellan (1989) reported that 7 of 13 successful legal hunters interviewed had been on a road when they harvested a grizzly bear.

In the North Fork of the Flathead River Valley in British Columbia, McLellan and Mace (1985) found that a disproportionate number of mortalities occurred near roads. In the Yellowstone ecosystem, Mattson and Knight (1991) reported that areas influenced by secondary roads and major developments were most lethal to bears. Aune and Kasworm (1989) reported 63 percent of known, human-caused grizzly bear deaths on the east front of the Rocky Mountains occurred within 1 kilometer (0.6 miles) of roads, including 10 of 11 known female grizzly bear deaths. In Montana, Dood et al. (1986) reported that 48 percent of all known, non-hunting mortalities during the period of 1967 through 1986 occurred within 1 mile of roads. Kasworm et al. (2007) reported that 64 percent (7 of 11) of human-caused grizzly bear mortalities on National Forest lands within the CYRZ were within 500 meters of an open road. Within the SRZ, 68 percent (30 of 44) of human-caused mortalities were within 500 meters of an open road (Wakkinen and Johnson 2008).

The effect of roads upon grizzly bear behavior and habitat use has also been well documented in the scientific literature. Several authors have documented grizzly bear avoidance of roads and the resulting displacement from adjacent habitat (Aune and Stivers 1985, McLellan and Mace 1985, Kasworm and Manley 1988, McLellan and Shackleton 1988, Aune and Kasworm 1989, Frederick 1991, and Wakkinen and Kasworm 1997). Mace and Manley (1993) documented displacement of grizzly bears from closed roads, and found that grizzly bear use of areas declined as total road densities (open and closed roads) exceeded 2 mi/mi^2 and open road densities exceeded 1 mi/mi^2. Mace et al. (1996) found that grizzly bears are able to utilize roaded habitats, but that spatial avoidance increases and survival decreases as traffic levels and

road densities increase. Wakkinen and Kasworm (1997) found that areas with total road densities greater than 2 mi/mi^2 and/or open road densities greater than 1 mi/mi^2 were used less than expected (avoided) by grizzly bears. A number of studies have indicated that female grizzlies with cubs tend to avoid roads (Mace et al. 1996, and Zager 1980 *In*: Service 1993). The occurrence of roads and the associated human disturbance within high quality bear habitats can also influence indirect mortality risk by disrupting efficient foraging strategies resulting in nutritional stress, restricting reproduction and dispersal, and potentially reducing carrying capacity (Mattson et al. 1987 *In*: Frederick 1991, and Aune and Stivers 1985 In: Frederick 1991). Nutritional demands of female bears with cubs are triple that of other bears, making their access to nutritional food sources and uninterrupted feeding essential during spring and fall (Jonkel 1982 *In*: Frederick 1991). The IGBC recognized the effect of roads upon grizzly bears through its recommendation to develop ecosystem specific management parameters for core habitat, TMRD, and OMRD (IGBC 1998).

C. Effects of the Proposed Action

Under section 7(a)(2) of the Act, "effects of the action" refers to the direct and indirect effects of an action on the species or critical habitat, with the effects of other activities interrelated or interdependent with that action. Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur as allowed by the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed under the MIRR versus an analysis of on-the-ground activities, and therefore has no direct effects. Indirect effects are those caused by the proposed action and are later in time, but still are reasonably certain to occur (50 CFR 402.02). The effects of the action are added to the environmental baseline to determine the future baseline and to form the basis for the determination in this opinion. Should the Federal action result in a jeopardy situation and/or adverse modification conclusion, the Service may propose reasonable and prudent alternatives that the Federal agency can take to avoid violation of section 7(a)(2). The impacts discussed below are the result of indirect impacts that could occur as a result of implementing the MIRR.

The MIRR proposes direction for the management of roadless areas in Idaho. The MIRR would establish five management area themes for individual roadless areas: WLR; PRIM, SAHTS; BCR; and GFRG (Figure 10). The proposed themes span a continuum that includes both prohibitions and permissive allocations. Allocation to a specific theme is not intended to mandate or direct the USFS to propose or implement any action; rather the themes provide an array of permitted and prohibited activities regarding: timber cutting, sale, or removal; road construction and reconstruction; and mineral activities.

According to the Assessment, the provisions set forth in the MIRR take precedence over any inconsistent land management plan component. Land management plan components that are not inconsistent with the MIRR will continue to provide guidance for projects and activities within IRAs. In the USFS review of existing management direction for grizzly bears they have determined that none of the species specific direction in LRMPs is inconsistent with the permissions or prohibitions provided in the MIRR management themes. The existing LRMP

management direction provides specific criteria for designing projects or activities; therefore existing LRMP management direction for grizzly bear would be applied. The Assessment further states that LRMP components will shape and guide the projects undertaken as allowed by the MIRR, which would include standards for grizzly bear protection. The Assessment states that if the LRMP grizzly bear standards cannot be met, the proposed project would have to be modified, abandoned, or the plan amended. According to the Assessment, applicable LRMP components for grizzly bear are those outlined in Appendix B of the Assessment (USFS 2008b). Furthermore, the Service's 2001 BO on the IPNF's 1987 LRMP sets forth specific terms and conditions for the management of grizzly bear habitat within the CYRZ and SRZ on IPNF ownership.

The Assessment relied on several assumptions when analyzing the potential effects of implementing the MIRR (USFS 2008). The Assessment assumed that road construction, reconstruction, and timber harvest in IRAs would be similar to that which has occurred over the past five years, which was due primarily to implementation of the 2001 Roadless Rule and declining budgets. The following projections (which would be distributed across all of the IRAs) are not included in the proposed action, but were provided in the Assessment to facilitate the analysis of the potential effects resulting from activities allowed by the MIRR:

- 1,000 acres of annual timber harvest,
- 15,000 acres of timber harvest over 15 years, and
- Annual road construction/re-construction would equal 3.3 miles or less. About 2.3 miles of which would associated with timber harvest and would be temporary in nature, and 1.0 miles would be for other reasons such as rights-of-way access, locatable minerals, and phosphates.

IRAs overlap approximately 23 percent and 7 percent of the entire area encompassed within the SRZ and CYRZ, respectively (USFS 2008). According to the Assessment, currently grizzly bear core habitat comprises 47% (325,498 core acres out of 688,734 total acres) of the SRZ, and 55% (929,607 core acres out of 1,692,290 total acres) of the CYRZ. Within the SRZ and CYRZ, IRAs are essentially analogous to grizzly bear core habitat (Figure 10). Grizzly bear core habitat is defined as areas greater than or equal to 0.31 miles from any road (open or restricted), motorized trail, or high intensity use area. Core habitat may contain restricted roads, but such roads must be *effectively* (emphasis added) closed with devices, including but not limited to earthen berms or barriers, or naturally closed by vegetative growth (IGBC 1998a). As described in the "Current Status of the SRZ and CYRZ Population" and as further elucidated in the Service's 2004 Access Opinion, management of grizzly bear core habitat within BMUs of the SRZ and CYRZ is vital to the stability and recovery of both populations (Service 2004). Given the current habitat conditions and grizzly bear population status within both the SRZ and CYRZ, the Service's long standing position is that there can be no degradation of the existing habitat conditions within these recovery zones, which includes losses of core habitat. In fact, to improve the status of both populations within the SRZ and CYRZ, the Service's position is that, based upon the grizzly bears' life history needs as determined through scientific research specific to these to ecosystems (e.g., Wakkinen and Kasworm 1997), additional habitat improvements must occur (i.e., increases in core habitat, and decreases in TMRD and OMRD within several BMUs) within these recovery zones.

Construction or reconstruction of roads within grizzly bear core habitat would result in losses of core habitat and corresponding adverse effects to grizzly bears within the SRZ and CYRZ. It appears that the MIRR would allow the construction of roads within grizzly bear core habitat within BMUs in the SRZ and CYRZ, which would potentially have serious ramifications on the stability and recovery of the grizzly bear populations within these ecosystems. Approximately 136,917 acres of grizzly bear core habitat in the SRZ and 108,899 acres of grizzly bear core habitat in the CYRZ are contained in IRA MIRR themes, which equates to approximately 42 percent and 12 percent of the total core habitat in SRZ and CYRZ, respectively (Table 27).

However, as described in the project description, the potential for road construction/reconstruction to occur within grizzly bear core habitat overlapped by IRAs differs between individual MIRR themes. For example, under the WLR, PRIM, and SAHTS themes road construction/reconstruction is generally prohibited. Thus, even though the WLR theme overlays approximately 54,123 acres of grizzly core habitat in the SRZ and 10,340 acres in the CYRZ, grizzly bear core habitat in the WLR theme should not be affected by road construction or reconstruction. There is no overlap of the PRIM or SAHTS themes with grizzly bear core habitat within either the SRZ or CYRZ. The two MIRR themes under which grizzly bear core habitat could be impacted within the SRZ and CYRZ are the BCR and GFRG themes, as road construction and reconstruction are allowed under these two themes. Approximately 471 acres of grizzly bear core habitat in the SRZ and 11,719 acres of grizzly bear core habitat in the CYRZ are within the BCR theme; which equates to less than 1% of grizzly bear core habitat in the SRZ and approximately 1% of core habitat in the CYRZ. The GFRG theme contains approximately 7,992 acres of grizzly bear core habitat in the SRZ and 979 acres of grizzly bear core habitat in the CYRZ, which represents 2% of core habitat in SRZ and less than 1% of core habitat in CYRZ, respectively.

However, on August 7, 2008, the Forest Supervisor of the IPNF submitted a letter to the Service stating that, "*…I will defer decisions that would have a "likely to adversely affect" determination, except when the project is designed to provide long-term benefits to grizzly bears, until the Record of Decision for the Access Amendment is signed*" (McNair 2008) (Appendix C).

The intent of the Access Amendment is to provide a strategy to minimize the effects to grizzly bears resulting from motorized access into grizzly bear habitat on National Forest lands in the Selkirk and Cabinet-Yaak ecosystems. The Access Amendment will establish standards and guidelines pertaining to wheeled, motorized use within areas occupied by grizzly bears within these ecosystems. Implementation of the Access Amendment will contribute to the conservation and recovery of grizzly bears within the Selkirk and Cabinet-Yaak ecosystems. A ROD for the Access Amendment is anticipated in 2009.

Table 27. Overlap of grizzly bear core habitat with the Modified Idaho Roadless Rule themes, in the Selkirk and Cabinet-Yaak Ecosystems (after USFS 2008).

Recovery Zone	BMU	Total Core Habitat	Modified Idaho Rule Themes[1]					
			WLR	BC	BCR/CPZ	GF	SA	Total in IRA
Selkirk								
	Ball-Trout	41,439	12,216	17,571.07	0	4,938.63	0	76,164.7
	Blue-Grass	28,549	1559	9,698.31	0	0	920.65	40,726.96
	Sullivan-Hughes	47,857	4,067.79	1,965.76	0	0	4,900.17	58,790.72
	Kalispell-Granite	41,014	0	7,963.17	120.32	0	127.14	49,224.63
	Lakeshore	3,430	0	444.61	157.57	0	706.05	4,738.23
	Long-Smith	47,991	14,855.01	15,701.23	193.25	0	5,668.91	84,409.4
	Myrtle	37,055	13,905.16	6,543.31	0	3,054.08	196.62	60,754.17
	Salmo-Priest	57,492	7,519.42	0	0	0	1,923.49	66,934.91
	State Land	0.45	0.02	0.14	0	0	0.05	0.66
Totals			54,122.4	59,887.6	471.14	7,992.71	14,443.08	136,916.93
Cabinet-Yaak								
	Boulder	30,966	0	23,164.59	0.47	979.31	1,425.75	56,536.12
	Callahan	49,899	0	26,415.25	00	0	172.51	76,486.76
	Grouse	21,284	0	7,338.28	1,522.63	0	0	30,144.91
	Keno	30,138	0	4,698.83	356.13	0	0	35,192.96
	North Lightning	45,937	0	14,413.64	3,340.67	0	0	63,691.31
	Scotchman	39,080	10,340.32	4,622.02	6,498.99	0	1,295.65	61,836.98
	Spar	45,601	0	2,314.38	0	0	0	47,915.38
Totals			10,340.32	82,966.99	11,718.89	979.31	2,893.91	108,899.42

[1] There was no overlap with Primitive or SAHT; consequently, those themes are not included below.

Based on the August 7, 2008, letter from the IPNF Forest Supervisor , we assume that projects allowed pursuant to the MIRR will not involve the construction or reconstruction of temporary or permanent roads within grizzly bear core habitat within the SRZ or CYRZ unless the project is designed to provide long-term benefits to grizzly bears until such time as the ROD for the Access Amendment is signed. Therefore, for activities allowed under the MIRR, we do not anticipate adverse effects to grizzly bears within the SRZ and CYRZ as a result of road construction or reconstruction within grizzly bear core habitat prior to signature and completion of any appropriate section 7 consultation on the Access Amendment. This assumption is central to our effects analysis and biological conclusions. If this assumption is determined to be incorrect, consultation on the MIRR may need to be reinitiated to determine whether any site-specific action pursuant to the MIRR resulted in effects to grizzly bears that were not considered and analyzed in this biological opinion (50 CFR 402.16). Additionally, as potential effects to grizzly bears related to road construction or reconstruction within grizzly bear core habitat under the MIRR are not anticipated to occur until the Access Amendment ROD is signed, such potential effects to grizzly bears are not analyzed within the context of this analyisis. The potential road-related effects that may occur to grizzly bears under the MIRR will be fully evaluated within the analysis conducted with the Forest Service for the consulation on the Access Amendment. Furthermore, the potential for such future road-related effects to grizzly bears, once the Access Amendment ROD is signed, are anticipated to be fully consistent with the management direction

for grizzly bears within the SRZ and CYRZ prescribed by the Access Amendment. As noted previously, the Access Amendment ROD is anticipated to be completed in 2009.

A portion of the White Mountain IRA is contained within the PRA and the White Mountain IRA is overlapped by the BCR theme, under which road construction and reconstruction are allowed. The PRA is an area adjacent to the SRZ that has been delineated as receiving regular reoccurring use by grizzly bears. Some of the grizzly bears may have home ranges located entirely outside of the SRZ, while others may utilize habitats both within and outside of the SRZ. However, grizzly bear densities are lower in the area than they are within the SRZ. While core grizzly bear habitat has not been mapped and is not managed for in the PRA, the presence of grizzly bears in the area indicates that some bears have apparently acclimated to the existing conditions. Maintaining the existing roaded conditions within the PRA would most likely prevent displacing the grizzly bears that are utilizing the area. Compensating for road construction within unroaded areas of the PRA may include road management elsewhere in the PRA (i.e., restricting or closing existing roads). As grizzly bear densities are most likely lower in the PRA, relative to the SRZ, closing or restricting other existing roads within the PRA to compensate for road construction within currently unroaded portions of the PRA would provide secure areas for grizzly bears to be displaced to and utilize. The Service expects that the USFS's (specifically, the IPNF) commitment to avoid adverse effects to grizzly bears would extend to actions proposed under the MIRR within the PRA, and would, therefore, maintain the existing roaded conditions within the PRA (Table 21). Furthermore, for projects proposed in accordance with the MIRR other appropriate measures would be incorporated through site-specific, project-level consultations to reduce the potential for, or effects of, displacing grizzly bears from important seasonal habitat within the PRA. Maintaining existing road densities within the PRA, to which the grizzly bears have apparently acclimated, as well as incorporating other appropriate site specific conservation measures, will ensure that any grizzly bear displacement does not increase the risk of direct or indirect mortality of the bears.

Other factors beyond motorized access management can affect the effectiveness of grizzly bear habitat as well. The IGBC defined grizzly bear core habitat in terms of linear features (i.e., roads, trails) on the landscape that provide for or facilitate motorized access or high intensity non-motorized human activity (e.g., recreation), as they are one of the most influential factors affecting grizzly bear habitat security, which are easily defined and measurable. However, the IGBC recognized that controlling motorized access alone will not completely address grizzly bear habitat security. The Service's 1999 finding concluded that human intrusion into grizzly bear habitat is one of the factors contributing to the risk of grizzly bear extinction in the SRZ and CYRZ (Service 1999). Christensen and Madel (1982) determined that grizzly bears can be displaced from habitat impacted by high levels of human activity, such as mining, sustained helicopter flights, and high use recreational areas (i.e., campgrounds), and therefore, activities of this type must be considered when managing for effective grizzly bear habitat. A 1987 compendium of scientific research on grizzly bears documented that the bears avoid, and can be displaced from, areas impacted by point-source disturbances including, but not limited to, mining, hydrocarbon exploration and development, helicopter flights, and recreational developments and activity (IGBC 1987). Thus, projects undertaken pursuant to the MIRR may adversely affect grizzly bears through these other disturbance mechanisms, such as helicopter harvest and prescribed fire, which may not be associated with road construction/reconstruction.

Projects undertaken pursuant to the MIRR may involve timber harvesting. The Assessment projects that approximately 1,000 acres could be harvested annually across all of Idaho. Given the prohibitions and permissions associated with the MIRR themes, most of this projected harvest would take place within the GFRG theme. If all acres of harvest were concentrated in either the SRZ or CYRZ, this would affect less than 1 percent of the core habitat in either ecosystem on an annual basis. Over the course of 15 years, the Assessment projects that as many as 15,000 acres could be harvested. Due to the programmatic nature of this consultation, it is not possible to predict how many, if any, of the 15,000 acres of harvest would occur in the CYRZ or SRZ. However, because the purpose of the MIRR is to provide State-specific direction for the conservation and management of the 250 IRAs totaling 9.3 million acres (USFS 2008) distributed throughout the State of Idaho, it is highly unlikely that harvest activities would be concentrated in the CYRZ or SRZ.

If timber harvesting were to occur within grizzly bear core habitat within the SRZ or CYRZ under the MIRR, it would most likely involve helicopter harvesting or winter logging, at least until the ROD for the Access Amendment is signed; ground-based harvesting operations would require road construction resulting in the loss of grizzly bear core habitat and adverse affects to grizzly bears, which the IPNF has committed to deferring. Helicopter logging activities in grizzly bear core habitat can affect grizzly bears resulting in their displacement.

Helicopter logging does not pose the same long-term displacement effects and increased mortality risk to grizzly bears as roads do. Helicopter logging is transitory and does not bring additional human use into grizzly bear habitat, whereas roads are generally longer term or permanent features on the landscape and facilitate human access into grizzly bear habitat. Helicopter logging may, however, result in short-term adverse impacts to grizzly bear core habitat because the ability of the area to function as grizzly bear core habitat is compromised, and grizzly bears are likely to be displaced from the area during the time the helicopter logging operations are on-going. Thus, while helicopter logging within grizzly bear core habitat may not necessarily require a deduction in core habitat (unlike road construction within grizzly bear core habitat, which does require a deduction in the core habitat calculations), the potential temporary adverse displacement effects to grizzly bears associated with helicopter logging within grizzly bear core habitat must be considered. Repeated helicopter flights less than 1,500 feet in altitude are considered to result in grizzly bear displacement on the ground (Service 2004b).

As described previously, the nutritional demands of female bears with cubs is triple that of other bears, making their access to nutritional food sources and uninterrupted feeding essential during spring and fall (Jonkel 1982 *In*: Frederick 1991). Thus, similar to the potential displacement effects upon grizzly bears resulting from roads, the potential displacement effects associated with helicopter logging within grizzly bear core habitat, and especially spring grizzly bear habitat, can also influence indirect mortality risk by disrupting efficient foraging strategies resulting in nutritional stress, restricting reproduction and dispersal, and potentially reducing carrying capacity. The disturbance effects of the timber harvest are likely to be temporary, but depending on the experience of individual grizzly bears, the impact could result in long or short-term avoidance of the area harvested, including the influence zone surrounding the harvest units.

However, the IPNF has committed to deferring projects that would be implemented under the MIRR and that would have adverse affects to grizzly bears, except when the project is designed to provide long-term benefits to grizzly bears, until the ROD for the Access Amendment is signed. It is difficult to conceive of a helicopter logging project that would be designed to achieve the objectives of the MIRR and that would at the same time also result in improved habitat conditions for grizzly bears. An example might be a project that would reduce wildland fire risk by reducing fuel loading through overstory canopy removal, which would promote understory shrub development increasing the foraging opportunities for grizzly bears. Such a project could include timing constraints to minimize the potential for displacement of grizzly bears from important seasonal habitats. Limiting the timing and duration of helicopter use within grizzly bear core habitat may reduce the potential for displacement of, and effects to, grizzly bears that may result from the harvest activities. These types of measures, as well as other appropriate measures, would be incorporated through site-specific, project-level consultations to reduce the potential for, or effects of, displacing grizzly bears from important seasonal habitat within grizzly bear core habitat for projects that are proposed in accordance with the MIRR. Incorporating appropriate site-specific conservation measures will ensure that any adverse displacement effects are short-term in nature (e.g., temporary) and do not have any potential to result in direct or indirect mortality of grizzly bears.

When allowed under the LRMP, the use of prescribed fire as a management tool would be available across all themes as the MIRR does not require, limit or prohibit the use of prescribed fire. Fire in grizzly bear habitat can be beneficial or detrimental depending on when and where it occurs, and the scale (number of acres burned) at which it occurs. In general, fire is thought to have a positive effect on grizzly bear habitat, and the decline of grizzly bear populations has been attributed to fire suppression (Willard and Herman 1977; Tirmenstein 1983; Contreras and Evans 1986). Grizzly bears are opportunistic species with large home ranges, and their populations change little in response to fire (Smith 2000). Fires promote and maintain many important berry-producing shrubs and forbs and provide a medium for insects and carrion (primarily in the instance of very large fires). However, fire can also affect other food sources, such as whitebark pine nuts. Although grizzly bears generally benefit from periodic burns because of improved habitat quality, a very large burn could destroy a large percentage of available habitats resulting in habitat fragmentation.

As for most species, the effects of fire on grizzly bears are highly dependent on numerous factors that are difficult to predict for this analysis. It is generally agreed that historically wildfire was the primary disturbance factor in the SRZ and CYRZ. In the past, fire has destroyed grizzly bear cover and food and has altered habitat. Although such disturbances may not have a major impact when a large acreage of habitat is available, in the present conditions of limited, fragmented habitat, a fire could burn a large percentage of the remaining available habitat. This potential effect can be minimized by implementing projects designed to prevent stand-replacing and uncontrollable wildfires.

Grizzly bears occupy large areas of suitable habitat. Shrub and grass communities interspersed within the wooded areas provide seasonal foraging opportunities for grizzly bears. Implementation of prescribed burning within the IRAs to maintain grass and shrub communities can maintain or increase grizzly bear foraging opportunities However, individual grizzly bears

could be adversely affected depending on size (number of acres treated) and timing (season) of implementation of prescribed fire projects undertaken pursuant to the MIRR. Although it is possible that some fire-related mortality of grizzly bears occurs, it is thought to be rare and unlikely to have a substantial impact on the grizzly bear population as a whole (Blanchard and Knight 1991). Methods to avoid conflicts with grizzly bears may include the use of seasonal timing constraints to avoid burning grizzly bear habitat during the season of grizzly bear use. These types of measures, as well as other appropriate measures, would be incorporated through site-specific, project-level consultations to reduce the potential for, or effects of, displacing grizzly bears from important seasonal habitat within grizzly bear core habitat for prescribed fire projects that are proposed in accordance with the MIRR.

Discretionary mining activities would be allowed under the MIRR. However, new road construction and reconstruction associated with development of geothermal, oil, or gas reserves is prohibited in roadless areas under the MIRR regardless of theme. Surface use and occupancy in the BCR and GFRG themes would be permitted if allowed in the LRMP. There are no known oil and gas deposits on the IPNF, and geothermal energy potential is very low. As such, little commercial interest in leasing for such resources is anticipated as development would essentially be precluded in the absence of new roads and there is low potential for the resource. Activities related to phosphate leasing in IRAs would be restricted to areas in and adjacent to specific Known Phosphate Leasing Areas (KPLAs) on the Caribou portion of the Caribou-Targhee National Forest. Consequently, the likelihood that discretionary mining activities will take place in IRAs related to discretionary mining on the IPNF is exceptionally low.

D. Cumulative Effects

Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

- The action area for the MIRR consists of IRAs (see definition in Section II of the Assessment), most of which are unlikely to contain significant inholdings given their current roadless character and thus effects on such intervening non-Federal lands are unlikely;
- Given the broad scope of this Federal Action, it is not possible to determine specific state, private or local government legislation, administrative rules, or policy initiatives that would be reasonably certain to occur in IRAs.

E. Conclusion

After reviewing the current status of the grizzly bear, environmental baseline, effects of the proposed MIRR, and cumulative effects, it is the Service's biological opinion that the proposed MIRR would not have adverse affects in the SRZ or CYRZ such that recovery of the grizzly bear would be precluded. As the BRZ is currently unoccupied, the proposed MIRR will have no effect on the status of the BRZ. Also because the NCDRZ, NCRZ, and YRZ are outside the action area of the proposed MIRR, it will have no direct effects upon status of grizzly bears in

those ecosystems. Therefore, because the proposed MIRR will not preclude recovery and survival in any Recovery Zone, it is the Service's opinion the proposed MIRR will not jeopardize the listed grizzly bear population in the conterminous United States. No critical habitat has been designated for this species, therefore, none will be affected. Our conclusion is based on the following rationales:

1. Future projects proposed under the MIRR are subject to existing LRMP standards and guidelines that govern the management of activities within grizzly bear habitat. Additionally, the USFS is committed to complying with the Service's 2001 BO on the IPNF's LRMP. The 2001 BO stipulates terms and conditions to minimize the effects to grizzly bear that may result from activities implemented by the IPNF within the SRZ and CYRZ.

2 .The USFS (IPNF, Forest Supervisor) made a commitment to the Service to defer decisions within the SRZ and CYRZ that would have "likely to adversely affect" determinations (except when the projects are designed to provide long-term benefits to grizzly bears), until the ROD for the Access Amendment is signed.

3. The USFS will be required to consult with the Service on future actions proposed under the MIRR that have the potential to affect grizzly bears. Future projects with the potential to adversely affect grizzly bears, will be required to incorporate site-specific conservation measures to ensure that any such adverse effects are short-term in nature (e.g., temporary displacement) and do not have any potential to result in direct or indirect mortality of grizzly bears.

F. Incidental Take Statement

Due to the general nature of the proposed action, the *Effects of the Action* section of this document does not analytically support a finding that incidental take of the grizzly bear is likely to occur as a result of the proposed action. For that reason, any appropriate take exemption is deferred to the results of future section 7 analysis of individual or batched actions taken in accordance with the MIRR. The mere potential for future take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions developed pursuant to the MIRR and relevant provisions of LRMPs will serve as the basis for determining if an exemption from the section 9 take prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the grizzly bear in accordance with 50 CFR 402.14(i).

G. Conservation Recommendations

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends that the IPNF:

1. Continue working with the IGBC to develop and implement a Food Storage Order to reduce the potential for grizzly bear/human conflicts. It would be prudent to implement such an order within the administrative boundaries of the Forest. Improperly stored food and garbage leads to food conditioned and habituated grizzly bears that generally result in their direct mortality or management removal. Attraction of grizzly bears to improperly stored food and garbage is identified by the Recovery Plan as one of the principal causes of grizzly bear mortality, and has been the ultimate reason for several mortalities of grizzly bears within the CYRZ and SRZ;

2. In coordination with the Service and the Colville NF, evaluate for reconfiguration the BMUs that border the two Forests. Specifically, evaluate the appropriateness of reconfiguring the Salmo Priest, Sullivan-Hughes, Kalispell-Granite, and Lakeshore BMUs to more closely approximate the home range size of female grizzly bears within this Selkirk ecosystem (i.e., approximately 100 mi^2);

3. Conduct a moving windows analysis in the areas of grizzly bear occupancy outside of but adjacent to the SRZ and CYRZ to better assess the potential effects of road densities upon grizzly bears in these areas;

4. Within linkage areas, provide for landscape connectivity by participating in the development and implementation of a management plan to protect and restore habitat connectivity within these areas on federal lands;

5. Plan recreational development, and manage recreational and operational uses to provide for grizzly bear movement, and to maintain the effectiveness of grizzly bear habitat;

6. Identify and prioritize roads for reclamation or seasonal restrictions within watersheds exceeding > 2 mi/mi^2 of open road density to improve habitat quality and/or security for grizzly bears, as well as other listed and non-listed fish and wildlife species.

CHAPTER VI: GRAY WOLF

A. Status of the Species

As explained in more detail below, the status of the gray wolf in Idaho at the completion of this Opinion is as follows: the gray wolf north of Interstate 90 is listed as endangered and the gray wolf population south of Interstate 90 is considered nonessential experimental (NEP) under 10(j) of the Act (Figure 11). The USFS has concluded in their Assessment that the proposed MIRR may affect, and is likely to adversely affect the gray wolves throughout the state of Idaho. While making the same determination for both the endangered gray wolf north of Interstate 90 and the NEP of gray wolves south of I-90, the USFS has also concluded that the MIRR is not likely to jeopardize the continued existence of the NEP of gray wolves south of I-90. This Opinion only addresses the USFS's determination of may affect, and is likely to adversely affect the endangered gray wolf north of Interstate 90.

1. Listing History

In 1974, the Service listed four subspecies of gray wolf as endangered, including the northern Rocky Mountains gray wolf (*Canis lupus irremotus*), the eastern timber wolf (*C. l. lycaon*) in the northern Great Lakes region, the Mexican wolf (*C. l. baileyi*) in Mexico and the southwestern United States, and the Texas gray wolf (*C. l. monstrabilis*) of Texas and Mexico (50 CFR 17.11(h)) (Service 1974). In 1978, the Service relisted the gray wolf as endangered at the species level (*C. lupus*) throughout the conterminous 48 States and Mexico, except for Minnesota where it was reclassified as threatened (50 CFR 17.11(h)).

On November 22, 1994, the Service designated unoccupied portions of Idaho, Montana, and Wyoming as two NEP population areas for the gray wolf under section 10(j) of the Endangered Species Act of 1973, as amended (Act) (50 CFR 17.84(i)): the Greater Yellowstone Area NEP, including all of Wyoming and parts of southern Montana and eastern Idaho; and the central Idaho NEP area, including most of Idaho (south of Interstate Highway 90) and parts of southwestern Montana. In 2003, the Service adopted regulations that reclassified, or down-listed, wolves from endangered to threatened in Idaho north of I-90 (Service 2003); however, in early 2005, a federal court judge remanded these regulations. Consequently, wolves north of I-90 remained classified as fully endangered. Wolves were reintroduced to the NEP areas (south of I-90) starting in 1995. On January 6, 2005, the Service published a revised NEP 10(j) rule increasing management flexibility of these recovered populations for those States and Tribes with Service-approved wolf management plans (50 CFR 17.84(n)); this NEP special rule was revised again on January 28, 2008.

On March 12, 2007, the Service established and delisted the Western Great Lakes distinct population segment (DPS) of wolves, including all of Minnesota, Wisconsin, Michigan, and parts of North and South Dakota, Iowa, Illinois, Indiana, and Ohio (Service 2007).

On February 27, 2008, the Service designated and delisted the Northern Rocky Mountain gray wolf DPS throughout Idaho, Montana and Wyoming. Management of the delisted gray wolf was transferred to the individual state departments of wildlife with certain oversight responsibilities

remaining with the Service. On July 18, 2008, the district court of Montana issued a preliminary injunction on this Service action, temporarily reinstating protections under the Act previously provided to this species. Consequently the current status of the gray wolf in Idaho under the Act is as follows: the gray wolf north of Interstate 90 is listed as endangered and the gray wolf south of Interstate 90 is considered NEP under 10(j) of the Act (Figure 11). As stated above, this Opinion only addresses the USFS's determination that the proposed MIRR may affect, and is likely to adversely affect the population of gray wolves listed as endangered north of Interstate 90.

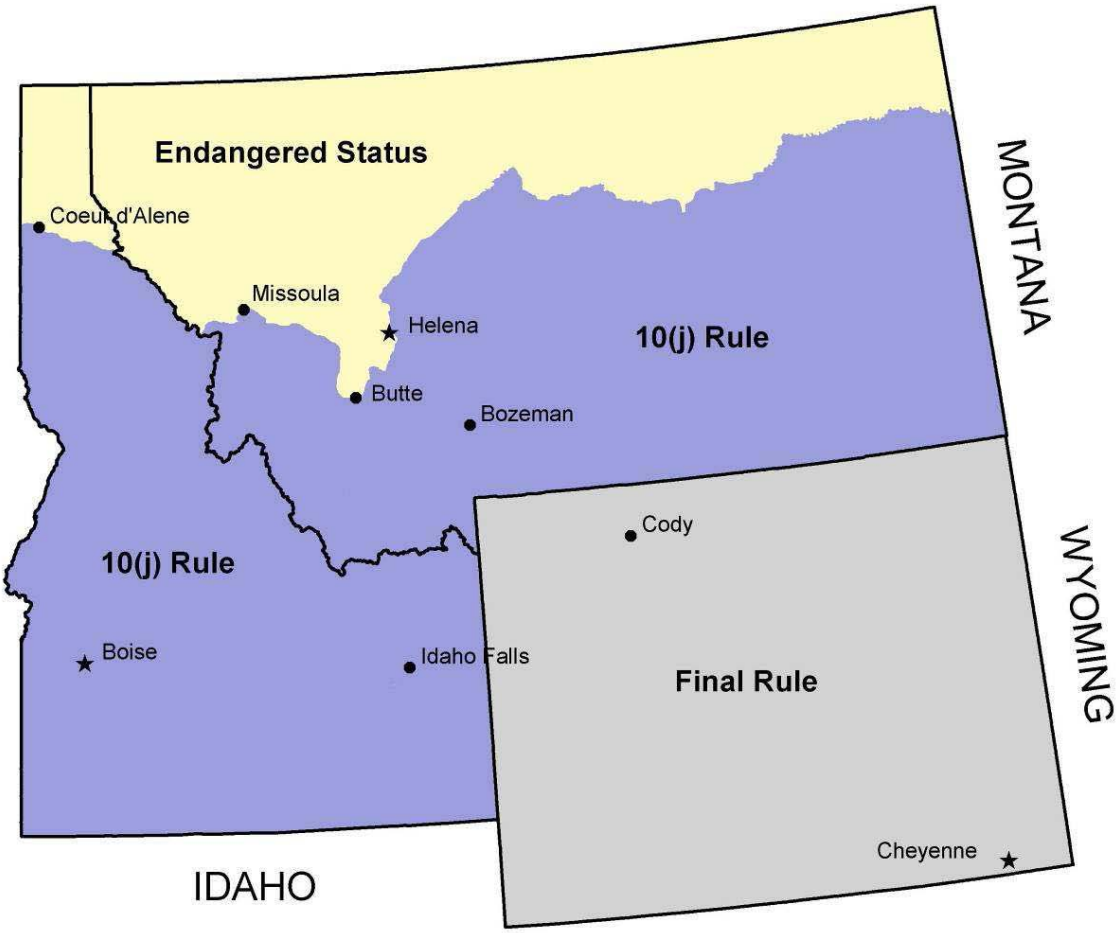

Figure 11. Northern Rocky Mountain Gray Wolf recovery areas depicting endangered (yellow) and nonessential experimental (blue) status of gray wolves.

2. Description of the Species

Gray wolves are the largest wild members of the dog family (Canidae). Adult gray wolves range from 18–80 kilograms (kg) (40–175 pounds (lb)) depending upon sex and region (Mech 1974, p. 1). In the NRM, adult male gray wolves average over 45 kg (100 lb), but may weigh up to 60 kg (130 lb). Females weigh slightly less than males. Wolves' fur color is frequently a grizzled gray, but it can vary from pure white to coal black (Gipson et al. 2002).

3. Life History and Habitat Requirements

Wolves are considered relatively social, forming packs consisting on average of 2-12 animals, including a breeding pair (Service 2008, pg. 10514). In the NRM, pack sizes average about 10 wolves in protected areas, but a few complex packs have been substantially bigger in some areas of Yellowstone National Park (YNP) (Smith et al. 2006, p. 243; Service 2008b). Packs typically occupy large distinct territories from 518 to 1,295 km^2 (200 to 500 mi^2) and defend these areas from other wolves or packs. Typically, only the top-ranking ''alpha'' male and female in each pack breed and produce pups (Packard 2003, p. 38; Smith et al. 2006, pp. 243–4; Service 2008b). Females and males typically begin breeding as 2- year-olds and may annually produce young until they are over 10 years old. Litters are typically born in April and range from 1 to 11 pups, but average around 5 pups (Service 2008b). Most years, four of these five pups survive until winter (Service 2008b). Wolves can live 13 years (Holyan et al. 2005, p. 446), but the average lifespan in the NRM is less than 4 years (Smith et al. 2006, p. 245).

In general, wolves are habitat generalists in that they can use a wide array of habitat types. However, there are several biological and behavioral characteristics of wolves that largely dictate where populations can persist successfully. Wolves primarily prey on medium and large mammals. Ungulates comprise the major component of wolf diets throughout Idaho, including elk, mule deer, white-tailed deer, and moose where available. Columbian ground squirrels, snowshoe hare, and grouse may provide alternate prey sources (Service 1987, pg. 6). Wolves appear most vulnerable to human disturbance in and around denning and rendezvous sites (Service 1987, pg. 73). Based on these characteristics, key components of wolf habitat that appear consistent across the diversity of landscapes inhabited by wolves include the following: 1) a sufficient year-round prey based of ungulates and alternate prey, 2) suitable and somewhat secluded denning and rendezvous sites, and 3) sufficient space with minimal exposure to humans (Service 1987, pg. 7).

4. Population Dynamics

Once a given area is occupied by resident wolf packs, it becomes saturated and wolf numbers become regulated by the amount of available prey, intra-species conflict, other forms of mortality, and dispersal. Dispersing wolves may cover large areas as they try to join other packs or attempt to form their own pack in unoccupied habitat (Mech and Boitani 2003, p. 11–17). Pup production and survival can increase when wolf density is lower and food availability per wolf increases (Service 2008b; Fuller et al. 2003, p. 186). Pack social structure is very adaptable and resilient. Breeding members can be quickly replaced either from within or outside the pack and pups can be reared by another pack member should their parents die (Packard 2003, p. 38; Brainerd et al. 2008; Mech 2006, p. 1482). Consequently, wolf populations can rapidly recover from severe disruptions, such as very high levels of human-caused mortality or disease. After severe declines, wolf populations can more than double in just 2 years if mortality is reduced; increases of nearly 100 percent per year have been documented in low-density suitable habitat (Fuller et al. 2003; Service 2008b). Although most wolf packs tend to adhere geographically to their established home ranges, there are few real barriers to wolf movement across landscapes.

5. Historic and Current Distribution

The gray wolf has a circumpolar distribution in the northern latitudes. It occurs in Europe, Asia, and North America. Although once distributed broadly across the conterminous 48 states and Alaska, the breeding range within the United States was reduced down to only a small corner in southeastern Minnesota and Isle Royale, Michigan by 1974. Individual wolves were periodically observed in the West, but there were no breeding packs (Service 1978). Through recovery efforts, wolves have significantly increased in abundance and distribution in targeted recovery areas since 1974 (Figure V-9 in the Assessment). As stated above, the Western Great Lakes DPS rebounded in numbers to the point it was delisted under ESA in 2007 (Service 2007).

In the early 1980s, individual wolves, naturally dispersing from Canada, recolonized portions of northwest Montana near Glacier National Park. However, the 1987 plan called for establishing a metapopulation comprised of three northern Rocky Mountain wolf recovery areas: northwest Montana (NWMT), central Idaho (CID), and the Greater Yellowstone area (GYA). Collectively these three populations (NWMT, CID and GYA) form the Northern Rocky Mountain (NRM) gray wolf population. The Service reintroduced 15 gray wolves from southwestern Canada into central Idaho and Yellowstone in 1995, and 20 more wolves in 1996 (Bangs and Fritts 1996; Bangs et al. 1998). The reintroduction expanded the numbers and distribution of wolves throughout the three recovery areas of the NRM. Monitoring conducted throughout the NRM since 1979 indicates that this population achieved its numerical and distributional recovery goals at the end of 2000, Table 28 (Service et al. 2008). The temporal portion of the recovery goal was achieved in 2002 when the numerical and distributional recovery goals were exceeded for the third successive year, Table 28 (Service et al. 2008). In general, wolf numbers, as well as packs and breeding pairs, have exhibited relatively constant increasing trends since 1995, particularly throughout northern and central portions of the State (Nadeau et al. 2008, pgs. 132-134). Figure 12 illustrates the documented wolf packs dispersed throughout the state of Idaho.

As of 2007, there was a total minimum estimate of 1,513 wolves within the NRM distributed as follows: NWMT-230, CID-830; and GYA-453. Of 197 packs, 107 were classified as 'breeding pairs,' defined as an adult male and adult female raising 2 or more pups until December 31st. At least 10 breeding pairs and 100 wolves were documented within each recovery area, resulting in a well distributed wolf population across the NRM, as summarized below (Service et al. 2008):

Year	Recovery Area	Number of Wolves	Packs	Breeding Pairs*
1999	NWMT	63	10	5
	GYA	118	16	8
	CID	141	13	10
	Total	**322**	**39**	**23**
2007	NWMT	230	39	23
	GYA	453	53	3
	CID	830	105	51
	Total	**1513**	**197**	**107***

*Breeding pair: an adult male and an adult female that raise at least 2 pups until December 31 of the year of their birth.

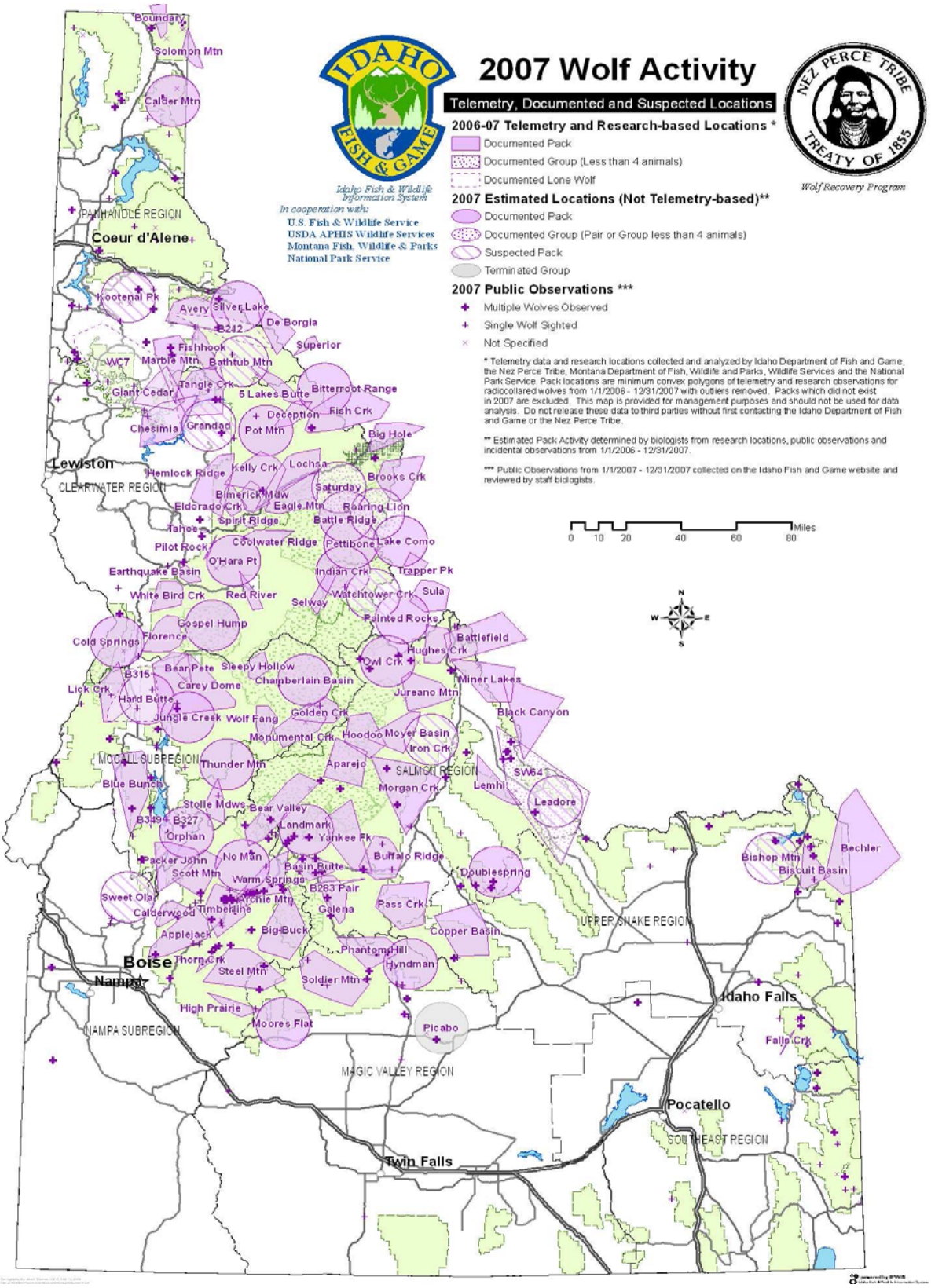

Figure 12. Distribution of documented and suspected wolf packs, other documented groups, and public wolf reports in Idaho, 2007.

Following 2002, the Service began to use States, in addition to recovery areas, to measure progress toward recovery goals (Service et al. 2008; Service 2008b). Because Montana, Idaho, and Wyoming each contain the vast majority of one of the original three core recovery areas, we determined the metapopulation structure would be conserved by equally dividing the overall recovery goal between the three States. This approach made each State's responsibility for wolf conservation fair, consistent, and clear. It avoided any possible confusion that one State might assume all of the responsibility for maintaining the required number of wolves and wolf breeding pairs in a shared core recovery area. State regulatory authorities and traditional management of resident game populations occurred on a State-by-State basis. Management by State would still maintain a robust wolf population in each core recovery area because they each contain manmade or natural refugia from high levels of human-caused mortality (e.g., National Parks, wilderness areas, and remote Federal lands) that guarantee those areas remain the stronghold for wolf breeding pairs and source of dispersing wolves in each State. Recovery targets by State promote connectivity and genetic exchange between the metapopulation segments by avoiding management that focuses solely on wolf breeding pairs in relatively distinct core recovery areas and promote a minimum level of potential natural dispersal to and from each population segment. Table 28 displays the status of gray wolves within Montana, Idaho, and Wyoming from 1979 through 2007 (Service et al. 2008). Figure 13 provides a graphical representation of the increasing wolf population trends within each of these three states. At the end of 2007 Idaho supported 732 in 86 packs, 43 of which constituted 43 breeding pairs (Service et al. 2008).

Table 28. Status of the gray wolf in Montana, Wyoming, and Idaho from 1979 to 2007 (Service et al. 2008)

Minimum fall wolf population by state:

Year	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07
State																													
MT	2	1	2	8	6	6	13	15	10	14	12	33	29	41	55	48	66	70	56	49	74	97	123	183	182	152	256	316	422
WY																	21	40	86	112	107	153	189	217	234	272	252	311	359
ID																	14	42	71	114	156	187	251	263	345	422	512	673	732
TOTAL	2	1	2	8	6	6	13	15	10	14	12	33	29	41	55	48	101	152	213	275	337	437	563	663	761	846	1020	1300	1513

Breeding pairs by state:

Year	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	00	01	02	03	04	05	06	07
State																													
MT								1	2	1	1	3	2	4	4	5	6	7	5	5	7	8	7	17	10	15	19	21	39
WY																	2	4	9	6	7	12	13	18	16	25	16	25	25
ID																		3	6	10	10	10	14	14	25	26	36	40	43
TOTAL								1	2	1	1	3	2	4	4	5	8	14	20	21	24	30	34	49	51	66	71	86	107

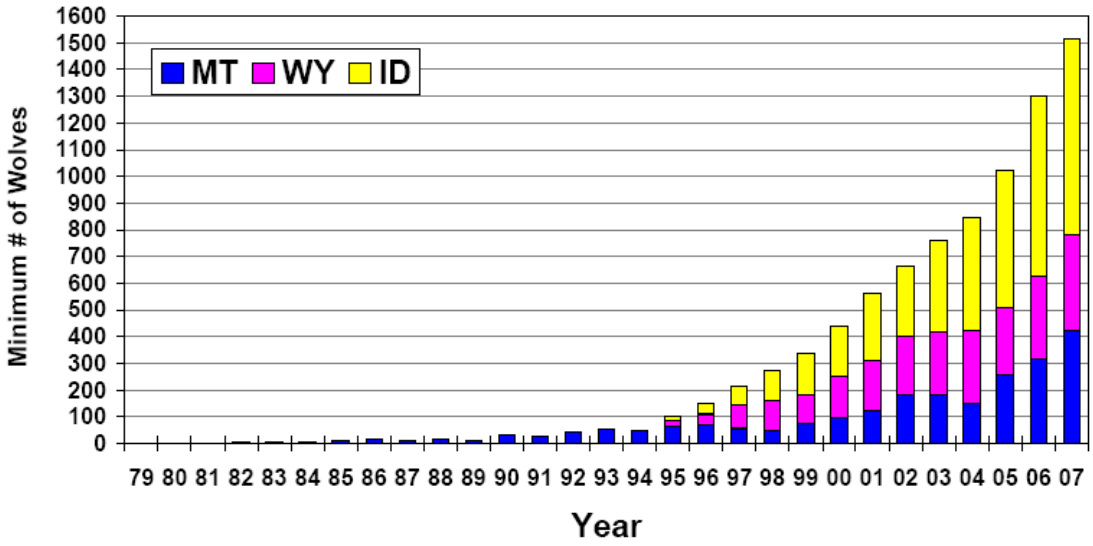

Figure 13. Northern Rocky Mountain population trends by State, 2007- 2008 (Service et al. 2008).

6. Previously Consulted-on Effects

Any projects in IRAs would need to be consistent with applicable plan components. For wolves, these constitute specific goals, objectives, standards, and guidelines that have been incorporated into the Forest Plans throughout Idaho National Forests, and have undergone consultation under 7(a)(2) of the Act. Particularly pertinent to wolves north of I-90, the IPNF Plan provides the following direction regarding gray wolves;

a. In areas of reported occurrence, consider maintenance of a high number of prey species (deer, elk) and maintenance of security through road management.
b. Forward information on reported sightings to the Wolf Recovery Team.
c. Cooperate in research and data collection involving wolf and wolf habitat.

In the Amended Biological Opinion Addressing the Effects to Listed Endangered and Threatened Species from the Continued Implementation of the IPNF LRMP (1987) issued on April 9, 2001, the Service indicated that based on these guidelines, implementation of the Forest Plan was not expected to result in adverse effects to gray wolves at the programmatic level (Service 2001). The conclusions of the Amended Opinion in 2001were based on the status of the species at the time when no wolf packs were known to occupy the Panhandle region north of I-90. Since that time, at least 3 wolf packs have been tallied as occurring in the Panhandle region, and conclusions of any current or future section 7 consultation will reflect this change in population status in north Idaho (Holt, pers. comm. September 8, 2008). The Assessment for the MIRR has determined that none of the standards and guidelines regarding gray wolves documented in the IPNF LRMP (1987) is inconsistent with the MIRR; therefore they would be applied.

Since issuance of the 2001 Opinion, the IPNF applies the following measures to most projects that are proposed near active den and/or rendezvous sites (USFS 2004):

- Known active wolf den and rendezvous sites will be protected from high impact equipment/activities within a 1.25 mile radius of the site during occupancy, generally between April 1 and July 1 for den sites and from July 1 - August 15 for rendezvous sites.
- Known active den and rendezvous sites will be protected from all other activity associated with trail maintenance (excluding walking through) within a 0.5 mile radius from April 1 – July 1 for den sites and from July 1 - August 15 for rendezvous sites.

Although these measures are not 'standards and guidelines' as established by the 1987 LRMP, they are considered mandatory for many projects to assist in minimizing impacts to wolves.

7. Conservation Needs

As stated above, the Recovery Plan for the Northern Rocky Mountain wolf (Service 1987) summarized the primary causes for decline of the eastern timber wolf and Northern Rocky Mountain wolf: 1) intensive human settlement; 2) direct conflict with domestic livestock; 3) a lack of understanding of the animal's ecology and habitats; 4) fears and superstitions concerning wolves; and 5) the extreme control programs designed to eradicate it. The Service concluded that these issues contributed to habitat loss and direct mortality (poisoning, trapping, hunting) in this western population (Service 1987, pg. 3). The demographic goals outlined in the Recovery Plan for the Northern Rocky Mountain wolf were achieved in 2000. This achievement was the basis for the Service determination in 2008 that this population met the criteria of a 'recovered' population (Service 2008). This determination suggests that previous threats to the species have been removed or are no longer impacting the Northern Rocky Mountain wolf to the extent that it warrants listing under the Act.

Human-caused mortality is the most significant threat to the long-term conservation of the gray wolf. Managing this source of mortality (i.e., overutilization of wolves for commercial, recreational, scientific and educational purposes and human predation) remains the primary challenge to maintaining a recovered wolf population into the foreseeable future. Montana and Idaho have wolf management plans to regulate human caused mortality that are current and effective under State law and that the Service has determined are adequate to support a recovered wolf population. On February 27, 2008, the Service designated and delisted the Northern Rocky Mountain gray wolf DPS throughout Idaho, Montana and Wyoming. Management of the delisted gray wolf was transferred to the individual state departments of game with certain oversight responsibilities remaining with the Service. On July 18, 2008, the district court of Montana issued a preliminary injunction on this Service action, temporarily reinstating protections under the Act previously provided to this species.

8. Critical Habitat

Critical habitat has not been designated for the endangered gray wolf north of I-90 in Idaho or the remainder of the NWMT recovery area, therefore none will be affected by the proposed action.

B. Environmental Baseline

1. Status of the Species in the Action Area

The action area for the MIRR consists of the IRAs on NFS lands throughout Idaho, and the Assessment addresses the status of gray wolf across the entire action area. As described above (and depicted in Figure 11), the MIRR action area involves both the NEP of gray wolves south of I-90 as well as the endangered gray wolf north of I-90. However, this formal consultation addresses the endangered gray wolf that occupies the Idaho portion of the NWMT recovery area. The entire NWMT recovery area basically extends west of I–15 and north of I–90 in Montana and Idaho. For that reason, the IRAs located north of I-90 are highlighted in this analysis.

The NWMT has sustained fewer wolves than the other recovery areas because there is less suitable habitat and it is more fragmented (Oakleaf et al.2006, p. 560). While the NWMT recovery area (84,800 km^2 (33,386 mi^2)) also has a core of protected suitable habitat (Glacier National Park, the Bob Marshal Wilderness Complex, and extensive USFS lands), it is not as high quality or as contiguous as that in either central Idaho or GYA. The primary reason is that many ungulates do not winter in the Glacier National Park or wilderness areas because these are higher in elevation. Most wolf packs in northwestern Montana live west of the Continental Divide, where forest habitats are a fractured mix of private and public lands (Service 2008b). This mix exposes wolves to high levels of human-caused mortality, and thus this area supports smaller and fewer wolf packs. There appears to be enough habitat connectivity between occupied wolf habitat in Canada, northwestern Montana, and Idaho to ensure exchange of sufficient numbers of dispersing wolves to maintain demographic and genetic diversity in the NRM DPS (Oakleaf et al. 2006, p. 559; Carroll et al. 2006, p. 32; Jimenez et al. in prep; vonHoldt et al. 2007, p. 19).

Numerous unconfirmed and confirmed sightings of transient or dispersing gray wolves have been documented north of I-90 in Idaho since 1995. In that year, a wolf was incidentally killed approximately 4 miles north of the town of Priest river, Idaho by an M-44 device set by the U.S. Department of Agriculture, Wildlife Services for lethal coyote (*Canis latrans*) control. In January and February 2002, a female radio-colored gray wolf was documented traveling from Montana though Northern Idaho (near Bonners Ferry), crossing into Washington State near Priest Lake, and then traveling north into Canada. Substantial wolf activity has been documented near Hall and Mission Mountains in northern Idaho, and dispersing wolves are expected to have traveled through the Idaho panhandle. Home ranges of 4 wolf packs: Boundary, Solomon Mountain, Calder Mountain, and Silver Lake appear to overlap areas north of I-90, the latter only marginally.

The Panhandle Region of the IDFG encompasses most of north Idaho both north and south of Interstate 90. There were 5 documented resident, 2 suspected resident, and 6 documented border packs (three tallied for Idaho and three tallied for Montana) in the Panhandle Region of the IDFG in 2007 (Figure 14). Four of the 8 documented Idaho packs (Avery, Calder Mountain, Fishhook, and Marble Mountain) produced litters, but only the Fishhook pack qualified as breeding pair. Litter production and breeding pair estimates were minimums as manpower and field season timing were insufficient to adequately survey all known Panhandle Region packs. The Calder

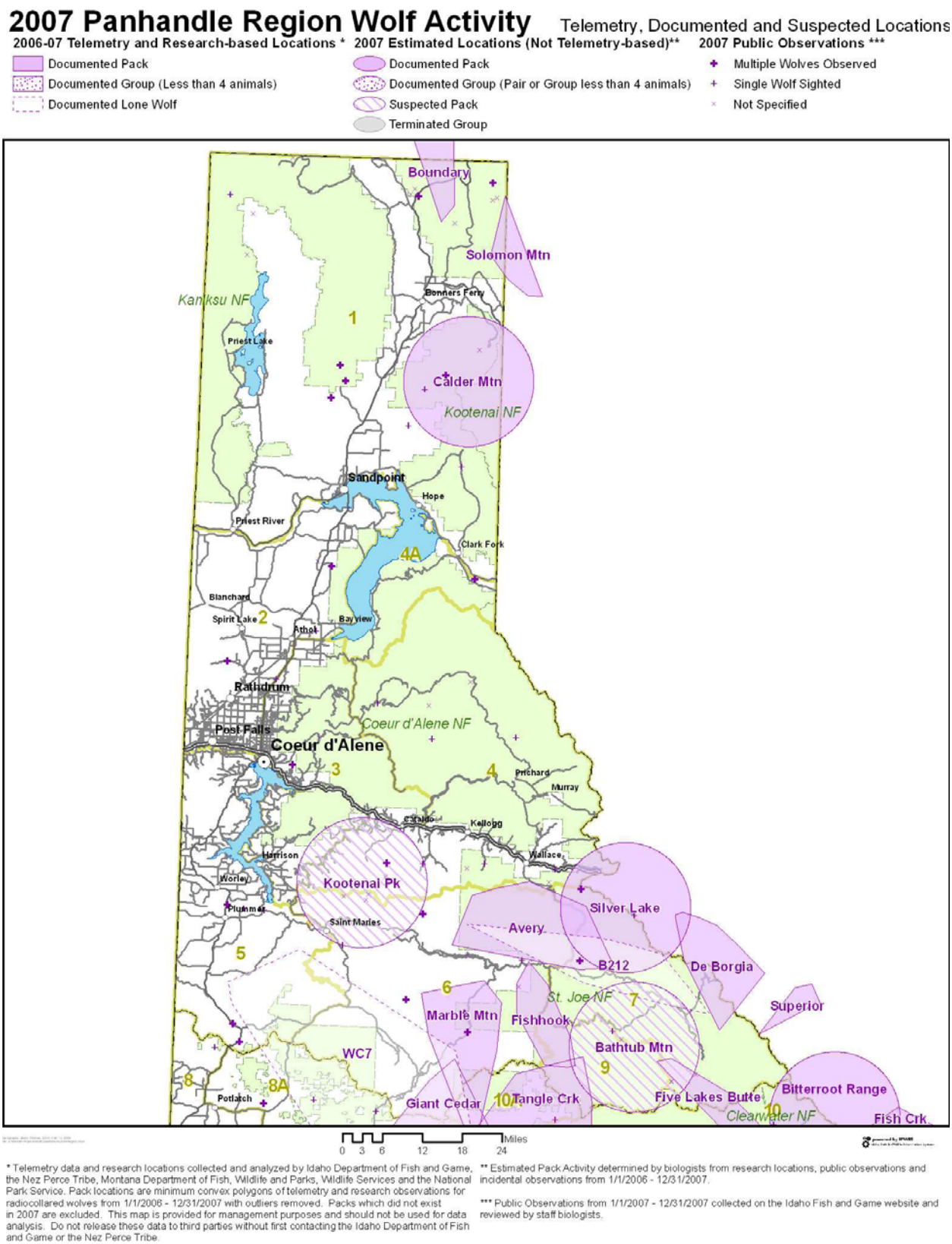

Figure 14. Wolf pack activity and observations in the Panhandle Region, 2007.

Mountain and Solomon Mountain border packs shared time between Idaho and Montana, and were counted as Idaho packs, while the De Borgia, Silver Lake, and Superior packs were counted by Montana. The Boundary pack moved between Idaho and Canada. Numerous observations of wolves or wolf sign have been reported in areas of the Panhandle Region where known wolf packs have not been documented. Reports indicated the recurring presence of wolves in the Coeur d'Alene Mountains, the eastern (near Priest Lake) and western (Pack River & southern Purcell Mountain ranges) portions of Big Game Management Unit 1. Observation reports have been received from additional areas of the Panhandle Region though not in a recurring fashion that would lead investigators to believe the persistent presence of wolves. Future monitoring will be conducted to determine the status of wolf activity in these areas of the Panhandle Region.

The following section provides more detailed information on the documented border packs (packs that travel between Idaho, Montana and Canada) tallied to Idaho in the Panhandle Region (IDFG 2007). Nadeau et al. (2008, pg, 144) reported on all wolf activity across Idaho in 2007 using the following terms:

- Documented Pack – territorial groups of wolves usually consisting of an adult male and female and their offspring from one or more generations, and has the potential to reproduce (2 adults of opposite sex);
- Suspected Pack – geographic areas where wolf pack presence was suspected but not verified, or where wolf presence was verified but did not meet documented pack status; other documented wolf activity – verified groups or lone wolves not meeting either documented or suspected pack status.

Boundary (ID) **-** This border pack was tallied to Idaho for 2007. In spring 2007, the only marked member of the Boundary pack (female B296) was discovered with the newly documented Solomon Mountain pack. Program personnel surveyed the traditional Boundary pack area in September 2007 and determined the presence of at least 2 wolves, but were unable to mark any animals or quantify the pack size. In early December 2007, Wildlife Services personnel found the remains of a domestic calf (cause of death undetermined) that had been consumed by wolves and noted tracks indicating the presence of 5 wolves in the vicinity of Hall Mountain. The Boundary pack was considered a documented border pack (US/Canada border) but was not counted as a breeding pair.

Calder Mountain (ID) **-** This border pack was tallied for Idaho in 2007. This pack was first documented in 2005; however, to date no wolves have been radio collared. The Calder Mountain pack was considered a Panhandle Region border pack based on den and rendezvous site locations and spent time in both Idaho and Montana. Program personnel discovered rendezvous sites and tracks indicating at least 3 adults and 1 pup in September (official counts), although a report of 4 pups was unverified. The Calder Mountain pack was not counted as a breeding pair for 2007.

Solomon Mountain (ID) **–** This border pack was tallied for Idaho in 2007. The Solomon Mountain pack was discovered by monitoring female B296, originally a member of the Boundary pack. Program personnel monitored the radio signal at a likely den site in spring 2007 although no verification was accomplished. During summer, fall, and early winter 2007, the Solomon Mountain pack was located numerous times on both sides of the Idaho/Montana. The

Solomon Mountain pack was considered an Idaho pack but was not counted as a breeding pair for 2007.

Table 29. Overlap of documented and suspected wolf packs and other documented wolf activity3 and the Modified Idaho Roadless Rule in the Panhandle IDFG (Region 1).

IDFG Region	Total [1]	MIRR Theme						
		WLR	Prim	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Panhandle								
Documented Packs	11	2	2	9	3	2	0	6
Suspected Packs	2	1	1	1	0	1	0	1
Documented wolf activity	1	0	0	1	1	0	0	1

1Total within the Panhandle IDFG (Region 1).

2. Factors affecting the Species in the Action Area

The majority of wolf records in Idaho, as of 2007, overlap IRAs to some degree. High use of roadless areas by wolves is not surprising given that wolves persist most effectively in areas where human disturbance is low. IRAs hold particular importance to wolves in providing both the prey base and a relatively large, undisturbed landscape to both persist and increase in numbers. As indicated above, the MIRR establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across IRAs based on management area 'themes'. This section begins with a general discussion of the potential effects that these management activities can have on gray wolves and then describes the implications of the management area themes proposed by the MIRR on the species north of I-90.

Roads, Road Construction and Reconstruction

Today, approximately 2,050 miles of roads currently exist on less than 5 percent of the land area (statewide) in IRAs. There are 51 miles and 3 miles of roads within IRA's within the Idaho Panhandle and Kootenai National Forests respectively. Because not all of the IPNF lies north of I-90, some of the 51 miles of roads found within roadless areas on this forest likely occur south of I-90. Some of these roads pre-date the roadless area inventories, while others have been constructed where Forest Plans permitted development. The more current inventory may include forest roads, other public roads, private roads, and unauthorized roads. The unauthorized roads include but are not limited to "jammer roads," user created routes, and other roads that were never authorized through contract or permit.

In general, roads were not considered a primary threat to the gray wolf at the time of listing in and of themselves (Service 1974, 2003). However, road construction, reconstruction, and use may affect individual wolves or packs through a number of mechanisms. First, wide-ranging carnivores such as wolves are vulnerable to collisions with vehicles (Forman et al. 2003, pg. 118). A number of wolf deaths documented in the NRM population have been attributed to collisions with cars on highways (Sime et al. 2007, pg. 35). Vehicle speeds on forest roads are relatively slow in comparison to highways or other public roads due to topography, substrate and

road conditions. Consequently, the potential for wolf mortality or injury due to collisions with vehicles is probably low on forest roads.

As wolves persist more successfully where interactions with humans is minimal (Service 1987, pg. 7), construction and use of roads do have the potential to impact wolves due to the human activities and disturbance they facilitate (Mech et al. 1988). Some studies suggest that wolves may avoid areas characterized by road densities that exceed certain thresholds (Jensen et al. 1986 and Thurber et al. 1994, as cited in Trombulak and Frissell 2000, pg. 20). Although individual roads and trails may not impact wolf movements, increasing road/trail densities to these thresholds may eventually displace wolves from certain areas (Whittington et al. pg. 550). Though IRAs may contain segments of roads as explained above, road densities currently found in IRAs are extremely low and do not reach a threshold sufficient to displace wolves from these areas. The likelihood of high road densities occurring in the future in IRAs north of I-90 is low, particularly as these IRAs are also managed to achieve grizzly bear recovery objectives (Holt, pers. comm., September 8, 2008).

The impact of human disturbance is of particular concern in and around dens and rendezvous sites (Service 1987, pg. 73) due to the potential implications to successful recruitment of pups. Frame et al. (2007, pg. 319) found that older pups (> 6 weeks of age) were more likely to be successfully moved from den sites disturbed by human intrusion than younger pups (< 3 weeks of age). Attempts to move younger pups to a new den site often were unsuccessful as pups were less mobile and apparently difficult to carry. Human intrusion during this period has the potential to adversely affect wolves where adults spend more time guarding pups and less time hunting, which could contribute to poor physical condition of pups. As the level of human disturbance evaluated in this study did not influence reproductive success or use of den sites by the same wolves in subsequent years, authors concluded there was a minimal effect on wolves at a population scale. Creel et al. (2002) reported similar findings to those of Frame et al. (2007) in that although free-ranging wolves did exhibit adrenal responses to snowmobile activity, there did not appear any consequences to recruitment of pups. It should be noted that this study did not necessarily focus on disturbance at den sites, and thus the degree to which wolves altered their behavior in response to disturbance was not examined. In summary, these studies suggest that although the behavior of wolves may be altered due to even small human disturbances in and around den sites, such changes in behavior did not appear to reduce individual survivability or population numbers.

Timber Cutting/Harvest

In general, wolves are considered habitat generalists, where the most important habitat characteristics revolve around the availability of a sufficient year-round prey base and areas free from human disturbance (i.e., ‘secure’ habitat). Although not considered a primary threat to wolves (Service 1974), timber cutting, sale, or removal has the potential to alter these characteristics in the following ways:

- Vegetation management that reduces the quality or availability of habitat of wolf prey species is likely to have cascading impacts on wolf populations as well, where prey densities are altered (Hanley et al. 2005, pgs. 122-123).

- Timber cutting activities and associated road construction increases human disturbance, and may increase road densities in areas utilized by wolves that were previously remote, which as discussed above, have the potential to displace wolves from key habitats such as denning and rendezvous sites. In some cases, however, even active wolf dens can be quite resilient to nonlethal disturbance by humans (Frame et al. 2007, p. 316).

C. Effects of the Proposed Action

The previous section presented factors and activities that can affect the gray wolf in the action area, some of which (particularly road construction, road reconstruction, timber cutting and discretionary mining) may also result from future actions undertaken as allowed by the MIRR. To minimize duplication, these potential effects are not reiterated in their entirety below, but are addressed specifically relative to the MIRR. Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur as allowed by the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed under the rule versus an analysis of the on-the-ground activities, and therefore has no direct effects.

Almost all records of wolf activity in Idaho (e.g., documented packs, suspected packs, etc.) overlap IRAs to some degree. Consequently, management of IRAs is relevant to wolves throughout the state. Most wolf packs, given the sizes of their estimated or telemetered home ranges, overlap several themes. Consequently, totals across themes do not equate to total packs.

Conditions under which road construction/reconstruction and timber cutting could occur within IRAs vary with themes proposed by the MIRR. Generally, these themes rank in restrictiveness as follows (from most restrictive to least): WLR, PRIM and SAHTS, BCR, BCR-CPZ, and lastly GFRG (see Chapter II for more detailed descriptions of these themes). Approximately 1,000 acres of timber harvest (i.e., removal of a commercial product) and 3.3 miles of road are projected in IRAs per year across the entire state under the MIRR. Below we discuss the implications of these themes to the gray wolf.

Wild Land Recreation, Primitive, SAHTS

Road construction and reconstruction is prohibited under both of these themes, unless provided for by statue or treaty, or pursuant to reserved or outstanding rights, or other legal duty of the United States. Therefore, effects to wolves associated with road construction or reconstruction within home ranges overlapping these themes (e.g., increased opportunities for vehicle-related injuries and mortalities, as well as facilitation of unauthorized recreational shooting) are not anticipated to occur. Further, prohibition on new roads, temporary or permanent, should benefit the species in these areas by reducing disturbance and human access. While there is documented overlap between wolf pack and these themes in the Idaho Panhandle Region of the IDFG, neither the Calder Mountain nor Solomon Mountain packs north of I-90 have been documented in WLR, PRIM or SAHTS themes. The Silver Lake pack, for which a small portion of the home range falls north of I-90, has not been documented to overlap WLR, PRIM or SAHTS. However,

given the widespread distribution of wolves across northern Idaho, areas assigned to these themes are likely to overlap areas occupied by wolves in the future.

Timber cutting, sale, or removal is generally prohibited in WLR except for personal or administrative uses, or where incidental to the implementation of management activities not otherwise prohibited. Consequently, we would not anticipate adverse effects to wolves under this theme resulting from timber cutting. Timber cutting is permitted in PRIM in two additional circumstances: to improve habitat for TEPC and to maintain or restore the characteristics of ecosystem composition and structure; or to reduce the risk of uncharacteristic wildland fire effects to an at-risk community or municipal water supply system. Such activities could only be facilitated using existing roads or aerial systems, and projects would have to meet certain additional criteria (e.g., retention of large trees, Regional Forester approval, etc.). Therefore, timber cutting activities (and related activities such as prescribed burning) could occur in PRIM where they are designed to restore or improve TEPC habitat, such as removal of encroaching conifers montane meadows. Such activities would likely have benign or long-term beneficial effects on wolves particularly where they maintain and/or improve habitat conditions for ungulates, the primary prey species of wolves.

Given the widespread distribution of wolves across Idaho, watersheds that contain municipal water sources are likely to overlap areas occupied by wolves. Further, there are several areas in the PRIM theme within 1 ½ mile of an at-risk community and which overlap areas characterized by wolf activity. Therefore, timber cutting activities (including related activities such prescribed fire) intended to reduce and remove hazardous fuels could occur in these IRAs to protect municipal water sources or at-risk communities. Such activities are unlikely to adversely affect wolves except possibly through short-term disturbance during implementation. However, the objective of fuels reduction is typically to remove ladder fuels, create a more open stand, conditions that could benefit wolves by improving habitat quality for primary wolf prey species.

Road construction and reconstruction related to discretionary mining activities and surface occupancy are prohibited in WLR and PRIM. Consequently, effects associated with these activities on wolves (e.g., habitat loss, fragmentation, increased human access) are not anticipated under these themes.

Backcountry Restoration

Both the Calder Mountain and Solomon Mountain wolf packs north of I-90 overlap BCR. Within BCR, roads could be constructed or reconstructed under six primary exceptions (See Chapter II for more details). In addition, temporary road construction to facilitate timber harvest could be allowed to reduce hazardous fuels in the BCR theme outside the CPZ if it is determined that there is a significant risk to a community or a municipal water supply system. Since additional conditions would be required, it is likely that temporary road construction for this purpose would be infrequent. Timber cutting from existing roads or using aerial systems could be done throughout all of BCR to improve TEPC habitat or ecosystem composition and function, provided that these activities maintain or improve at least one roadless characteristic. Activities away from roads would likely be in the form of prescribed fire or wildland fire use.

Within the CPZ temporary roads could be constructed to facilitate timber cutting to reduce hazardous fuels. Temporary roads may only be used for their specified purpose and must be decommissioned after use. Timber cutting from existing roads or using aerial systems could also occur to address similar purposes as described under PRIM (e.g., improve TEPC habitat, maintain characteristics of ecosystem composition and structure, etc). Effects to wolves resulting from construction of temporary roads or timber cutting could occur under BCR-CPZ, given that 54,200 acres on the IPNF are assigned with this theme. No BCR-CPZ is proposed in the KNF.

Again, timber cutting is not likely to adversely impact wolves except where disturbance, particularly around den and rendezvous sites, can not be avoided. Given both the Calder Mountain and Solomon Mountain wolf packs north of I-90 overlap the BCR theme, and given that the IPNF has 533,900 acres and the KNF has 34,900 acres assigned to the BCR theme, the likelihood that wolves may encounter activities under this theme is moderate. However, the severity of effects on wolves from these activities is expected to be relatively low.

General Forest, Rangeland or Grassland

North of I-90, the Calder Mountain Pack territory overlaps GFRG theme assignments. Both permanent and temporary forest roads can be constructed, reconstructed and/or maintained in GRFG and timber cutting, sale, and removal is permissible. All activities that take place in GRFG would be subject to applicable land management plan components as well as to specific conditions promulgated by this rule (See Chapter II for list of conditions).

Most of the road construction/reconstruction and timber cutting projected under the MIRR is expected to occur in GFRG. No GFRG is proposed in the KNF, but there are approximately 17,600 acres assigned to the GFRG theme on the IPNF. Again, the likelihood of adverse effects to wolves is low from these activities relevant to the MIRR.

Use of prescribed fire is not directly addressed by the MIRR. However, this activity is typically paired with timber cutting activities intended to reduce fuels, which is addressed by the MIRR, thus we address impacts of prescribed burning on gray wolves north of I-90. In general, fire exclusion throughout the western U.S. over the past 50 to 100 years has substantially altered the natural succession of many forested ecosystems, whereas early successional forest stages have been reduced or eliminated (Zager 1980, as cited in the Grizzly Bear Compendium 1987). Such changes have likely impacted the habitats for ungulate populations upon which wolves depend. Use of prescribed fire has the potential to improve habitat for key wolf prey species such as elk and deer, particularly where fire increases understory plant growth where nutrients are released from conifer litter. Short-term adverse effects to wolves from prescribed fire could occur where implementation overlaps wolf denning and rendezvous sites in space and time. Limited operating periods intended to avoid periods during which wolf pups are vulnerable to disturbance may assist in minimizing such effects. Such avoidance measures can be included during project design and subsequent site-specific section 7 consultations.

Discretionary mining activities would be allowed under the MIRR. However, new road construction and reconstruction associated with development of geothermal, oil, or gas reserves

is prohibited in roadless areas under the MIRR regardless of theme except to provide access to specific phosphate deposits on the Caribou portion of the Caribou-Targhee National Forest. Surface use and occupancy is permitted within the BCR and GFRG theme if allowed under the applicable Forest Plan. While there are 17,600 acres assigned to the GFRG theme on the IPNF, some of which could overlap gray wolf activity north of I-90, all of the unleased phosphate deposits where new discretionary mining might be initiated occur on the Caribou-Targhee National Forest well south of the I-90 boundary where wolves are listed endangered. Also, as of 2007, there were no documented or suspected wolf packs or documented records of wolf activity on the portions of the Caribou-Targhee National Forest where phosphate mining might occur (Nadeau et al. 2008). Surface occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal) would be allowed where it is consistent with applicable plan components. Although the likelihood of new leases in IRAs in northern Idaho is low, surface occupancy for any new mines that use existing road systems could impact wolves via habitat loss, disturbance, and reductions in prey availability and abundance where they overlap wolf packs or activity north of I-90.

Although it varies by commodity, surface use associated with the exploration and development of leasable minerals requires access and haul roads, open pits, facilities, power lines, pipelines, and communication sites, all of which can impact habitats for terrestrial species. For example, development of geothermal energy includes the following: exploratory drilling (some ground disturbance, road to access if not already there); if exploratory is favorable, construction of a well pad (about 3 acres); a power plant is needed within one to two miles, as well as pipelines which are above ground (Abing 2008). Development of oil, coal and gas plants require similar intra-structure components.

Generally, most of the impacts discretionary mining could have on terrestrial wildlife species, including the gray wolf, will ensue from removal of the substrate for the mine footprint and required infrastructure, primarily road construction and development. The impacts resulting from these activities include habitat loss, degradation, fragmentation, and human disturbance. Development associated with mining operations can also facilitate increased human access into gray wolf habitat, which could contribute to increased disturbance.

D. Cumulative Effects

Under the Act, cumulative effects are defined in 50 CFR 402.02 as: “those effects of future state and private activities that are reasonably certain to occur within the action area of the Federal Action subject to consultation.” A non-Federal Action is “reasonably certain” to occur if the action requires the approval of a state of local resource or land use control, such agencies have approved the action, and the project is ready to proceed. For Federal lands, state, Tribal, and local government actions could be in the form of legislation, administrative rules, or policy initiatives, or they could be actions proposed on non-federal lands that fall within the action area (e.g., inholdings).

We do not anticipate cumulative effects to gray wolves resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the MIRR consists of IRAs (see definition in Section II of the Assessment), most of which are unlikely to contain significant inholdings given their current roadless character and thus effects on such intervening non-Federal lands are unlikely;
- Given the broad scope of this Federal Action, it is not possible to determine specific state, private or local government legislation, administrative rules, or policy initiatives that would be reasonably certain to occur in IRAs.

E. Conclusion

The Service has reviewed the current status of the endangered gray wolf north of Interstate 90 in northern Idaho, the environmental baseline in the roadless areas within the IPNF and KNF north of I-90, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to jeopardize the species continued existence of the species.

Timber cutting activities and road construction and reconstruction in IRAs permitted under the MIRR, particularly in GFRG, have some potential to adversely affect individual wolves comprising the Boundary, Calder Mountain and Solomon Mountain Packs north of I-90 in northern Idaho. Adverse effects might occur due to habitat degradation due to increased road densities and disturbance in and around dens and rendezvous sites. At the project level, all activities will be subject to existing plan components that may assist in avoiding or minimizing adverse effects. Most projects proposed by the IPNF have not resulted in adverse effects to wolves as they have avoided disturbance to dens and rendezvous sites either temporally or spatially (USFS 2004b). As we can not predict where future activities authorized by the MIRR might take occur in place and time, or ensure such avoidance can always be incorporated into project design, we can not discount the potential for adverse effects, primarily in the form of disturbance, to wolves north of I-90.

While adverse effects result to gray wolves north of I-90 from the proposed MIRR cannot be discounted, they may not rise to the level of take of wolves or their habitat. Activities undertaken pursuant to the MIRR are not expected to result in mortality to wolves, or cause changes to existing population numbers, breeding pairs, or distribution. Wolves are a habitat generalist and one of the most adaptable large predators in the world, and only became extirpated because of deliberate human persecution (Fuller et al. 2003, p. 163; Boitani 2003, pp. 328–330). Land-use restrictions on human development were not necessary to recover the wolf population (Service 2008b). The ranges of wolves and grizzly bears overlap in many parts of Montana, Idaho, and Wyoming, and mandatory habitat guidelines on public lands for grizzly bear conservation guarantee and far exceed necessary criteria for maintaining suitable habitat for wolves (Service 2008b). Suitable habitat, occupied by persistent wolf packs, is secured by core recovery areas in northwestern Montana, central Idaho, and the GYA, including northwestern Wyoming. These areas include Glacier National Park, Grand Teton National Park, YNP, numerous wilderness areas, and other State and Federal public lands. These areas will continue to be managed for high ungulate densities, moderate rates of seasonal livestock grazing,

moderate-to-low road densities associated with abundant native prey, low potential for livestock conflicts, and security from excessive unregulated human-caused mortality. The core recovery areas also are within proximity to one another and have enough public land between them to ensure enough natural connectivity for wolf dispersal into the foreseeable future (Service 2008b). These areas currently support nearly 1,500 wolves and over 100 breeding pairs and have long been recognized as the most likely areas to successfully support 30 or more breeding pairs of wolves, comprising 300 or more individuals in a metapopulation with some dispersal between subpopulations (Service 1980, pp. 1–4; 1987, p. 23; 1994, pp. 6, 74– 75). Overall, the Service has determined that secure portions of Idaho, Montana and Wyoming contain habitat of sufficient quality, extent, and distribution to collectively support connected, stable populations of more than 45 breeding pairs and 450 wolves that will not fall below 30 breeding pairs and 300 wolves (Service 2008b).

F. Incidental Take Statement

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without specific exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of take in the Act means an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

1. Amount or Extent of the Take – No incidental take of gray wolves or gray wolf habitat is exempted herein as a result of the FS adopting the MIRR, although specific actions developed in accordance with the MIRR and associated LRMPs may cause effects that constitute take. The mere potential for take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions developed pursuant to the MIRR and relevant provisions of LRMPs will serve as the basis for determining if an exemption from the section 9 take prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the listed species in accordance with 50 CFR 402.14i.

2. Effect of the Take – Not applicable to this Opinion.

3. Reasonable and Prudent Measures and Terms and Conditions – As there is not take exemption under 7(o) of the Act in this Opinion, the Service is not providing Reasonable and Prudent Measures or Terms and Conditions.

G. Conservation Recommendations

Section 7(a)(1) of the Act requires Federal Agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities intended to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends that the Forest Service implement the following conservation measures:

1. As the IPNF and KNF have routinely agreed to during site-specific project consultations, continue to provide protections to wolf den sites and rendezvous areas related to land management activities occurring in IRAs.

2. The USFS should continue to assist other federal agencies and the IDFG in monitoring the distribution of gray wolves in the Idaho Panhandle Region.

CHAPTER VII. CANADA LYNX

A. Status of the Species

1. Listing History

The Service listed the contiguous U.S. distinct population segment (DPS) of Canada lynx as threatened under the Endangered Species Act in March 2000. The Final Rule listing the Canada lynx identified the primary threat to the species was the inadequacy of existing regulatory mechanisms, specifically the lack of guidance for conservation of lynx and lynx habitat in the National Forest LRMPs and the BLM Land Use Plans (65 FR 58, pg. 16052-16086).

2. Description of the Species

The Canada lynx is a medium-sized cat with long legs; well-furred feet, long tufts on the ears; and a short, black-tipped tail. Their long legs and large feet make lynx especially adept at hunting in deep snow. The winter pelage of the lynx is dense and has a grizzled appearance with grayish-brown mixed with buff or pale brown fur on the back and grayish-white or buff white fur on the belly, legs and feet. Summer pelage is more reddish to gray-brown. Adult males average 22 pounds in weight and 33.5 inches in length (head to tail). Females are generally smaller, averaging 19 pounds and 32 inches in length.

3. Life History and Habitat Requirements

The breeding period for Canada lynx occurs through March and April in the north (Quinn and Parker 1987). Kittens are born in May to June in south Yukon (Slough and Mowat 1996). Male lynx do not participate with rearing young (Eisenberg 1986) and may be incapable of breeding during their first year (McCord and Cardoza 1982). Lynx use large woody debris, such as downed longs, root wads, and windfalls for denning sites with security and thermal cover for kittens (McCord and Cardoza 1982, Koehler 1990, Koehler and Brittell 1990, Mowat et al. 2000, Squires and Laurion 2000, Ruediger, et al. 2000). During the first few months of life, kittens are left alone at these sites when the female lynx hunts. Denning sites provide protection of kittens from predators, such as owls, hawks, and other carnivores during this period. This structure must be available throughout the home range providing multiple quality den sites, because it is likely that these structures are used when the kittens are old enough to travel but not to hunt (Bailey 1974). It is equally important that an abundance of high quality foraging habitat be available in close proximity to all den sites if they are to be functional.

Home range size varies by the animal's gender, abundance of prey, and season and density of lynx populations (Hatler 1988, Koehler 1990, Poole 1994, Slough and Mowat 1996, Mowat et al. 2000, Aubry et al. 2000). Female home ranges are largely governed by food distribution and denning availability and suitability, while male home ranges reflect the distribution of females and food availability. Documented home ranges vary from 8 to 800 square kilometers (3 to 300 square miles) (Saunders 1963, Brand et al. 1976, Mech 1980, Parker et al. 1983, Koehler and Aubry 1994, Mowat et al. 2000, Squires and Laurion 2000, Apps 2000) with males generally maintaining larger home ranges (Sandell 1989, Koehler and Aubry 1994). Distribution of

quality feeding, security, and denning habitat patches, and the availability of secure travel corridors between these patches determine the actual size and shape of the home range. Lynx are capable of dispersing extremely long distances, primarily when snowshoe hare populations decline, though subadult lynx disperse even when prey is abundant, presumably as an innate response to establish homes ranges (Poole 1994).

Both snow conditions and vegetation type are important factors to consider in defining lynx habitat. Across the northern boreal forests of Canada, snow depths are relatively uniform and only moderately deep (total annual snowfall of 39-50 inches) (Kelsall et al. 1977). Snow conditions are very cold and dry. In contrast, in the southern portion of the range of the lynx, snow depths generally increase, with deepest snows in the mountains of southern Colorado. Snow in southern lynx habitats may be subjected to more freezing and thawing than in the taiga (Buskirk et al. 2000), although this varies depending on elevation, aspect, and local weather conditions. Crusting or compaction of snow may reduce the competitive advantage that lynx have in soft snow, with their long legs and low foot loadings.

Lynx are associated primarily with upper elevation (1,400 – 2,700 m) coniferous forests dominated by one of the following vegetation types: Douglas-fir, spruce-fir, fir-hemlock, and on drier sites, lodgepole pine (Aubry et al. 2000). In extreme northern Idaho, northeastern Washington, and northwestern Montana, cedar-hemlock habitat types may also be considered primary vegetation. In central Idaho, Douglas-fir on moist sites at higher elevations may also be considered primary vegetation. Secondary vegetation that, when interspersed within subalpine forests, may also contribute to lynx habitat, include 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.

Lynx distribution and abundance appear to be closely associated with that of the snowshoe hare (*Lepus americanus*), the primary prey of lynx, comprising 35-97 percent of the diet throughout the range of the lynx (Koehler and Aubry 1994). Primary forest types that support snowshoe hare are subalpine fir, Englemann spruce, Douglas-fir and lodgepole pine in the western United States (Hodges 2000). Within these habitat types, snowshoe hares prefer stands of conifers with shrub understories that provide forage, cover to escape predators, and protection during extreme weather (Wolfe et al. 1982, Monthey 1986, Koehler and Aubry 1994). Snowshoe hares have evolved to survive in areas that receive deep snow (Bittner and Rongstad 1982). Within these forested communities, vegetation structure that provides for an abundance of snowshoe hares (e.g., dense understory), and lynx denning habitat (e.g., large woody debris) is important for supporting lynx (Aubry et al. 2000). Other prey species include red squirrel, grouse, flying squirrel, and ground squirrels, among others. During cycles when hares become scarce, the proportion and importance of other prey species, especially red squirrel, increases in the diet (Brand et al. 1976, O'Donoghue et al. 1998).

4. <u>Population Dynamics</u>

In Canada and Alaska, lynx undergo extreme fluctuations in response to snowshoe hare population cycles, enlarging or dispersing from their home ranges and ceasing the recruitment of young into the population after hare populations decline (Mowat et al 2000). In northern study

areas during the low phase of a hare cycle, few if any live kittens are born, and few yearling females conceive (Brand and Keith 1979, Poole 1994, Slough and Mowat 1996). However, Slough and Mowat (1996) reported yearling females giving birth during periods when hares are abundant. In the southern portion of the range in the contiguous United States, lynx populations appear to be limited by the availability of snowshoe hares, as suggested by large home range size, high kitten mortality due to starvation, and greater reliance on alternate prey. These characteristics appear to be similar to those exhibited by lynx populations in the taiga during the low phase of the population cycle (Quinn and Parker 1987, Koehler 1990, Aubry et al 2000). This is likely due to the naturally lower densities of hares and the patchy distribution of habitat in the contiguous United States.

Reported causes of mortality vary among studies. The most commonly reported causes include starvation of kittens (Quinn and Parker 1987, Koehler 1990), and human-caused mortality, primarily fur trapping (Ward and Krebs 1985, Bailey et al. 1986). In cyclic populations of the northern taiga, significant mortality due to starvation has been demonstrated during the first 2 years of hare scarcity (Poole 1994, Slough and Mowat 1996). Vehicle collisions on paved roads have been a mortality factor for lynx, most frequently observed in translocated animals (Brocke et al. 1990). Predation on lynx by mountain lion, coyote, wolverine, gray wolf, bobcat, and other lynx has been confirmed (Koehler et al. 1979, Poole 1994, Slough and Mowat 1996, O'Donoghue et al. 1997, Apps 2000, Squires and Laurion 2000). To observe such events are rare, and the significance of predation on lynx populations is unknown.

5. Historic and Current Distribution

The Canada lynx has a circumboreal distribution. In North America, the Canada lynx ranges across nearly all of Canada and Alaska, and extends south into northern, forested portions of the United States. Within the contiguous United States, the lynx's range coincides with that of the southern margins of the boreal forest along the Appalachian Mountains in the Northeast, the western Great Lakes and the Rocky Mountains and Cascade Mountains in the West. Lynx in the contiguous United States are part of a larger metapopulation whose center is located in the northern boreal forest of central Canada; lynx populations emanate from this area (Buskirk et al. 2000; McKelvey et al.2000). It appears that hare populations and, as a result, lynx populations in the southern part of their range are cyclic, although amplitude of the fluctuations in this portion of the range is not as extreme as in the center of their range (Aubry et al. 2000; Hodges 2000; McKelvey et al. 2000). When there is a high in the lynx population in central Canada, it acts like a wave radiating out to the margins of the lynx range (McKelvey et al. 2000). Some maps (e.g. Hall and Kelson 1959) incorrectly portray the range of the lynx by encompassing peripheral records from areas that are not within the boreal forest or do not have cold winters with deep snow, such as prairie or deciduous forest. Such maps have lead to the misperception that the historic range of the lynx was once more extensive than ecologically possible. Records of lynx outside the southern boreal forest in peripheral habitats that are unable to support lynx represent long-distance dispersers that are lost from the metapopulation unless they return to boreal forest and contribute to the persistence of the population. This includes records from Connecticut, Indiana, Iowa, Massachusetts, Nebraska, Nevada, North Dakota, Ohio, Pennsylvania, South Dakota and Virginia (Hall and Kelson 1959; Burt 1946; Gunderson 1978, McKelvey et al. 2000).

The extent of boreal forest in the United States and thereby the range of Canada lynx extends south through the Rocky Mountains, northern Great Lakes region, and northern New England. Historic and current range consists of Colorado, Idaho, Maine, Michigan, Minnesota, Montana, New Hampshire, New York, Oregon, Utah, Vermont, Washington, Wisconsin and Wyoming because these States support some boreal forest and have more frequent records of lynx. Lynx populations in the northeastern United States and the southeastern Canada are separated from those in north-central Canada by the St. Lawrence River. There is little evidence of regular hare or lynx population cycles in this area (Hoving 2001), but wide fluctuations in lynx and snowshoe hares do occur. Most records of lynx in the western United States are associated with Rocky Mountain conifer forest and most were within the 4,920-6,560 foot elevation zone. There is a gradient in the elevational distribution of lynx habitat from the northern to the southern Rocky Mountains, with lynx habitat occurring at 8,000-11,500 feet in the southern Rockies. The southern Rocky Mountains in Colorado, Utah, and southern Wyoming are disjunct from other lynx habitats in the United States and Canada.

6. Previously Consulted-on Effects

Following the listing of Canada lynx in March 2000, the USFS signed a Canada Lynx Conservation Agreement with the Service in 2001 agreeing to consider the Lynx Conservation Assessment and Strategy (LCAS) during project analysis and the USFS agreed not to proceed with projects that would be *likely to adversely affect lynx* until their plans were amended. The LCA was renewed in 2005 and added the concept of occupied mapped lynx habitat. In 2006 the LCA was amended to define occupied habitat and to list those National Forests that were occupied. In 2006 it was also extended for 5 years (until 2011), or until all relevant Forest Plans were revised to provide guidance necessary to conserve lynx (USFS and Service 2000, 2005, 2006a, 2006b). The 2007 decision documented in the Northern Rockies Lynx Management Direction FEIS, commonly referred to as the Northern Rockies Lynx Amendment (NRLA), fulfilled the agreement to amend the plans for all National Forests in the Northern Rockies Lynx Planning Area (see Table 30) and most National Forests in Idaho. The NRLA incorporated the goals, objectives, standards and guidelines of the selected alternative (Alternative F, Scenario 2). The direction provided by the NRLA applies to mapped lynx habitat on National Forests System lands presently occupied by Canada lynx, as defined by the *Amended Lynx Conservation Agreement between the Forest Service and the Service* (USFS and Service 2006). When National Forests are designing management actions in unoccupied mapped lynx habitat they should consider the lynx direction, especially the direction regarding linkage habitat. If and when those NFS lands become occupied, based upon criteria and evidence described in the LCA, the direction shall then be applied to those forests. If a conflict exists between the NRLA management direction and an existing plan, the more restrictive direction will apply.

On March 16, 2007, the Service issued its Biological Opinion on the NRLA and determined that the management direction would not jeopardize the continued existence of lynx. The Service provided non-discretionary terms and conditions and reasonable and prudent measures in their Biological Opinion which are incorporated into the NRLA Record of Decision. The Service also provided exemption of take of lynx habitat through that Opinion up to 6 percent of mapped lynx habitat associated with fuel management projects. Such projects must be compliant with the

terms and conditions in the NRLA Opinion and remain within 6 percent of the mapped lynx habitat take exemption.

The SWIE completed revising their plans prior to initiation of the NRLA and fully incorporated the LCAS protective provisions into their standards and guidelines and associated formal consultations for lynx. Also, as stated above, the Wallowa-Whitman NF remains subject to the conditions of the LCAS, pending revision of its LRMP. Based on the lack of appropriate vegetation types, there is no mapped lynx habitat on the Caribou National Forest and therefore the LCAS, nor the NRLA applies. Appendix B of the Assessment for the MIRR provides a description of the standards and guidelines relevant to management of lynx habitat in the LCAS, LRMPs for the SWIE, and the NRLA.

Table 30. Lynx management direction for Idaho National Forests.

National Forest	**Recovery role[1]**	**Management Direction**
Bitterroot	Secondary	NRLA (2007)
Boise	Secondary	Revised LRMP (2003)
Clearwater	Secondary	NRLA (2007)
Idaho-Panhandle	Secondary	NRLA (2007)
Kootenai	Core	NRLA (2007)
Nez Perce	Secondary	NRLA (2007)
Payette	Secondary	Revised LRMP (2003)
Salmon-Challis	Secondary	NRLA (2007)
Sawtooth	Secondary	Revised LRMP (2003)
Targhee[2]	Core	NRLA (2007)
Wallowa-Whitman	Secondary	Lynx Conservation Agreement

[1]As determined by Service (2005)
[2] Only applicable to the Targhee National Forest.

Any projects in IRAs would need to be consistent with applicable plan components associated with the national forest within which the IRA is located. For lynx, these constitute specific goals, objectives, standards, and guidelines have been incorporated into the Forest Plans for the SWIE (i.e., Boise, Payette, and Sawtooth National Forests), the NRLA (see USFS 2007), and the LCAS (i.e., relevant to the Wallowa-Whitman only) to minimize adverse effects to Canada lynx and to establish a framework for managing lynx habitat to promote recovery of the species. All activities proposed in IRA must also undergo Section 7 consultation under Act with the Service (and NMFS for listed anadromous fishes). However, within the Forests covered under the NRLA, effects to lynx from timber cutting were analyzed within the Biological Opinion on the NRLA (Service 2007). Since the Service also provided exemption of take of lynx habitat up to 6 percent of mapped lynx habitat associated with fuel management projects, such projects must be compliant with the terms and conditions in the NRLA Opinion and remain within the 6 percent of mapped lynx habitat take exemption.

7. Conservation Needs

On September 12, 2005, the Service issued a Recovery Plan Outline for the Contiguous United States Distinct Population Segment of lynx (Service 2005). The outline is to serve as an interim strategy to guide and encourage recovery efforts until a recovery plan is completed. In the Recovery Outline, the Service categorized lynx habitat as: 1) core areas; 2) secondary areas; and 3) peripheral areas. The areas with the strongest long-term evidence of the persistence of lynx populations in the United States are defined as core areas. Core areas have both persistent verified records of lynx occurrence over time and recent evidence of reproduction. Focusing lynx conservation efforts on these core areas will ensure the continued persistence of lynx in the contiguous United States by addressing fundamental principles of conservation biology to lynx (Service, 2005). Areas classified as secondary areas are those with historical records of lynx presence with no record of reproduction; or areas with historical records and no recent surveys that document the presence of lynx and/or reproduction. Much of the secondary habitat is unoccupied, but may contribute to lynx persistence by providing habitat to support lynx during dispersal movements, allowing animals to then return to core areas. In peripheral areas, the majority of historical lynx records are sporadic and generally correspond to periods following cyclic lynx population highs in Canada. While peripheral areas show no evidence of long-term presence or reproduction of lynx, they may enable successful dispersal of lynx between populations or subpopulations.

The recovery outline identifies four preliminary objectives for calculating progress toward the goal of delisting lynx. The objectives are:

a. Retain adequate habitat of sufficient quality to support the long-term persistence of lynx populations within each of the identified core areas.
b. Ensure sufficient habitat is available to accommodate the long-term persistence of immigration and emigration between each core area and adjacent populations in Canada or secondary areas in the United States.
c. Ensure habitat in secondary areas remains available for continued occupancy by lynx.
d. Ensure threats have been addressed so that lynx populations will persist in the contiguous United States for at least the next 100 years.

8. Critical Habitat

On November 9, 2006, the Service issued a Federal Register (71 FR 66007) notice entitled Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of Lynx (Service, 2006). No National Forest System lands were designated as critical habitat because these lands were found to already provide special management and/or protection for lynx. On July 20, 2007, the Service announced a review of the November 9, 2006 final rule after questions were raised about the integrity of the scientific information used and whether the decision made was consistent with the appropriate legal standards. On February 28, 2008, the Service proposed a rule in the Federal Register (73 FR 10860) to revise designated critical habitat for the contiguous United States distinct population of Canada lynx. The proposed designation would add an additional 40,913 square miles to the existing critical habitat designation of 1,841 square miles in Idaho, Maine, Minnesota, Montana, Washington and

Wyoming (73 FR 10860). In Idaho, approximately 32,000 acres of proposed revised designated critical habitat is located in Boundary County primarily on federal land including the IPNF and a portion of the Buckhorn Ridge Roadless Area. This Opinion addresses this proposed revised designated critical habitat on the IPNF involving a portion of the Buckhorn Ridge Roadless Area in the following chapter.

B. Environmental Baseline

1. Status of the Species in the Action Area

The following National Forests in Idaho have mapped primary and secondary vegetation as lynx habitat and identified Lynx Analysis Units (LAUs) to assist in project-level analyses: Bitterroot, Boise, Clearwater Idaho Panhandle, Kootenai, Nez Perce, Payette, Salmon-Challis, Sawtooth, Targhee, and Wallow-Whitman (Figure V-2 in the Assessment). As stated above, there is no mapped lynx habitat on the Caribou National Forest based on the lack of appropriate vegetation types. In total, mapped lynx habitat on these Forests covers 7,354,755 acres (Table 31). Approximately 3,641,858 acres (~48%) of mapped lynx habitat on Idaho's National Forests overlap IRAs (Table 31).

Based on historical and current documentation of lynx presence, mapped lynx habitat is considered 'occupied' on the following National Forests in Idaho (USFS and Service 2006): Idaho Panhandle, Clearwater, Kootenai, and Targhee. However, none of these forests are considered occupied based on recent documented reproduction of lynx (T. Bertram, pers. comm., 2008). Lynx presence has been well documented, historically and currently, throughout the Panhandle of Idaho. In 1998, a survey for lynx using hair-snagging techniques and DNA analyses was conducted in the Priest Lake, Bonners Ferry, and Sandpoint areas of northern Idaho. Lynx hair was collected at 5 separate locations across the survey area (Weaver 1999). Interviews of Idaho residents documented additional records of lynx in the Salmon, Upper Snake, and Bear River watersheds as well (Lewis and Wenger 1998). Other areas in Idaho that have consistent historical records over time include the Stanley Basin, the Henry's Lake/Island Park area, the Lemhi Range, and the upper Bear River watershed (Ruggiero et al. 2000, pg. 4-7).

Due to the absence of recent records of lynx presence and reproduction, the Nez Perce, Wallowa-Whitman, and Salmon-Challis are considered 'unoccupied'. The Service continues to include Canada lynx on 90-day species lists for Payette, Boise, and Sawtooth National Forests, though based on criteria applied to the other Forests in Idaho, current occupancy by lynx may be unlikely.

2. Factors affecting the Species in the Action Area

The LCAS identified 15 criteria for evaluating risks to Canada lynx, and in the Service's 2000 Opinion regarding land management effects to lynx range-wide, the Service grouped them into four categories: reduction in habitat quality or quantity, habitat fragmentation contributing to the loss of connectivity, improved access for competing carnivores, and direct mortality. These risk factors were further condensed to productivity, movement, and mortality as addressed in the

analysis for the Northern Rockies Lynx Management Direction (USFS FEIS March 2007) as well as by Ruediger et al. (2000) and Ruggiero et al. (2000a and 2000b).

Table 31. Mapped lynx habitat, overlap of habitat with IRA, likelihood of occupancy, and management direction for lynx on National Forests in Idaho.

National Forest	**Mapped Lynx habitat**	**Mapped lynx habitat in IRA**	**Percent**	**Likelihood of occupancy[1]**
Bitterroot	193,604[2]	0	0%	Not Likely
Boise	601,752	434,196	72%	Undetermined[3]
Clearwater	933,050	578,710	62%	Likely
Idaho-Panhandle	700,8002	305,599	63%	Likely
Kootenai	36,4052	25,846	71%	Likely
Nez Perce	805,048	217,174	27%	Not likely[4]
Payette	831,251	377,954	45%	Undetermined[3]
Salmon-Challis	1,803,502	798,757	44%	Not likely
Sawtooth	555,207	384,467	69%	Undetermined[3]
Targhee[3]	868,582	380,555	44%	Likely
Wallowa-Whitman	25,5552	41	0.16%	Not likely
Total	7,354,755	3,503,401	48%	

[1]Based on criteria described in USDA Forest Service and USDI Fish and Wildlife Service (2006).

[2] Does not include mapped lynx habitat on Forest outside Idaho.

[3]Lynx included on FWS 90-day species list (1/10/08), but current presence of the species on the Forest is unlikely based on criteria of 'occupancy' applied by USDA Forest Service and USDI Fish and Wildlife Service (2006).

[4]Status could change pending results of surveys to be completed during winter, 2008.

Timber Cutting

The effects of vegetation management on Canada lynx and its prey species will vary depending how such activities alter forest structure. Even-aged harvest, for example, removes or alters stand structure, and temporarily eliminates snowshoe hare forage/cover and lynx cover until the site is regenerated to forest cover. Even-aged harvest generally reduces potential for denning habitat by removing large trees and down logs from the treated acreage. Red squirrel habitat is also reduced by the harvest of large trees. Regeneration harvest can be a tool for creating high quality snowshoe hare habitat in the future, especially where natural regeneration would be expected to respond and provide dense young vegetation. Uneven-aged management, such as single tree selection or group selection, results in varying effects to snowshoe hare, red squirrel and lynx, depending on the stems removed, harvest system and post sale treatments. This harvest method can be used to replicate or mimic forest gap dynamics. In drier forests, particularly at the southern edge of lynx range, snowshoe hare abundance may exhibit unimodal distribution, with peaks in old growth forests (Buskirk et al. 2000a). Harvest in these stands may therefore have greater effects upon the prey base of lynx.

Reducing dense horizontal structure within forest stand understories through silvicultural thinning can reduce an area's carrying capacity for snowshoe hares (Homyack et al. 2007). In northwestern Montana, Ausband and Baty (2005) found that within individual forest stands, hares had a significant affinity for dense, unthinned sapling patches. Research conducted in northwestern Montana found that precommercial thinning (PCT) decreased snowshoe hare abundance, compared to both control and PCT thinned stands where 80 percent of the entire stand was thinned but 20 percent of the total stands was retained with saplings uncut (Griffin and Mills 2007). Declines were prominent in the second winter after treatment. In addition, estimated survival rates of snowshoe hares decreased as individuals spent proportionately more time in open young and open mature forest stand structure types (Griffin and Mills 2007). Additional research to investigate the relationship of various stand conditions to snowshoe hares is currently underway in several different regions of the western United States.

Fire management activities and salvage and timber harvests may remove existing coarse woody material and/or affect its recruitment. Loss of denning habitat may affect the survival of kittens. Fuel reduction projects have the potential to reduce or eliminate lynx habitat by simplifying stand structure and/or reducing stem densities below levels that provide suitable forage and cover conditions for snowshoe hares. These activities have the potential to diminish the landscape's ability to produce adequate densities of snowshoe hares to support persistent lynx populations, both effects anticipated to be adverse to lynx (Service 2008a).

Conversion of native plant communities, fire suppression and hazardous fuel reduction, precommercial thinning, and timber management may result in effects to prey species and alter the abundance and/or availability of denning habitat. Grazing by livestock and/or wild ungulates may increase forage competition with lynx prey or alter native plant communities that may reduce the quantity and/or quality of snowshoe hare habitat. Recreational activities, roads, and trails can create compacted snow conditions that may facilitate increased access into lynx habitat and competition for food resources by competitors (e.g., bobcats, coyotes and mountain lions).

The primary risk factors affecting the movement of Canada lynx include major highways and associated development within rights-of-way and private land development, especially along road corridors in mountain valleys (Ruediger et al. 2000). Though the MIRR proposes no activities directly affecting these factors, we address them here in their broader context existing between IRAs. Although empirical data are limited, observations of radio-collared lynx indicate they have crossed two lane highways (Squires and Laurion 2000). Other studies have found that lynx are reluctant to cross major highways (Gibeau and Heuer 1996, as cited in Ruediger et al. 2000). Apps (2000) found that radio-collared lynx in the southern Canadian Rockies crossed highways within home ranges less than expected. The highways that may have the highest potential of impacting lynx in Idaho are SR 12, 55, 75 and 95. As stated above, while the MIRR proposes no activities directly affecting these major highway in Idaho, it does propose permissions and prohibitions to road construction and reconstruction according to roadless area management themes. For this reason, the following information is provided as factors that could affect lynx in IRAs.

Road Construction and Reconstruction

In general, construction and reconstruction of forest roads are not considered a primary threat to resident lynx populations in and of themselves (Service 2000a and 2007). Vehicle speeds on forest roads are relatively slow in comparison to highways or other public roads due to topography, substrate and road conditions. Thus, the potential for lynx mortality or injury due to collisions with vehicles is probably low on forest roads (Service, NRLA BO, 2007, pg 21, pg 50). Further, although recreational, administrative and commercial uses of forest roads are known to disturb many species of wildlife (Ruediger 1996), preliminary information suggests that lynx do not avoid roads (Ruggiero et al. 2000a), except at high traffic volumes (Apps 2000). It is possible that summer use of roads and trails through denning habitat may have negative effects if female lynx are forced to move kittens because of associated human disturbance (Ruggiero et al. 2000b). However, new road construction continues to occur in many watersheds within lynx habitat, many of which are already highly roaded, and the effects on lynx are largely unknown. Further research directed at elucidating the effects of road density on lynx is needed (Ruediger et al. 2000, pgs. 2-12).

The primary mechanism through which forest and backcountry roads could negatively impact Canada lynx is through facilitation of winter recreation, such as snowmobiling, cross-country skiing, or snow-shoeing. These snow-compacting activities may facilitate the movement of competing carnivores, primarily coyotes, along snow compacted routes into lynx habitat during winter. Lynx have very large feet in relation to their body mass, which provides them with a competitive advantage over other carnivores in deep snow conditions. Various reports and anecdotal observations have documented coyotes using high elevation, deep snow areas (Buskirk et al. 2000b) when aided by mechanical snow compaction. Research conducted in central Alberta, attributed the use of more open habitats by coyotes to greater snow compaction (Todd et al. 1981). In another study in Alberta, coyotes were more selective of hard or shallow snow conditions than lynx (Murray et al. 1994).

Within lynx habitat in northwestern Montana, twelve radio-collared coyotes were monitored over three winter seasons to assess how coyotes interacted with compacted snowmobile trails (Kolbe et al. 2007). Coyotes remained in lynx habitat having deep snow conditions and traveled on compacted snowmobile trails more than random expectations. However, coyotes used compacted snowmobile trails for less than eight percent or their travel and used compacted and uncompacted roads similarly (Kolbe et al. 2007). Coyotes did strongly select for shallower and more supportive snow surfaces when traveling off of compacted trails. In this study, coyotes primarily scavenged ungulate carrion that was readily available during winter months, while snowshoe hare kills comprised only three percent of coyote feeding sites (Kolbe et al. 2007).

In the Uinta Mountains of northeastern Utah and in an additional three comparative study areas (Bear River range in Utah and Idaho, Targhee National Forest in Idaho, Bighorn National Forest in Wyoming), Bunnell et al. (2006) found that the presence of snowmobile trails was a highly significant predictor of coyote activity in deep snow areas. From track surveys it was determined that the vast majority of coyotes (90 percent) stayed within 350 meters of a compacted trail and that snow depth and prey density estimates (snowshoe hares and red squirrels) were the most significant variable in determining whether a coyote returned to a snowmobile trail (Bunnell et

al. 2006). Of these four study areas, recent lynx presence has only been documented on the Targhee National Forest.

It is important to note that in Kolbe et al. (2007), the study area was characterized by the presence of abundant ungulate carrion in the winter, primarily related to hunter mortality. This characteristic may be a rather unique occurrence within lynx habitat in northwestern Montana and may not occur within other portions of lynx habitat. Further, geographic variation in snow conditions (i.e., depth, supportiveness) may account for differences in coyote use of compacted snow trails documented in these two studies. Consequently, the effects of snow-compacting winter recreation activities on lynx may be dependent upon the environmental conditions which can vary with location.

Highways, predation by other species, predator control activities, shooting and trapping are all factors that could pose potential risk of mortality to Canada lynx. The MIRR will have no effect on these factors, but they are addressed briefly here to describe their potential influence on lynx in Idaho. Major high use highways such as I-90, I-15, US-2, US-12 and US-93 which occur between Idaho's dispersed roadless areas may result in lynx mortalities of both resident and dispersing individuals through vehicle collisions (Ruediger et al. 2000).

Discretionary Mining

Although it varies by commodity, surface use associated with the exploration and development of leasable minerals requires access and haul roads, open pits, facilities, power lines, pipelines, and communication sites, all of which can impact habitats for terrestrial species. For example, development of geothermal energy includes the following: exploratory drilling (some ground disturbance, road to access if not already there); if exploratory is favorable, construct well pad (about 3 acres); need a power plant within one to two miles, pipelines which are above ground (Abing 2008). Mining operations associated with phosphate extraction can contribute to the following impacts on species (BLM and USFS 2006):

- Physical removal of habitat and increased disturbance to adjacent habitats;
- Increased uptake by wildlife of contaminants (e.g., selenium) in mining disturbance areas and areas that are reclaimed;
- Increased potential for road-related mortality of wildlife due to collisions and human access.

Although the trapping of lynx is currently not permitted within Idaho, lynx may be trapped incidentally by bobcat and coyote trappers. Predator control activities may pose a risk to lynx within portions of the state. Lynx may also occasionally be shot and predation by mountain lions and wolves may be a source of mortality in some locations.

Lastly, hybridization between taxonomically similar species is a mechanism that can limit the recovery of threatened and endangered species. Hybridization between lynx and bobcats has been documented in Minnesota (Schwartz et al. 2004). However, the extent of this hybridization is unknown but at this time it appears to be a localized occurrence.

C. Effects of the Proposed Action

The previous section presented factors and activities that can affect Canada lynx in the action area, some of which (particularly road construction, road reconstruction, timber cutting and discretionary mining) may also result from future actions undertaken as allowed by the MIRR. To minimize duplication, these potential effects to lynx are not reiterated in their entirety below but are addressed specific to the proposed MIRR. Lynx productivity is directly related to the quantity and quality of habitat and indirectly related to competition with other predators. Conversion or alteration of native plant communities through timber management, fire suppression and natural fuel reduction, precommercial thinning, grazing by livestock, road and trail access and other recreational uses all serve as potential risk factors affecting the quantity and quality of habitat and thereby lynx productivity. The MIRR establishes prohibitions and permissions on timber cutting, road construction/reconstruction, and discretionary mining activities across IRAs, based on management area 'themes'. Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur pursuant to the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed under the MIRR (by theme) versus an analysis of the on-the-ground activities, and therefore has no direct effects.

Of over 7.3 million acres of mapped lynx habitat on National Forests in Idaho, 48 percent (~3.5 million acres) or nearly half overlaps IRAs (Table 32). Conditions under which road construction/reconstruction, timber cutting, and discretionary mining could occur within IRAs vary with themes proposed by the MIRR. Generally, these themes rank in restrictiveness as follows (from most restrictive to least): WLR, PRIM and SAHTS, BCR, BCR-CPZ, and lastly GFRG (see Chapter II for more detailed descriptions of these themes). Approximately 1,000 acres of timber harvest (i.e., removal of a commercial product) and 3.3 miles of road construction/reconstruction are projected in IRAs per year across the entire state under the MIRR. Below we discuss the effects of these themes and potential management activities on Canada lynx.

Wild Land Recreation

About 7.5 percent of total mapped lynx habitat in Idaho (549,101 acres) overlaps WLR (Table 32). These lands were generally identified during the forest planning process as recommended for wilderness designation. Consequently, road construction/ reconstruction, timber cutting, sale, or removal, and discretionary mining activities are all prohibited in this theme, with very few exceptions (See Chapter II for exceptions). Therefore, under WLR, effects to lynx and its habitat that could occur due to road construction or reconstruction (e.g., facilitation of human access), vegetation management (e.g., degradation or loss of lynx habitat), and discretionary mining (e.g., habitat loss and disturbance) are not anticipated. Further, prohibition on new roads, temporary or permanent, should benefit the species in these areas by reducing disturbance and human access, which should preclude increased recreational impacts that might be facilitated by new roads. Beneficial effects to lynx (as discussed above) of certain vegetation management activities designed to improve snowshoe hare habitat would also be precluded in WLR.

Table 32. Overlap of Mapped Lynx Habitat with the MIRR themes.

	Mapped lynx habitat	**% of total mapped lynx habitat in Idaho**
Wild Land Recreation	549,101	7.47%
Primitive	649,028	8.83%
Backcountry	1,884,947	25.63%
Backcountry CPZ	152,327	2.07%
General Forest, Rangeland, Grassland	115,795	1.57%
Special Areas of Historical and Tribal Significance	36,503	0.50%
Other Forest Plan Special Areas[1]	115,296	1.57%
Total in IRA	3,502,997	47.64%
Total Mapped Lynx Habitat in Idaho	7,353,220	

[1]These are roadless areas that are already part of other land classification systems; they are not addressed by in the MIRR. They are only included here for sake of completeness.

Primitive and SAHTS

A total of 685,531 acres (9.3 percent) of mapped lynx habitat falls within PRIM and SAHTS themes. Road construction/reconstruction and mineral activities are prohibited with the same limited exceptions that apply to WLR. Consequently, we would not anticipate adverse effects to lynx or its habitat resulting from these activities in Primitive or SAHTS.

Timber cutting, sale, or removal could occur in PRIM under the same two exceptions as WLR (See Chapter II) and for two additional purposes: to improve threatened, endangered, proposed, or sensitive species habitat; maintain or restore characteristics of ecosystem composition and structure; and reduce the risk of uncharacteristic wildland fire effects to an at-risk community or municipal water supply system. Such activities could only be facilitated using existing roads or aerial systems, and projects would have to meet certain additional criteria (e.g., retention of large trees, Regional Forester approval, etc.) to generally ensure that roadless characteristics are maintained or improved. Therefore, timber management (and related activities such as prescribed burning) could occur in PRIM and SAHTS where they are designed to restore or improve lynx habitat. Such activities are likely to be benign or beneficial to lynx in the long-term, although short-term negative impacts to individual lynx could still occur.

Timber cutting in lynx habitat for the purposes of reducing fuels (as might be conducted to reduce the risk of uncharacteristic wildland fire effects to at-risk communities or municipal water supply systems) could adversely affect lynx by altering the habitat of its primary prey, snow-shoe hares (see Effects of the Action – Timber cutting above). About 43,346 acres of mapped lynx habitat in PRIM are within 1.5 miles of an at-risk community, where most fuels reduction activities would be expected to occur. Municipal water supply systems are primarily concentrated around urban areas, although there is some overlap with IRAs, particularly in the following regions of Idaho: panhandle, west-central, and south-east. Consequently, it is possible,

that timber cutting activities intended to protect municipal water supply systems could occur within and impact the quality of lynx habitat.

Backcountry Restoration

Approximately 2,037,273 acres of mapped lynx habitat (~27%) fall in BCR, including 152,410 acres within CPZ. Within BCR, construction/reconstruction of temporary roads would be permitted (see Chapter II for more details) under certain circumstances, including but not limited to the following: to reduce hazardous fuel conditions with the CPZ, or outside the CPZ if there is a significant risk that a wildland disturbance event could adversely affect an at-risk community or municipal water supply systems. If these purposes applied, activities would be further subject to certain conditions (See Chapter II for more details) which would likely reduce the likelihood that temporary roads would be constructed. Consequently, lynx could be impacted by road construction/reconstruction (as discussed above), particularly within CPZ, albeit the instances are likely to be infrequent given the limited conditions under which these activities could occur.

Similarly, timber cutting activities are permitted in BCR to address a number of purposes, including but not limited to: treating hazardous fuels, improving TEPC habitat, and restoring/maintaining characteristics of ecosystem composition and structure. These activities would occur using existing roads or aerial systems. Such vegetation management practices in BCR have the potential to adversely or beneficially affect lynx and its habitat, depending on the prescriptions applied, as described above.

Road construction or reconstruction related to discretionary mining is not permitted in BCR. However, surface occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal, phosphates) would be allowed where it is consistent with applicable plan components. Although the likelihood of new leases in IRAs under this theme is low without the ability to build new roads, surface occupancy for any new mines that use existing road systems could impact lynx via habitat loss and degradation where they overlap mapped lynx habitat.

Given over 25 percent of mapped lynx habitat overlaps the BCR theme, the likelihood for some type of effect to lynx, adverse or beneficial in nature, under this theme is considered moderate.

General Forest, Rangeland, or Grassland

Approximately 405,900 acres of IRA are proposed under this theme, including 115,795 acres of mapped lynx habitat (Table V-7). Both permanent and temporary forest roads can be constructed, reconstructed and/or maintained in GRFG and timber cutting, sale, and removal is permissible. In addition, there are 14,460 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. The MIRR would allow road construction and reconstruction and surface occupancy for future phosphate exploration and development within the GFRG theme, which encompasses 5,770 acres of unleased KPLAs and any undiscovered phosphate acreage outside of KPLA within GFRG. Under the MIRR, the following IRAs contain unleased KPLAs in GFRG: Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek. These IRA's are all located in the Caribou portion of the Caribou-Targhee National Forest before these forests were consolidated. Since there is no mapped lynx habitat on the Caribou portion of the Caribou-Targhee National Forest due to the lack of appropriate

vegetation types, there is little potential risk to lynx on these 5,770 acres when and if this development should occur. Site-specific analysis and consultation would occur prior to any future leasing.

Most of the road construction/reconstruction and timber cutting projected under the MIRR is expected to occur in GFRG. No GFRG is proposed in the following Forests: Challis, Clearwater, Kootenai, Nez Perce, or the Wallowa-Whitman (Table 33). Given that approximately 29 percent of GFRG is also mapped lynx habitat, the potential for activities to occur in mapped lynx habitat is relatively high. However, this potential occurs on only 1.57 percent of total mapped lynx habitat on National Forests in Idaho, of which 20,028 acres are documented as "occupied" by lynx at this time. This suggests there is potential for individuals to be exposed and possibly adversely impacted on those forests considered occupied by lynx that have GFRG assigned to mapped lynx habitat (IPNF and Targhee National Forest). Given the limited overlap between GFRG and mapped lynx habitat that may be occupied by lynx, a relatively low risk to the species exists from select management activities (i.e., road construction/reconstruction, timber cutting, discretionary mining) in IRAs statewide.

Table 33. Overlap of Mapped Lynx Habitat with the MIRR themes by Forest.

Forest	**WLR**	**Prim.**	**BCR**	**BCR CPZ**	**GFRG**	**SAHTS**	**FPSA**
Bitterroot	0	0	0	0	0	0	0
Boise	75,900	173,087	158,553	4,533	13,327	0	8,796
Clearwater	171,039	121,188	261,893	885	0	21,448	2,256
Idaho-Panhandle	85,895	0	180,869	7,778	4,612	0	26,444
Kootenai	0	0	25,733	0	0	0	113
Nez Perce	91	64,387	120,534	13,042	0	15,055	4,064
Payette	97,461	43,462	202,532	22,112	68	0	12,319
Salmon-Challis	16,039	6,605	639,096	48,764	81,809	0	6,444
Sawtooth	47,146	179,660	86,951	34,692	481	0	35,538
Targhee	55,646	57,178	207,960	20,603	15,416	0	23,753
Wallowa-Whitman	0	0	41	0	0	0	0
Totals	549,218	645,567	1,884,162	152,410	115,712	36,503	119,729

Bolded National Forests are those determined 'occupied' by lynx at this time.

Prescribed Fire

Use of prescribed fire is not directly addressed by the MIRR. However, this activity is typically paired with timber cutting activities intended to reduce fuels, which is addressed by the MIRR and thus we also consider its impacts on Canada lynx. Fire exclusion has altered the pattern and composition of vegetation within lynx habitat within National Forests in Idaho (Hillis 2003).

These patterns, especially within stand replacing fire regimes (predominately spruce-fir communities), were likely important in providing young age class (i.e., stand initiation) snowshoe hare habitat across the landscape. Use of natural fire processes, such as wildland fire or prescribed fire, could be used as a restoration tool for these ecosystems that have been impacted by fire exclusion. These activities may temporarily reduce the quality of lynx habitat for several years following a burn (Fox 1978), as changes to understory may reduce snowshoe hare populations, remove cover, and possibly increase competition from coyotes in open habitats (Stephenson 1984, Koehler and Brittell 1990). However, in the longer term (10-15 years), areas burned may provide for higher densities of snow shoe hares than prior to treatment, resulting in a benefit to resident lynx.

Discretionary Mining

Generally, many of the impacts discretionary mining could have on terrestrial wildlife species, including Canada lynx, will result from removal of the substrate for the mine footprint and required infrastructure, primarily road construction and development. The impacts ensuing from these activities include habitat loss, degradation, fragmentation, and human disturbance. Most of the road construction/reconstruction and timber cutting projected under the MIRR is expected to occur in GFRG. However, this potential occurs on only 15,416 acres of mapped lynx habitat on the Targhee National Forest (which is considered "occupied" by lynx at this time) out of nearly 7.3 million acres of mapped lynx habitat on National Forest lands in Idaho. About 910 acres of unleased phosphate are located in GFRG on the Targhee portion of the Caribou-Targhee National Forest; however roads may not be constructed to access these deposits because they are not within the map specified in figure 3-20 of the FEIS (section 3.15 Minerals and Energy). Given the fact roads may not be constructed to access unleased phosphate deposits that may overlap occupied mapped lynx habitat there is a relatively low risk to the species from discretionary mining management activities in IRAs.

Surface occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal, phosphates) would be allowed where it is consistent with applicable plan components. There is no potential for oil and gas in IRAs other than on the Caribou-Targhee National Forest. The forest supervisor on the Targhee National Forest issued an oil and gas leasing decision in 2000. The decision made much of the forest either unavailable for leasing or available for leasing with a no surface occupancy (NSO) stipulation. The large expanse of the designated NSO renders them virtually impossible to economically explore and develop (FEIS, section 3.15 Minerals and Energy). Surface use and occupancy, and associated infrastructure could be granted in some areas for geothermal development although there is a low likelihood of new leases in IRAs without the ability to build new roads. Surface occupancy for any new mineral or energy development that uses existing road systems could impact lynx via habitat loss and degradation where they overlap mapped lynx habitat.

D. Cumulative Effects

Under the Act, cumulative effects are defined in 50 CFR 402.02 as: "those effects of future state and private activities that are reasonably certain to occur within the action area of the Federal Action subject to consultation." A non-Federal Action is "reasonably certain" to occur if the

action requires the approval of a state of local resource or land use control, such agencies have approved the action, and the project is ready to proceed. For Federal lands, state, Tribal, and local government actions could be in the form of legislation, administrative rules, or policy initiatives, or they could be actions proposed on non-federal lands that fall within the action area (e.g., inholdings).

We do not anticipate cumulative effects to the Canada lynx resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the MIRR consists of IRAs (see definition in Section II of the Assessment), most of which are unlikely to contain significant inholdings given their current roadless character and thus effects on such intervening non-Federal lands are unlikely;
- Given the broad scope of this Federal Action, it is not possible to determine specific state, private or local government legislation, administrative rules, or policy initiatives that would be reasonably certain to occur in IRAs.

E. Conclusion

The Service has reviewed the current status of the Canada lynx, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed MIRR is not likely to jeopardize the continued existence of Canada lynx. The potential for adverse effects to Canada lynx and its habitat to result from site-specific actions that could occur pursuant to the MIRR are not discountable but are also not certain to result in take of individual lynx or lynx habitat. Slightly over half of the mapped lynx habitat in Idaho is not affected by the proposed MIRR. Of over 7.3 million acres of mapped lynx habitat on National Forests in Idaho, 48 percent (~3.5 million acres) or nearly half does overlap IRAs. About 549,101 acres (~7.5 percent) of this mapped lynx habitat overlaps WLR. Adverse effects to lynx or its habitat are not expected in this theme because the theme prohibits road construction or reconstruction (other than access to valid existing rights), vegetation management, and discretionary mining. Approximately 685,531 acres (9.3%) of mapped lynx habitat falls within PRIM and SAHTS themes. While timber management (and related activities such as prescribed burning) could occur in PRIM and SAHTS, such activities could only be facilitated using existing roads or aerial systems. Short-term negative impacts to individual lynx could occur within these themes but they are likely to be benign or beneficial to lynx in the long-term. About 43,346 acres (.58%) of mapped lynx habitat in PRIM are within 1.5 miles of an at-risk community, where most fuels reduction activities intended to protect municipal water supply systems and associated communities are expected to occur. The restrictive conditions under which these activities could occur and the limited habitat involved in PRIM themes adjacent to communities constrain the potential for adverse effects to lynx overall.

Approximately 2,037,273 acres (~27%) of mapped lynx habitat fall in BCR, including 152,410 acres (2.07% mapped lynx habitat) within CPZ. Within BCR, construction and reconstruction of temporary roads would be permitted under certain circumstances and the likelihood for some type of effect to lynx, adverse or beneficial in nature, under this theme may be considered moderate.

Approximately 405,900 acres of IRA are proposed under the GFRG theme, including 115,795 acres (1.57 %) of mapped lynx habitat. Both permanent and temporary forest roads can be constructed, reconstructed and/or maintained in GRFG and timber cutting, sale, and removal is permissible. Given road construction and reconstruction, timber cutting, and activities associated with phosphate mining projected under the MIRR are expected to be concentrated in GFRG, the potential for these activities to take place in lynx habitat is relatively high on the Targhee portion of the Caribou-Targhee National Forest. No GFRG is proposed in two of the forests considered currently occupied by lynx; the Clearwater and Kootenai. This suggests that the potential for individuals to be exposed and possibly adversely impacted by GFRG activities is limited to mapped lynx habitat on the IPNF (4,612 acres of GFRG in mapped lynx habitat) and Targhee (15,416 acres of GFRG in mapped lynx habitat) National Forests. Given the limited overlap (20,028 acres or 1.57 of mapped lynx habitat) between GFRG and mapped lynx habitat that may be occupied by lynx, a relatively low risk to the species exists from MIRR-proposed management activities (i.e., road construction/reconstruction, timber cutting, and discretionary mining) in IRAs statewide. This limited risk is further rendered unlikely due to the existing applicable land management plan components (e.g., standards and guidelines) that remain in place to protect lynx and lynx habitat.

All activities that take place under the authority of the MIRR in each of the assigned themes within IRAs, including GFRG would be subject to applicable land management plan components (e.g., standards and guidelines) as well as to specific conditions promulgated by this rule (See Chapter II for list of conditions). The revisions of the SWIE Forest Plans fully incorporate the LCAS and the Service's Biological Opinion completed in 2003 determined that lynx would not be jeopardized by continued land management within these forests. The March 16, 2007 Biological Opinion addressing the Northern Rockies Lynx Management Direction (Service, 2007) determined the management direction applied to the remaining forests in Idaho (except for the Wallowa-Whitman) would not jeopardize the continued existence of lynx and provided terms and conditions as well as reasonable and prudent measures to minimize impacts of any take that may occur. The management direction for lynx in the SWIE Forest Plans and the Northern Rockies Lynx Management direction are not inconsistent with the MIRR direction; therefore lynx management direction would be applied at the project level.

All of the objectives, standards and guidelines listed in Appendix N of the FEIS for the Northern Rockies Lynx Management Direction apply to IRA's located within the Clearwater, Idaho Panhandle, Kootenai and Targhee National Forests that are currently considered occupied by lynx. If a conflict exists between the NRLA direction and direction provided in an existing plan, the more restrictive direction will apply (USFS, NRLA ROD 2007). For the Nez Perce, Salmon-Challis and Bitterroot National Forests that are considered unoccupied at this time, the direction should still be considered when designing management actions in mapped lynx habitat within IRAs, especially direction regarding linkage habitat. If and when these unoccupied forests become occupied by lynx, based on criteria and evidence described in the LCA, the direction shall then be applied to those forests (including the IRAs within them) as well. Finally, the Biological Opinion for the Northern Rockies Lynx Management Direction included Term and Condition number 4 requiring the USFS to work with the Service to develop and complete an acceptable protocol to survey currently unoccupied lynx habitat in secondary areas. This

requirement should reveal new lynx occurrences in habitat currently unoccupied lynx habitat in secondary areas and afford NRLA protection to newly occupied IRAs in the future.

The same standards and guides in existing Forest Plans (including those amended by the Northern Rockies Lynx Management Direction) that support conclusions of no jeopardy to lynx in National Forest lands in Idaho extend to the MIRR as well. Site-specific analysis would occur prior to any road construction, reconstruction, timber cutting or future mineral leasing in IRAs. Section 7 consultation under the Act will also be required for site-specific proposals other than the exempted take of up to 6 percent of mapped lynx habitat associated with fuel management projects where the USFS will not need to consult with the Service regarding those types of activities. However, such projects must be compliant with the terms and conditions in the NRLA Opinion provided by the Service.

The Service's 2000 Biological Opinion determined that lynx would not be jeopardized by continued land management that was consistent with Interagency Agreements that applied the LCAS to all land management activities (Service 2000). The Wallowa-Whitman National Forest is the only National Forest still operating solely under the direction of the LCAS at least until their Forest Plan revision process is completed. No GFRG is proposed in the Wallowa-Whitman and this forest is not considered occupied by lynx at this time. Based on these considerations above, the Service concludes that implementing the proposed MIRR would not appreciably reduce the likelihood of survival and recovery of Canada lynx.

F. Incidental Take Statement

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without specific exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of take in the Act means an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

1. Amount or Extent of the Take – No incidental take of lynx or lynx habitat is exempted herein as a result of the FS adopting the MIRR, although specific actions developed pursuant to the MIRR and associated LRMPs may cause effects that constitute take. The mere potential for take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions developed pursuant to the MIRR and relevant provisions of LRMPs will serve as the basis for determining if an exemption from the section 9 take

prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the listed species in accordance with 50 CFR 402.14i.

2. Effect of the Take – Not applicable to this Opinion.

3. Reasonable and Prudent Measures and Terms and Conditions – As there is not take exemption under 7(o) of the Act in this Opinion, the Service is not providing Reasonable and Prudent Measures or Terms and Conditions.

G. Conservation Recommendations

Section 7(a)(1) of the Act requires Federal Agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities intended to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service does not recommend conservation measures specifically for the MIRR because any applicable conservation measures have already been applied to the Northern Rockies Lynx decision.

CHAPTER VIII. PROPOSED CRITICAL HABITAT FOR CANADA LYNX (Conference Opinion)

In the Assessment addressing the MIRR, the USFS has concluded that the proposed action *is likely to adversely affect, but is not likely to result in the destruction or adverse modification* of proposed revised designated critical habitat for the contiguous United States distinct population segment of the Canada lynx. Federal action agencies may request a conference with the Service on any proposed action that may affect proposed critical habitat. If the proposed critical habitat is considered in the formal consultation (as it is for proposed critical habitat for Canada lynx in this Opinion), the analysis is included in the same sections as the listed species. If the proposed critical habitat becomes designated, the Service may adopt the conference opinion as the biological opinion issued through this formal consultation if no significant changes have occurred in the proposed action or the information used in this formal Conference Opinion.

A. History of Proposed Revised Designated Critical Habitat for Canada Lynx

On November 9, 2006, the Service issued a Federal Register (71 FR 66007) notice entitled Designation of Critical Habitat for the Contiguous United States Distinct Population Segment of Lynx (Service 2006). The Service designated three areas as critical habitat for lynx, including: 1) Voyageurs National Park in north-eastern Minnesota; 2) Glacier National Park in north-western Montana; and 3) North Cascades National Park in north-central Washington. No National Forest System lands were designated as critical habitat because these lands were found to already provide special management and/or protection for lynx. On July 20, 2007, the Service announced a review of the November 9, 2006 final rule after questions were raised about the integrity of the scientific information used and whether the decision made was consistent with the appropriate legal standards. Based on that review of the previous critical habitat designation, it was determined necessary to revise critical habitat. On February 28, 2008, the Service proposed a rule in the Federal Register (73 FR 10860) to revise designated critical habitat for the contiguous United States distinct population of Canada lynx. Approximately 42 mi^2 (110,727 km^2) fall within the boundaries of the proposed revised critical habitat designation (73 FR 10860). The proposed designation would add an additional 40,913 mi^2 to the existing critical habitat designation of 1,841 mi^2 in Idaho, Maine, Minnesota, Montana, Washington and Wyoming (73 FR 10860). In Idaho, approximately 32,000 acres of proposed revised designated critical habitat is located in Boundary County on Federal (National Forest and BLM) lands and 649 acres on State of Idaho lands. Of the estimated 32,000 acres on federal lands, 5,668 acres overlap the Buckhorn Ridge Roadless Area on the Panhandle National Forest. This Conference Opinion addresses this proposed revised designated critical habitat on the IPNF involving a portion of the Buckhorn Ridge Roadless Area.

B. Description of Proposed Critical Habitat for Canada Lynx

In proposing critical habitat for Canada lynx, the Service considered essential physical and biological features, also referred to as PCEs, laid out in the appropriate quantity and spatial arrangement for conservation of the species. In general, these PCEs include, but are not limited to the following: space for individual and population growth and for normal behavior; food, water, air, light, minerals, or other nutritional or physiological requirements; cover or shelter;

sites for breeding, reproduction, or rearing (or development) of offspring; and habitats that are protected from disturbance or are representative of the historic, geographical, and ecological distributions of a species.

The area proposed for designation by the Service as critical habitat within each of the five units – Northern Maine, (Unit 1), Northeastern Minnesota (Unit 2), Northern Rocky Mountains (Unit 3), North Cascades (Unit 4), and the Greater Yellowstone Area (Unit 5) – are reflected in Table 34. These units overlay lands under various ownerships including Federal, State, private, tribal, and other.

Table 34. Critical habitat units proposed for the Canada lynx.

Critical Habitat Unit	**Sq. Miles**	**Sq. Kilometers**	**Acres[1]**
1. Northern Maine	10,633	27,539	6,805,100
2. Northeastern Minnesota	8,226	21,305	5,264,600
3. Northern Rocky Mountains	11,304	29,276	7,234,400
4. North Cascades	2,000	5,180	1,280,000
5. Greater Yellowstone Area	10,590	27,427	6,777,600
Total	42,753	110,727	27,361,900

[1]Rounded to the nearest 100.

C. Environmental Baseline

Approximately 51 mi^2 (~32,940 acres) of the Northern Rocky Mountains Unit (Figure 15) overlap into Idaho, which represents about 17% of that unit (Table V-10 in the Assessment). The majority (98%) of proposed lynx critical habitat in Idaho occurs on Federal lands in northeastern Idaho (Figure 16). Lynx are known to be widely distributed throughout the Northern Rocky Mountains unit and breeding has been documented in multiple locations. This area is essential to the conservation of lynx because it appears to support the highest density lynx populations in the Northern Rocky Mountain region of the lynx's range. It likely acts as a source for lynx within the United States and provides connectivity to other portions of the lynx's range in the Rocky Mountains, particularly the Yellowstone area. Of the estimated 32,000 acres of proposed lynx critical habitat in Idaho, 5,668 acres overlap IRA, all falling within the Buckhorn Ridge Roadless Area (Figure 16). This equates to approximately 0.08 percent of the entire Northern Rocky Mountains unit. See the FEIS, Volume 3, pages C3-82 through C3-85 for more detailed information on the Buckhorn Roadless Area.

1. Primary Constituent Elements for Proposed Critical Habitat

Within the Northern Rocky Mountains Unit and specifically Unit 3 which includes Boundary County, Idaho, the primary constituent element for lynx critical habitat is the boreal forest landscape supporting a mosaic of differing successional forest stages and containing: (i) presence of snowshoe hares and their preferred habitat conditions, including dense understories of young trees or shrubs tall enough to protrude above the snow; (ii) winter snow conditions that are generally deep and fluffy for extended periods of time; (iii) sites for denning having abundant,

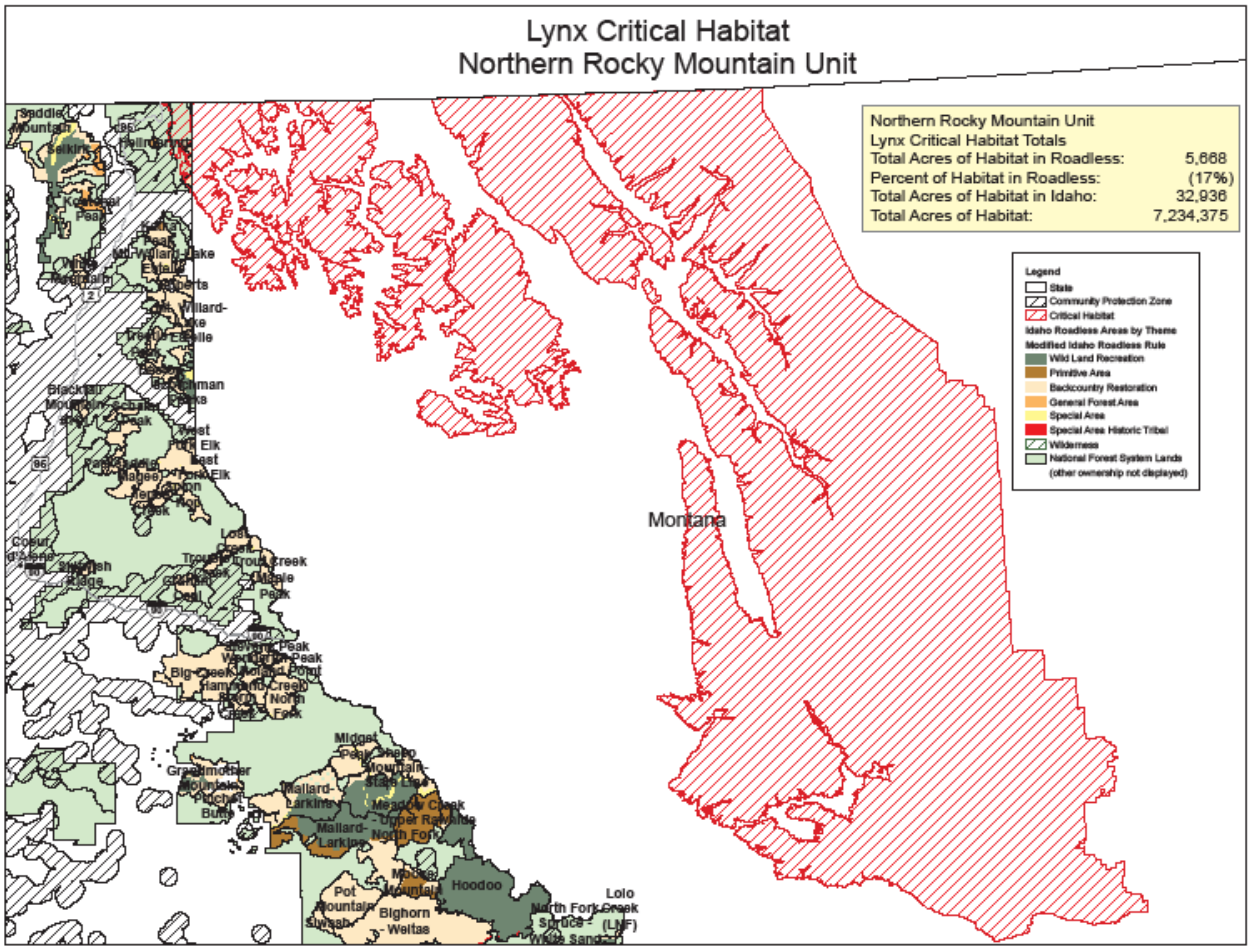

Figure 15. Proposed designated critical habitat for lynx in the Northern Rocky Mountain Unit.

coarse, woody debris, such as downed trees and root wads; and (iv) matrix habitat (e.g., hardwood forest, dry forest, non-forest, or other habitat types that do not support snowshoe hares) that occurs between patches of boreal forest in close juxtaposition (at the scale of a lynx home range) such that lynx are likely to travel through such habitat while accessing patches of boreal forest within a home range. The important aspect of matrix habitat for lynx is that these habitats provide the ability to allow unimpeded movement of lynx through them as lynx travel between patches of boreal forest (Service 2008a, page 10882).

2. <u>Factors affecting Proposed Critical Habitat in the Action Area</u>

Timber harvest and management is a dominant land use in the Boundary County, Idaho area. Timber management practices that provide for a dense understory are beneficial for lynx and snowshoe hares. However, forest management techniques that thin the understory may render the habitat unsuitable for hares and, thus, for lynx (Ruediger et al. 2000). Also in this area of north Idaho, fire suppression or fuels treatment, lack of an International conservation strategy for lynx, traffic, and development are other habitat-related threats to lynx (68 FR 40075)(Service

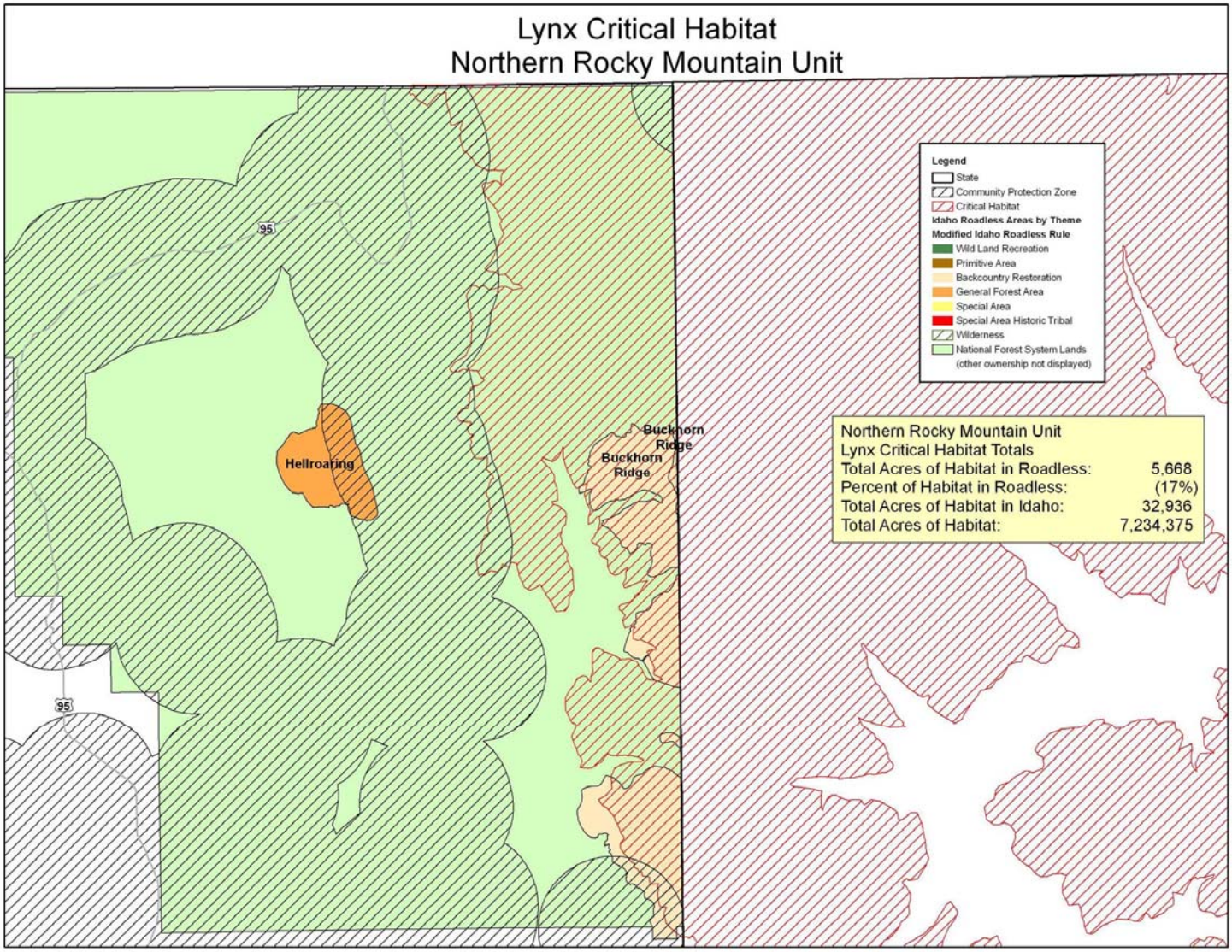

Figure 16 . Proposed designated critical habitat for lynx in the Northern Rocky Mountain Unit in Idaho Roadless Areas.

2008a, page 10874). The LCAS originally identified an inclusive list of 17 potential risk factors for lynx or lynx habitat that may be addressed under programs, practices and activities within the authority and jurisdiction of Federal land management agencies. Most of these risk factors hold potential to adversely affect lynx productivity and/or lynx mortality. Potential risk factors that the LCAS addresses that may affect lynx movement include highways, railroads and utility corridors, land ownership pattern, and ski areas and large resorts. While all of these factors occur in the Boundary County, Idaho area, most do not occur directly within the IRAs.

Winter activities including cross-country skiing and snowmobiling may be expected to occur in the Buckhorn Ridge Roadless Area at least occasionally. Some researchers maintain that winter activities such as these can compact snow allowing other predators that compete with lynx to access lynx habitat (Claar et al. 1999; Brunnell et al. 2006). Other researchers note that there is

no solid data on the role of snow compaction and changes in competitive advantage between lynx and other species (Kolbe et al. 2007). After evaluating Brunnell et al. (2006) and Kolbe et al. 2007, the Service determined that the best information available did not indicate that compacted snow routes increase competition from other species to levels that adversely impact lynx populations in the NRLA area (Service 2007).

Other potential large-scale risk factors for lynx addressed by the LCAS include fragmentation and degradation of lynx refugia, lynx movement and dispersal across shrub-steppe habitats, and habitat degradation by nonnative and invasive plant species. While these factors may influence or adversely affect portions of proposed lynx critical habitat within the Northern Rocky Mountains unit, they are not issues degrading lynx habitat within the Buckhorn Ridge Roadless Area.

D. Effects of the Proposed Action

The previous section presented factors and activities that can affect proposed critical habitat for the Canada lynx in the action area, some of which (particularly road construction, road reconstruction, timber cutting and discretionary mining) may also result from future actions undertaken as allowed by the MIRR. To minimize duplication, these potential effects are not reiterated in their entirety below, but are addressed specifically with regard to the proposed MIRR. Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur pursuant to the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed under the rule versus an analysis of the on-the-ground activities, and therefore has no direct effects.

Under the MIRR, all 5,668 acres of proposed lynx critical habitat in IRAs are included in BCR, of which 323 acres fall within the CPZ. There is no overlap with any of the other themes – WLR, PRIM, GFRG, or SAHTS. Within BCR, timber cutting, sale or removal and would be permitted for the following general purposes: to reduce fuels, particularly around at-risk communities or municipal water supply systems, to improve threatened, endangered, proposed or sensitive species habitat, and to maintain or restore characteristics of ecosystem composition and structure. Roads could be constructed only to facilitate hazardous fuel reduction activities within the CPZ or it is determined a significant risk exists to an at-risk community or municipal water supply system outside the CPZ. If these any of these circumstances applied, activities would be further subject to certain conditions, including but not limited to Regional Forester approval and meeting consistency with applicable plan components.

Under the MIRR, 1,000 acres of timber harvest (i.e., removal of a commercial product) and 3.3 miles of road construction/reconstruction per year are projected in all of IRAs based on historic trends for developing roadless areas over the past 20 years. Most of these activities are expected to occur within the 405,900 of GFRG. However, there is the potential for timber harvest and cutting and road construction/reconstruction within BCR, particularly within the CPZ, albeit the circumstances under which it would occur are limited (as described above). See Section II of this BO and Chapter II of the FEIS for a complete description of the BCR theme.

The nature of effects timber cutting activities could have on proposed lynx critical habitat will vary depending on the purpose, prescriptions, and methods involved. Timber cutting that reduces or removes understory vegetation within boreal forest stands (PCE), as for the purposes of fuels reduction, could reduce the quality of snowshoe hare habitat such that the landscape's ability to produce adequate densities of snowshoe hares to support persistent lynx populations is at least temporarily diminished (Service 2008a, page 10876). However, vegetation management that contributes to a dense understory could increase habitat for snowshoe hare and thus be beneficial to lynx. As 5,668 acres of the Northern Rocky Mountains Unit do overlap BCR, there is the potential for the MIRR to adversely affect proposed lynx critical habitat, as disclosed above, particularly given the exact location of activities that are permitted under this theme can not be known at this time.

Use of prescribed fire is not directly addressed by the MIRR. However, this activity is typically paired with timber cutting activities intended to reduce fuels, which is addressed by the MIRR. Consequently, we also consider potential impacts resulting from prescribed fire on proposed critical habitat for Canada lynx. Fire exclusion has altered the pattern and composition of vegetation within lynx habitat within National Forests in Idaho (Hillis 2003). These patterns, especially within stand replacing fire regimes (predominately spruce-fir communities), were likely important in providing young age class (i.e., stand initiation) snowshoe hare habitat across the landscape. Use of natural fire processes, such as wildland fire or prescribed fire, could be used as a restoration tool for these ecosystems that have been impacted by fire exclusion. These activities may temporarily reduce the quality of lynx habitat for several years following a burn (Fox 1978), as changes to understory may reduce snowshoe hare populations, remove cover, and possibly increase competition from coyotes in open habitats (Stephenson 1984, Koehler and Brittell 1990). However, in the longer term (10-15 years), areas burned may provide for higher densities of snowshoe hares than prior to treatment, resulting in a benefit to resident lynx.

Although it varies by commodity, surface use associated with the exploration and development of leasable minerals requires access and haul roads, open pits, facilities, power lines, pipelines, and communication sites, all of which can impact habitats for terrestrial species. Generally, many of the impacts discretionary mining could have on terrestrial wildlife species, including Canada lynx, will result from removal of the substrate for the mine footprint and required infrastructure, primarily road construction and development. Discretionary mining activities, including surface use and occupancy, would be allowed under the MIRR if permitted in the land management plan. However, new road construction and reconstruction associated with development of geothermal, oil, or gas reserves is prohibited in roadless areas under the MIRR regardless of theme. There are no known oil and gas deposits on the IPNF, and geothermal energy potential is very low. As such, little commercial interest in leasing for such resources is anticipated as development would essentially be precluded in the absence of new roads and there is low potential for the resource. Surface use and occupancy in the BCR and GFRG themes would be permitted if allowed in the LRMP. Road construction is only permitted to access specific phosphate deposits in the GFRG theme. There is no GFRG theme assigned to the Buckhorn Ridge Roadless Area. Activities related to phosphate leasing in IRAs would be restricted to areas in and adjacent to specific Known Phosphate Leasing Areas (KPLAs) on the Caribou portion of the Caribou-Targhee National Forest. Consequently, the likelihood that

discretionary mining activities will take place in IRAs in northern Idaho (and specifically the Buckhorn Ridge Roadless Area (FEIS, Volume 3 page 3-82 to 3-85) is exceptionally low.

E. Cumulative Effects

Under the Act, cumulative effects are defined in 50 CFR 402.02 as: "those effects of future state and private activities that are reasonably certain to occur within the action area of the Federal Action subject to consultation." A non-Federal Action is "reasonably certain" to occur if the action requires the approval of a state of local resource or land use control, such agencies have approved the action, and the project is ready to proceed. For Federal lands, state, Tribal, and local government actions could be in the form of legislation, administrative rules, or policy initiatives, or they could be actions proposed on non-federal lands that fall within the action area (e.g., inholdings).

We do not anticipate cumulative effects to the Canada lynx resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the MIRR consists of IRAs (see definition in Section II of the Assessment), most of which are unlikely to contain significant inholdings given their current roadless character and thus effects on such intervening non-Federal lands are unlikely;
- Given the broad scope of this Federal Action, it is not possible to determine specific state, private or local government legislation, administrative rules, or policy initiatives that would be reasonably certain to occur in IRAs.

F. Conclusion

The Service has reviewed the current status of proposed critical habitat for Canada lynx, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to destroy or adversely modify critical habitat for Canada lynx.

The MIRR is likely to adversely affect proposed critical habitat for Canada lynx, as 5,668 acres of the Northern Rocky Mountains Unit do overlap BCR. Given that the exact location of activities that are permitted under this theme are not known at this time, the exact extent of potential adverse effects that may result from future site-specific proposed actions authorized by the MIRR within the IRA portion of proposed critical habitat for Canada lynx are also unknown. However, when these potential adverse effects are added to the environmental baseline of the entire proposed critical habitat, they are not likely to appreciably diminish the capability of the proposed critical habitat to satisfy requirements essential to both the survival and recovery of Canada lynx. The Buckhorn Ridge Roadless Area portion of proposed critical habitat for lynx represents only 0.08 percent of the entire Northern Rocky Mountains Unit. The conditions under which timber cutting and temporary road construction or reconstruction in Backcountry Restoration theme acres would be permitted should serve to minimize and reduce the degree and scope of adverse effects in critical habitat. Requiring Regional Forester approval will likely serve to filter proposed activities within BCR to those clearly meeting the permitted purposes.

Occupied mapped lynx habitat in Idaho, including that proposed as critical habitat, is subject to the standards and guidelines outlined in the NRLA (see Appendix B of the Assessment for details), many of which are designed to limit impacts to lynx habitat both on spatial and temporal scales. The management direction for lynx in the Northern Rockies Lynx Management direction is not inconsistent with the MIRR direction; therefore lynx management direction would be applied at the project level. These standards and guidelines should function similarly in minimizing adverse effects to proposed lynx critical habitat. Despite the potential for activities allowed by the MIRR to affect structural vegetation components within the boreal forest (PCE) that may reduce the ability of those areas to support high densities of snowshoe hare, the potential extent of the affect is very limited and does not appreciably diminish the value of constituent elements essential to the conservation of the contiguous United States distinct population segment of Canada lynx. In addition, activities undertaken pursuant to the MIRR are not expected to disrupt habitat connectivity to other portions of the lynx's range in the Rocky Mountains. For these reasons, activities allowed by the MIRR are not likely to result in the destruction or adverse modification of proposed critical habitat for the contiguous United States distinct population segment of the Canada lynx.

G. Conservation Recommendations

Section 7(a)(1) of the Act requires Federal Agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities intended to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service does not recommend conservation measures specifically for the MIRR because only 0.08 percent (5,668 acres) of the proposed critical habitat of the entire Northern Rocky Mountains Unit (spanning approximately 42,753 square miles) is involved in IRAs and any applicable conservation measures have already been addressed in the consultation for the Northern Rockies Lynx decision.

H. Closing Statement

This concludes the Conference Opinion for the MIRR. The USFS may ask the Service to confirm this Conference Opinion as a biological opinion issued through formal consultation if the proposed revised designated critical habitat for the contiguous United States distinct population segment of the Canada lynx is designated. The request must be in writing. If the Service reviews the proposed action and finds that there have been no significant changes in the action as planned or in the information used during the conference, the Service will confirm the Conference Opinion as a biological opinion on the MIRR and no further section 7 consultation will be necessary.

After designation of critical habitat for Canada lynx and any subsequent adoption of this Conference Opinion, the Federal agency shall request reinitiation of consultation if (1) the amount or extent of incidental take is exceeded; (2) new information reveals the effects of the agency action that may affect critical habitat in a manner or to an extent not considered in this Conference Opinion; (3) the USFS action is subsequently modified in a manner that causes an

effect to the critical habitat that was not considered in the Conference Opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action.

CHAPTER IX: NORTHERN IDAHO GROUND SQUIRREL

A. Status of the Species

1. Listing History

In March of 1998, the Service proposed that the northern Idaho ground squirrel (*Spermophilus brunneus brunneus*; NIDGS) be listed under the Endangered Species Act (Act) as a threatened species; it was subsequently listed as threatened on April 5, 2000. A Recovery Plan for NIDGS was developed and published by the Service on July 28, 2003 (Service 2003). The recovery priority number for the subspecies is 3C on a scale of 1 to 18, indicating that it is: 1) taxonomically, a subspecies; 2) facing a high degree of threat; 3) rated high in terms of recovery potential; and 4) may be in conflict with construction and recreational development projects or other forms of economic activity. Critical habitat has not been designated for NIDGS.

2. Description of the Species

The NIDGS is a relatively small member of the genus *Spermophilus*; the mean lengths of the male and female are 23.4 centimeters (9.2 inches) and 22.6 centimeters (8.9 inches), respectively (Yensen and Sherman 1997). The pelage (fur) of NIDGS on the dorsal area appears dark reddish-gray as the result of a mixture of black unbanded and yellowish-red banded guard hairs. The subspecies' eye ring is buffy-white.

The NIDGS has the most restricted geographical range of any *Spermophilus* species (Figure 17), and one of the smallest ranges of any North American mammal (Gill and Yensen 1992). The first specimens were collected in 1913 by L.E. Wyman, and described by A.H. Howell as a subspecies (*Citellus townsendii brunneus*) of the present-day Washington ground squirrel (*Spermophilus washingtoni*) (then confused with the Townsend's ground squirrel, *C. townsendii*) (Howell 1938). Subsequently, Howell (1938) reclassified the Idaho ground squirrel as a full species, *Citellus brunneus*. Hershkovitz (1949) demonstrated that *Spermophilus* is the correct name for the genus. The systematics of *Spermophilus brunneus* were further investigated by Nadler et.al. (1973) with chromosomal descriptions. Yensen (1991) determined that *Spermophilus brunneus* consisted of two subspecies (the NIDGS, *Spermophilus brunneus brunneus*, and the southern Idaho ground squirrel, *Spermophilus brunneus endemicus*) based on cranial morphology, pelage, life history differences, and other characteristics.

3. Life History and Habitat Requirements

Ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) with shrub steppe open areas associated with south-facing slopes with less then 30 percent slope below elevation of 1,830 meters (6,000 feet) is considered potentially suitable habitat (Service 2003). These naturally occurring pockets of habitat are open areas that usually have shallow soil with intrusions of deeper soil. The areas of deeper soil are necessary for nest burrows by the ground squirrels. This ground squirrel is not abundant in meadows that contain high densities of small trees (Sherman and Yensen 1994).

Prior to 2005, NIDGS were considered restricted to elevations between 1,160 to 1,830 meters (3,800 to 6,000 feet) elevation in areas with north-facing slopes and gentle terrain. More recent surveys conducted in 2006 and 2007 detected NIDGS at elevations as high as 2,300 meters (7,500 feet) indicating a broader elevational range that previously documented (Evans-Mack 2006). The *Probable Historic Distribution* (PHD) for the NIDGS is being revised to reflect this new information (Ray Vizgirdas, Service, pers. comm., August 25, 2008).

The NIDGS emerge usually in late March or early April and cease above ground activity in late July or early August. Emergence begins with adult males, followed by adult females and then yearlings. The species becomes reproductively active within the first two weeks of emergence (Yensen 1991). Females that survive the first winter live on nearly twice as long as males (on average 3.2 years for females compared to 1.7 years for males). Males normally die at a younger age due to behavior associated with reproductive activity.

The NIDGS often digs burrows under logs, rocks and other objects. While dry vegetation sites with shallow soils of less than 50 centimeters (19.5 inches) depth above bedrock are used for auxiliary burrow systems (Yensen, et al 1991), nesting burrows are found in soil pockets that are deeper than 1 meter (3.28 feet) deep (Yensen, et al 1991, Yensen and Sherman 1997). Squirrels move between patches of habitat by crossing open stands of forest vegetation. Dense stands of trees restrict movement of squirrels between habitat patches. Although Columbian ground squirrels *(Spermophilus columbianus)* overlap in distribution with the NIDGS (Yensen and Sherman, unpublished data, Dyni and Yensen 1996), Columbian ground squirrels prefer moister areas with deeper soils.

The NIDGS consumes at least 45 to 50 plant species (Dyni and Yensen 1996). Seeds of forbs, lupines, and composites are important, while roots, bulbs, leaf stems, and flower heads are a minor component of their diet. Grasses and seeds are especially important, and it ingests large amounts of bluegrass (*Poa* sp.) and other grass seeds to store energy for the winter (Dyni and Yensen 1996). Additionally, NIDGS often inhabits areas with shorter, sparser vegetation than the Columbian ground squirrel. Such areas likely contain less abundant food resources than habitats occupied by Columbian ground squirrels (Dyni and Yensen 1996).

4. Population Dynamics

As a result of the factors described in the Life History and Habitat Requirements section, and due to the small sizes of the remaining population sites, the NIDGS may have little resilience to naturally occurring events. Small populations are often vulnerable to climatic fluctuations and catastrophic events (Mangel and Tier 1994). In 1993, Gavin ran a computer population viability simulation program using recruitment and death values recorded over 8 years from an intensively studied NIDGS population site (Gavin *et al.* 1999; Sherman and Yensen 1994). Variables in the model included no natural immigration, and began the population viability analysis using 50 individuals, a figure that was 30 individuals lower than the actual population size of 80 individuals (Sherman and Yensen 1994). The model calculated that all but 1 of 100 population sites would become extinct in less than 20 years.

The Service then contracted with the U.S. Geological Survey-Patuxent Wildlife Research Center, to develop a population model for the NIDGS (Runge 1999). The program was designed to allow the user to develop population projections for a population site or population complex using data collected about the demographic structure over 3 or more years. Using the assumptions of a closed population and overwintering survival of the female and pups, this model predicts population extinction within 7 years using current demographic trends if no conservation measures are taken.

Winter mortality may be a significant factor in the dynamics of this species, especially when juvenile squirrels enter torpor without sufficient fat reserves and snow levels are below average. When the snow pack is shallow, the energy requirements necessary for thermoregulation may increase mortality due to depletion of fat reserves. Although the relationship between ground squirrels and weather is complex, populations may have been adversely affected by drought and winter mortality in the early 1990's. On the other hand, higher than average snowfall combined with cool and stormy springs may result in above average mortality due to insufficient food availability and fat reserves upon emergence from hibernation.

There is a paucity of information about factors affecting fecundity and recruitment of the NIDGS. Models provide descriptive and predictive demographic information related to observed numbers and distribution of the species, but little insight into the causal factors. Until forces driving reproductive success and dispersal are better understood, management of the species must focus on restoring habitat and minimizing adverse effects on its quality and abundance.

5. Historic and Current Distribution

The distribution of the NIDGS has become fragmented into what are now very small, isolated populations in Adams and Valley Counties of west-central Idaho (Figure 18), an area covering approximately 1,300 square-miles (approximately 800,000 acres) (Service 2003). The fragmented distribution of the NIDGS is a remnant of what may once have been a more continuous distribution from Round Valley, Valley County, north to New Meadows, west to Bear, and south to Indian Valley in Adams County, Idaho (Service 2003). All remaining habitat sites for this ground squirrel are small in relation to those of other species of ground squirrels, ranging from >1 to 44 hectares (>1 to 110 acres), and are threatened by forest encroachment into grassland meadows.

The PHD of the NIDGS, developed by the NIDGS Technical Working Group, delineates what is believed to be the species current and historical range. The PHD totals approximately 843,434 acres and overlaps the Payette and Boise National Forests (Figure 16), but currently the species is known to occur only on the Payette National Forest. In 1985, the total NIDGS population at 18 known population sites was approximately 5,000 squirrels (Yensen 1985, Service 1985). The species declined from an estimated 5,000 individuals in 1985, to less than 1,000 by 1998. Surveys conducted in 2001 estimated the population was from 250 to 500 animals. In 2007, the population estimate for NIDGS was 1,040 individuals (Evans-Mack 2008). Given the extremely low population numbers and disjunct and isolated condition of current habitat, population viability could be a concern for this species (Service 2003).

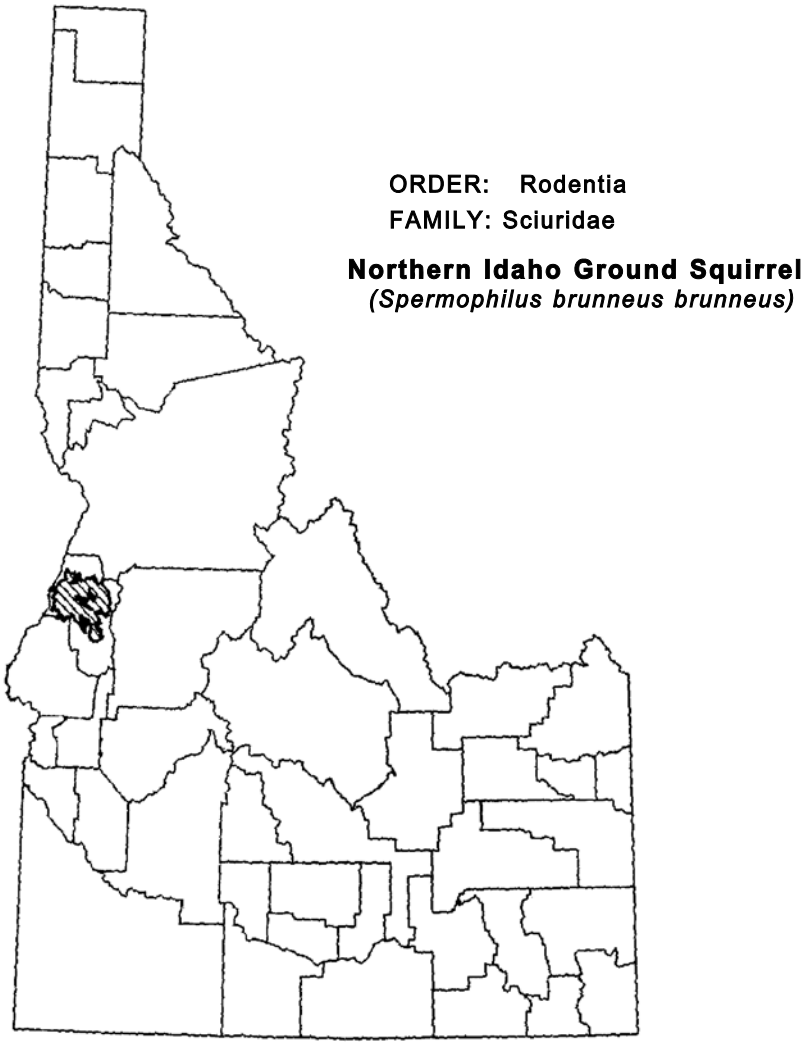

Figure 17. Current Distribution of NIDGS.

Metapopulation sites encompass clusters of population sites within the PHD. These sites were mapped by biologists conducting on-the-ground surveys to delineate elevation, slope, soil type, and other factors contributing to habitat that could be utilized by northern Idaho ground squirrels. Most of the known population sites fall within the metapopulation sites identified.

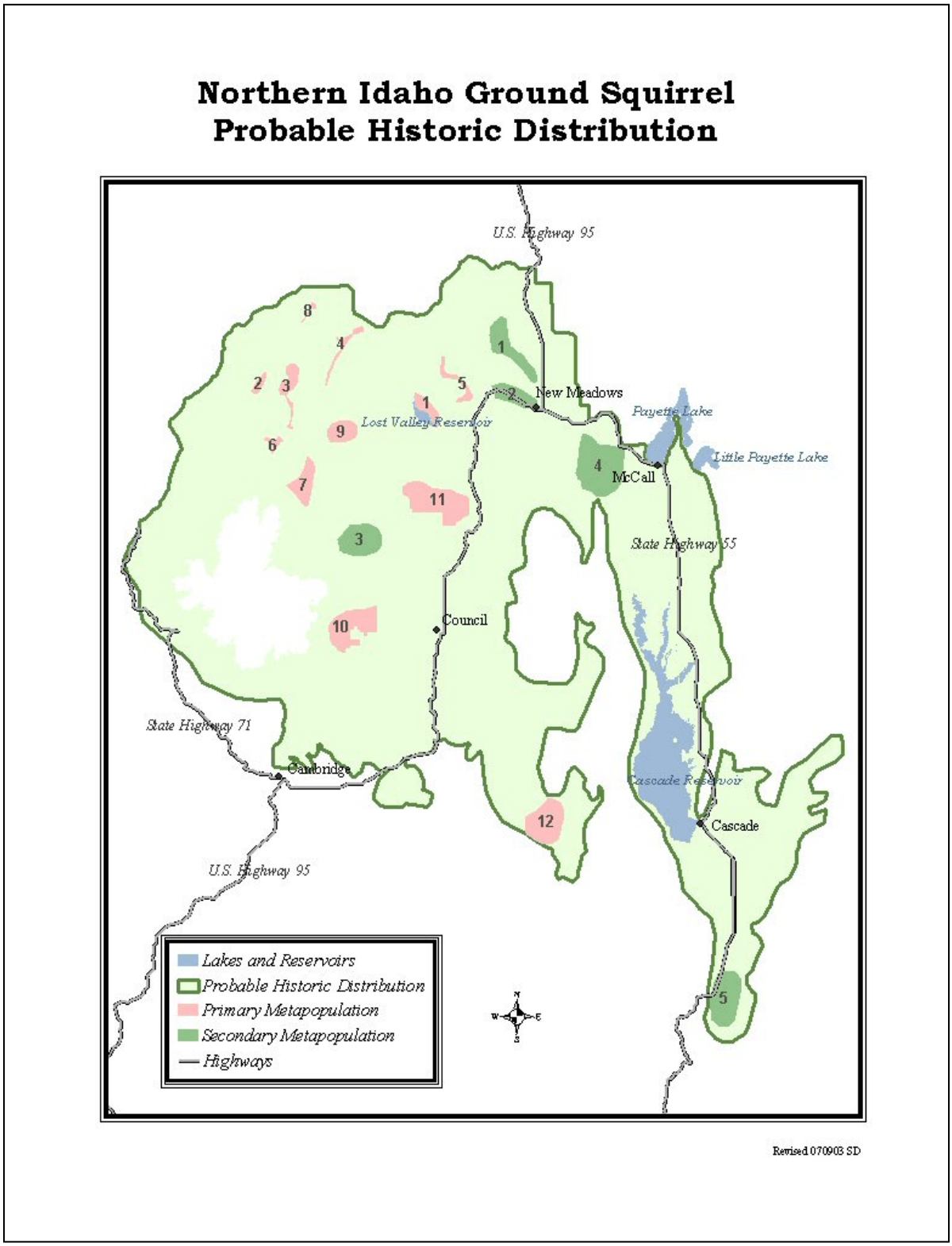

Figure 18. Probable Historic Distribution of NIDGS.

In a metapopulation system such as that of NIDGS, the extinction and re-colonization of local populations is perceived to be a natural occurrence. Some local populations may be larger and more robust than others because of the availability of suitable resources such as well drained soils, above-ground structure for cover, and diverse and nutritious food sources. These productive sites are often referred to as "source populations." Additionally, areas that harbor less resource value may support small populations during periods of ideal climatic conditions but may not remain viable when climatic conditions further reduce the resource value. These sites are referred to as "sink populations" in that most of the animals that occur there arrive via dispersal from source sites.

In general, larger local populations have a greater ability to persist through intermittent fluctuations in climate and food resources and can serve as source populations, through dispersal, for less viable populations or can re-colonize local populations that have gone extinct. A necessity for this process to work is the connectivity among local populations, a characteristic that is now lacking across substantial portions of the NIDGS range. Sink populations, although potentially intermittently occupied, are valuable to the metapopulation as well. They can contribute genetic diversity and can serve as a bridge between other source populations that would otherwise lack connection.

Currently, NIDGS are still characterized by relatively high genetic diversity as a species, and only low to moderate differentiation between individual populations (Garner et al. 2005). Consequently, this subspecies does yet not appear to be exhibiting deleterious effects associated with small populations, such as inbreeding or loss of genetic diversity (Garner et al. 2005).

6. Previously Consulted-on Effects

The Service has conducted numerous informal and formal section 7 consultations with the Forest Service and other Federal agencies, in addition to the Forest Plan revision consultation. The majority of these consultations were on site-specific actions such as timber sales, vegetation management actions, road maintenance and construction, and livestock grazing. To date, no incidental take has been granted, and due to the nature of these actions (individually and in aggregate) these have not compromised the survival and recovery of the NIDGS.

Land management on the Payette and Boise National Forests is considered critically important to the species and its habitat because these Forests constitute the primary Federal action agency with the potential to affect its survival and assist in recovery under section 7(a)(1) of the Act (Service 2003). In summary, the Service's 2003 Biological Opinion for the SWIE LRMPs developed the following assumptions with regards to Forest Plan implementation and NIDGS to avoid a jeopardy determination. The Service assumes that: 1) all actions proposed under this Forest Plan will benefit the recovery of the NIDGS, and 2) any adverse effects to the NIDGS will be short-term and completely off-set by long-term benefits.

7. Conservation Needs

In 1996, while still a candidate species, a Conservation Agreement between the Payette National Forest and the Service was developed to address this viability concern and encourage habitat

improvement opportunities. Prior to and since this agreement, the Payette National Forest has been implementing habitat improvement projects to decrease conifer encroachment on currently occupied sites, and to connect adjacent populations (Service 1996). These projects (e.g., Summit Gulch) appear to be beneficial to the squirrel, but are still being evaluated to determine their effectiveness.

Current conservation and management of NIDGS on the Payette and Boise National Forests is guided by the Final Recovery Plan for the Northern Idaho Ground Squirrel (Service 2003) and the Land and Resource Management Plans for the Boise, Payette and Sawtooth National Forests (USFS 2003). Additionally, other voluntary plans and agreements have been developed among State and Federal agencies to further enhance NIDGS conservation and recovery. These include: a Payette National Forest Habitat Restoration Plan for activities to be conducted to pro-actively enhance and restore habitat up to 2006; and a Participating Agreement between the Payette National Forest, Service, and the IDFG committing to the provision of long-term protection of the NIDGS (Service 2003).

The LRMPs for the SWIE Forests provide Forest-wide direction that pertains directly to NIDGS and additional Management Area direction for those areas where the NIDGS is known to occur (e.g., within Management Areas 2, 3, and 5 on the Payette National Forest). In general, this direction provides the minimum needs to promote conservation of the NIDGS through proactive maintenance and restoration of NIDGS habitat and minimization of effects to individual squirrels through restrictions on other management disciplines (e.g., grazing, recreation, fire) in occupied NIDGS habitat.

8. Critical Habitat

No Critical Habitat for NIDGS has been designated, therefore none would be affected.

B. Environmental Baseline

Regulations implementing the Act (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, State, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area which have undergone formal section 7 consultation, and the impacts of State, tribal, local, and/or private actions that are reasonably certain to occur and are contemporaneous with the consultation in progress.

1. Status of the Species in the Action Area

Of the approximately 843,434 acres encompassed by the PHD for NIDGS, 5.61 percent (47,313 acres) falls within Idaho Roadless Areas (IRA) (Figure 19). Of 40 known metapopulation sites (to be differentiated from colonies) for NIDGS within the PHD of the species, none occur within IRAs as of 2008. Four existing NIDGS colonies have been documented within IRA and include Bear-lick Ridgeline, Lick Creek Lookout, Lick Creek Lookout Lower, and the Smith Mountain Lookout (Table 35). These 4 colonies occur outside of the currently established metapopulation sites.

The PHD of the NIDGS overlaps five IRAs and include Indian Creek, Cuddy Mountain, Council Mountain, and small portions of Rapid River and Poison Creek (Figure 19). One additional IRA is situated between metapopulations (e.g., Snowbank) and seven IRAs surround the outer boundaries of the PHD (e.g., Bear Wallow, Peace Rock, Stony Meadows, Needles, French Creek, Patrick Butte, and Hells Canyon/Seven Devils Scenic Area). Based on the proximity of these thirteen IRAs to the PHD and metapopulation sites these IRAs could contain habitat that serves as linkage and/or connectivity between adjacent metapopulations and colonies or that supports yet to be discovered NIDGS colonies (Ray Vizgirdas, Service, pers. comm. August 25, 2008).

Much of the squirrel's preferred meadow and natural opening habitat on the Payette National Forest has been managed in the past, but not in a way that has particularly benefited this species. Many areas adjacent to the meadows historically had large, widely spaced ponderosa pine and Douglas-fir that have been replaced by dense stands of younger trees with dense understories, which may inhibit movement of squirrels between colonies. Many of these meadows and openings have been invaded by trees due to past fire exclusion and grazing.

Table 35. Existing NIDGS colonies in Idaho Roadless Areas.

Colony Name	**Status**	**2007 Population Estimate***		**Acres in IRA**	**Roadless Area**
		Observed	**Min. Est.**		
Bear-Lick Ridgeline	Extant	9	10	5.68	Rapid River
Lick Creek Lookout	Extant	21	25	14.21	Rapid River
Lick Creek Lookout Lower	Extant	0	undetermined	4.42	Rapid River
Smith Mountain Lookout	Extant	10	20	0.07	Hells Canyon/Devils Scenic

*From Evans- Mack and Bond 2007.

2. Factors affecting the Species in the Action Area

The primary threats to NIDGS include habitat loss, degradation, and fragmentation due to conifer encroachment into meadow habitats, changes in vegetation composition and structure, agricultural conversions, and rural development. Other threats identified include mortality associated with illegal recreational shooting, poisoning, and competitive exclusion by the larger Columbian ground squirrel (Service 2003).

Sherman and Runge (2002) observed unusually high mortality of older breeding females in the Squirrel Valley population, which appears to have contributed to a collapse of this population from 1986-1999. They hypothesized this population decline was a demographic response to loss and fragmentation of meadow habitats, as well as changes in vegetation composition within meadow habitats. This change in habitat quality, quantity, and distribution has been attributed to: a) fire suppression which has allowed for conifer encroachment into meadow ecosystems;

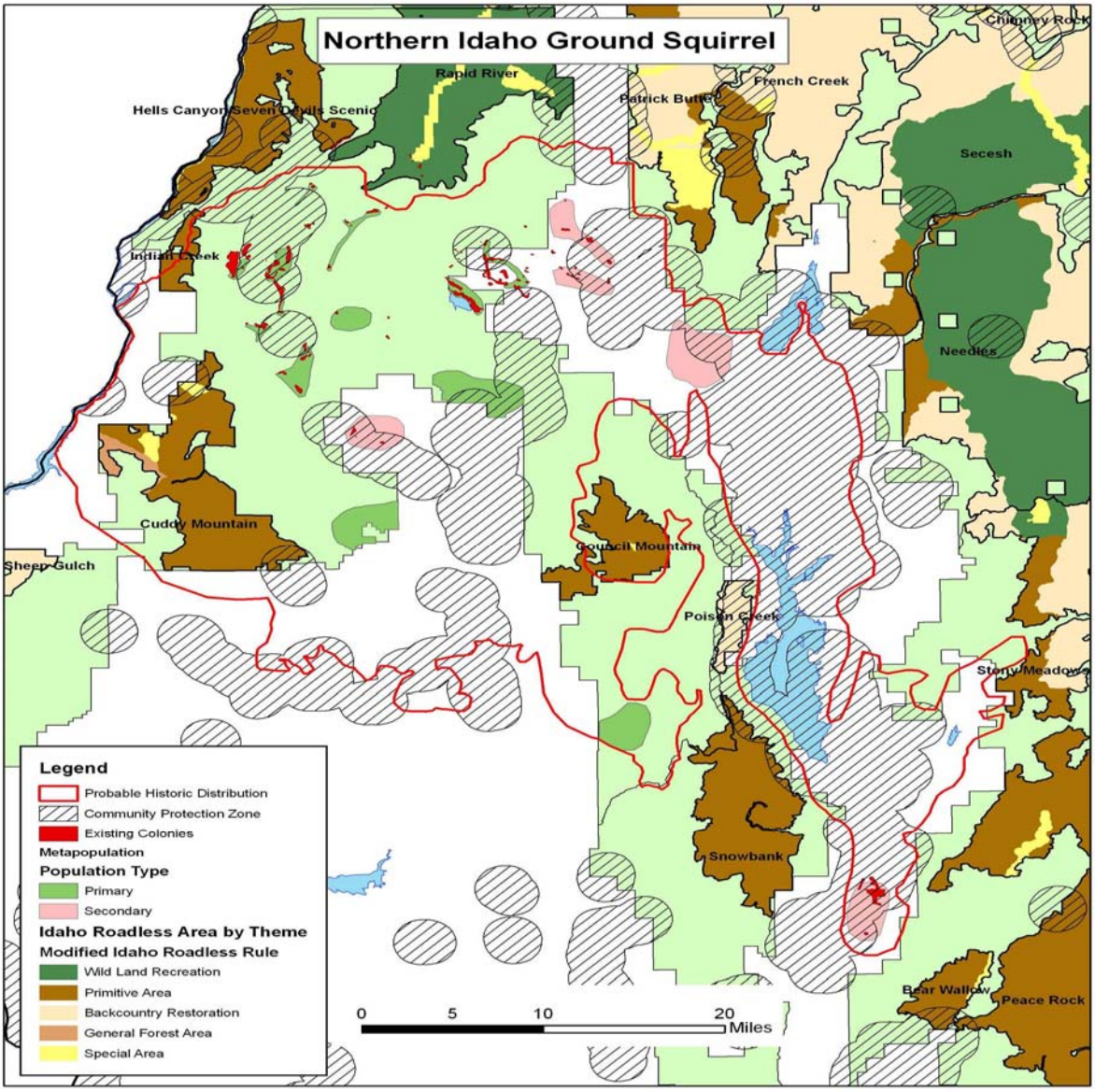

Figure 19. Overlap of MIRR Themes with NIDGS Probable Historic Distribution and Known Populations

b) the introduction of exotic pasture grasses; and c) past and present livestock grazing which has modified the herbaceous communities that are important to ground squirrels (Sherman and Runge 2002).

The range of the Columbian ground squirrel overlaps the distribution of the NIDGS. Sherman and Yensen (1994) reported that the segregation of these two species is due to competitive exclusion as opposed to differing habitat requirements. Again, past management activities, such as fire exclusion, may have modified these habitats (e.g., increased density of vegetation) resulting in a competitive advantage for the Columbian ground squirrel where the two species are in close proximity to one another. Such past management actions have reduced the sizes of the

meadows and eliminated dispersal corridors along the valley bottoms (Service 2003). Because of the current low population numbers and limited number of locations where animals are present, impacts to individual NIDGS from any cause are of concern.

Road Construction and Reconstruction

As indicated above, the MIRR establishes prohibitions and permissions on road construction and reconstruction, and timber cutting activities across IRAs based on management area themes. Construction, maintenance, and use of forest roads have the potential to impact NIDGS through a number of mechanisms. Habitat can become inaccessible to individuals where roads function as a barrier to movement. For example, Merriam et al. (1988), Swihart and Slade (1984), and Oxley and Fenton (1974), found that some rodent species are reluctant to cross even the narrowest gravel roads. This avoidance behavior can result in substantial amounts of suitable habitat being unavailable to these species. Further, such habitat loss can fragment populations into smaller subpopulations through loss of connectivity between populations (Shine et al. 2004), which can lead to demography fluctuations, inbreeding, loss of genetic variability, and local population extinctions (Yensen and Sherman 1997).

Where roads function as barriers to movement, travel and dispersal, they can significantly alter population demographics and genetics of a species. Rico et al. (2007) found that whereas individual voles and mice were observed crossing narrow highways, wide highways served as complete barrier to movement, effectively separating populations on either side of the highway demographically. For NIDGS, increased habitat fragmentation between colonies could impact dispersal between these populations, which could lead to demographic consequences should such separation be maintained.

Roads facilitate human access and activities that could contribute to direct and indirect mortality of NIDGS, including collisions and crushing. In certain situations, such as for some rodents with highly restricted home ranges, populations or rare animals may be reduced to dangerous sizes by road kills (USFS 2000). Ground squirrels often are a target of recreational shooting, which is facilitated by human developments and road access (Service 2003, Ingles 1965). Many local endemic ground squirrels, such as the NIDGS, with small, isolated populations are vulnerable to recreational shooting facilitated by roads (Service 2003). Given the isolated nature of existing NIDGS colonies and the relatively low population numbers, loss of just a few individuals, particularly adult breeding females, may have demographic consequences (Sherman and Runge 2002).

Timber Cutting

The NIDGS can be impacted by management of vegetative communities, including timber cutting. “[Although] the species does not make significant use of forested areas, short-term adverse impacts from timber management activities [could occur where] meadows are used as landings, staging areas, equipment parking, storage, and camps. Impacts to the squirrels from logging and or forest management are similar to those impacts discussed for prescribed fire described below. Logging activity, if implemented while squirrels are present and active above

ground, can trigger avoidance behavior and make them more susceptible to predation" (Service 2003, pg. 53).

The NIDGS are not typically abundant in meadows that contain a high density of small trees (Service 2003). Consequently, in the long-term, this species can benefit from vegetation management designed to reduce stand densities, maintain a vegetation mosaic that includes openings, and remove encroaching conifers from dry meadows (Service 2003). Such prescriptions improve habitat conditions for NIDGS and are likely to be either benign or beneficial to the species in the long-term.

In addition to the Forest Plan direction that specifically addresses NIDGS conservation (Table 36), the SWIE LRMPs outline a variety of general goals, objectives, standards and guidelines that are intended to further avoid, minimize, or mitigate adverse effects to threatened, endangered, proposed, and candidate species, including NIDGS (Table 37). How this general Forest-wide direction is implemented will vary with species and location. For NIDGS, minimization measures might include reducing disturbance to NIDGS and its habitat, controlling noxious weeds, and excluding road construction through occupied NIDGS habitat or use of roads during periods where NIDGS are active.

Table 36. Existing conservation and management direction for NIDGS from the Land and Resource Management Plans for the Boise, Payette, and Sawtooth National Forests.

Direction	Description
TEPC Objective 14	Maintain or restore vegetative conditions that contribute to the recovery of northern Idaho ground squirrel habitat
Wildlife Resources Goal	Restore northern Idaho ground squirrel habitat quality, abundance, and connectivity to promote recovery of the species
Wildlife Resources Objective	Implement the recovery plan for the northern Idaho ground squirrel, when approved, to promote recovery of the species
Wildlife Resources Standard	The northern Idaho ground squirrel will receive priority consideration for all management activities that occur within their known occupied habitat. The intent of this standard is not to exclude all other activities within this habitat, but rather to reduce or minimize potential impacts to this species while emphasizing habitat improvement within and adjacent to known sites
Recreation Resources Standard	All new developed recreation facilities shall be located outside occupied NIDGS habitat.
Rangeland Resources Standard	Livestock salting shall be located outside occupied NIDGS habitat
Fire Management Standard	Once a Wildland Fire Situation Analysis (WFSA) is approved, heavy equipment shall not be used to construct fire lines within occupied NIDGS habitat unless: a. The line officer or designee determines that imminent safety to human life or protection of structures is an issue; OR b. The incident resource advisor determines and documents an escaped fire would cause more degradation to occupied NIDGS

	habitat than would result from the disturbance of heavy equipment. c.In no case will the decision to use heavy equipment in occupied NIDGS habitat be delayed when the line officer or designee determines safety or loss of human life or protection of structures is at imminent risk.
Fire Management Standard	Once a WFSA is approved, incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities shall be located outside of occupied NIDGS habitat unless the only suitable location for such activities is determined and documented by the line officer or designee to be within occupied NIDGS habitat. In no case will the decision to place these activities inside occupied NIDGS habitat be delayed when the line officer or designee determines safety or loss of human life or structures is at imminent risk
Fire Management Standard	Once a WFSA is approved, avoid delivery of chemical retardant, foam, or additives to all surfaces within occupied NIDGS habitat unless: a.The line officer or designee determines that imminent safety to human life or protection of structures is an issue; OR b.The incident resource advisor determines and documents an escaped fire would cause more degradation to occupied NIDGS habitat, than would be caused by chemical, foam or additive delivery to the habitat. c.In no case will the decision to avoid delivery of chemical retardant, foam or additives to occupied NIDGS habitat be delayed when the line officer or designee determines safety or loss of human life or protection of structures is at imminent risk

Table 37. General goals, objectives, standards and guidelines outlined in the LRMPs for the Southwest Idaho Ecogroup that may serve to minimize adverse effects on NIDGS.

Threats	**Federal Action** **Management Direction in Chapter III of LRMPs**
Habitat Loss, Modification	**TEPC Species**: Goals 1, 3, 4, 5, 6; Objectives 1, 2, 3, 4, 5, 7, 14, 18, 22, 25, 26, 27; Standards 1, 2, 3, 5, 29; Guidelines 4, 6, 8, 10
Over-utilization	**TEPC Species**: Objectives 2, 5 **Wildlife Resources**: Objective 5,6 **Recreation Resources**: Standard 5
Disease or Predation	**Wildlife Resources**: Objectives 4, 5, 6

Inadequacy of Regulatory Mechanisms	**TEPC Species**: Goals 1, 3, 4, 5, 6; Objectives 1, 2, 3, 4, 5, 7, 14, 18, 22, 25, 26, 27; Standards 1, 2, 3, 5, 29; Guidelines 1, 2, 4, 6, 8 **Rangeland Resources**: Goal 1; Objective 1 **Recreation Resources**: Goals 4, 5; Objective 18; Standard 5 **Lands and Special Uses**: Goal 1; Objective 1; Guideline 1 **Facilities and Roads**: Goal 1; Objectives 4, 6; Guidelines 4, 9
Other Natural or Man-caused Concerns	**TEPC Species**: Standard 5

C. Effects of the Proposed Action

The previous section presented factors and activities that can affect the NIDGS in the action area, some of which (particularly road construction, road reconstruction, timber cutting and discretionary mining) may also result from future actions undertaken as allowed by the MIRR. To minimize duplication, these potential effects are not reiterated in their entirety below, but are addressed specifically with regard to the proposed MIRR. Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur pursuant to the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed under the rule versus an analysis of the on-the-ground activities, and therefore has no direct effects.

Approximately 5.61 percent (47,313 acres) of the PHD for NIDGS and some recently discovered colonies overlap IRAs (Table 38). Conditions under which road construction and reconstruction, and timber cutting could occur within IRAs vary with themes proposed by the MIRR. Generally, these themes rank in restrictiveness as follows (from most restrictive to least): WLR, PRIM and SAHTS, BCR, BCR-CPZ, and lastly GFRG. Approximately 1,000 acres of timber harvest (i.e., removal of a commercial product) and 3.3 miles of road are projected in IRAs per year across the entire state under the MIRR. The implications of these themes to NIDGS are as follows:

Wild Land Recreation and Primitive

Of the approximately 47,313 acres of the PHD that overlap IRA, 94 percent falls in IRAs that will be managed under relatively restrictive themes: WLR (31 acres) and PRIM (42,783 acres) (Table 38 and Figure 19). This overlap constitutes about 5.1 percent (42,814 acres) of the entire PHD. Three extant colonies overlap the WLR theme in the Rapid River Roadless Area and one colony overlaps the Primitive theme in the Hells Canyon/Seven Devils Scenic Roadless Area (Table 38).

Road construction and reconstruction is prohibited under both of these themes, unless provided for by statue or treaty, or pursuant to reserved or outstanding rights, or other legal duty of the United States. Therefore, under these themes, effects to NIDGS associated with road construction or reconstruction in NIDGS habitat (e.g., increased opportunities for vehicle-related

injuries and mortalities, as well as facilitation of unauthorized recreational shooting) are not anticipated to occur. Further, prohibition on new roads, temporary or permanent, should benefit the species in these areas by minimizing disturbance and human access.

Timber cutting, sale, or removal is generally prohibited in WLR except for personal or administrative uses, or where incidental to the implementation of management activities not otherwise prohibited. As such, adverse impacts to the NIDGS are not anticipated to occur under this theme resulting from timber cutting. Timber cutting is permitted, however, in PRIM in two additional circumstances: to improve habitat for TEPC species and to maintain or restore the characteristics of ecosystem composition and structure; or to reduce the risk of uncharacteristic wildland fire effects to an at-risk community or municipal water supply system. Such activities could only be facilitated using existing roads or aerial systems, and projects would have to meet certain additional criteria (e.g.,retention of large trees, Regional Forester approval, etc.). Therefore, timber cutting activities (and related activities such as prescribed burning) could occur in PRIM where they are designed to restore or improve NIDGS habitat, such as removal of encroaching conifers into montane meadows. Such activities would likely have benign or long-term beneficial effects on NIDGS (Service 2003).

Table 38. Overlap of the Probable Historic Distribution (PHD) of the Northern Idaho Ground Squirrel and the Modified Idaho Roadless Rule.

IRA Themes	**Overlapping Colonies**	**Acres PHD**	**% of PHD**	**% IRA overlap**
Wild Land Recreation	Bear-Lick Ridgeline Lick Creek Lookout Lick Creek Lookout Lower	31	0.00%	0.07%
Primitive	Smith Mountain Lookout	42,783	5.07%	90.4%
Backcountry	None	0	0.00%	0.00%
Backcountry CPZ	None	1.49	0.00%	0.00%
General Forest, Rangeland, Grassland	None	2,675	0.32%	5.65%
Forest Plan Special Areas*	Bear-Lick Ridgeline	1,822	0.22%	3.85%
Total in IRA	4	47,313	5.61%	100%
Total Area of PHD		843,434		

* The MIRR does not apply to these other special areas.

Watersheds that contain municipal water sources do occur within the PHD for NIDGS, and appear to overlap the following IRAs: Cuddy, Council Mountain, Snowbank, Needles, Peace Rock, Bear Wallows, Patrick Butte, and French Creek (Figure 19). Further, CPZs, which may include at-risk communities, also appear to overlap small portions of IRAs classified as PRIM within the PHD for the NIDGS (Figure 19). Therefore, timber cutting activities (including related activities such prescribed fire) intended to reduce and remove hazardous fuels could

occur in these IRAs to protect municipal water sources or at-risk communities. At this time it is difficult to predict the nature of impacts such activities might have on NIDGS given the range of methods and possible prescriptions. However, the objective of fuels reduction is typically to remove ladder fuels and to create a more open stands, activities that could create conditions that are conducive to NIDGS. Short-term adverse effects could occur due to disturbance to individual squirrels or temporary changes in habitat quality. Furthermore, use of existing roads to facilitate such treatments has the potential to increase vehicle-related injury or mortality of NIDGS.

Road construction and reconstruction related to discretionary mining activities and surface occupancy are prohibited in WLR and PRIM. Consequently, effects associated with these activities on NIDGS (e.g., habitat loss, fragmentation, and degradation, increased human access) are not anticipated under these themes.

Backcountry Restoration

Approximately 1.49 acres of the PHD for NIDGS overlap BCR, entirely within CPZ in the Poison Creek Roadless Area. No known colonies of NIDGS overlap this theme at this time. Within BCR-CPZ, temporary roads could be constructed or reconstructed under six primary exceptions and to address hazardous fuels surrounding at-risk communities and municipal water supply systems. Timber cutting could also occur to reduce hazardous fuels within CPZ, reduce significant risk of wildland fire effects to an at-risk community, or municipal water supply system, and to address similar purposes as described under PRIM (e.g., improve TEPC species habitat, maintain characteristics of ecosystem composition and structure, etc.). Effects to NIDGS resulting from construction of temporary roads or timber cutting (as described under PRIM) could occur under BCR-CPZ. However, given the minimal degree of overlap between the PHD and this theme, it is highly unlikely that any activities that could occur in BCR-CPZ will take place in NIDGS habitat.

Road construction or reconstruction related to discretionary mining is not permitted in BCR. However, surface occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal) would be allowed where it is consistent with applicable forest plan direction. The likelihood of new leases for oil, gas, coal or geothermal development in IRAs, particularly outside of the Caribou-Targhee National Forest, is exceptionally low. This likelihood is further reduced under this theme without the ability to build new roads. Given the minimal degree of overlap between the PHD and this theme, it is highly unlikely that any activities that could occur in BCR-CPZ would take place in NIDGS habitat.

General Forest, Rangeland, or Grassland

Approximately 2,675 acres of the PHD fall into the designation of GFRG. This represents approximately 0.32 percent of the entire PHD, and approximately 5.65 percent of the PHD overlapping IRA. Additionally, there are no known colonies of NIDGS that exist within the IRA proposed as GFRG. However, not all areas within the PHD have been surveyed.

Road construction and reconstruction (forest or temporary), and timber cutting activities, including timber harvest (i.e., removal of a commercial product), are generally permitted in GFRG. Road construction or reconstruction related to discretionary mining is not permitted in GFRG, except where associated with phosphate deposits on the Caribou-Targhee National Forest. Surface use and occupancy to facilitate extraction of leaseable minerals (e.g., oil and gas, geothermal) in the Backcountry and GFRG themes would be permitted if allowed in the LRMP. However, new road construction and reconstruction associated with development of geothermal, oil, or gas reserves is prohibited in roadless areas under the MIRR regardless of theme. There are no known oil and gas deposits in west-central Idaho, and geothermal energy potential is very low. As such, little commercial interest in leasing for such resources is anticipated as development would essentially be precluded in the absence of new roads and there is low potential for the resource. Activities related to phosphate leasing in IRAs would be restricted to areas in and adjacent to specific Known Phosphate Leasing Areas (KPLAs) on the Caribou portion of the Caribou-Targhee National Forest. Consequently, the likelihood that discretionary mining activities will take place in IRAs related to discretionary mining on the Payette and Boise National Forests is exceptionally low.

Given the relatively few constraints on road construction and timber cutting in GFRG, NIDGS would have the highest potential to be impacted by these activities where its habitat overlaps this theme. This theme also does not prohibit surface occupancy for new mines that use existing road systems, and thus there is a small potential for mining-related impacts on NIDGS via habitat loss, degradation, and human access where future activities overlap the range of this species. However, as there are no known colonies documented within GFRG to date, the likelihood that individuals will be exposed to activities is relatively low.

Applicable LRMP direction for NIDGS

Implementation of any projects in IRA would require consistency with existing Forest Plan direction. These include specific goals, objectives, standards, and guidelines have been incorporated into the Forest Plans for the SWIE (Service 2003 Biological Opinion) to minimize adverse effects to the NIDGS and move the species towards recovery (Tables 36 and 37). Further, design features of projects currently proposed in modeled NIDGS habitat include surveys of the project area prior to ground disturbing activities, and limited operating procedures to avoid seasonal periods when NIDGS are above ground and active. Although most threats resulting from active management in NIDGS habitat (e.g. timber, etc.) are addressed by Forest-wide standards and guidelines, Management Prescription Category (MPC), or Management Area direction, those MPCs that emphasize active management (e.g., mechanical harvest, road construction, etc.) have a higher potential for temporary and short-term effects to habitat and individuals. This is based on the following rationale:

- First, as more active treatments are applied, more protective measures are needed to avoid or minimize potential adverse effects. It is assumed that as more protective measures are applied, the more risk there is of impacts from these measures, or of impacts from avoidance or minimization measures not being implemented correctly.

- Second, it is also assumed that the more management activities are applied to a specific location, the more the risk there is of impacts from those management disturbances, regardless of avoidance or minimization measures.

Finally, all activities proposed in IRA pursuant to the MIRR that may affect NIDGS in the future will be subject to subsequent section 7 consultation under Act with the Service. Use of prescribed fire is not directly addressed by the MIRR. However, this activity is typically paired with timber cutting activities intended to reduce fuels, which is addressed by the MIRR. The suppression or control of wildfire in south-central Idaho has contributed to conifer encroachment on meadow habitats, and subsequent loss and degradation of NIDGS habitat. Prescribed fire can be used to restore or maintain natural ecosystems by reducing fuel accumulations, reducing the risk of future severe wildland fires, recycling nutrients, enhancing fire dependent vegetation communities, and promoting growth of early seral vegetation. Thus, prescribed fire in NIDGS habitat has the potential to result in long-term benefits to the species (Sherman and Runge 2002). However, there is the potential for temporary adverse effects to NIDGS from prescribed fire due to disturbance and short-term changes in habitat quality immediately following treatments. Although it varies by commodity, surface use associated with the exploration and development of leasable minerals requires access and haul roads, open pits, facilities, power lines, pipelines, and communication sites, all of which can impact habitats for terrestrial species. For example, development of geothermal energy includes the following: exploratory drilling (some ground disturbance, road to access if not already there); if exploratory is favorable, construction of a well pad (about 3 acres); a power plant is needed within one to two miles, as well as pipelines which are above ground (Abing 2008). Development of oil, coal and gas plants require similar infra-structure components.

Generally, most of the impacts discretionary mining could have on terrestrial wildlife species, including NIDGS, will ensue from removal of the substrate for the mine footprint and required infrastructure, primarily road construction and development. The impacts resulting from these activities include habitat loss, degradation, fragmentation, and human disturbance. Development associated with mining operations can also facilitate increased human access into NIDGS habitat, which could contribute to increased mortality where recreational shooting of rodents, including NIDGS, is not prevented.

D. Cumulative Effects

Under the Act, cumulative effects are defined in 50 CFR 402.02 as: “those effects of future state and private activities that are reasonably certain to occur within the action area of the Federal Action subject to consultation.” A non-Federal Action is “reasonably certain” to occur if the action requires the approval of a state of local resource or land use control, such agencies have approved the action, and the project is ready to proceed. For Federal lands, state, Tribal, and local government actions could be in the form of legislation, administrative rules, or policy initiatives, or they could be actions proposed on non-federal lands that fall within the action area (e.g., inholdings). We do not anticipate cumulative effects to NIDGS resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the MIRR consists of IRAs, most of which are unlikely to contain significant inholdings given their current roadless character, thus effects on such intervening non-Federal lands are unlikely;
- Given the broad scope of this Federal Action, it is not possible to determine specific state, private or local government legislation, administrative rules, or policy initiatives that would be reasonably certain to occur in IRAs.

E. Conclusion

The Service has evaluated the current status of the NIDGS, the environmental baseline in the action area, effects of the proposed action, along with cumulative effects. Based on this analysis, the Service anticipates adverse effects from the proposed action on NIDGS, but it is our conclusion that the proposed activities allowed under the specific themes is not likely to jeopardize the continued existence of the species. This action would not reduce the reproduction, status, or distribution of the NIDGS to a point where the likelihood of its survival and recovery is appreciably reduced. It is the Service's opinion that these adverse effects will not rise to level of jeopardy to the species, based on the following rationale:

- Timber cutting activities and road construction and reconstruction in IRAs permitted under the MIRR, particularly in GFRG, have the potential to adversely affect individual NIDGS. Adverse effects might occur due to short-term habitat degradation or increased chance for mortality where new roads are constructed.
- At the project level, all activities will continue to utilize existing Forest Plan direction (see Tables 37 and 38) that are designed to avoid or minimize adverse effects to the small, isolated colonies of this species on Federal lands.
- Further, there is limited overlap of the NIDGS PHD (<6%) and few known NIDGS locations within IRA (4 known colonies) that would decrease the likelihood that NIDGS being exposed to activities that might have adverse impacts, and the risks these activities could pose to the species as a whole.
- However, because we cannot predict when and where future activities might take place, we can not discount the potential for short-term adverse effects to NIDGS habitat and the chance of increased mortality where roads intercept NIDGS habitat, as described above and by 2003 Forest Plan (USFS 2003) and associated Biological Opinion (Service 2003).

F. Incidental Take Statement

Section 9 of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without special exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm is further defined by Service to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(0)(2), taking that

is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

1. Amount or Extent of the Take – The risk of incidental take of NIDGS is not completely precluded by the MIRR, though following Forest-wide and Management Area Direction described in the LRMPs for the SWIE (Forest Plan) renders that risk to an extremely low level. The Service believes that the Forest Plan provides adequate guidance to assure that implementation of actions and programs would almost always have negligible risk of take of squirrels.

No incidental take of NIDGS is exempted herein as a result of the USFS adopting the MIRR, although specific actions developed pursuant to the MIRR and associated LRMPs may cause effects that constitute take. The mere potential for take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions developed pursuant to the MIRR and relevant provisions of LRMPs will serve as the basis for determining if an exemption from the section 9 take prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the listed species in accordance with 50 CFR 402.14i.

2. Effect of the Take – Not applicable to this Opinion.

3. Reasonable and Prudent Measures and Terms and Conditions – Since no incidental take is anticipated, no Reasonable and Prudent Measures and Terms and Conditions are necessary.

G. Conservation Recommendations

Section 7(a)(l) of the Act, directs Federal Agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation Recommendations are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery programs, or to develop information. These conservation recommendations were developed, in part, from the final Recovery Plan for the species and the Service's 2003 Biological Opinion (Service 2003), and they are included in the SWIE Forest Plans. They are presented here to highlight additional conservation needs for NIDGS.

1. Provide additional physical protection of NIDGS from mortality or injury caused by humans using roads or trails in potentially suitable habitats. This protection could be provided by (but not limited to) erecting signs, roads closures, off-road vehicle restrictions, and other measures to limit human disturbance to the species and their habitat.

2. In cooperation with the Service, prepare an outreach plan that allows the public to be updated on information on the conservation and biology of NIDGS. Inform the public of current habitat restoration and monitoring efforts on Forest Service lands.

3. In cooperation with others to secure protection of existing habitat frommm threats on adjacent private lands.

4. Working with the NIDGS Technical Working Group, cooperate in establishing and maintaining a database that tracks all known populations numbers and documents the geographic extent of NIDGS populations using a GIS. Past and present narrative data for the NIDGS should be collected and incorporated into a system that allows a crosswalk of narrative data with the GIS system data. These records and GIS habitat maps should be updated regularly.

5. To provide additional understanding of important characteristics of the NIDGS habitat, work with the Service and others to formulate a multivariate analysis of existing populations and their habitats. Environmental correlates of areas now occupied by the species should be analyzed statistically. All types of land use should be evaluated including mining, grazing, timber management, burning, cultivation, private land use and developments, highway construction, recreational, and utility uses.

6. Conduct a historical review of known pesticide applications within suitable NIDGS habitat on federal lands and adjacent private lands. Where possible, identify the initiating agency, amount of application, type of product, and target species.

7. Assist the Technical Working Group in evaluating population models for the species and re-affirm the accuracy of parameters in terms of population biology, habitat requirements, and other limiting factors. Update and refine existing information on population distribution, exchange rates between metapopulations, and genetic studies.

8. Assist others in establishing a long-term contingency plan to allow management procedures if the NIDGS population should reach critically low numbers or other special management needs are identified. This plan would consider the following:

a) guidelines and procedures regarding the potential for supplemental feeding and/or protection of existing food reserves;
b) a plan should be developed to take selected squirrels into captivity to develop propagation techniques should captive reproduction be needed in the future;
c) an emergency plan outlining strategies to be implemented in the event of catastrophic loss of habitat should be prepared.

9. Continue existing efforts to locate additional natural populations of NIDGS within the PHD of the species. Document the systematic search methods so all surveys are using similar techniques.

10. Assist in the development of management plans for each of the identified metapopulations of the NIDGS.

CHAPTER X. MACFARLANE'S FOUR-O'CLOCK

A. Status of the Species

1. Listing History

Mirabilis macfarlanei (MacFarlane's Four-o'clock; MIMA) is endemic to canyon grassland habitats in portions of the Snake, Salmon, and Imnaha river canyons in west-central Idaho, and adjacent northeastern Oregon. MIMA was first recognized for consideration as an endangered or threatened species in a report to Congress by the Smithsonian Institution in 1975. Subsequently a Notice of Review was published in the Federal Register on July 1 of that same year (40 FR 27823). On October 26, 1979, the Service listed MIMA as endangered under the Act of 1973, as amended, and at the time of listing, only 3 populations of the plant were known to exist, with a total of 20 to 25 individual plants. The species was reported to be threatened by several factors, including trampling, collecting, livestock grazing, disease, and insect damage (Service 2000). Between 1985 and 1996, additional populations of the plant were discovered and some populations on Federal lands received active monitoring and conservation actions. As a result of those efforts, the species was downlisted from endangered to threatened in 1996 (Service 2007).

2. Description of the Species

MIMA is a perennial forb with a stout, deep-seated taproot, and freely branched, decumbent (of a plant, which lies on the ground with tips turned upwards) or ascending stems that form small to large clumps. The leaves are opposite, somewhat succulent, green above, and glaucescent (lightly coated with a fine bloom) below. The lower leaves are orbicular or ovate-deltoid in shape, becoming progressively smaller towards the tip of the stem. The inflorescence is comprised of a cluster of 4-7 flowers subtended (occurring below) by an involucre (a collection or rosette of bracts occurring below a flower cluster). The striking, 5-merous (having flower parts in 5), bright magenta-colored flowers are up to 25 millimeters (1 inch) long and 25 millimeters (1 inch) wide. They are funnel-form shaped with a widely expanding limb and exserted (projecting beyond the corolla) stamens (modified from Hitchcock et al. 1964).

3. Life History and Habitat Requirements

MIMA emerges from the ground by early April, blooms May through June, sets seed by mid-summer (June to July), then dies back to a large, tuberous root growing deep in the soil until the following spring. This species appears to reproduce mostly clonally, via the growth of underground rhizomes, which then send up new shoots producing new, but genetically identical, plants or ramets. This mode of reproduction may contribute more to population stability than through seedling recruitment (Kaye 1995, Barnes et al. 1997).

MIMA occurs in river canyon habitats characterized by regionally warm and dry conditions. Less than 30.5 centimeters (12 inches) of precipitation occurs mostly as rain during the winter and spring within the Snake, Salmon, and Imnaha river canyons in Oregon and Idaho (Yates 2007). Sites are normally dry and open, or with scattered shrubs. Individual plants can be found on all aspects, but most often occur on southeast to western exposures. Habitat and associated

species vary among populations. MIMA typically occurs in bunchgrass communities dominated by bluebunch wheatgrass (*Pseudoroegnaria spicata*) which may also include sand dropseed (*Sporobolus cryptandrus*), red three-awn (*Aristida longiseta*), Sandberg's bluegrass (*Poa secunda*) and other native graminoids. Other commonly associated species include *Penstemon eriantherus* var. *redactus* (fuzzy-tongue penstemon), *Phacelia heterophylla (*varileaf phacelia), *Achillea millefolium* (yarrow*), Oenothera cespitosa (*tufted evening primrose*), Astragalus inflexus (*bent milkvetch), *Rhus glabra (*smooth sumac), *Chrysothamnus nauseosus (*rabbitbrush*),* and *Celtis reticulata (*net-leaf hackberry). Non-native species include *Bromus tectorum (*cheatgrass), *Bromus mollis* (soft brome), *Alyssum alyssoides* (pale madwort), *Hypericum perforatum (*common St. Johnswort), *Centaurea solstialis* (yellow starthistle), *Chondrilla juncea* (rush skeletonweed), and *Convolvulus arvensis* (field bindweed).

MIMA also grows in a community of *Glosseopetalon spinecens* var. *aridum* (greenbush), *Cercocarpus ledifolius* (curl-leaf mountain mahogany), bluebunch wheatgrass, and *Physaria oregana* (Oregon twinpod) on a steep southerly slope of sand, gravels, and scree derived from mudstone (Yates 2007). Two infrequent associates identified by Yates (2007) include *Orobanche fasciculata* (clustered broomrape) and *Asclepias cryptoceras* (pallid milkweed).

Individual plants may live for many years, but the size of crown growth and number of flowers produced annually varies according to temperature and precipitation (Kaye and Meinke 1992, Yates 2007). Due to this life cycle pattern, the time of year when activities are most likely to directly impact MIMA is during the spring and early summer, when the plants are actively growing, flowering, or fruiting. At one study site in Oregon, the vegetation associated with MIMA appeared to be influenced by aspect, soil development and topographic position, at least on a local scale (Kaye and Meinke 1992).

The habitat of MIMA stood-out in a multivariate analysis of the vegetation data as a community-type, dominated by *Agropyron spicatum* and other species on steep south-east facing slopes (Kaye 1992). Nearby sites without MIMA had a higher number of weedy annual species, and tended to occupy gentler slopes with deeper, more stable soils. Additionally, MIMA did not occur on adjacent north-facing slopes dominated by *Festuca idahoensis* (Idaho fescue) (Kaye and Meinke 1992).

It is difficult to determine the extent of a particular MIMA clone since different clones (genotypes) can overlap in distribution and vary greatly in size (Barnes et al. 1995). The root system of some MIMA clones extends beyond the presence of ramets by at least 1 to 3 meters (about 1 to 3 yards) (Service 2000). Conceivably, an extensive root system could allow populations to expand into adjacent areas. Such areas may contain suitable habitat, or habitat that, under appropriate circumstances, could be suitable for this species in the future.

4. Population Dynamics

Most MIMA populations, except perhaps the smallest, contain several genets. Each genet is a genetical individual, resulting from a single sexual fusion (zygote) and genetically distinct from all other genets. Vegetative spread has produced some colonies with intermixed lateral roots from different genets growing amongst one another. Other colonies have displayed less

interclonal mixing, with more or less separate genet clumps. Barnes (1996) hypothesized that the clonal habit of MIMA would increase the amount of inbreeding, but her studies at one population found a high degree of outcrossing; slightly more than half the seeds were cross-pollinated. Because most populations comprise several genotypes, recruitment by seed must be taking place although may be quite slow. This assumption is supported by monitoring (Kaye and Meinke 1992) that reported seedlings to be rare with poor survivorship – approximately 88 percent of seedlings died by their second year. Seed dispersal has not been studied, but apparently seeds fall to the ground and are transported by gravity and rain (Barnes 1996). Seed longevity and viability are unknown.

MIMA exhibits low genetic diversity among the populations, in part due to the clonal nature of the species, with observed differences increasing as the distance between the populations increases (Barnes et al. 1996). Additionally, populations within a given river canyon (e.g., Snake River) are more closely related to one another than to populations in other river canyons (e.g., Salmon or Imnaha). Currently, little gene flow is evident between the populations – thus isolation and small population size may be perpetuating low levels of genetic diversity observed in MIMA populations (Yates 2007). The greatest level of gene flow occurred between populations that were 0.5 kilometer (slightly more than 0.25 mile) apart (Barnes 1996).

Throughout much of the Pacific Northwest, native bunchgrasses (i.e., steppe) communities have been altered by the invasion of non-native annual grasses such as *Poa pratensis* (Kentucky bluegrass) and *Bromus tectorum* (cheatgrass). Disturbances such as fire and livestock grazing tend to favor the spread of *B. tectorum*, and eliminate native species such as *Agropyron spicatum* and *Festuca idahoensis* (Pellant 1996). Nearly all sites occupied by MIMA contain at least some *B. tectorum* (Mancuso and Shepherd 2008).

During the past two decades, the invasion of noxious weeds has increased within canyon grassland habitats in the Salmon and Snake River Canyons (Service 2000). *Centaurea solstialis* (yellow starthistle), *Linaria genistifolia* (toadflax), and *Centaurea maculosa* (spotted knapweed) have encroached on poor and fair quality grassland habitats, and have invaded high quality sites to a lesser extent. These three exotic species have invaded MIMA populations in the Salmon River drainage.

5. Historic and Current Distribution

Mirabilis macfarlanei was named for Ed Macfarlane, a boatman on the Snake River, who pointed out the plant on the Oregon side of the river to Lincoln Constance and Reed Rollins in 1936. These botanists described the species later that year, and records indicate that MIMA was again collected in the Hells Canyon area in 1939. In 1947, the Skookumchuck population (Idaho) was discovered by the botanist R.J. Davis. Futile searches for MIMA from 1947 to the mid-1970s led botanists to consider the possibility the species may be extinct. However, in May 1977, a small colony was found along the Snake River near the Cottonwood Landing on the Oregon side of the river. In 1979, the Skookumchuck population was relocated to BLM lands (Johnson 1995), and in 1980 a large colony was discovered on BLM and private lands in the Long Gulch area. Between 1983 and 1987 nine additional populations were located (within the

Salmon, Snake, and Imnaha river canyons), which brought the total number of extant populations to 12 occurring over approximately 70 acres (Service 2000).

MIMA is narrowly endemic to portions of the Snake, Salmon, and Imnaha river canyons in Wallowa County in northeastern Oregon, and adjacent Idaho County in Idaho (Figure 14). The species global range is approximately 46 kilometers (28.5 miles) by 28.5 kilometers (17.5 miles). Populations in Oregon contain an estimated 3,500 ramets and cover about 36 hectares (90 acres) within 4 Element Occurrences (EOs) (Kaye 1992, page 9). An estimated 3,000-4,000 ramets occur in Idaho within nine EOs. Two Idaho populations contain more than 1,000 ramets, while seven have fewer than 100. Most sites throughout the species range are less than an acre in size, ranging from a few square meters to about 2.8 hectares (7 acres). In addition, the populations of M. macfarlanei in the three major drainages of the Snake, Salmon, and Imnaha rivers are disjunct (separated) from each other (Barnes et al. 1995).

Figure 20. Distribution of MIMA in portions of the Snake, Salmon, and Imnaha river canyons in Wallowa County in northeastern Oregon, and adjacent Idaho County in Idaho.

There are 13 known Element Occurrences (EOs) of MIMA: nine in Idaho (Table 39) and four in Oregon (Table 40) (Colket et al. 2007; Sue Vrilakas, Oregon Natural Heritage Information Center, 2007, personal communication). One Hells Canyon EO is quite large, with hundreds of plants growing in eight distinct patches. Of the four EOs in Oregon, three are on Federal lands within the Hells Canyon National Recreation Area (NRA). The fourth EO is privately owned within the NRA. In Idaho, the majority of MIMA occurrences are located at least partly on BLM administered lands; the remainder occurring on private property. Table 39 data lists the EOs currently known for MIMA, area of population, number of plants, land ownership, and river canyon location (Service 2007).

Table 39. Mirabilis macfarlanei Element Occurrences in Idaho.

Element Occurrence (1)	**USGS 7.5 Topographic Quadrangle** (2)	**Area acres (hectare)**	**Number of Ramets**	**Land Ownership**	**River Canyon**
Skookumchuck EO #1	Slate Ck	144 square yards (120 square meters)	4 ramets	BLM	Salmon
Long Gulch EO #2	Lucile	>7 acres (2 ha)	866-1,266 ramets	Private and BLM	Salmon
Horseshoe Bend EO #3	Slate Ck	1,750 square feet (162 square meters)	300-400 ramets	BLM	Salmon
Slicker Bar EO #4	Slate Ck.	5,625 square feet (522 square meters)	244 ramets	Private	Salmon
Giants Nose EO #5	White Bird	11,250 square feet (1,045 square meters)	380 ramets	Private	Salmon
Lower Pittsburg Landing EO #6	Grave Point	Unknown	250 genets	Forest Service	Snake
Lucile Caves EO #7	Lucile	100 square yards within a 15 acre fenced area	~196 ramets	BLM	Salmon
Rhett Creek EO #8	Slate Creek	Unknown	640 ramets in 2 subpopulations	BLM	Salmon
Box Canyon EO #9	Lucile	0.2 acre (0.1 ha)	>800 ramets	BLM	Salmon

[1] EOs are separate if they are > 1 kilometers apart. Separation distances between EO features are measured pairwise and edge-to-edge after accounting for locational uncertainty.
[2] The global distribution of Mirabilis macfarlanei is Idaho County (Idaho) and Wallowa County (Oregon) in portions of the Snake, Salmon, and Imnaha river canyons. The species range is approximately 46 by 29 kilometers.

Table 40. Mirabilis macfarlanei Element Occurrences (Oregon)

Element Occurrence	USGS 7.5 Topographic Quadrangle	Area Occupied	Number of Ramets	Ownership	River Canyon
Tryon Bar / Snake River EO #1	Lord Flat	50 acres (20 hectare)	~ 3,000 ramets	Forest Service	Snake River
Buck Creek EO #2	Haas Hollow	1.0 acre (0.4 hectare)	~ 200 ramets	Private	Imnaha
Fall Creek EO #3	Haas Hollow	5.0 acres (2 hectare)	~ 351 ramets	Forest Service, some private	Imnaha
Pleasant Valley EO #5	Grave Point	0.1 acre (406 square meters)	~ 38 ramets	Forest Service	Snake River

6. Conservation Needs

MIMA is known to occur in two counties in west-central Idaho and northeastern Oregon. The State Conservation ranking maintained by the Idaho Conservation Data Center is the same as the Global rank. In addition to its federal designation as threatened, MIMA is also listed as Endangered by the state of Oregon. Endangered species here means: "Any native plant species determined by the department to be in danger of extinction throughout any significant portion of its range (ORS 564.100)."

In 1985, the Service developed a recovery plan for the species (Service 1985). In summary, this plan called for the following actions in order to achieve recovery: 1) conduct additional field surveys; 2) protect MIMA sites and develop management plans; 3) conduct baseline studies to identify limiting factors and determine threats; 4) establish new colonies; and 5) maintain a propagule bank.

In 2000, the Service developed a revised recovery plan (Service 2000). In summary, the revised recovery plan called for the following actions: 1) protection of occupied habitat and implementation of actions to eliminate or control threats; 2) monitor population trends; 3) conduct research; 4) conduct surveys in potential habitat areas; 5) establish propagule banks; 6) if warranted, establish new populations where MIMA has been extirpated; and 7) validate and revise recovery objectives as needed.

In August 2007, the Service completed a Recovery Needs Assessment (RNA) for MIMA (Service 2007). This RNA summarized all the recovery and conservation actions initiated and/or completed to date, and identified six actions that would be needed for recovery and delisting to occur. These include: 1) establishing a technical working group to provide guidance on identifying and prioritizing remaining recovery actions; 2) develop recovery task implementation agreements with the USFS and BLM for the control of non-native invasive plant species; 3) develop and implement a range-wide [population and habitat] monitoring strategy; 4) identify

and implement site-specific fence construction; 5) develop and implement studies to assess general life history and ecological needs, and genetic studies; and 6) develop, if possible, a population viability analysis for MIMA.

7. Critical Habitat

Critical habitat has not been designated for MIMA; therefore no critical habitat will be affected by this action.

B. Environmental Baseline

At the time when MIMA was reclassified from endangered to threatened on March 15, 1996, the Service identified the following threats to the species: habitat destruction (related to wildfires and altered fire regime), non-native weeds, commercial collection, wildlife and domestic livestock grazing, trampling, insect predation, and inadequate protection of plants on private lands. Additionally, factors that may affect MIMA do not act independently, but rather interact synergistically, and should be regarded holistically instead of as separate pieces.

MIMA EO#6 is found within the Big Canyon Roadless Area and is managed by the Forest Service. Under the MIRR, three subpopulations of this EO fall within the BCR theme and another six subpopulations fall within the BCR-CPZ theme.

1. Status of the Species in the Action Area

The West Creek site (EO#6) is a large population of approximately 250 clones located adjacent to the Big Canyon Road (FS Road #1805). The West Creek site is in the Pittsburg Grazing Allotment, which became vacant in 2003. Up to this time, cattle had grazed this pasture through March of each year. Most of the MIMA had been fenced in 1998 to exclude grazing by cattle. The population lies on a steep north-facing slope and had been impacted by cattle before it was fenced. It is probably not being impacted by the nearby road or Hells Canyon visitors. The West Creek site also contains a large patch of *Dipsacus sylvestris* (teasel), an exotic weedy plant that may be impacting MIMA plants. Yellow star-thistle, an aggressive weed is known to occur within ¼ mile and poses a threat to this site.

2. Factors affecting the Species in the Action Area

Grassland habitat in good ecological condition appears to be important for the long-term survival of MIMA. Livestock grazing, invasion by non-native plant species and uncharacteristically large or frequent fires are likely the greatest threats to MIMA (Service 2007). Other identified threats include off-road vehicle impacts, herbicide use, pedestrian trampling, and road and trail construction. Suitable but unoccupied habitat appears to have a higher density of non-native plant species than nearby MIMA locations (Kaye and Meinke 1992). All known populations of MIMA in the Hells Canyon National Recreation Area occur in grassland plant communities below 3,000 feet elevation.

Invasive Non-native Plant Species

The invasion of non-native plant species continues to be a major threat to MIMA. Invasive non-native plants alter various attributes of ecosystems including geomorphology, fire regime, hydrology, microclimate, nutrient cycle, and productivity (Pyke and Novak 1994). Additionally, the invasive non-native plants can negatively affect native plants, including MIMA through competitive exclusion, niche displacement, competition for pollinators, and changes in insect predation (Monsen 1994). Non-native plants that co-occur with MIMA at most EOs include: *Bromus tectorum* (cheatgrass), *Hypericum perforatum* (St. John's wort), *Convolvulus arvensis* (field bindweed), *Linaria genistifolia* ssp. *dalmatica* (Dalmation toadflax), and *Centaurea solsitialis* (yellow starthistle) (Mancuso and Shepherd 2008, Yates 2007, Colket et al. 2006). Currently, at least ten of the thirteen EOs for MIMA have *B. tectorum* and other non-native plants documented (Colket et al. 2006, Vrilakas, *in litt.* 2007, Mancuso and Shepherd 2008, Yates 2007).

In summary, the threat of non-native weed invasions into MIMA sites could adversely impact the species and its recovery. There are many negative ecological impacts associated with noxious weeds which include, but not limited to: displacement of native plants, reduced biodiversity, altered normal ecological processes (e.g., nutrient cycling, water cycling, etc.), a decrease in wildlife habitat value, and increased soil erosion and stream sedimentation potential.

Wildfires

The effects of wildfire on the habitat of MIMA encompass several categories, most of which are interrelated and often difficult to isolate from each other and equates to the loss of habitat for MIMA and other native species (Billings 1994). For example, the invasion and establishment on non-native annual grasses and forbs following wildfire increases the amount and continuity of fine fuels across the landscape, which in turn increases the likelihood of frequent and intense wildfires in habitats that support MIMA.

Organisms adapt to disturbances such as historical wildfire regimes (fire frequency, intensity, and seasonality) with which they have evolved (Landres et al. 1999), and different rare species respond differently to wildfires (Hessel and Spackman 1995). In general, fire regimes within forest and steppe habitats in the western United States have been highly disrupted (Whisenant 1990). In some instances, fire suppression has allowed grasslands to be invaded by trees (Lesica and Martin 2003). At the same time, in many grassland and shrub habitats fire frequencies have increased due to the expansion and invasion of annual non-native grasses (Whisenant 1990). These invasive annual non-native grasses fill gaps that would naturally occur between native vegetation, dramatically increasing the ability of wildfire to spread. Several MIMA EOs have been burned since 1990 (in Idaho EO#1, EO#2, EO#7; in Oregon EO#5) and almost all of the EOs have become infested with non-native plants such as *Bromus tectorum* and *Centaurea solsitialis*, making them more vulnerable to wildfires (Mancuso and Shepherd 2008, Colket et al. 2006).

Wildfires that occur during summer and fall months when MIMA plants are dormant may have minimal direct effects on this species since the underground rhizomes will be largely insulated

from fire (Service 2000). However, fires may result in adverse changes in the ecological conditions of sites and lead to the subsequent invasion of exotic species. Burning may also result in concentrations of ungulates grazing within the burned areas, which might cause increased trampling of MIMA plants. The primary concern from wildfires appears to be during the active growing period (April through June) when the above ground plants would be susceptible to fire kill or injury (Service 2000). Finally, while there is information that there is higher seed set in MIMA plants with larger inflorescence displays than those of with a smaller display (Barnes 1996) there is no information available about seed production and set in a post-wildfire setting.

C. Effects of the Proposed Action

The previous section presented factors and activities that can affect the species in the action area, some of which (particularly road construction, road reconstruction, timber cutting and discretionary mining) may also result from future actions undertaken as allowed by the MIRR. To minimize duplication, these potential effects are not reiterated in their entirety below but are addressed relative to the proposed MIRR. Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur pursuant to the MIRR and the indirect and cumulative effects that could occur from those actions. It is an analysis of what is allowed under the rule versus an analysis of the on-the-ground activities, and therefore has no direct effects.

The MIMA site (EO#6) is found within the Big Canyon Roadless Area and is managed by the Wallowa-Whitman Forest. Under MIRR, three subpopulations of this EO fall within the BCR theme and another six subpopulations fall within the BCR-CPZ theme. Of the 14,000 acres in the Big Canyon Roadless Area under the BCR theme, 4,600 acres are estimated to be within the BCR-CPZ theme. This theme allows for some temporary road construction and re-construction, and timber cutting in areas of significant risk from wildfire. The USFS has fenced the known plant sub-populations to protect them from livestock grazing and other impacts. Because MIMA is associated with open, steep canyon grasslands, direct impacts to this MIMA EO and its habitat are highly unlikely to occur from timber cutting or road construction under MIRR.

The MIRR will not affect EO#6 on USFS lands, which will continue to be monitored by the USFS. The Hells Canyon National Recreation Area Comprehensive Management Plan (Appendix C, pages 88-94) provide specific protective management direction for this species that would be incorporated into any project that would occur within the watershed or within extant or potential habitat for MIMA. Additionally, mitigations and/or avoidance measures as per USFS Manual direction would be incorporated into any fuels or wildland fire use project that may occur within the watershed or potential habitat of MIMA. Prescribed burn plans are required to identify sensitive resources in the area and measures to protect these resources whenever possible in the event of escaped fire are considered. However, given that precise locations of future projects allowable within this theme area, it cannot be discounted that the potential for adverse effects to undiscovered populations or potential habitat could occur for this species.

D. Cumulative Effects

The vast majority of occurrences of MIMA are on BLM properties, lands within the Hells Canyon National Recreation Area, or on private lands. Only EO#6 is on Forest Service lands. The primary threats to the species include non-native plant invasion, uncharacteristic wildfires, as well as livestock grazing. These risk factors have been analyzed and previously undergone consultation in other project and land use management plans and decisions. This decision will not make a difference in these factors.

E. Conclusion

The Service has reviewed the current status of MIMA, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to jeopardize the species continued existence.

F. Incidental Take Statement

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without specific exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of take in the Act means an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying these species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants is provided to the extent that the Act prohibits the removal and reduction to possession of Federally listed plants, the malicious damage of endangered plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of State criminal trespass law.

1. Amount or Extent of the Take – No incidental take is exempted herein as a result of the Forest Service adopting the MIRR, although specific actions developed in accordance with the MIRR and associated management plans (e.g. Hells Canyon NRA Comprehensive Management Plan) may cause effects that constitute take. The mere potential for take is not a legitimate basis for providing such an exemption. Subsequent consultation, as appropriate, on specific actions developed pursuant to the MIRR and relevant provisions of management plans will serve as the

basis for determining if an exemption from the section 9 take prohibitions is warranted. If so, the Service will provide Reasonable and Prudent Measures and Terms and Conditions, as appropriate, to minimize the impacts of the taking on the listed species in accordance with 50 CFR 402.14i.

2. Effect of the Take – Not applicable to this Opinion.

3. Reasonable and Prudent Measures and Terms and Conditions – As there is not take exemption under 7(o) of the Act in this Opinion, the Service is not providing Reasonable and Prudent Measures or Terms and Conditions.

G. Conservation Recommendations

Section 7(a)(1) of the Act requires Federal Agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities intended to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery plans, or to develop information. The Service recommends that the Forest Service implement the following conservation measures.

1. In cooperation with BLM, State Natural Heritage programs in Idaho and Oregon, Service, and others:
   a) Cooperate to develop consistent interagency inventory and monitoring methods.
   b) Cooperate to identify and map populations and suitable habitats. Participate in surveys within suitable habitats, and map new populations as found.
   c) Following current monitoring protocols, cooperate in monitoring MIMA population trends and habitat conditions.
   d) Cooperate in the management of high priority habitat areas and populations to promote species recovery.
   e) Participate in research essential to recovery of the species. Cooperate in determining specific limiting factors in terms of habitat needs and characteristics. Cooperate in population viability analyses to ensure that recovery criteria objectives are being met.
   f) Support seed banks in a long-term seed storage facility.
   g) Working with other agencies, compile a general list of Best Management Practices (BMP) that would apply to all programs, to the extent that such a list would assist with consultation and species recovery. The intent of implementing BMPs is to avoid/minimize negative effects.
   h) Support the establishment and maintenance of new populations in suitable MIMA habitat. The goal of these activities is to maintain or enhance viable populations.

2. Ensure that ongoing Federal actions support or do not preclude species recovery.

3. Ensure that new Federal actions support or do not preclude species recovery.

4. Promote restoration of suitable habitat following fire, fire rehabilitation, restoration treatments, or other major disturbances.

5. Ensure that fire suppression efforts will be conducted, as possible, to protect MIMA habitat. Place a high priority on protecting suitable habitat.

CHAPTER XI: UTE LADIES' TRESSES ORCHID

A. Status of the Species

1. Listing History

Ute ladies'-tresses (*Spiranthes diluvialis*; SPDI) was listed as Threatened under the Act on 17 January 1992. At that time, the species was known from fewer than 6,000 individuals in 10 extant and 7 historical (and presumed extirpated) populations in Colorado, Nevada, and Utah. This species was considered extremely vulnerable to extinction from habitat loss/modification, small population size, and low reproductive rate (Service 1992). Since 1992, the number of extant populations of SPDI has increased to over 50 and its known range has expanded to Idaho, Montana, Nebraska, Washington, and Wyoming. Survey work and monitoring studies suggest that the global population may be over 83,000 individuals. New discoveries have also shed light on the plant's complex life history, dependence on natural and human induced disturbance, and response to existing and newly identified threats.

SPDI is also listed on Appendix II of the Convention on the International Trade in Endangered Species (CITES) and is protected from illegal export (Service 1995). Critical habitat has not been designated at this time. To date, no recovery plan has been approved for this species. However, a draft recovery plan has been written (Service 1995b). This species receives no formal protection under Idaho state law.

2. Description of the Species

SPDI was first collected by Marcus E. Jones in Salt Lake City, Utah in August 1880. Jones' specimen was initially identified as *S. romanzoffiana*, a widespread Cordilleran species, but was later referred to *S. cernua* by Correll (1950). While revising the taxonomy of the genus *Spiranthes* in the early 1980s, Charles Sheviak (1984) recognized that the Jones specimen and several others from eastern Nevada, western Utah, and northern Colorado belonged to an undescribed species that he named *S. diluvialis* in 1984.

SPDI is a perennial herb with erect, glandular-pubescent stems 12-50 cm tall arising from tuberous-thickened roots. Basal leaves are linear, up to 1 cm wide and 28 cm long, and persist at flowering time. Leaves become progressively reduced higher up the stem. The inflorescence is a loose spike 3-15 cm long of numerous, small white to ivory flowers arranged in a gradual spiral. The lip petal is oval to lance-shaped, narrowed at the middle, and has crispy-wavy margins. Sepals are free or fused only at the base (not forming a hood-like structure) and are often spreading at their tips (Fertig et al. 1994; Service 1995).

3. Life History and Habitat Requirements

Very little is known about the life history of SPDI (Service 1995). Much of what is presumed about the species' life history is drawn from knowledge of other orchids. Orchids generally have very small seeds that require symbiotic associations with mycorrhizal fungi for germination. Many species of orchids are saprophytic, underground plants that may

persist for many years underground before emerging above ground. The mycorrhizal stage is reported to last 8 years in *S. spiralis* and green leaves are first produced up to 11 years after germination in that species (Wells 1967). Studies of *S. magnicamporum* in western Kansas and Nebraska report that that species may bloom as rarely as once in 20 years. The mean life expectancy of *S. spiralis* plants studied over a nine year period was calculated to be more than 50 years (Service 1995).

Throughout its range, reproduction of the SPDI appears to be strictly sexual, with bumblebees (*Bombus* spp.) as the primary pollinators (Arditti 1992, Sheviak 1984). Flowers are protandrus (functionally male first and then female). As with other orchid species, it is thought that SPDI does not reach sexual maturity for 5 to 10 years (Service 1995). Each fruit can have several hundred to 10,000 seeds with an average of around 2,000 (Sipes and Tepedino 1994). These seeds may be dispersed by water (Carroll 2004) or wind (Wells 1967). The flowers, seed heads, and vegetative parts of the SPDI are palatable and can be incidentally eaten by grazing livestock. The possibility that grazers could disperse the seeds of this species has not been evaluated. The blooming period is from early August to early September, with fruits produced in mid-August to September (Fertig 2000). Not all individual mature SPDI bloom every year and some may remain dormant beneath the ground surface and not show any above ground parts for at least one growing season (Arft 1995).

SPDI occurs primarily on moist, sub-irrigated or seasonally flooded soils in valley bottoms, gravel bars, old oxbows, or floodplains bordering springs, lakes, rivers, or perennial streams at elevations between 550-2075 meters (1800-6800 feet) (Arft and Ranker 1998; Moseley 1998). Soils vary from sandy or coarse cobbley alluvium to calcareous, histic, or fine-textured clays and loams. Populations have been documented from alkaline sedge meadows dominated by *Carex aquatilis, C. praegracilis,* and *C. lanuginosa* (Heidel 1998), *Eleocharis rostellata, Elaeagnus commutata/Agrostis stolonifera, Salix exigua/Agrostis stolonifera,* and *Equisetum variegatum* cover types within riverine floodplains (Moseley 1998), flooded alkaline meadows adjacent to *Pinus ponderosa/Pseudotsuga menziesii* woodlands and sagebrush steppe (Washington Natural Heritage Program 1999), and streamside floodplains and meadows on alluvium (Stone 1998). Some occurrences are also found on agricultural lands managed for winter or early season grazing or hay production (Hazlett 1996, 1997). Known sites often have low vegetative cover and may be subjected to periodic disturbances (flooding, or grazing). Populations are often dynamic and “move” within a watershed as disturbances create new habitat or succession eliminates old habitat (Moseley 1998).

SPDI is a late-blooming species, which is only recognizable while it is blooming. Despite their distinctive spikes of white flowers, blooming plants can be extremely difficult to see in the dense herbaceous understory vegetation they are associated with. Plants not yet blooming, plants past bloom, and vegetative plants are virtually impossible to distinguish from background vegetation. Because different plants come into bloom at different times within a single population, a population must be visited several times during the growing season for an accurate count.

4. Population Dynamics

The locations of populations within a watershed vary with the availability of suitable habitat. Sizes of populations fluctuate naturally and in some years not a single SPDI individual appears above ground. The number of flowering adults does not give an accurate picture of population size nor tell us anything about population structure. More information is necessary regarding population viability (Service 1995).

If estimated population size is based on the number of SPDI flowering spikes, then populations appear to fluctuate dramatically in size from year to year (Service 1992). For example, the primary site for the Boulder, Colorado population contained 5,435 plants in 1986, 200 plants in 1987, 131 plants in 1988, 1,137 plants in 1989, 1,894 plants in 1990, and at least 80 plants in 1991 (Service 1992). This variability in apparent population size is consistent with other observations made of other orchid species.

However, Wells (1967) questioned whether apparent fluctuations in orchid numbers were (and are) accurate descriptions of the actual dynamics of the orchid populations. According to Wells (1967), the criterion adopted for judging whether the number of orchids at a site has changed or not has been the number of flowering spikes displayed at the time of visit. This may be an unsatisfactory criterion for measuring a quantitative change in population because, as has been demonstrated, plants may spend several years as vegetative rosettes or as underground tubers (as many as 11 years) with no above-ground parts. Furthermore, according to Wells (1967), the autumn ladies'-tresses orchid (*S. spiralis)* grows mainly in short grassland which is typically maintained in that condition by some kind of grazing which can damage some of the flowering spikes making a visual estimate of number based on count of flowering spikes unreliable. Arft's (1995) work on SPDI supports this theory as well.

SPDI population levels and viability are, at least in part, determined by habitat conditions created and maintained by natural water processes. Therefore, the significance of population size and distribution within a watershed can, at least partially, be assessed in terms of the ability of the watershed factors to perpetuate it. However, the linkages between watershed processes, habitat conditions, and SPDI population response are complex and not completely understood.

In the January 1992 final listing rule, SPDI was reported from 10 extant populations and 7 historical localities in Colorado, Utah, and Nevada (Service 1992). Since then, nearly 100 additional locations have been discovered or relocated in Colorado and Utah as well as Idaho, Montana, Nebraska, Washington, and Wyoming (Fertig 2000, Franklin 1993, Hartman and Nelson 1994, Heidel 1996, 1998, Hildebrand 1998, Moseley 2000). Many of these “element occurrences” (as recognized by state natural heritage programs) fall within the same drainage or are otherwise in close proximity. In 2004, the Colorado Natural Heritage Program developed standardized criteria for delineating SPDI populations for the entire network of natural heritage programs. Under this system (NatureServe 2004), occurrences within 8.05 km (5 miles) in the same river or stream system are considered part of one natural, interbreeding metapopulation, as are upland meadow areas separated by less than

1.61 km (1 mile). Based on these new criteria, there are currently 61 SPDI populations recognized rangewide, of which 52 are extant.

Based on available survey data through 1991, the Service (1992) estimated the total number of SPDI to be less than 6,000 plants in 10 extant populations and about 170 acres of habitat. In 1995 this estimate was increased to 20,500 plants following the discovery or relocation of 21 additional populations from 1992-1994 (Service 1995). Since 1995, another 24 populations have been discovered, including several large occurrences along the Green, Snake, and Niobrara rivers. SPDI is now known to occupy 674-783 acres of habitat. The highest number of plants recorded in any one year was 38,438 in 1998, based on sampling 23 of 55 populations known at that time. Since these populations were not selected randomly, no useful extrapolations can be made to estimate rangewide numbers based on annual counts.

5. Historic and Current Distribution

When it was first listed under the Act in 1992, SPDI was known only from north-central Colorado, northern and south-central Utah, and southeastern Nevada. Since 1993, SPDI has been discovered in southeastern Wyoming (Hartman and Nelson 1994), southwestern Montana (Heidel 1996), western Nebraska (Hazlett 1996), eastern Idaho (Moseley 1997), and north-central Washington (Bjork 1997) and new populations have been documented in northwestern Colorado (Ward and Naumann 1998) and northern Utah (Franklin 1993, Stone 1993).

SPDI populations occur on a mix of private, federal, tribal, state, county, and city lands. All or portions of 33 populations (54.1%) are on private lands and cover approximately 380 acres (48.7% of occupied habitat). Fifteen populations (24.6%) occur on federal lands managed by the BLM, Bureau of Reclamation, National Park Service, USFS, and Service. These lands cover about 339 acres (43.3% of all occupied SPDI habitat). Four populations (6.6%) covering about 52 acres occur wholly or in part within the Uintah and Ouray Indian Reservation in northeastern Utah. Fourteen other populations (23%) are found partly or completely on state, county, or city managed lands that cover about 100 acres (12.8% of occupied habitat).

SPDI was first discovered in Idaho by Mabel Jones in 1996 along the South Fork of the Snake River (Moseley 1997). The species is now known from Bonneville, Fremont, Jefferson, and Madison counties along the Snake River and from wetland sites along the Henry's Fork River (Mancuso 2004). All occurrences along the South Fork of the Snake River are considered part of the same metapopulation (Murphy 2004). Within the scope of the Idaho Roadless Area analysis, known SPDI populations are only found on the Targhee portion of the Caribou-Targhee National Forest in the Garns Mountain Roadless area.

6. Critical Habitat

Critical habitat has not been designated for SPDI; therefore, no critical habitat will be affected by this action.

B. Environmental Baseline

1. Status of the Species in the Action Area

Virtually all known occurrences within the state of Idaho are or at one time were associated with the Snake floodplain in early to mid-seral riparian habitats. Within the scope of the Modified Roadless Rule, all known occurrences fall within the Garns Mountain IRA on the Targhee portion of the Caribou-Targhee National Forest.

2. Factors affecting the Species in the Action Area

Throughout the species' range, urban, residential, agricultural, or recreational development within riparian or lacustrine floodplain areas could threaten SPDI populations. These activities historically have likely been a primary cause of the fragmentation of populations now currently observed. Incompatible agricultural or other land management practices could also threaten the SPDI. The orchid is tolerant of grazing and other forms of land and vegetation disturbance. However, continuous grazing during the flowering season, severe trampling and soil compaction, untimely herbicide applications, proliferation of aggressive native and exotic plant species indicative of site degradation, and practices that result in habitat alteration from grass/forb/sedge to shrub/tree dominance, can result in loss of vigor and eventual demise of the orchid and/or orchid pollinators. Many riparian and other wetland and wetland/upland habitats suffer from these impacts.

Alterations of stream hydrology could also threaten SPDI. The orchid is supported by moist soil throughout the growing season, and by wet habitats that are dominated by grass/forb/sedge communities. During the past 150 years, and continuing today, water development, diversions, stream channel alterations for flood control or other purposes (including oil and gas development and mining), and changes in hydrograph have altered hydrology, floodplain geomorphology, and vegetation composition and trends. While in some streams and reaches this may have provided improved conditions for the orchid, in many cases it has resulted in the loss of suitable habitat and likely fragmentation or loss of the orchid within watersheds (Service 2004).

The following discussions provide more specific information related to the abovementioned factors in Idaho:

Changes in Hydrology

The past and present impacts to SPDI in the action area may have included increases or decreases in habitat suitability due to irrigation developments and other human-caused changes to stream hydrology. Human-caused changes to stream hydrology have taken the form of channelization of streams, construction and use of irrigation canals, water impoundment (pond) construction, increased water discharges to surface waters, and water depletions from surface waters. Many historical projects exist that have changed stream hydrology.

Invasive Plants

Invasive plant species do occupy much of the Idaho range of SPDI area and herbicide use to control these invasive species has been undertaken by private citizens or performed by County weed control districts. It has not been observed at present that any invasive plants may be adversely impacting any SPDI plants within the action area. However, it is likely that invasive plants could impede the ability of SPDI to spread and reproduce.

Forage Production

Livestock grazing, haying, or mowing occur within the Idaho range of SPDI. Grazing activities on BLM-administered lands are authorized by the BLM through a permitting process. Grazing, haying and mowing activities are normally undertaken by private land owners as part of their agricultural operations. These activities may be beneficial to SPDI through the maintenance of habitat or they may be detrimental in that these activities if not timed properly may reduce the reproductive success of individual SPDI plants.

Herbivory

Another impact to SPDI in the action area may be herbivory by wildlife. Herbivory of the flowering spikes of SPDI by voles (Arft 1994), deer (Fertig 2000), and moose (Moseley 1998) is frequent at some locations. Wells (1967) documented significant flowering stalk herbivory of the autumn ladies'-tresses orchid by rabbits. Arft (1994) speculated that vole herbivory could be the greatest single threat to the long-term survival of SPDI at one study site. It is plausible that similar damage to SPDI in the action area could be attributed to wildlife as well.

Additional potential effects from activities could result in the loss of habitat or direct damage to individual and flowering parts of SPDI. Alterations or changes to stream, wetland or riparian habitats could affect the ability of the plant to reproduce, disperse through seeds, and remain functioning. Seed dispersal mechanisms of SPDI are poorly known, but it is probably through transport by flowing water or wind. The species grows in clumped patterns suggesting that seed dispersal distances are relatively short but the scattered distribution of populations suggest seed dispersal could occur over great distances. It is unlikely that projects under the Forest Plan Special Theme would fragment populations of SPDI above the current situation.

C. Effects of the Proposed Action

The previous section presented factors and activities that can affect the species in the action area. This section focuses on those activities that may result from future actions undertaken as allowed by the MIRR. Unlike most USFS project analyses of alternatives and environmental consequences, the analysis of the MIRR does not include an analysis of project implementation and resulting direct effects; it is an analysis of activities that could occur pursuant to the MIRR and the indirect and cumulative effects that could occur from

those actions. It is an analysis of what is allowed under the rule versus an analysis of the on-the-ground activities, and therefore has no direct effects.

Virtually all known occurrences within the state of Idaho are or at one time were associated with the Snake floodplain in early to mid-seral riparian habitats. Within the scope of the MIRR, all known occurrences fall within the Garns Mountain IRA on the Targhee portion of the Caribou-Targhee National Forest. The Garns Mountain IRA falls within the Forest Plan Special Area theme – areas that are governed by specific Agency directives and forest plan direction. Since the MIRR does not propose or recommend management direction for these lands, the known populations of SPDI and potential habitat which falls within this IRA will not be affected by this action. However, due to the cryptic nature (up to 10-year dormancy) of this species' life history and the relatively broad characterization of potential habitat throughout its large range, it is impossible to rule out that new populations may yet be found in other roadless areas or be affected by this action until more thorough inventories are conducted at the individual project level.

D. Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local, or private actions that are reasonably certain to occur in the action area. Since any future actions unrelated to this action would require their own separate consultation(s) pursuant to Section 7 of the Act, no further consideration beyond the current scope is evaluated at this point in time.

Little development is occurring within areas occupied by SPDI in Idaho. Several landscape-level threats to SPDI were cited by Murphy (2004) along the Snake River. These include floodplain alteration from levee maintenance and construction, road and bridge development, bank stabilization activities (riprapping, dredging, etc.), and recreational access activities. Cultivated or native pasture agriculture may limit the size of suitable riparian wetlands due to plowing/mowing or pesticide applications to control grasshoppers may impact native insect pollinators all of which could affect SPDI populations. Grazing of riparian areas may increase the suitability of areas by reducing the density of competing vegetation but may also destabilize streams creating channelization effects and reducing the amount of suitable sub-irrigated floodplain. Late season grazing may also reduce seed production within a population by eliminating flowers and fruits. Effects cannot be determined at this time to undiscovered SPDI populations that may be present in uninventoried IRAs.

E. Conclusion

The Service has reviewed the current status of SPDI, the environmental baseline in the action area, effects of the proposed action, and cumulative effects, and it is our conclusion that the proposed action is not likely to jeopardize the species continued existence. Our conclusion is based on the Management of IRAs proposed by the MIRR has a low likelihood of impacting SPDI. The only known occurrences on National Forest Service lands, found within the Garns Mountain Roadless area, will not be affected by the MIRR since they fall within the Forest Plan Special Area theme. However, because potential habitat for SPDI in Idaho is still relatively broadly characterized and road construction/reconstruction, mineral activities,

timber cutting may be permitted within other IRAs under MIRR, adverse affects to undiscovered SPDI populations in un-surveyed potential habitat cannot be completely discounted.

F. Incidental Take Statement

Section 9 of the Act and Federal regulations pursuant to section 4(d) of the Act prohibit the take of endangered and threatened species, respectively, without specific exemption. Take is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harm in the definition of take in the Act means an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Harass is defined by the Service as intentional or negligent actions that create the likelihood of injury to listed species by annoying these species to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with the terms and conditions of this Incidental Take Statement.

Sections 7(b)(4) and 7(o)(2) of the Act generally do not apply to listed plant species. However, limited protection of listed plants is provided to the extent that the Act prohibits the removal and reduction to possession of Federally listed plants, the malicious damage of endangered plants on areas under Federal jurisdiction, or the destruction of endangered plants on non-federal areas in violation of State law or regulation or in the course of any violation of a State criminal trespass law.

1. Amount or Extent of the Take – No incidental take is exempted herein as a result of the Forest Service adopting the MIRR.

2. Effect of the Take – Not applicable to this Opinion.

3. Reasonable and Prudent Measures and Terms and Conditions – As there is not take exemption under 7(o) of the Act in this Opinion, the Service is not providing Reasonable and Prudent Measures or Terms and Conditions

G. Conservation Recommendations

1. All projects which impact wetlands will be evaluated for suitability for SPDI (i.e., below 6,800 feet elevation; non-saline soils; open palustrine wetlands with no overstory; perennial water source).

2. Wetlands that may be disturbed with characteristics suitable for SPDI will be surveyed prior to disturbance according to Service guidelines to determine presence/absence of the species.

3. Wetlands that may be disturbed that have SPDI present will be restored and protected in a manner which preserves topsoil from the affected areas and utilizes it for reclamation thus preserving the seed bank, propagules, and other biological materials.

CHAPTER XII: REINITIATION-CLOSING STATEMENT

This concludes formal consultation on the Modified Idaho Roadless Rule. As provided in 50 CFR §402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: 1) the amount or extent of incidental take is exceeded; 2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this Opinion; 3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this Opinion; or 4) a new species is listed or critical habitat designated that may be affected by the action. Specifically, if the USFS changes the proposed action (MIRR) in the final rule such that it differs from the action described in the final Assessment of September 12, 2008 and reflected in this Opinion, then the USFS should contact the Service to discuss the need to reinitiate consultation. The Service's analysis and conclusions in this consultation are predicated on the standards contained in the existing LRMPs. Should these existing LRMPs or the standards contained therein change, reinitiation of consultation on the MIRR may be necessary. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending reinitiation.

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CHAPTER IX – NORTHERN IDAHO GROUND SQUIRREL (*Spermophilus brunneus brunneus*)

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APPENDIX A.

(EXCERPT FROM)

Biological Opinion
for the
EFFECTS TO BULL TROUT FROM CONTINUED IMPLEMENTATION OF LAND AND RESOURCE MANAGEMENT PLANS AND RESOURCE MANAGEMENT PLANS AS AMENDED BY THE INTERIM STRATEGY FOR MANAGING FISH-PRODUCING WATERSHEDS IN EASTERN OREGON AND WASHINGTON, IDAHO, WESTERN MONTANA, AND PORTIONS OF NEVADA (INFISH), AND THE INTERIM STRATEGY FOR MANAGING ANADROMOUS FISH-PRODUCING WATERSHEDS IN EASTERN OREGON AND WASHINGTON, IDAHO, AND PORTIONS OF CALIFORNIA (PACFISH).

INTRODUCTION

The U.S. Fish and Wildlife Service (Service) has reviewed the biological assessment (BA) addressing effects to the threatened bull trout (*Salvelinus confluentus*) from continued implementation of U.S. Forest Service (USFS) Land and Resource Management Plans (LRMPs) and Bureau of Land Management (BLM) Resource Management Plans (RMPs) as amended by the Interim Strategy for Managing Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana and Portions of Nevada (INFISH: USDA and USDI 1995a) and the Interim Strategy for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH: USDA and USDI 1995b). A June 15, 1998 request for consultation from the USFS and BLM was received on June 16, 1998. Activities administered by the USFS are carried out under the existing direction of LRMPs. BLM activities are administered under the direction of RMPs or Management Framework Plans. For convenience, all plan documents are referred to in this document as LRMPs.

This document represents the Service=s biological opinion (BO) on the effects of continued implementation of the LRMPs as amended by PACFISH and INFISH on listed bull trout in accordance with section 7 of the Endangered Species Act of 1973, as amended (ESA)(16 U.S.C. 1531 et seq.). This BO is based on the information provided in the June 15, 1998 BA (USDA and USDI 1998a) and a June 19, 1998 letter amending the BA (USDA and USDI 1998b). In the BA, the USFS and BLM determined that the action is not likely to jeopardize the continued existence of the listed species, but that it may affect and likely adversely affect the bull trout. No critical habitat has been designated for this species, therefore, none was determined to be affected.

In addition to the information contained in the BA, the best available information from several other sources was used in this analysis. A list of those sources is included in Appendix 1. A complete administrative record of this consultation is on file in the Service=s Oregon State Office, 2600 S.E. 98th Avenue, Suite 100, Portland, Oregon 97266.

The BA and transmittal letter also requested consultation on the effects of the LRMPs on proposed critical habitat for the Lost River (*Deltistes luxatus*) and shortnose suckers (*Chasmistes brevirostris*). However, the Service, USFS and BLM subsequently agreed to confine this opinion to bull trout, and evaluate the effects to proposed critical habitats for the two sucker species in a separate conference opinion to be prepared at a later date. In addition, the analysis in the BA addressed the effects of the LRMPs on the Jarbidge River population of bull trout, which was proposed for listing as threatened on June 10, 1998 (USDI 1998b). Conferencing on bull trout for this DPS will also be addressed in a separate conference opinion.

In a separate plan-level programmatic BO, the Service is providing similar analyses of the effects of continued implementation of the USFS LRMPs and BLM RMPs, as amended by the Northwest Forest Plan Record of Decision (USDA and USDI 1994).

BACKGROUND/CONSULTATION HISTORY

The bull trout was proposed for listing as threatened in the Columbia River Basin and endangered in the Klamath River Basin on June 13, 1997 (USDI 1997). The final rule listing the Klamath and Columbia River Basin distinct population segments (DPSs) of bull trout as threatened was published on June 10, 1998 (USDI 1998a). The effective date of the listing was July 10, 1998.

Section 7 regulations (50 CFR '402.16) require reinitiation of formal consultation where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and a new species is listed or critical habitat designated that may be affected by the action. This BO addresses the effects of continued implementation of the LRMPs as amended by PACFISH and INFISH standards and guidelines where listed DPSs of bull trout occur in Idaho, Montana, Oregon, and Washington.

II. BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Recent decisions by the USFS and BLM have resulted in the addition of interim aquatic strategies to LRMPs within the geographic range of the Columbia and Klamath River bull trout DPSs. Forests and BLM Districts with anadromous fish have modified their LRMPs either through amendment (USFS) or instruction memorandum (BLM) by the PACFISH. The USFS, through the INFISH, amended LRMPs where PACFISH was not already in place. The BLM, via instructional memoranda, applied INFISH direction to bull trout watersheds. The agencies also consult on site-specific actions conducted under the direction of the LRMPs that may affect listed species. This BO addresses LRMPs, as modified by PACFISH and INFISH, for the Columbia and Klamath River bull trout DPSs. Additional features of the proposed action were provided by letter dated June 19, 1998 (USDA and USDI 1998b) and considered as part of the proposed action. Among the DPSs, this BO considers the effects to bull trout from 24 USFS and 16 BLM LRMPs in the states of Washington, Oregon, Idaho, Montana, and Nevada.

Purpose and Function of LRMPs

Within the range of the DPSs of bull trout, LRMPs provide direction and standards for broad classes of project activities and land and water management practices that may affect bull trout. LRMPs provide policy guidance for various federal activities carried out on the forest or management area. While all of the USFS and BLM administrative units implement many of the same land-use practices, the level of activities and outputs will vary depending on local conditions. Although LRMPs set important parameters for authorization of specific projects, with some exceptions, LRMPs do not themselves authorize the projects. Actual authorization of projects depends on analysis of site-specific effects, and consistency with appropriate management direction and applicable legal requirements.

The action area encompasses all or parts of the following National Forests (NF) of the USFS, and Resource Areas (RA) of the BLM for the Columbia River and Klamath River DPSs of bull trout (USDA and USDI 1998a). These are:

Agency	DPS	Administrative unit (region or state)
USFS	Columbia River	Colville NF, Deschutes NF, Malheur NF, Ochoco NF, Okanogan NF, Umatilla NF, Wallowa-Whitman NF, Wenatchee NF, and Columbia River Gorge National Scenic Area (Pacific Northwest Region); Bitterroot NF, Clearwater NF, Flathead NF, Helena NF, Kootenai NF, Lolo NF, Beaverhead-Deerlodge NF, Idaho Panhandle NF, Nez Perce NF (Northern Region); Boise NF, Payette NF, Salmon-Challis NF, Sawtooth NF (Intermountain Region)
	Klamath River	Fremont NF, Winema NF (Pacific Northwest Region)
BLM	Columbia River	Baker RA, Central Oregon RA, Deschutes RA, Three Rivers RA, Malheur RA, Border RA, Wenatchee RA, (Washington-Oregon); Cascade RA, Cottonwood RA, Emerald Empire RA, Shoshone RA, Big Butte RA, Lemhi RA, Challis RA (Idaho); Garnet RA (Montana)
	Klamath River	Klamath Falls RA (Washington-Oregon)

LRMPs provide direction and standards for a large variety of projects and types of activities, including forest management, recreation, range management, mining, watershed restoration, fish and wildlife habitat management, fire and fuels management, land exchanges and acquisitions, and a variety of special uses. Specific actions associated with these program activities are described below.

Forest management generally consists of two categories of activities: timber harvest and associated actions, and silvicultural treatments used to develop desirable stand characteristics.

Timber harvest and associated actions can include: road construction, landing construction, renovation and use, including quarry operation; yarding and skidding logs; clear-cutting or thinning treatments; salvage of dead or dying trees, and maintenance of existing roads. Road maintenance includes surface maintenance (blading), surface replacement, drainage maintenance and repair, vegetation management (brushing, limbing, seeding and mulching along roadways), slide repair, sign maintenance and repair, and maintenance, replacement and repair of major structures (bridges and major culverts). Silvicultural treatments include planting, prescribed burning, plantation maintenance and release (density management, precommercial thinning and control of competing vegetation), animal damage control, and fertilization.

Recreation consists of activities that provide for a wide range of developed and dispersed recreational opportunities. Developed recreation actions include campground maintenance, and recreation site and trail construction/maintenance. Dispersed activities include general public use of Federal lands (hunting, fishing, camping, hiking, etc), environmental education, and management of off-highway vehicles.

Range management activities on Federal lands include livestock grazing, and rangeland improvements (fencing, water development, livestock handling facilities, and vegetation management). Noxious weed control programs may be implemented in association with range management or other actions, such as silvicultural treatments.

Mining consists of two broad categories based on the method of extraction. Surface mining includes dredging, dispersed gold panning, and pit mining while underground mining utilizes tunnels or shafts to extract minerals. Activities associated with mining include roads and supporting structures and facilities, hazardous chemicals, water use and treatment.

Watershed restoration actions on Federal lands are an integral part of management to aid in the recovery of watershed health and water quality. Road decommissioning, road drainage improvement, surfacing, culvert upgrades, and sediment source stabilization through seeding and planting are typical restoration actions.

Fish and wildlife management actions on Federal lands may include stream and riparian habitat surveys; surveys for fish (smolt traps, snorkling, spawning ground counts, electrofishing), amphibians, and fish habitat projects such as direct habitat improvements to increase habitat complexity, riparian planting, channel and bank stabilization, and fish passage improvements. Typical wildlife management activities include winter range burning, access management, snag management, tree topping and falling, and water developments.

Fire and fuels management actions include the suppression of wildfire and prescribed fire used to meet resource management objectives. Prescribed burning is used for fuels management for wildfire hazard reduction (underburning), restoration of desired vegetation conditions, management of habitat and silvicultural treatments, i.e., site preparation (broadcast burning or pile burning). Pump chances, or water withdrawal sites, are created as water sources for fire suppression. Usually located next to roads, these sites are typically small excavated ponds or short spurs for vehicle access to streams or lakes.

Land exchanges and acquisitions are made to benefit a variety of uses and values. Land tenure adjustments are made to improve public access, acquire important habitats or resources and improve the efficiency of managing Federal lands.

Because Federal lands are a source of forest products for domestic and commercial uses, a variety of special uses occur on Federal lands. Some products include Christmas trees, firewood, mushrooms, ferns, boughs, mosses and similar products. Both the USFS and BLM administrative units issue permits for the collection of these products.

The USFS and BLM also issue a variety of permits for the use of Federal lands. Permits may be issued for utility and powerline corridors, communications sites, domestic and municipal water lines and diversions, and hydroelectric facilities. Road use permits are issued to allow for the transportation of commercial commodities on FS and BLM managed roads. Road right-of-ways are issued to private individuals and companies for the construction and use of access roads across Federal lands.

Because a wide variety of activities and projects are directed by the amended LRMPs, and many of these require interdisciplinary team development, watershed analysis, compliance with the National Forest Management Act (NFMA) and National Environmental Policy Act (NEPA) and other analysis and documentation before they can proceed, it is not the Service's intent to fully evaluate effects of individual projects in this BO. This BO focuses primarily (and necessarily quite broadly) on the land management direction, standards and guidelines (S&Gs), objectives, assumptions, and major components of LRMPs, PACFISH and INFISH ACS components, and individual LRMP standards that may affect bull trout. Individual projects that may affect bull trout are subject to Endangered Species Act requirements, and will be addressed as agreed to in the January 27, 1998 letter of direction.

Amended LRMP Direction For PACFISH and INFISH

PACFISH and INFISH provide programmatic direction for management of lands administered by the USFS and BLM. Both are interim strategies intended to provide protection against extinction or further endangerment of fish stocks and to maintain long-term management options, such as those being considered by the Interior Columbia Basin Ecosystem Management Project (ICBEMP) Draft Environmental Impact Statement.

PACFISH and INFISH share similar goals, objectives, standards, and guidelines, which are collectively considered the ACS. For PACFISH, management direction is applied to all proposed and ongoing management activities for the mitigation of environmental effects relative to the ACS. Seven general components of the ACS are:

1. Establish riparian goals and objectives to maintain and restore fish habitat.
2. Delineate Riparian Habitat Conservation Areas (RHCAs).
3. Establish standards and guidelines for the management of RHCAs.
4. Establish criteria and process to designate key watersheds.
5. Establish criteria and process to guide watershed analysis.
6. Emphasize the need for watershed restoration actions

7. Establish requirements for effectiveness and implementation monitoring.

Similar components are included in INFISH. However, application of PACFISH and INFISH strategies differs between the USFS and BLM. For the USFS, the strategies are amended to regional guides and LRMPs, whereas the BLM addresses the strategies through instruction memoranda for individual states.

LRMP Protections that Exceed Plan Standards

Some USFS and BLM administrative units had existing LRMP management direction specific to aquatic resources that was more stringent than that contained in the INFISH and PACFISH ACS. Based on USDA and USDI (1998a), the majority of the National Forests (16) reported standards and guidelines or specific management direction that were more stringent than those provided by amendment with the ACS. These specific measures came about either through actions implemented to benefit other threatened, endangered or sensitive species, such as salmon and grizzly bear, or specific standards for aquatic habitat management. The majority of the BLM administrative units that responded to requests indicated no specific standards or guidelines more stringent than exists in LRMPs amended by the aquatic strategies. Those BLM units reporting more restrictive management guidelines (4) indicated they were a result of specific management area plans prior to the implementation of the ACS and measures brought about through consultation for listed salmon stocks.

ACS Strategy - Components and Objectives

The ACS strategy includes aspects designed to provide for protection of aquatic species and their habitats.

1. Riparian Goals--Riparian goals establish an expectation of the characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. Because the quality of water and fish habitat in aquatic systems is inseparably related to the integrity of upland and riparian areas within the watersheds, the goals encompass both aquatic and terrestrial processes. The goals are to maintain or restore:

- (1) water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems;
- (2) stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed;
- (3) instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
- (4) natural timing and variability of the water table elevation in meadows and wetlands;
- (5) diversity and productivity of native and desired non-native plant communities in riparian zones;
- (6) riparian vegetation, to:
  - (a) provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;

(b) provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and

(c) help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

(7) riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geo-climatic region; and

(8) habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

2. Riparian Management Objectives (RMOs)--In the development of PACFISH, landscape-scale interim RMOs describing good habitat for anadromous fish were developed, using stream inventory data for pool frequency, large woody debris, bank stability and lower bank angle, and width to depth ratio. Applicable published and unpublished scientific literature was used to define favorable water temperatures. All of the described features may not occur in a specific segment of stream within a watershed, but all generally should occur at the watershed scale for stream systems of moderate to large size (3rd to 6th order streams).

This material was reviewed in regard to its applicability to inland native fish. It has been determined that the RMOs described in PACFISH are good indicators of ecosystem health. The analysis that led to development of the RMOs involved watersheds in Oregon, Washington, and Idaho that include inland native fish as well as anadromous fish. With the exception of the temperature objective, which has been modified, the RMOs represented a good starting point to describe the desired condition for fish habitat.

Under INFISH, these interim RMOs apply where watershed analysis has not been completed. The components of good habitat can vary across specific geographic areas. Interim RMOs are considered to be the best watershed scale information available; Federal land managers are encouraged to establish site-specific RMOs through watershed analysis or site-specific analysis.

RMOs should be refined to better reflect conditions that are attainable in a specific watershed or stream reach based on local geology, topography, climate, and potential vegetation. Establishment of RMO's requires completion of watershed analysis to provide the ecological basis for the change. However, interim RMOs may be modified by amendment in the absence of watershed analysis where watershed or stream reach specific data support the change. In all cases, the rationale supporting RMOs and their effects are documented.

The interim RMOs for stream channel conditions provide the criteria against which attainment or progress toward attainment of the riparian goals is measured. Interim RMOs provide the target toward which managers aim as they conduct resource management activities across the landscape. It is not expected that the objectives would be met instantaneously, but rather would be achieved over time. However, the intent of interim RMOs is not to establish a ceiling for what constitutes good habitat conditions.

In addition, interim RMOs are meant to lead to watershed specific RMOs developed through watershed analysis. Actions that reduce habitat quality, whether existing conditions are better or worse than objective values, would be inconsistent with the purpose of this interim direction. Without the benchmark provided by measurable RMOs, habitat may suffer continual erosion.

As indicated below, some of the objectives would apply to only forested ecosystems, some to non-forested ecosystems, and some to all ecosystems regardless of whether or not they are forested. Objectives for relevant environmental features have been identified, including one key feature and five supporting features. These features are good indicators of ecosystem health, are quantifiable, and are subject to accurate, repeatable measurements. They generally apply to 3rd to 6th order watersheds.

Under the ACS, interim RMOs would apply to watersheds occupied by anadromous and inland native fish. Application of the interim RMOs would require thorough analysis. That is, if the objective for an important feature such as pool frequency is met or exceeded, there may be some latitude in assessing the importance of the objectives for other features that contribute to good habitat conditions. For example, in headwater streams with an abundance of pools created by large boulders, fewer pieces of large wood might still constitute good habitat. The goal is to achieve a high level of habitat diversity and complexity through a combination of habitat features to meet the life-history requirements of the fish community inhabiting a watershed. Specific RMOs address pool frequency that varies by channel width, water temperature, large woody debris, bank stability, lower bank angle, and stream width/depth ratio, as examples.

3. Riparian Habitat Conservation Areas (RHCAs)--Interim RHCAs would be delineated in every watershed on USFS and BLM lands within the geographic range of bull trout. RHCAs are portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific S&Gs. RHCAs include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by (1) influencing the delivery of coarse sediment, organic matter, and woody debris to streams; (2) providing root strength for channel stability; (3) shading the stream; and (4) protecting water quality (Naiman et al. 1992).

The RHCAs under the ACS strategy would be nearly identical to those under the Idaho Conservation Strategy (Idaho Department of Fish and Game (IDFG) 1995). The main difference is that, under the Idaho Conservation Strategy, RHCAs would apply only in key watersheds. However, since their key watersheds are large and cover much of the National Forest System lands in Idaho, there would be little difference between the two Strategies in regard to RHCAs in Conservation Areas within occupied bull trout habitat.

Widths of interim RHCAs that are adequate to protect streams from non-channelized sediment inputs should be sufficient to provide other riparian functions, including delivery of organic matter and woody debris, stream shading, and bank stability (Brazier and Brown 1973, Gregory et al. 1984, Steinblums et al. 1984, Beschta et al. 1987,

McDade et al. 1990, Sedell and Beschta 1991, Belt et al. 1992). The effectiveness of riparian conservation areas in influencing sediment delivery from non-channelized flow is highly variable. A review by Belt et al. (1992) of studies in Idaho (Haupt 1959a, 1959b; Ketcheson and Megehan 1996; Burroughs and King 1985, 1989; and elsewhere (Trimble and Sartz 1957, Packer 1967, Swift 1986) concluded that non-channelized sediment flow rarely travels more than 300 feet and that 200-300 foot riparian "filter strips" are generally effective at protecting streams from sediment from non-channelized flow.

Interim RHCA widths apply where watershed analysis has not been completed. Site-specific widths may be increased where necessary to achieve riparian management goals and objectives, or decreased where interim widths are not needed to attain RMOs or avoid adverse effects. Establishment of RHCAs would require completion of watershed analysis to provide the ecological basis for the change. However, interim RHCAs may be modified by amendment in the absence of watershed analysis where stream reach or site-specific data support the change. In all cases, the rationale supporting RHCA widths and their effects are documented.

The standard widths of interim RHCAs fall into four categories of stream or water bodies:

Category 1 - Fish-bearing streams: Interim RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel), whichever is greatest.

Category 2 - Permanently flowing non-fish-bearing streams: Interim RHCAs consist of the stream and the area on either side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year flood plain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet, including both sides of the stream channel), whichever is greatest.

Category 3 - Ponds, lakes, reservoirs, and wetlands greater than 1 acre: Interim RHCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or to the extent of moderately and highly unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest.

Category 4 - Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone areas: This category includes features with high variability in size and site-specific characteristics.

At a minimum, the interim RHCAs must include:

a. the extent of landslides and landslide-prone areas;

b. the intermittent stream channel and the area to the top of the inner gorge;

c. the intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation;

d. for Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest;

e. for watersheds not identified as Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one-half site potential tree, or 50 feet slope distance, whichever is greatest.

In non-forested rangeland ecosystems, the interim RHCA width for permanently flowing streams in categories 1 and 2 is the extent of the 100-year flood plain.

4. Standards and GuidelinesC S&Gs of the ACS apply to all RHCAs and to projects and activities in areas outside of RHCAs that would degrade conditions in RHCAs. The S&Gs address ten management issues in RHCAs and associated areas: timber management, roads management, grazing management, recreation management, minerals management, fire and fuels management, lands, general riparian area management, watershed and habitat restoration, and fisheries and wildlife restoration.

Timber Management

TM-1. Prohibit timber harvest, including fuelwood cutting, in RHCAs, except as described below. Do not include RHCAs in the land base used to determine the Allowable Sale Quantity, but any volume harvested can contribute to the timber sale program.

a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting in RHCAs only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other Riparian Management Objectives, and where adverse effects on listed anadromous fish can be avoided. For watersheds with listed salmon or designated critical habitat, complete Watershed Analysis prior to salvage cutting in RHCAS.

b. Apply silvicultural practices for RHCA to acquire desired vegetation characteristics where needed to attain RMOs. Apply silvicultural practices in a manner that does not retard attainment of RMOs and that avoids adverse effects on listed anadromous fish.

Roads Management

RF-1. Cooperate with Federal, Tribal, State, and county agencies, and cost-share partners to achieve consistency in road design, operation, and maintenance necessary to attain RMOs.

RF-2. For each existing or planned road, meet the RMOs and avoid adverse effects on listed anadromous fish by:

1. completing Watershed Analyses prior to construction of new roads or landings in RHCA.

b. minimizing road and landing locations in RHCA.

c. initiating development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, address the following items in the plan:

1. Road design criteria, elements, and standards that govern construction and reconstruction.

2. Road management objectives for each road.

2. Criteria that govern road operation, maintenance, and management.

4. Requirements for pre-, during-, and post-storm inspections and maintenance.

2. Regulation of traffic during wet periods to minimize erosion and sediment delivery and accomplish other objectives.

3. Implementation and effectiveness monitoring plans for road stability, drainage, and erosion control.

4. Mitigation plans for road failures.

d. avoiding sediment delivery to streams from the road surface.

1. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe.

5. Route road drainage away from potentially unstable stream channels, fills, and hillslopes.

e. avoiding disruption of natural hydrologic flow paths.

2. avoiding sidecasting of soils or snow. Sidecasting of road material is prohibited on road segments within or abutting RHCAs in watersheds containing designated critical habitat for listed anadromous fish.

RF-3. Determine the influence of each road on the RMOs. Meet RMOs and avoid adverse effects on listed anadromous fish by:

a. reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, or that have been shown to be less effective than designed for controlling sediment delivery, or that retard attainment of RMOs, or do not protect designated critical habitat for listed anadromous fish from increased sedimentation.

b. prioritizing reconstruction based on the current and potential damage to listed anadromous fish and their designated critical habitat, the ecological value of the riparian resources affected, and the feasibility of options such as helicopter logging and road relocation out of RHCA.

c. closing and stabilizing or obliterating, and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to listed anadromous fish and their designated critical habitat, and the ecological value of the riparian resources affected.

RF-4. Construct new, and improve existing, culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris, where those improvements would/do pose a substantial risk to riparian conditions. Substantial risk improvements include those that do not meet design and operation maintenance criteria, or that have been shown to be less effective than designed for controlling erosion, or that retard attainment of RMOs, or that do not protect designated critical habitat from increased sedimentation. Base priority for upgrading on risks to listed anadromous fish and their designated critical habitat and the ecological value of the riparian resources affected. Construct and maintain crossings to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.

RF-5. Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.

Grazing Management

GM-1. Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of RMOs or are likely to adversely affect listed anadromous fish. Suspend grazing if adjusting practices is not effective in meeting RMOs and avoiding adverse effects on listed anadromous fish.

GM-2. Locate new livestock handling and/or management facilities outside of RHCA. For existing livestock handling facilities inside the RHCA, assure that facilities do not prevent attainment of RMOs or adversely affect listed anadromous fish. Relocate or close facilities where these objectives cannot be met.

GM-3. Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that will not retard or prevent attainment of RMOs or adversely affect listed anadromous fish.

GM-4. Adjust wild horse and burro management to avoid impacts that prevent attainment of RMOs or adversely affect listed anadromous fish.

Recreation Management

RM-1. Design, construct, and operate recreation facilities, including trails and dispersed sites, in a manner that does not retard or prevent attainment of the RMOs and avoids adverse effects on listed anadromous fish. Complete Watershed Analysis prior to construction of new recreation facilities in RHCA. For existing recreation facilities inside RHCA, assure that the facilities or use of the facilities will not prevent attainment of RMOs or adversely affect listed anadromous fish. Relocate or close recreation facilities where RMOs cannot be met or adverse effects on listed anadromous fish avoided.

RM-2. Adjust dispersed and developed recreation practices that retard or prevent attainment of RMOs or adversely affect listed anadromous fish. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting RMOs and avoiding adverse effects on listed anadromous fish, eliminate the practice or occupancy.

RM-3. Address attainment of RMOs and potential effect on listed anadromous fish and designated critical habitat in Wild and Scenic Rivers, Wilderness, and other Recreation Management plans.

Minerals Management

MM-1. Avoid adverse effects to listed species and designated critical habitat from mineral operations. If the Notice of Intent indicates a mineral operation would be located in a RHCA, or could affect attainment of RMOs, or adversely affect listed anadromous fish, require a reclamation plan, approved Plan of Operations (or other such governing

document), and reclamation bond. For effects that cannot be avoided, such plans and bonds must address the costs of removing facilities, equipment, and materials; recontouring disturbed land to near pre-mining topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvage and replacement of topsoil; and seed bed preparation and revegetation to attain RMOs and avoid adverse effects on listed anadromous fish. Ensure Reclamation Plans contain measurable attainment and bond release criteria for each reclamation activity.

MM-2. Locate structures, support facilities, and roads outside RHCAs. Where no alternative to siting facilities in RHCAs exists, locate and construct the facilities in ways that avoid impacts to RHCAs and streams adverse effects on listed anadromous fish. Where no alternative to road construction exists, keep roads to the minimum necessary for the approved mineral activity. Close, obliterate and revegetate roads no longer required for mineral or land management activities.

MM-3. Prohibit solid and sanitary waste facilities in RHCAs. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in RHCA exists, and releases can be prevented and stability can be ensured, then:

3. analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.

4. locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in RHCA.

c. monitor waste and waste facilities to confirm predictions of chemical and physical stability, and make adjustments to operations as needed to avoid adverse effects to listed anadromous fish and to attain RMOs.

5. reclaim and monitor waste facilities to assure chemical and physical stability and revegetation to avoid adverse effects to listed anadromous fish and to attain the RMOs.

e. require reclamation bonds adequate to ensure long-term chemical or physical stability and successful revegetation of mine waste facilities.

MM-4 For leasable minerals, prohibit surface occupancy within RHCA for oil, gas, and geothermal exploration and development activities where contracts and leases do not already exist, unless there are no other options for location and RMOs can be attained and adverse effects to listed anadromous fish can be avoided. Adjust the operating plans of existing contracts to (1) eliminate impacts that prevent attainment of RMOs and (2) avoid adverse effects to listed anadromous fish.

MM-5 Permit sand and gravel mining and extraction within RHCA only if no alternatives exist, if the action(s) will not retard or prevent attainment of RMOs, and adverse effects to listed anadromous fish can be avoided.

MM-6 Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply the results of inspection and monitoring to modify mineral plans, leases, or permits as needed to eliminate impacts that prevent attainment of RMOs and avoid adverse effects on listed anadromous fish.

Fire/Fuels Management

FM-1. Design fuel treatment and fire suppression strategies, practices, and actions so as not to prevent attainment of RMOs, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function, listed anadromous fish, or designated critical habitat.

FM-2. Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RHCA. If the only suitable location for such activities is within the RHCA, an exemption may be granted following a review and recommendation by a resource advisor. The advisor will prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects to listed anadromous fish a primary goal. Use an interdisciplinary team, including a fishery biologist, to predetermine incident base and helibase locations during pre-suppression planning, with avoidance of potential adverse effects to listed anadromous fish a primary goal.

FM-3. Avoid delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor, and a fishery biologist, when the action agency determines an escape fire would cause more long-term damage to anadromous fish habitats than chemical delivery to surface waters.

FM-4. Design prescribed burn projects and prescriptions to contribute to the attainment of the RMOs.

FM-5. Immediately establish an emergency team to develop a rehabilitation treatment plan to attain RMOs and avoid adverse effects on listed anadromous fish whenever RHCA are significantly damaged by a wildfire or a prescribed fire burning out of prescription.

Lands

LH-1. Require instream flows and habitat conditions for hydroelectric and other surface water development proposals that maintain or restore riparian resources, favorable channel conditions, and fish passage, reproduction, and growth. Coordinate this process with the appropriate State agencies. During relicensing of hydroelectric projects, provide written and timely license conditions to the Federal Energy Regulatory Commission (FERC) that

require fish passage and flows and habitat conditions that maintain/restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate State agencies.

LH-2. Locate new hydroelectric ancillary facilities outside RHCA. For existing ancillary facilities inside the RHCA that are essential to proper management, provide recommendations to FERC to assure that the facilities will not prevent attainment of the RMOs and that adverse effects on listed anadromous fish are avoided. Where these objectives cannot be met, provide recommendations to FERC that such ancillary facilities should be relocated. Locate, operate, and maintain hydroelectric facilities that must be located in RHCA to avoid effects that would retard or prevent attainment of the RMOs and avoid adverse effects on listed anadromous fish.

LH-3. Issue leases, permits, rights-of-way, and easements to avoid effects that would retard or prevent attainment of the RMOs and avoid adverse effects on listed anadromous fish. Where the authority to do so was retained, adjust existing leases, permits, rights-of-way, and easements to eliminate effects that would retard or prevent attainment of the RMOs or adversely affect listed anadromous fish. If adjustments are not effective, eliminate the activity. Where the authority to adjust was not retained, negotiate to make changes in existing leases, permits, rights-of-way, and easements to eliminate effects that would prevent attainment of the RMOs or adversely affect listed anadromous fish. Priority for modifying existing leases, permits, rights-of-way, and easements will be based on the current and potential adverse effects on listed anadromous fish and the ecological value of the riparian resources affected.

LH-4. Use land acquisition, exchange, and conservation easements to meet RMOs and facilitate restoration of fish stocks and other species at risk of extinction.

General Riparian Area Management

RA-1. Identify and cooperate with Federal, Tribal, State and local governments to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.

RA-2. Trees may be felled in RHCA when they pose a safety risk. Keep felled trees on site when needed to meet woody debris objectives.

RA-3. Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of RMOs and avoids adverse effects on listed anadromous fish.

RA-4. Prohibit storage of fuels and other toxicants within RHCA. Prohibit refueling within RHCA unless there are no other alternatives. Refueling. sites within a RHCA must be approved by the USFS or BLM and have an approved spill containment plan.

RA-5. Locate water drafting sites to avoid adverse effects to listed anadromous fish and instream flows, and in a manner that does not retard or prevent attainment of RMOs.

Watershed and Habitat Restoration

WR-1. Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of RMOs.

WR-2. Cooperate with Federal, State, local, and Tribal agencies, and private landowners to develop watershed-based Coordinated Resource Management Plans (CRMPS) or other cooperative agreements to meet RMOs.

WR-3. Do not use planned restoration as a substitute for preventing habitat degradation (i.e., use planned restoration only to mitigate existing prob not to mitigate the effects of proposed activities).

Fisheries and Wildlife Restoration

FW-1. Design and implement fish and wildlife habitat restoration and enhance actions in a manner that contributes to attainment of the RMOs.

FW-2. Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of the RMOs or adversely affect anadromous fish. For existing fish and wildlife interpretive and other user-enhancement facilities inside RHCA assure that RMOs are met and adverse effects on listed anadromous fish are avoided. Where RMOs cannot be met or adverse effects on listed anadromous fish avoided, relocate or close such facilities.

FW-3. Cooperate with Federal, Tribal, and State wildlife management agencies to identify and eliminate wild ungulate impacts that prevent attainment of RMOs or adversely affect listed anadromous fish.

FW-4. Cooperate with Federal, Tribal, and State fish management agencies to identify and eliminate adverse effects on native anadromous fish associated with habitat manipulation, fish stocking, fish harvest, and poaching.

5. Key and Priority Watersheds--Key and priority watersheds are important to "at risk" fish. These watersheds are considered to be currently in good condition, or have a high potential for restoration. Both key (PACFISH) and priority watersheds (INFISH) are equivalent in the ACS relative to bull trout.

In both PACFISH and INFISH, the ACS is designed to conserve fish populations by protecting and recovering aquatic habitat on Federal lands. All watersheds with listed anadromous fish or critical habitat for listed anadromous fish are designated as key watersheds in the PACFISH area. Therefore, the key watershed designations due to

Federal listings under ESA include the Snake River salmon and steelhead Evolutionarily Significant Units (ESUs) and the Upper Columbia River steelhead ESU. The Middle Columbia River portion of the PACFISH area has no Federally listed anadromous fish, thus no key watershed designations. The INFISH priority watersheds were designated to protect and conserve inland native fish habitat and populations, although a priority was extended to bull trout populations within the INFISH area. As a result of this prioritization, priority watersheds are only located where bull trout are currently distributed.

The key or priority watershed networks were established for the conservation of habitat for anadromous fish or resident fish, specifically Federally listed salmon ESUs and bull trout populations for the PACFISH and INFISH, respectively. An analysis of the key and priority watershed networks within the DPSs or specific analysis areas addressed in the BA found the Federal land designated as key or priority watersheds ranges from 0 to 41 percent. The Columbia River and Klamath River bull trout DPSs have 41 and 20 percent of the Federal land designated as key or priority watersheds within their range, respectively.

6. Watershed Analysis Watershed analysis is a systematic procedure for determining how a watershed functions in relation to its physical and biological components. This is accomplished through consideration of history, processes, landform, and condition.

Generally, watershed analysis would be initiated where the interim RMOs and the interim RHCAs widths do not adequately reflect specific watershed capabilities, or as required in the S&Gs before specific projects are initiated. The guidelines and procedural manuals being developed by the Interagency Watershed Analysis Coordination Team and other potentially relevant procedures (e.g., the Cumulative Watershed Effects Process for Idaho, etc.) would be considered and used, where appropriate, in development of a watershed analysis protocol. Eventually, any watershed analysis would follow the final guidance on AEcosystem Analysis at a Watershed Scale, Federal Guide for Watershed Analysis@(often referred to as the AFederal Guide@: USDA et al. 1995). Currently there are two memoranda available (dated November 1, 1995 and October 16, 1996) that include new information and modules to be used. In addition, there is a draft riparian module (February 1997) specific to intermittent streams, but which suggests use also on perennial streams. At this time, the modules that accompany the Federal Guide are optional and USFS and BLM units often opt to use different techniques of analysis, depending on their time frames and budgets for analysis.

Watershed analysis is a prerequisite for determining which processes and parts of the landscape affect fish and riparian habitat, and is essential for defining watershed- specific boundaries for RHCAs and for RMOs. Watershed analysis can form the basis for evaluating cumulative watershed effects; defining watershed restoration needs, goals and objectives; implementing restoration strategies; and monitoring the effectiveness of watershed protection measures, depending upon the issues to be addressed in the watershed analysis. Watershed analysis employs the perspectives and tools of multiple disciplines, especially geomorphology, hydrology, geology, aquatic and terrestrial

ecology, and soil science. It is the framework for understanding and carrying out land use activities within a geomorphic context, and is a major component of the evolving science of ecosystem analysis.

Watershed analysis consists of a sequence of activities designed to identify and interpret the processes operating in a specific landscape. Since the concept of watershed analysis was first introduced, there has been much discussion as to the procedures and detail that a watershed analysis should complete. Under the Northwest Forest Plan, watershed analysis has been conducted, and there are varying levels of analysis completed in those analyses. It is recognized that the components and intensity of the analysis would vary depending on level of activity and significance of issues involved. Following are the general process steps for watershed analysis:

1. Characterization of the Watershed.
   a. Place the watershed in a broader geographic context.
   b. Highlight dominant features and processes within the watershed.

2. Identification of Issues and Key Questions.
   a. Key questions and resource components.
   b. Determine which issues are appropriate to analyze at this scale.

3. Description of Current Condition.

4. Description of Reference Conditions.
   a. Establish ecologically and geomorphically appropriate reference conditions for the watershed.

5. Interpretation of Information.
   a. Provide a comparison and interpretation of the current, historic, and reference conditions.

6. Recommendations.
   a. Provide conclusions and recommendations to management.

The process described above is significantly streamlined to allow managers to focus watershed analysis to address specific issues and management needs. This can include modification of RMOs, RHCAs, or identification of restoration and monitoring needs. The state-of-the art for watershed analysis is still developing and the processes are flexible.

7. Watershed Restoration--Watershed restoration comprises actions taken to improve the current conditions of watersheds to restore degraded habitat, and to provide long-term protection to natural resources, including riparian and aquatic resources.

The approach did not attempt to develop a restoration strategy given the short time period for implementation of the interim direction in the ACS. It was expected that land

managers would utilize the information from watershed analysis and project development to initiate restoration projects where appropriate and funds were available. Priority watersheds have the highest priority for restoration efforts.

8. Monitoring--Monitoring is an important component of the INFISH and PACFISH interim direction. The primary focus is to verify that the S&Gs are applied during the project implementation.

   Monitoring to assess whether protective measures are effective to attain riparian goals and management objectives has been considered a lower priority given the initial, short time frame for the interim direction of the ACS. Complex ecological processes and long time frames are inherent in the RMOs, and that type of monitoring would not likely generate conclusive results within the initial 18 months the ACS was to be in place. Nevertheless, monitoring is a critical to component of the ACS. Land managers have been urged to utilize current monitoring efforts, and section 7 monitoring results from PACFISH areas where on the same land management unit to establish a baseline for determining the effectiveness of these S&Gs. Priority watersheds have the highest priority for monitoring efforts.

   A third type of monitoring (validation monitoring) is intended to ascertain the validity of the assumptions used in developing the interim direction. Because of the initial, short-term nature of the management direction, no specific requirements were included in the ACS for validation monitoring.

Summary of Management Area Categories

Each LRMP describes the level of goods and services provided with implementation. There is considerable variability between plans as to the level of production. Even within a single plan the range of goods and services is expected to vary with budget and natural changes in the capability of the land. In order to display the total level of goods and services represented by all the LRMPs in the BA, some of the geographic information system data themes developed for the ICBEMP Plan were used (USDA and USDI 1998a). The Management Area Categories (MACs) layer was developed for BLM and USFS lands within the project area in an effort to provide a consistent display of management direction and support assessing the overall effects on the ecosystem. The focus of the categories is to describe existing management direction. These categories were used to display current conditions and assess effects of planned management activities to the species covered in this assessment. Potential roadless areas and predicted road density data layers were also used as another indicator of management activity.

The eight MACs identified are:

1. Natural, Unmodified Environments
2. Special Natural Areas
3. Essentially Unmodified Forested and Grassland Ecosystems
4. Natural Appearing, but Modified for Human Use and Occupancy
5. Modified Forest Ecosystems

6. Modified Rangelands
7. Areas Modified by Human Occupation and Activities
8. Modified Non-Sustainable Areas

For the analysis in the BA, the eight categories were collapsed into three areas of management activities: Undeveloped Areas, categories 1, 2, and 3; Developed Areas, categories 4, 5, and 6; and Highly Developed Areas, categories 7 and 8. In order to assess effects, the management activity areas were then compared against species presence, represented by known strong and depressed populations of bull trout in the three DPSs. Bull trout were also compared against potential roadless areas, areas having no or very low predicted road density in contiguous blocks greater than 5,000 acres in size, and predicted road density categories.

Monitoring and Adaptive Management Provisions

A specific monitoring plan was developed as a part of the PACFISH decision (PACFISH Record of Decision, Appendix E-1 through E-12). This monitoring strategy was framed around three aspects of monitoring: 1) implementation monitoring to determine if the S&Gs are followed; 2) effectiveness monitoring to see if the implementation of S&Gs achieved the desired goals and objectives; and 3) validation monitoring to determine if there is a cause-and-effect relationship between management activities and the fish habitat being managed. A proposal for effectiveness monitoring was submitted by technical staff to the Regional Executives of the USFS and BLM in June of 1995. The Regional Executives chose not to implement the effectiveness or validation monitoring portion of the plan. They did, however, recommend to the ICBEMP science team the effectiveness portion of the PACFISH plan for consideration in the ICBEMP monitoring package. An interagency implementation monitoring network was established in 1995 and was comprised of technical staff and line officers for the BLM, USFS, Service, and National Marine Fisheries Service (NMFS). Summary reports and individual site visit information are available for 1995, 1996, and 1997. The 1996 and 1997 PACFISH review also included a limited review of some INFISH areas.

The INFISH decision also stressed the importance of monitoring to ensure proper implementation and effectiveness of the S&Gs in the aquatic strategy. Instead of establishing a specific monitoring strategy, the Forests were "urged to utilize current Forest Plan monitoring efforts, and Section 7 monitoring results from PACFISH areas where on the same Forest..." (INFISH Record of Decision, Appendix A-15). A special request to the Forests for their monitoring results was initiated in January 1995. This request went to all INFISH Forests and was the only coordinated gathering of monitoring data for INFISH for all USFS units. In 1996, the Northern Region of the USFS requested monitoring data of its Forests and this data is also available. A similar request was not made in USFS Pacific Northwest and Intermountain Regions. No coordinated gathering of monitoring data was made for the BLM.

Provisions for adaptive management are not specifically addressed in either PACFISH or INFISH. Although existing data and data generated from forest plans and section 7 activities may be available for evaluation, the action does not provide for monitoring the efficacy or evaluating assumptions of activities implemented pursuant to the action. Moreover, the action does not provide a framework for identifying areas of uncertainty concerning management

activities, formulating testable hypotheses, generating additional data for performing tests of hypotheses, and evaluating the results of the tests relative to the management activities.

Additional Agency Commitments

In a letter to the Service, the USFS and BLM adopted commitments in implementing the ACS and requested that they be amended to the BA for this action(USDA and USDI 1998b). The Service has included the commitments in developing this BO and they are summarized below:

1. Restoration and improvement: The USFS and BLM, in cooperation with the NMFS and the Service, will develop and implement strategies that will integrate and coordinate restoration, protection and evaluation measures (construction/maintenance, flood repair, watershed, and fish habitat improvements, etc.) to expeditiously achieve restoration objectives at multiple scales (DPS, metapopulation, watershed). Restoration opportunities will be identified through an agreed upon approach using existing funding, information and programs, and incorporating new information as it becomes available. Initial strategy development will be completed by March 1, 1999.

2. Standards and guidelines: The USFS and BLM will complete prior commitments in the PACFISH and INFISH decisions, and use the conclusions in the PACFISH/INFISH reviews and the land management plan BA for bull trout and suckers.

Prior commitments to be emphasized are:

a. Road evaluation and Planning (PACFISH and INFISH) standards RF-2 and RF-3). Implementation of these existing standards in PACFISH/INFISH is necessary to understand and begin reducing impacts from roads on streams with habitat for ESA listed and proposed fish. Achievement of PACFISH/INFISH RF-2 and RF-3 will be a priority.

i) Using existing information and road definitions, the Service will be provided with road inventories on the management units in the three bull trout DPSs within 120 days of BO signature. This information should include a description of road definitions and survey methodology used. Information gaps will be identified and a schedule will be developed to provide information to the Service within two years.
ii) As part of watershed analyses, road inventories, and other appropriate information will be used to collaborate with NMFS and Service in developing restoration strategies. Restoration strategies will be used to identify key processes needing attention, prioritize key locations and project types, address implementation and scheduling issues and provide a preliminary estimate of costs. These strategies will serve as the primary framework for implementation of integrated restoration activities.
iii) continue updating the road inventories. Incorporate new information consistent with 2.a.i. (above).

b. To complete the commitments made in the aquatic strategies for culvert replacement, fish passage, grazing facilities in RHCAs, recreation facilities, and minerals management the implementation of these existing standards in PACFISH/INFISH are necessary to understand and begin reducing impacts from these management activities on streams with habitat for ESA listed and proposed fish. Achievement of PACFISH/INFISH RF-4 and RF-5, GM-2, RM-1, and MM-2 will be a priority.

3. Key and priority watershed networks: reexamine the structure and function of INFISH priority and PACFISH key watershed networks to ensure the protection and recovery of bull trout and listed sucker metapopulations.

a) Identify and clarify the primary functions of key, priority, and special emphasis watershed.

b) Identify special emphasis watersheds (within 60 days of BO signature) to ensure a comprehensive refugia network for the protection and recovery of bull trout and listed suckers.

c) Completing watershed analysis in existing INFISH priority watersheds, and special emphasis watersheds as identified in 3b above, is a priority (required in PACFISH and INFISH standards, TM-1, RF-2, RM-1). Project decisions will be guided by the results of watershed analysis.

d. Priorities and schedules for watershed analysis will be developed concurrently with #1 (above) and updated annually.

4. Watershed analysis: Watershed analysis will be conducted according to AEcosystem Analysis at the Watershed Scale@, Field Guide for Watershed Analysis, 1995, as updated (USDA et al. 1995). In general watershed analysis will not be project-driven but undertaken to generate an information base and recommendations for use in project planning.

5. Monitoring: To improve monitoring efforts, to make the level of monitoring commensurate with the level of on-the-ground activities, and to provide feedback on the effects of activities, the USFS and BLM will develop a mechanism for improved monitoring accountability and oversight. Interagency collaboration in the development of this mechanism is necessary to ensure a common understanding of expectations.

a. Consider NMFS= expectations for monitoring in the 1995 LRMP Opinion (section IX.I. and Appendix A-10), when updating the PACFISH monitoring strategy.

b. Activate the PACFISH interagency effectiveness monitoring subgroup including areas covered by INFISH, (within 120 days of signature) to develop a monitoring strategy including a range of monitoring alternatives commensurate with anticipated land management activity levels, funding, and staffing levels.

c. Incorporate INFISH areas into PACFISH implementation monitoring efforts.

d. Improve the current implementation monitoring process by expanding regional/state level USFS/BLM line officer involvement in PACFISH/INFISH implementation oversight and review.

6. Long-term Conservation and Recovery: USFS and BLM will use their authorities in carrying out programs for the conservation of endangered and threatened species as consistent with section 7(a)(1) of ESA.

a. Using PACFISH, INFISH, watershed analysis and other information, develop a conservation approach to protect and restore existing high quality habitats and the connectivity between them. The USFS and BLM will review existing roadless and low density areas (as defined in ICBEMP science assessment team) to assess their importance to listed species habitat.

b. As a foundation for the development of a long-term conservation and recovery strategy, the USFS and BLM will develop a mechanism for improved accountability and oversight to ensure PACFISH and INFISH direction is fully implemented. Interagency collaboration in the development of this mechanism is necessary to ensure a common understanding of expectations.

1. Provide a mechanism (within 120 days of signature), that ensures full implementation of programmatic aquatic conservation measures at all organizational levels for the bull trout and sucker species addressed in the BA.

2. Provide a strategy which will be used if funding or priorities prevent full implementation of the aquatic conservation measures. Annually, upon receipt of the initial budget, review the fiscal year priorities and program of work for attainment of fish conservation measures. Identify highest priority work for available funds and identify and document significant shortfalls in funding or staffing.

7. The USFS and BLM, in coordination with the Service, will complete section 7 consultation at the watershed level by May 1999. The watershed consultation will follow the approach agreed to in the January 27, 1998, letter of direction on bull trout conferencing, with modifications as agreed to by the agencies. After the effective date of the bull trout listing, and until the watershed consultations are completed, all ongoing and proposed actions must conform to INFISH and PACFISH guidelines and these seven commitments.

The entire Biological Opinion is on file at the Fish and Wildlife Service, Snake River Fish and Wildlife Office, 1387 South Vinnell Way, Boise, Idaho 83709

APPENDIX B.

United States Department of Agriculture | Forest Service | Idaho Panhandle National Forests | 3815 Schreiber Way Coeur d'Alene, ID 83815

File Code: 2670
Date: SEP 18 2008

Rich Torquemada
Supervisor
U.S. Fish and Wildlife Service
Upper Columbia Office
11103 East Montgomery Drive
Spokane, WA 99206

Dear Rich:

The purpose of this letter is to clarify caribou management on the Idaho Panhandle National Forests (IPNFs) and will be used in the consultation on the Idaho Roadless Rule.

The Land and Resource Management Plan (LRMP) Threatened and Endangered Species Standard a. states results of research regarding habitat of threatened and endangered species will be incorporated into management direction as it becomes available. The IPNFs are committed to using best science in the design and implementation of projects in the Caribou Recovery Zone. The IPNFs currently are utilizing the best science for seasonal habitats as described in Apps and Kinley, 2007. As new science becomes available we will consider it in consultation with you.

The commitment to using best science carries over to the cumulative effects analysis used for activities proposed in caribou habitat. The LRMP references Appendix HH, which consists of a Cumulative Effects Model. The LRMP does not require the use of this model, but rather includes it in the Appendix as an analytic tool for use in conducting evaluations. This model has been updated based on best science to employ some qualitative factors rather than un-validated quantitative factors. The cumulative effects analyses using the current approach will be done in consultation with you at the project level.

You have inquired about how the forest-wide old growth standard relates to Caribou habitat and how the forest intends to manage old growth in caribou habitat. Within Management Area 7, Caribou Management Areas, the standard is "Existing all-aged old-growth cedar/hemlock stands are to be retained". The forest-wide standard is to maintain at least 10 percent of the forested portion of the IPNF as old growth. To assure the public we are meeting the forest-wide standard we have allocated old growth stands across the forest totaling 12.3 percent.

The IPNFs do not implement timber harvest that removes allocated old growth stands. The 2005 and 2006 Forest Plan Monitoring Report provides a more complete discussion of the management of old growth. Our intent is to follow the 2001 Biological Opinion, the

LRMP, and the current practice of using best science to maintain and manage old growth stands that are suitable caribou habitat within the Caribou Recovery Zone. Of interest to you is that over 60,000 acres of old growth has been allocated within the Caribou Recovery Area.

Sincerely,

RANOTTA K. MCNAIR
Forest Supervisor

cc: Joan E Dickerson, Shanda DeKome

APPENDIX C.

United States Department of Agriculture | Forest Service | Idaho Panhandle National Forests | 3815 Schreiber Way Coeur d'Alene, ID 83815

File Code: 2670
Date: August 7, 2008

RECEIVED
AUG 11 2008
U.S. FISH & WILDLIFE SERVICE
ECOLOGICAL SERVICES
SPOKANE, WA

Susan Martin
Field Supervisor
U. S. Fish and Wildlife Service
11103 E. Montgomery Dr
Spokane, WA 99206

Dear Susan:

The purpose of this letter is to clarify the environmental baseline for grizzly bear management in the Idaho Roadless Areas that are part of the Kootenai and Idaho Panhandle National Forests. This baseline will be used for consultation on the Idaho Roadless Rule.

The Idaho Roadless Rule includes a requirement that land management plan components that are not inconsistent with the rule will continue to provide guidance for projects and activities within Idaho Roadless Areas. Land management plan components such as those included in the Access Amendment discussed below will shape and guide the actual implementation of this rule. These would include standards for grizzly bear protection, and any necessary consultation with the Fish & Wildlife Service if any adverse effect to grizzly bear is anticipated. These conditions would still apply and if the project cannot comport with these requirements, the proposed project would have to be modified, abandoned, or the plan amended.

The Forest Service is currently amending its land and resource management plans (forest plans) for the Idaho Panhandle, Kootenai, and the Lolo National Forests relative to Wheeled Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones (Access Amendment), which include portions of the area covered by the Idaho Roadless Rule. The purpose of the amendment is to establish standards and guidelines which will apply to all future site-specific decisions regarding wheeled, motorized use and contribute to the conservation and recovery of the species within these National Forests. A Record of Decision for the Access Amendment is anticipated in 2009.

In the interim the forest plans are in place along with the 2001 Biological Opinion and the Forests are currently incorporating "best" science recommended by IGBC access standards when designing projects. The Terms and Conditions from the Incidental Take Statement in the 2001 Biological Opinion on the 1987 Forest Plan and the current science being evaluated in the Access Amendment form the current environmental baseline. Site-specific projects will continue to incorporate recent science, forest plan standards and the section 7 consultation process.

Although there are no foreseeable projects that could result in increased risk of mortality to grizzly bears, the programmatic nature of the Idaho Roadless Rule decision allows for such projects. To provide additional assurance to the consultation process regarding grizzly bears, I will defer decisions that would have a "likely to adversely affect" determination, except when the project is designed to provide long-term benefits to grizzly bears, until the Record of

Decision (ROD) for the Access Amendment is signed. Sometimes, to achieve long-term benefits to grizzly bears it is necessary to have a short-term adverse effect, such as risk of displacement. I do not intend to defer decisions on projects where short-term effects result in habitat gains that substantially benefit bears and bear management.

This commitment pertains to road construction, reconstruction, or timber cutting, sale, or removal activities in Idaho Roadless Areas that are in core habitat within grizzly bear management units. Currently, there are no such activities in the foreseeable future that would be undertaken pursuant to the Idaho Roadless Rule in these areas prior to the expected date of the Access Amendment decision. Also, the geographic extent of any future projects is quite limited. Based on analysis of the areas where there is the most likelihood of projects, there are only 12,699 acres out of 130,658 acres of core in the Cabinet-Yaak Ecosystem and 8,464 acres out of 200,356 acres of core in the Selkirk Ecosystem. These areas are where the General Forest Rangeland and Grassland, and the community protection zones within the Backcountry theme overlap grizzly bear core in Idaho Roadless Areas. Moreover, these areas are primarily located near communities and their municipal water supplies

The above restriction applies only to Forest Service-initiated activities; activities on Federal lands within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones that are initiated by third parties will continue to be governed by normal consultation procedures and requirements for such activities under the Endangered Species Act.

These clarifications will facilitate our Section 7 Consultation process for the Idaho Roadless Rule. The Access Amendment will be in place for subsequent Section 7 Consultation on Idaho Roadless Rule projects.

Sincerely,

RANOTTA K. MCNAIR
Forest Supervisor

cc: Tom Tidwell, Bradley J Gilbert, Joan E Dickerson