REVISED BIOLOGICAL ASSESSMENT

Effects of the Modified Idaho Roadless Rule on Federally Listed Threatened, Endangered, Candidate, and Proposed Species for Terrestrial Wildlife, Aquatics, and Plants

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I. Introduction

The Endangered Species Act (ESA) requires the U.S. Department of Agriculture (USDA), Forest Service to use its authorities to further the purpose of the ESA (which is to conserve and recover listed species, and conserve the ecosystems upon which they depend) by carrying out programs for the conservation of species listed as threatened or endangered under the ESA [Sec. 7 (a)(1)]. The ESA further requires the Forest Service to consult with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (FWS) on any action authorized, funded, or carried out to insure that the action is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat for such species [Sec. 7 (a)(2)]. This requirement applies to species proposed for listing, and critical habitat proposed to be designated for a listed species as well [Sec. 7 (a)(4)]. To facilitate compliance with these requirements, the action agency (Forest Service) is required to prepare a biological assessment for the purposes of identifying any endangered or threatened species likely to be affected by such actions [Sec. 7 (c)].

Further, Forest Service Manual (FSM) direction (FSM 2671.44) requires the biological assessment (BA) process to conduct and document the program and activities review necessary to ensure that any action authorized, funded, or carried out by the Forest Service is not likely to jeopardize the continued existence of any listed or proposed species or to result in the destruction or adverse modification of critical or proposed critical habitat.

Lastly, a National Memorandum of Agreement for Section 7 Programmatic Planning Consultations and Coordination signed by the Forest Service, Bureau of Land Management (BLM), NMFS and the FWS (August 30, 2000) states the action agencies (Forest Service and BLM) agree to include candidate species in biological assessments/evaluations provided during the plan consultation/conference process.

This document is the Biological Assessment for the Idaho Roadless Rule Final Environmental Impact Statement (EIS). The purpose of this document is twofold: 1) to assess effects of the Modified Idaho Roadless Rule Alternative (Preferred Alternative) on federally listed threatened, endangered, proposed, and candidate (TEPC) species and their habitat; and 2) based on this assessment, determine the need for consultation with the FWS and/or NMFS on the effects of the Preferred Alternative on listed species. It documents the effects of implementing the proposed federal action through the Record of Decision (ROD) on listed plant and animal species, species proposed for listing, designated critical habitat, proposed designated critical habitat, essential fish habitat, and candidates for listing under the ESA (Table I-1).

This proposed federal action represents a programmatic decision, and therefore, will have no direct effects on listed species or their habitats. Any direct effects would occur later at the project level when site-specific decisions are made regarding road construction/reconstruction, timber cutting, sale, or removal, and discretionary mining. All of the effects identified in this analysis would be indirect effects in that they would occur later in time pursuant to this programmatic decision. The ESA determination provided in Sections IV, V, and VI of this BA compares the environmental baseline of each species against activities that could occur, by theme, under the Modified Rule alternative.

Table I-1. List of TEPC Species and Designated Critical Habitat Considered in this Biological Assessment and Determinations Made.

Scientific Name	Common Name	Status	Determination*	Designated Critical Habitat and Determination
Terrestrial Wildlife				
Rangifer tarandus	Woodland Caribou	Endangered	LAA	No
Ursus arctos horribilis	Grizzly Bear	Threatened	LAA	No
Canis lupus	Northern Rocky Mountain Gray wolf	Endangered**	LAA	No
Felis canadensis	Canada lynx	Threatened	LAA	Proposed LAA
Spermophilus brunneus brunneus	Northern Idaho ground squirrel	Threatened	LAA	No
Spermophilus brunneus endemicus	Southern Idaho ground squirrel	Candidate	NE	No
Coccyzus americanus	Western yellow-billed cuckoo	Candidate	LAA	No
Fish				
Oncorhynchus mykiss	Snake River Basin steelhead	Threatened	LAA	Yes LAA
Oncorhynchus nerka	Snake River sockeye salmon	Endangered	LAA	Yes LAA
Oncorhynchus tschawytsha	Snake River fall-run Chinook salmon	Threatened	LAA	Yes LAA
Oncorhynchus tschawytsha	Snake River spring/summer Chinook salmon	Threatened	LAA	Yes LAA
Salvelinus confluentus	Bull trout	Threatened	LAA	Yes – but exempted on NFS lands NLAA
Acipenser transmontanus	Kootenai River white sturgeon	Endangered	NLAA	Yes NLAA
Plants				
Mirabilis macfarlanei	MacFarlane's four-o-clock	Threatened	LAA	No
Spiranthes diluvialis	Ute ladies'-tresses	Threatened	LAA	No
Howellia aquatilis	Water Howellia	Threatened	NE	No
Silene spaldingii	Spalding's silene	Threatened	NE	No
Lepidium papilliferum	Slickpot peppergrass	Threatened	NE	No
Castilleja christii	Christ's Indian paintbrush	Candidate	NLAA	No

** LAA: Likely to adversely affect; NLAA: Not likely to adversely affect; NE: No effect.*

*** Within Idaho, the gray wolf is listed as Endangered north of I-90 and considered a non-essential experimental population south of I-90.*

II. Description of the Federal Action

The final EIS for the Idaho Roadless Rule considers four alternatives: 1) Existing Forest Plans, 2) 2001 Roadless Rule, 3) Proposed Idaho Roadless Rule and 4) Modified Idaho Roadless Rule. This biological assessment documents the potential effects of activities undertaken pursuant to the Modified Idaho Roadless Rule, Alternative 4. Chapter 2 of the final EIS contains a complete description of all the alternatives considered.

Unlike the final EIS, this BA assesses effects of the preferred alternative for the federal action (i.e., Modified Idaho Roadless Rule) only and is not intended to compare alternative management strategies outlined in the four alternatives considered during the environmental impact statement process. This BA discloses in greater detail the effects of implementing the proposed federal action on listed plant and animal species, species proposed for listing, designated critical habitat, proposed critical habitat, essential fish habitat, and candidates for listing under the ESA. This BA is designed to meet Forest Service regulations in FSM 2670 and the ESA.

Purpose and Need

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. There are 250 roadless areas in Idaho totaling 9.3 million acres[1]. The Idaho Roadless Rule integrates local management concerns with the national objectives for protecting roadless area values and characteristics.

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.

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 human use; (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;

[1] There are 250 roadless areas if administrative boundaries are not considered. There are 281 roadless areas, when considered by individual forest.

- 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.

Description of the Project Area

The Modified Idaho Roadless Rule proposes direction for management of roadless areas in Idaho, establishing prohibitions and permissions related to road construction/reconstruction, timber cutting, sale, and removal, and discretionary mining. Consequently, the project area for this federal action consists of Idaho Roadless Areas.

On public lands in Idaho managed by the Forest Service 9,304,300 acres of roadless areas stretch from the Selkirk Mountain on the Canadian border to the Wasatch Range that Idaho shares with Utah. Idaho Roadless Areas occur on twelve National Forests including the Boise, Caribou, Challis, Clearwater, Idaho Panhandle, Kootenai, Nez Perce, Payette, Salmon, Sawtooth, Targhee, and Wallowa-Whitman. Acreages of roadless by forest are listed in Table II-1.

Idaho Roadless Areas are spread across Idaho and encompass a wide variety of terrestrial and aquatic habitats (Figure II-1). There are more roadless acres in Idaho than any other state in the lower 48 states.

Table II-1. Acres of Idaho Roadless Areas 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	736,300
Wallowa-Whitman	35,400
Total	9,304,300

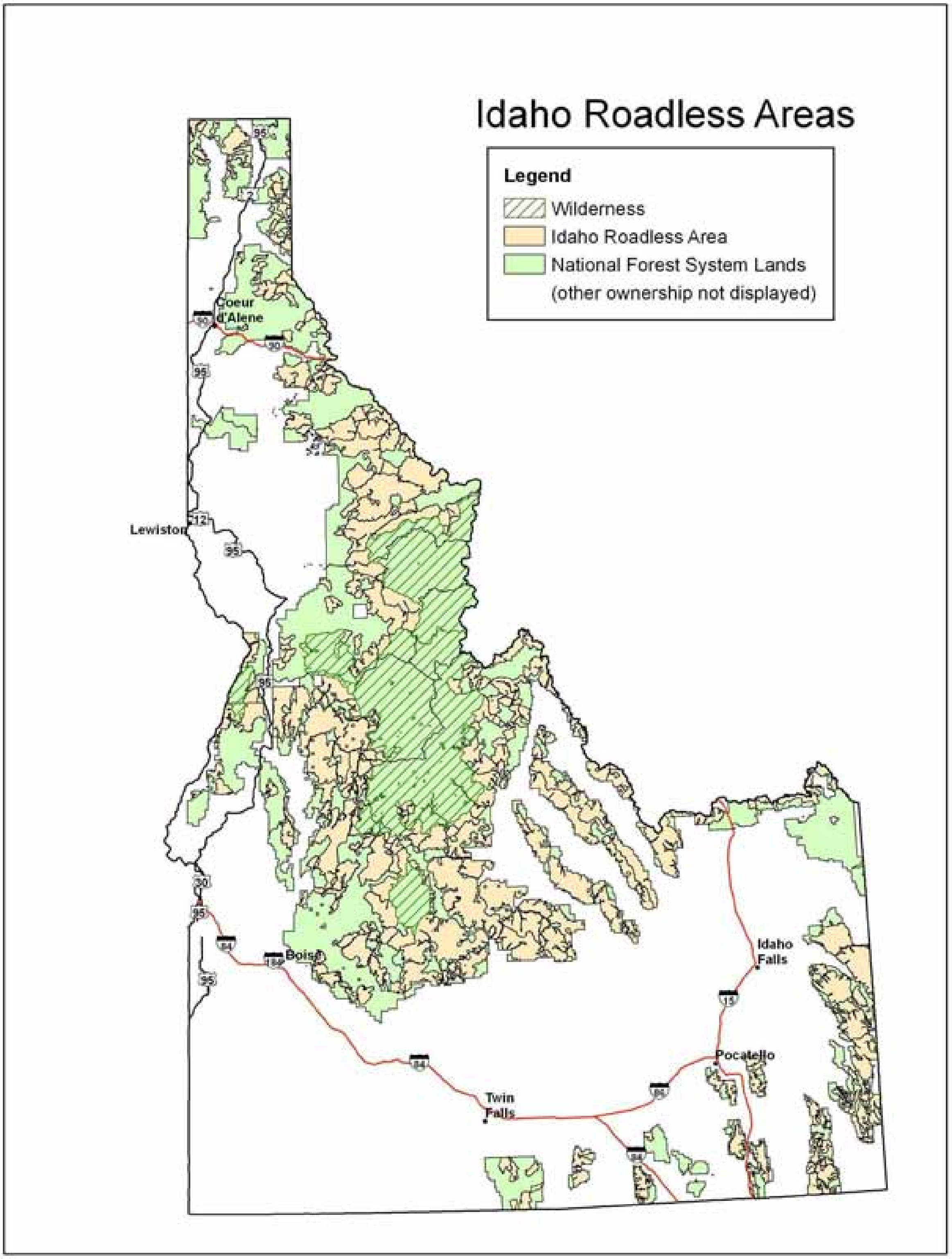

Figure II-1. Idaho Roadless Areas

Modified Idaho Roadless Rule

The Modified Idaho Roadless Rule (Proposed Action) would designate a system of lands called Idaho Roadless Areas and establish five management area themes for individual roadless areas: Wild Land Recreation; Primitive, Special Areas of Historic and Tribal Significance; Backcountry/Restoration; and General Forest, Rangeland, and Grassland. 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 to a specific theme is not intended to mandate or direct the Forest Service 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;
- Mineral activities.

The Proposed Action also provides for the ability to accommodate necessary corrections and modifications in the future such as removing or modifying the designations and management classifications based on changed circumstances or public need. This type of change could only be approved by the Chief of the Forest Service and would require a minimum 45 days public notice and opportunity to comment for all modifications. It is possible that future modifications could result in the need to re-initiate consultation.

The Proposed Action as presented in the draft Environmental Impact Statement was modified based on public comment, including, but not limited to, Tribal government-to-government consultation, recommendations from the Roadless Area Conservation National Advisory Committee (RACNAC), consultation with adjacent states, consultation with other agencies and input from the public at large. The following describes the Modified Idaho Roadless Rule, which is considered the Proposed Action for consultation purposes.

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.

WLR 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.

WLR 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).

WLR 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.

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/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/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;
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, to the extent the trees promote fire-resilient stands;
- Be consistent with applicable land management plan components; and
- Be approved by the Regional Forester.

PRIM/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 Primitive theme.

Timber harvest in Primitive - 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 II-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 II-3). Large trees would be retained.

Timber cutting in Primitive – 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).

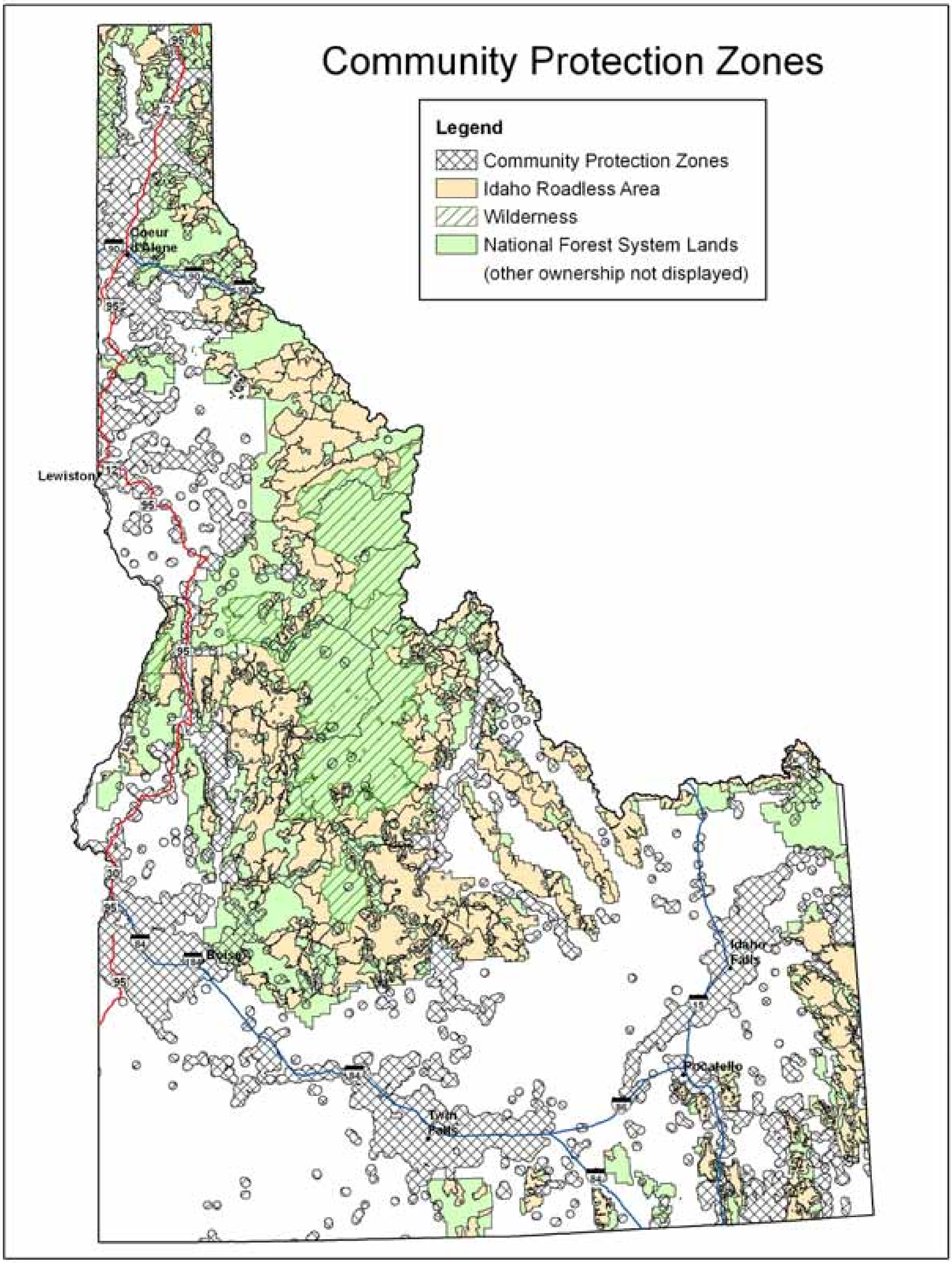

Figure II-2. Overlap of Idaho Roadless Areas with Community Protection Zones

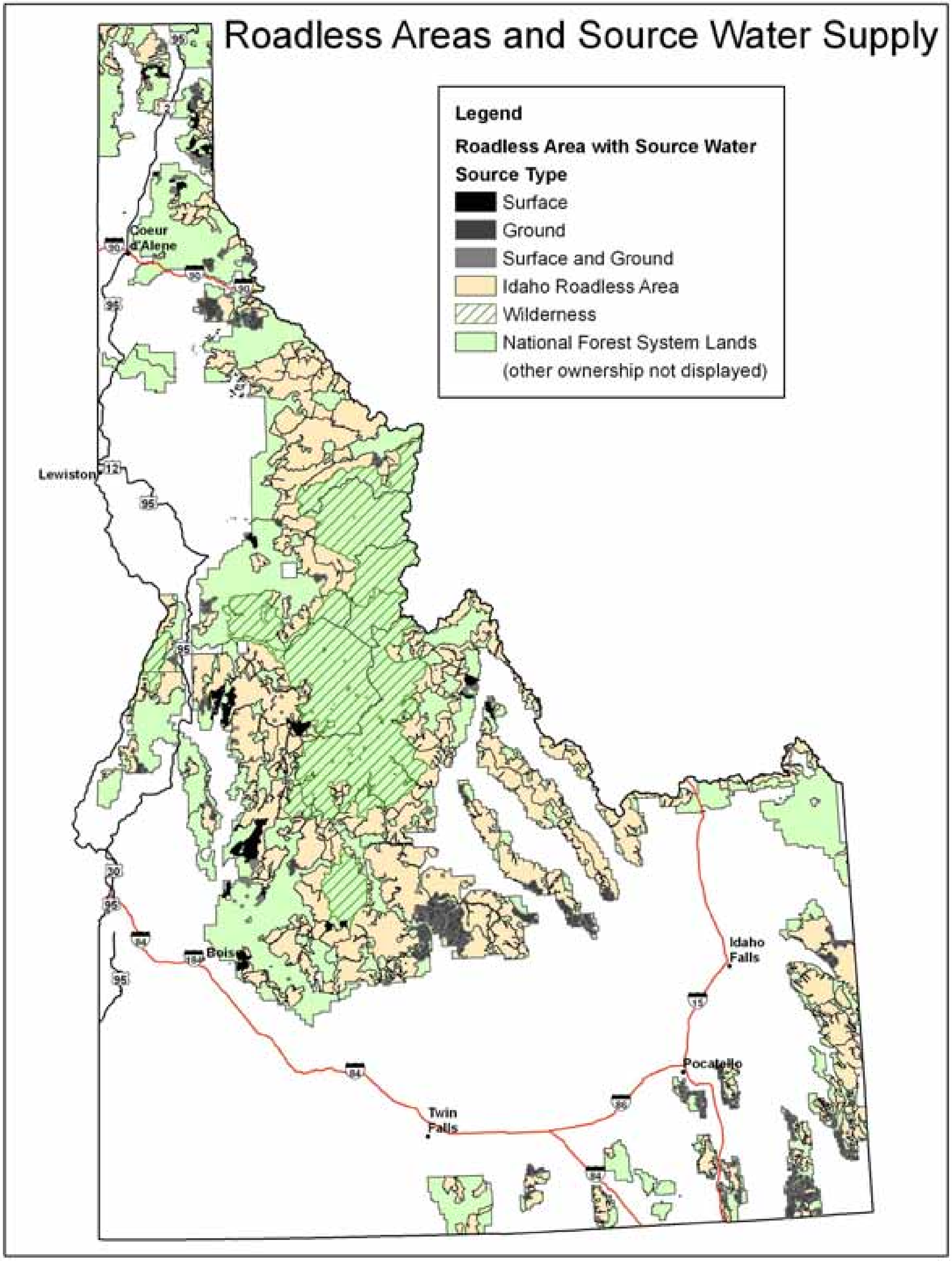

Figure II-3. Overlap of Idaho Roadless Areas with Community Water Supply Systems, Ground and Surface Waters

Backcountry/ Restoration (Backcountry) (BCR)

About 5,312,900 acres are classified as Backcountry, of which about 442,000 acres are within the community protection zone (CPZ).

BCR Road construction/reconstruction. Permissible:

1. Where the Regional Forester determines[2]:
   i. 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;
   ii. 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;
   iii. A road is needed pursuant to statute, treaty, reserved or outstanding rights, or other legal duty of the United States;
   iv. 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;
   v. A road reconstruction 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
   vi. 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 community protection zone 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 community protection zone where:
   i. 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.
   ii. The activity cannot be reasonably accomplished without a temporary road and;
   iii. The activity will maintain or improve one or more roadless area characteristics over the long-term.

[2] Exceptions found in road construction/reconstruction #1 are the same as the 2001 Roadless Rule.

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

1. To reduce hazardous fuel conditions within the community protection zone 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 community protection zone 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 backcountry/restoration, 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. 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.

[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 Backcountry theme are the same as the 2001 Roadless Rule, except the Modified Rule clarifies that prohibitions for surface use and occupancy established in forest plans would apply.

The Forest Service 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 mineral is incidental to activity allowed under this rule.

Assumptions related to activities in the Backcountry theme.

Timber cutting in backcountry in CPZ - would focus on reducing hazardous fuels in the community protection zone [about 442,000 acres of the 5,312,900 acres (8 percent)] of the backcountry. 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 backcountry 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 characteristics 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 Backcountry theme - temporary roads constructed for timber harvest must minimize effects on resources, may only be used for specified purposes, 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.

General Forest, Rangeland, or Grassland (GFRG)

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 on Figure II-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 Forest Service 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 and must be consistent with land management plan components. 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.

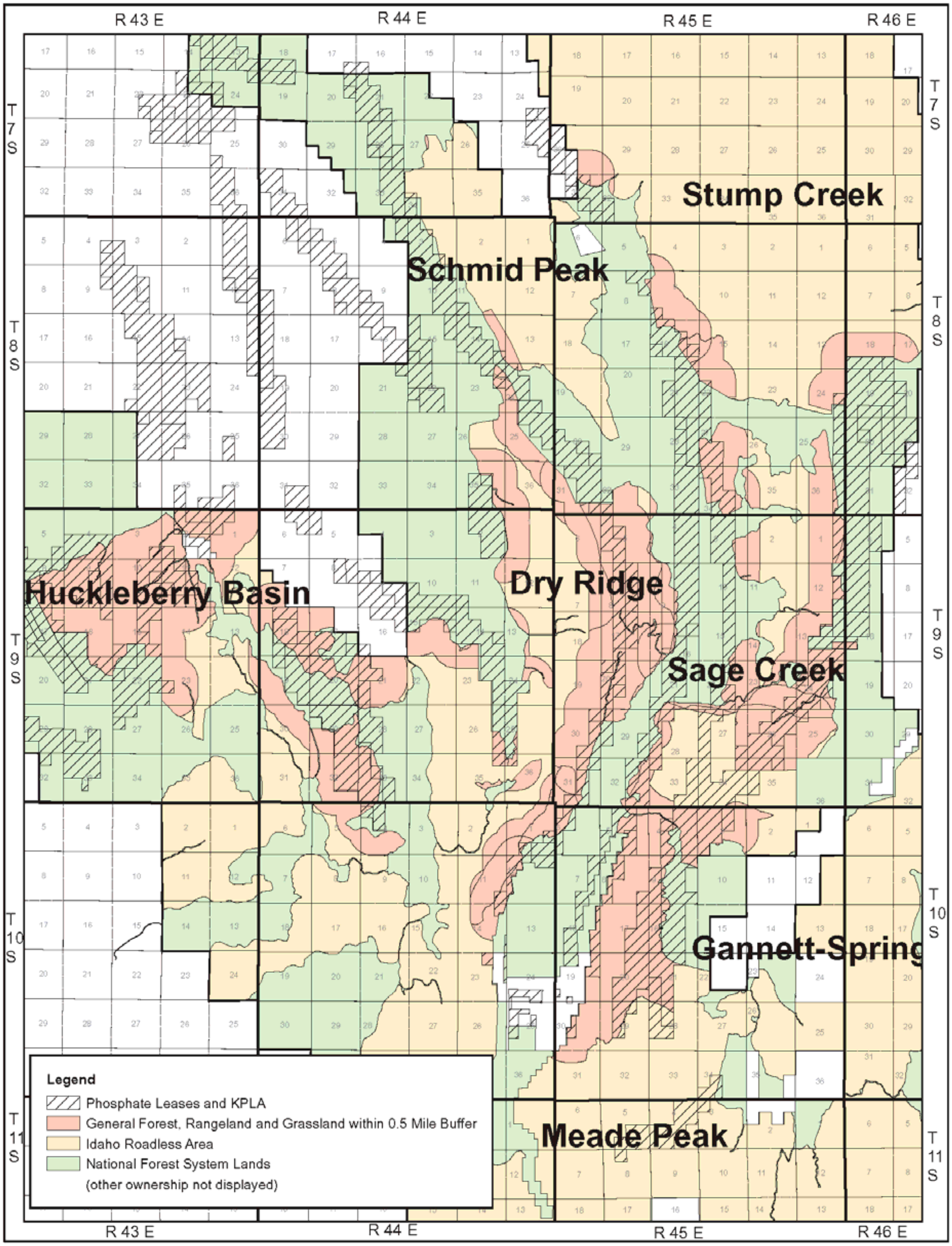

Figure II-4. GFRG where road construction/reconstruction is allowed to access unleased phosphate deposits

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.

Guidance that Applies to all Idaho Roadless Areas

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 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.

Temporary roads must be decommissioned when no longer needed or upon expiration of the contract, or permit, whichever is sooner. Road decommissioning will be required in all such contracts or permits and this provision may not be waived.

Road maintenance

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

Other Forest Plan Special Areas

The Idaho Roadless Rule identified approximately 334,500 acres of roadless areas—such as research natural areas, wild and scenic rivers, special interest areas, developed recreation areas and the like (FEIS Appendix Q, Table 1). These forest plan special areas are included for the sake of completeness; however, the Modified Rule does not recommend management direction for these lands. These areas would be governed by forest plans.

Other Activities in Idaho Roadless Areas

Motorized Travel. Nothing in this 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 this rule shall be construed as affecting existing grazing permits in Idaho Roadless Areas. Future road construction associated with livestock operations shall conform to this rule.

Motorized Equipment and Mechanical Transport. Nothing in this rule shall be construed as expressly or impliedly affecting the current or future management status of the existing use of motorized equipment and mechanical transport in Idaho Roadless Areas.

Grizzly Bear Considerations

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 will shape and guide the actual implementation of this rule. These would include standards for grizzly bear protection, and any necessary consultation with the FWS if any adverse effect to grizzly bear is 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 Forest Service is currently amending its land and resource management plans (LRMP) 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 Record of Decision (ROD) for the Access Amendment is signed (McNair, 2008; see 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 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 ESA.

Administrative Corrections

Correction or modification of designations made pursuant to this rule may occur under the following circumstances:

The Chief of the Forest Service 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.

Modifications

The Chief 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.

Scope and Applicability.

- After [effective date] the rule promulgated on January 12, 2001 (66 F.R. 3244) shall have no effect within the State of Idaho.
- This rule does not revoke, suspend, or modify any permit, contract, or other legal instrument authorizing the occupancy and use of National Forest System land issued prior to [effective date].
- The provisions set forth in this rule 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 Idaho Roadless Areas; as shall those related to protection of threatened and endangered species. This rule does not compel the amendment or revision of any land management plan. Note: We have determined that none of the existing management direction for threatened and endangered species 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 rule does not apply to Forest Plan Special Areas within Idaho Roadless Areas.
- This rule does not revoke, suspend, or modify any project or activity decision made prior to this effective date.
- The prohibitions and permissions set forth in the rule 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 rule or its application to any person or to certain circumstances is held invalid, the remainder of the regulation and their application remain in force.
- This rule 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.

Relationship to Current Guidance and Analysis of the Modified Rule

The analysis in this BA addresses activities that are permitted or prohibited under the proposed action. To provide context for this analysis the following summarizes how the Modified Rule compares to the 2001 Roadless Rule and Existing Plans in order to provide an understanding of how the Proposed Action might alter the current management situation for listed species throughout Idaho. However, this comparison does not impact how ESA effects determinations are made for federally listed species. The ESA determination provided in Sections IV, V and VI of this BA compares the environmental baseline of each species against activities that could occur, by theme, under the Modified Rule alternative.

Table II-2. Number of acres represented by Idaho Roadless Rule themes and equivalent themes for the 2001 Roadless Rule, Existing Plans, Proposed Idaho Roadless Rule, and Modified Idaho Roadless Rule

Theme	2001 Roadless Rule	Existing Plans	Proposed Rule	Modified Rule
Wild Land Recreation	0	1,320,500	1,378,000	1,479,700
Primitive	0	1,904,100	1,652,800	1,772,700
Special Areas of Historic and Tribal Significance	0	0	70,700	48,600
Similar to Backcountry/Restoration*	9,304,300	0	0	0
Backcountry/Restoration Backcountry/Community Protection Zone	0	4,482,000	5,258,700	5,312,900 442,000
General Forest, Rangeland, and Grassland	0	1,263,200	609,600	405,900
Other lands**				
Forest Plan Special Areas (FEIS appendix Q, table Q-1)	0	334,500	334,500	334,500
Totals	9,304,300	9,304,300	9,304,300	9,304,300

**The 2001 Roadless Rule is similar to the Backcountry theme for timber cutting and discretionary mineral activities, except for the allowance for road construction/reconstruction to access phosphate deposits, and the allowance for road construction/reconstruction to facilitate timber cutting in specific situations.*

*** The Idaho Roadless Rule would not apply to these other special areas.*

Relation of the Modified Rule to the 2001 Roadless Rule

In 2001, the Clinton administration adopted the Final 2001 Roadless Rule (USDA Forest Service 2001). The 2001 Roadless Rule was designed to ensure that inventoried roadless areas sustain their values for this generation and for future generations. By sustaining these values, a continuous flow of benefits associated with healthy watersheds and ecosystems was expected.

Timber-cutting activities and road construction/reconstruction were identified as having the greatest likelihood of altering and fragmenting landscapes, and the greatest likelihood of resulting in an immediate, long-term loss of roadless area values and characteristics. The 2001 Roadless Rule was the product of a national process and established management direction at the national level with limited focus on State or local issues. On August 8, 2008, the 2001 Roadless Rule was enjoined (Wyoming vs. USDA, No. 2:07-cv-00017-CAB).

Under the Modified Rule about 847,900 acres (in BCR-CPZ and GFRG themes) would managed under more permissive guidance than the 2001 Roadless Rule. The Modified Rule includes additional prohibitions than the 2001 Roadless Rule in the WLR, PRIM and SAHTS themes (3,251,000 acres). Under the Modified Rule about 4,870,900 acres (Backcountry outside of CPZ) would be managed generally the same as the 2001 Roadless Rule.

Both the Modified Rule in BCR outside of CPZ and the 2001 Roadless Rule include six exceptions that allow road building in roadless areas. The Modified Rule does not include the 2001 Roadless Rule exception (#7) related to continuation, extension, or renewal of a mineral lease on lands that are under lease because this is addressed separately under the requirements for accessing discretionary mineral and energy resources.

Table II-2 describes each theme's management emphasis and the number of acres represented by that theme, by alternative. To account for all acreage identified as a roadless area, the table lists other forest plan special areas (FPSA), which would be guided by applicable existing and future forest plan direction.

Relation of the Modified Rule to the Existing Forest Plans

The Modified Rule 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 Modified Rule (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, southwest Idaho Group Forest-wide requirements, the Final Conservation Strategy for the Grizzly Bear in the Greater Yellowstone Area, the Northern Rockies Lynx Amendment, or other species-specific direction.

In addition, we have reviewed the management direction in existing plans and associated amendments that provide species-specific management direction. We have determined that none of the species-specific standards and guidelines are inconsistent with the Modified Rule; therefore they would be applied during project implementation.

The Modified Rule would prohibit road construction on 3,251,000 acres (WLR, Primitive, and SAHTS), as compared to 3,224,600 acres in Existing Plans. Road construction (permanent and temporary) is generally permitted under Existing Plans in prescriptions equivalent to the Backcountry theme (4,482,000 acres). Under the Modified Rule only temporary road construction would be permitted to facilitate timber cutting in the Backcountry 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 Plans that allow most activities to occur (Table II-2). These areas are generally equivalent to the GFRG theme in the Modified Rule. In the Modified Rule there are 405,900 acres in GFRG where timber cutting and road construction would be allowed (Table II-2). The Modified Rule precludes road construction/reconstruction to access new mineral leases in the GFRG theme except that related to assessing phosphate deposits at illustrated in Figure II-4.

There are portions of several roadless areas, listed below, where the management direction in the Modified Rule would be more permissive than in the existing forest plans. In these areas the Modified Rule is inconsistent with the existing forest plan and the Modified Rule 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, Southwest Idaho Group Forest-wide requirements; grizzly bear or lynx requirements because these provide species-specific direction and are not inconsistent with the Modified Rule. These areas include the following:

- Boise/Payette National Forests, *Poison Creek* Roadless Area, 5,300 acres; this area is in a prescription that prohibits road construction except to access outstanding existing rights, but is in the Backcountry CPZ.
- Clearwater National Forest, *Moose Mountain*; 160 acres are in the Backcountry CPZ where temporary roads could be constructed. No road construction is permitted in the Existing Plan on these 160 acres.
- Idaho Panhandle National Forest; the following roadless areas have lands in the Backcountry CPZ where temporary roads could be constructed. No road construction is permitted in the Existing 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 Backcountry CPZ where temporary roads could be constructed. No road construction is permitted in the Existing 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 Backcountry CPZ where temporary roads could be constructed. No road construction is permitted in the Existing Plan on these 200 acres.
- Challis National Forest, *Railroad Ridge*; 300 acres are in Backcountry CPZ where temporary roads could be constructed. The Existing Plan permits road construction for mineral activities, but does not anticipate timber harvest, or road construction would occur.

There are five instances where the Modified Rule 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 Wild Land Recreation 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 Plans no roads could be constructed in these areas, nor would timber harvest occur. Under the Modified Rule, roads would not be constructed in areas that are in the Primitive theme, but could be constructed in the Backcountry theme and timber cutting could occur in both themes.

- *Boulder-White Clouds:* Existing plans 194,100 acres, Modified Rule 231,300 acres, net gain 37,200 acres. All areas not included in the Wild Land Recreation theme are in Primitive.
- *Mallard-Larkins:* Existing Plans 141,600 acres; Modified Rule 131,200 acres. The portion on the Clearwater National Forest is Primitive (6,400 acres) and the Idaho Panhandle National Forest is Backcountry (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 Plans* 25,400 acres; Modified Rule 42,000 acres – but includes a different set of lands than existing plans (about 7,000 acres is in Backcountry)
- *Scotchman Peaks: Existing Plans* 9,800 acres; Modified Rule 10,800 acres – but includes a different set of lands than existing plans (about 1,300 acres is in Backcountry)
- *Winegar Hole:* Existing Plans, 2600 acres. Modified Rule all 2,600 acres in Primitive.

Definitions

At-risk Community: As defined under section 101 of the Healthy Forests Restoration Act (HFRA) the term "at risk-community" means an area:

(a) that is comprised of:

(1) an interface community as defined in the notice entitled "Wildland Urban Interface Communities Within the Vicinity of Federal Lands That Are at High Risk From Wildfire" issued by the Secretary of Agriculture and the Secretary of the Interior in accordance with Title IV of the Department of the Interior and Related Agencies Appropriations Act, 2001 (114 Stat. 1009) (66 Fed. Reg. 753, January 4, 2001); or

(2) a group of homes and other structures with basic infrastructure and services (such as utilities and collectively maintained transportation routes) within or adjacent to Federal land;

(b) in which conditions are conducive to a large-scale wildland fire disturbance event; and

(c) for which a significant threat to human life or property exists as a result of a wildland fire disturbance event.

Community Protection Zone: An area extending ½ mile from the boundary of an at-risk community; or an area within 1 ½ miles of the boundary of an at-risk community, where any land (1) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community; (2) has a geographic feature that aids in creating an effective fire break, such as a road or a ridge top; or (3) is in condition class 3 as defined by HFRA.

Fire hazard and risk: The fuel conditions on the landscape.

Fire occurrence: The probability of wildfire ignition based on historic fire occurrence records and other information.

Forest Road: As defined at 36 CFR 212.1, a "forest road" means a road wholly or partly within or adjacent to and serving the National Forest System that the Forest Service determines is necessary for the protection, administration, and utilization of the National Forest System and the use and development of its resources.

Forest type: A forest stand that is essentially similar throughout its extent in composition under generally similar environmental conditions. It includes temporary, permanent, climax, and cover types.

Idaho Roadless Areas: Areas designated pursuant to this rule and identified in a set of maps maintained at the national headquarters office of the Forest Service.

Municipal Water Supply System: As defined under section 101 of the Healthy Forests Restoration Act, the term "municipal water supply system" means the reservoirs, canals, ditches, flumes, laterals, pipes, pipelines, and other surface facilities and systems constructed or installed for the collection, impoundment, storage, transportation, or distribution of drinking water.

Responsible Official: The Forest Service line officer with the authority and responsibility to make decisions about protection and management of Idaho Roadless Areas pursuant to this subpart.

Road: As defined at 36 CFR 212.1, a "road" means a motor vehicle route over 50 inches wide, unless identified and managed as a trail.

Road construction and reconstruction: As defined at 36 CFR 212.1, "road construction or reconstruction" means supervising, inspecting, actual building, and incurrence of all costs incidental to the construction or reconstruction of a road.

Road Decommissioning: As defined in 36 CFR 212.1, "road decommissioning" means activities that result in the stabilization and restoration of unneeded roads to a more natural state.

Road maintenance: The ongoing upkeep of a road necessary to retain or restore the road to the approved road management objective.

Road realignment: Activity that results in a new location of an existing road or portions of an existing road, and treatment of the old roadway.

Roadless characteristics: Resources or features that are often present in and characterize Idaho Roadless Areas, including:

(a) High quality or undisturbed soil, water, and air;

(b) Sources of public drinking water;

(c) Diversity of plant and animal communities;

(d) Habitat for threatened, endangered, proposed, candidate, and sensitive species, and for those species dependent on large, undisturbed areas of land;

(e) Primitive, semi-primitive non-motorized, and semi-primitive motorized classes of dispersed recreation;

(f) Reference landscapes;

(g) Natural appearing landscapes with high scenic quality;

(h) Traditional cultural properties and sacred sites; and

(i) Other locally identified unique characteristics.

Substantially altered portion: An area within an Idaho Roadless Area where past road construction, timber cutting, or other uses have materially diminished the area's roadless character.

Temporary road: As defined at 36 CFR 212.1, a "temporary road" is a road necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road and that is not included in a forest transportation atlas.

Timber Cutting: Timber cutting is used in this BA means any cutting of any trees for management purposes. Timber cutting is a broad term and includes timber harvest (removal of commercial products) as well as other actions that result in t he cutting of a tree with no removal of a commercial product – such as slashing, chipping, mulching, precommercial thinning, or personal use firewood.

Timber Harvest: The process by which trees with commercial value are cut and removed from the forest to meet management objectives.

Uncharacteristic wildland fire effects: An increase in wildland fire size, severity, and resistance to control; and the associated impact on people, property, and fire fighter safety, compared to that which occurred in the native ecosystem (2006 Cohesive Strategy).

Assumptions

Numbers used in this report:

- Idaho contains 52,961,000 total acres (Curley et al. 2004)
- 7 percent or 4,005,653 acres is in 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

Assumptions - General

The Modified Idaho Roadless Rule 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 this Rule 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.

Road construction, reconstruction, and timber harvest in Idaho Roadless areas over the past five years has been minimal and has not resulted in a change to the roadless character of the Idaho Roadless Areas (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 Idaho Roadless Areas 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 II-3 and II-4 are not included in the proposed action but are provided to help with understanding the anticipated scope of actions that could occur under the Modified Idaho Roadless Rule given the permissions and prohibitions included in this alternative. These projections are based on what occurred or what was projected to occur in Idaho Roadless Areas prior to the 2001 Roadless Rule (under Existing Plans) and modified based on the permissions and prohibitions under the Modified Rule; therefore these projections account to some degree fluctuating budgets and differing priorities for vegetative treatments.

Table II-3. Projected Timber Cutting - Modified Idaho Roadless Rule

	Projected Timber Cutting
timber harvest yearly average (MMBF)	5.04
timber harvest yearly average (acres)	1,000
Timber harvest over planning horizon 15 years (acres)	15,000

Table II-4. Projected road construction/reconstruction - Modified Idaho Roadless Rule

	Projected road construction/ reconstruction activities; yearly average
Permanent - other	0.8
Temporary - other	0.2
Reconstruction - other	0.0
Total	1.0
Permanent – timber	0.0
Temporary – timber	1.2
Reconstruction - timber	1.1
Total	2.3
Grand totals- yearly average	
Permanent total	0.8
Temporary total	1.4
Reconstruction Total	1.1
Total	3.3

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 1 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 II-4).
- 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 Comprehensive Environmental Response, Compensation, and Liability Act (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 Idaho Roadless Areas (Table II-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 II-5. Miles of roads 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 (USDA Forest Service 2000). 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 (USDA Forest Service 2006).

Assumptions – Discretionary Minerals

Discretionary minerals activities under the Modified Rule 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 Backcountry 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 Idaho Roadless Areas and past experience of no directional drilling; (2) the amount of geothermal resources outside of Idaho Roadless Areas 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 Modified Rule 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.

III. Consultation History

The consultation record provides a useful point of reference for determining the effects of implementing the proposed action on listed species. The existing Forest Plans and the 2001 Roadless Rule have undergone consultation in some form (i.e., informal or formal) with the USFWS and NMFS. Under the 2001 Roadless Rule, the Services determined that the action 'May affect but is not likely to adversely affect', federally listed species, with the anticipated impacts as beneficial to listed species due to the additional restrictions imposed on activities in inventoried roadless areas in comparison to existing Forest Plans. Forest Plans were consulted upon individually (with the exception of the Southwest Idaho Ecogroup (SWIEG) – Boise, Payette, and Sawtooth NFs), most of which were anticipated to result in some adverse impacts to listed species.

- Boise - 2003
- Payette -2003
- Sawtooth – 2003
- Caribou-Targhee
  - Caribou – 2003
  - Targhee - 1997
- Salmon-Challis - 1987
- Idaho Panhandle – 1987
- Clearwater – 1987
- Nez Perce – 1987
- Wallowa-Whitman – 1990

Consultation for this Idaho Roadless Rule effort has followed portions of the guidance for consultation on programmatic level proposals outlined in the August 30, 2000, National Memorandum of Agreement (MOA) signed by the BLM, Forest Service, NMFS, and the FWS (USDA Forest Service, USDI BLM, US Dept. of Commerce NMFS, and USDI FWS 2000).

The following individuals from FWS and NMFS are actively involved in informal discussions or have provided correspondence during the Idaho Roadless Rule Project planning:

Suzanne Audet, USFWS, Biologist, Spokane, Washington.

Dale Brege, NMFS, Fish Biologist, Grangeville, Idaho

Jeff Foss, USFWS, Field Supervisor, Boise, Idaho

Bryon Holt, USFWS, Biologist, Spokane, Washington

Ted Koch, USFWS, Biologist, Boise, Idaho

Bill Lind, NMFS, Fish Biologist, Boise, Idaho

David Mabe, NMFS, State Director, Boise, Idaho

Paul Moroz, USFWS, Consultant

Michael Morse, USFWS, Branch Chief - Environmental Contaminants, Boise, Idaho

Johnna Roy, USFWS, Biologist, Boise, Idaho

Meetings, Conference Calls, and Correspondence

Following is a summary of meetings and correspondence primarily between the Forest Service, FWS and NMFS in the course of this consultation. Initial discussions with the FWS and the NMFS began in June 2007 to discuss consultation needs for the Idaho Roadless Rule effort, as well as to discuss those species that needed to be included in the consultation.

June 21, 2007	Conference call to discuss the Idaho Roadless Rule alternatives and possible approaches to consultation. Participants in the call included David Mabe, NMFS (Boise, ID); Bill Lind, NMFS (Boise, ID); Ted Koch, USFWS (Boise, ID); Danielle Chi, FS (Ogden, UT); and Ann Carlson, FS (Missoula, MT).
February 7, 2008	Conference call to discuss the upcoming changes to the Idaho Roadless Rule preferred alternative including the bifurcation of the BCR theme into BCR and BCR CPZ. Participants included Bill Lind, NMFS (Boise, ID); Dale Brege, NMFS (Grangeville, ID); Michael Morse, USFWS (Boise, ID); Johnna Roy, USFWS (Boise, ID); Brad Gilbert, FS (Coeur d'Alene, ID); Joan Dickerson, FS (Missoula, MT); Danielle Chi, FS (Ogden, UT); Teresa Prendusi, FS (Ogden, UT); Ann Carlson, FS (Missoula, MT); and Shanda Dekome, FS (Coeur d'Alene, ID).
May 5-8, 2008	Meeting in Ogden, Utah with the Idaho Roadless IDT and representatives from USFWS and NMFS. Discussed the Modified Idaho Roadless Rule, assumptions, projections and possible avenues for consultation. Reviewed species information and BA needs for the FEIS. Participants included Dale Brege, NMFS (Grangeville, ID), Johnna Roy, USFWS (Boise, ID); Paul Moroz, USFWS Contractor; Brad Gilbert, FS (Coeur d'Alene, ID); Joan Dickerson, FS (Missoula, MT); Ken Karkula FS (Washington DC); Danielle Chi, FS (Ogden, UT); Teresa Prendusi, FS (Ogden, UT); Ann Carlson, FS (Missoula, MT).
May 9, 2008	Conference call to discuss the level of analysis needed for the BA and what USFWS and NMFS 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 (Grangeville, ID), Johnna Roy, USFWS (Boise, ID); Paul Moroz, USFWS Contractor; Danielle Chi, FS (Ogden, UT); Teresa Prendusi, FS (Ogden, UT); and Ann Carlson, FS (Missoula, MT).
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 T & E anadromous fish. Participants included Dale Brege, NMFS (Grangeville, ID), Paul Moroz, USFWS Contractor; Dave Schoen, FS (Orofino, ID); and Ann Carlson, FS (Missoula, MT). By phone: Johnna Roy, USFWS (Boise, ID); Danielle Chi, FS (Ogden, UT); and Shanda Dekome, FS (Coeur d'Alene, ID).

May 20-21, 2008	Meeting in Boise, Idaho to discuss approaches to consultation and analysis of effects to terrestrial T & E species. Participants included Johnna Roy, USFWS (Boise, ID); Suzanne Audet, USFWS (Spokane, WA); Bryon Holt, USFWS (Spokane, WA); Michael Morse, USFWS (Boise, ID); Paul Moroz, USFWS Contractor; Danielle Chi, FS (Ogden, UT); and by phone: Larry Salata, USFWS (Portland, OR); Mark Wilson, USFWS (Spokane, WA); Dale Brege, NMFS (Grangeville, ID); and Ann Carlson, FS (Missoula, MT).
May 23, 2008	Letter from the Forest Service to the USFWS Boise and Spokane Offices requesting species lists for the Idaho Roadless 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 Modified Idaho Roadless Rule section 7 consultation to date. Paul receives lap-top computer, other hardware and printed documents as requested. Participants included Brad Gilbert, FS (Coeur d'Alene, ID); Joan Dickerson, FS (Missoula, MT); Paul Moroz, USFWS Contractor (Grangeville, ID).
June 4, 2008	Technical assistance letter (14420-2008-TA-0416) and species lists (14420-2008-SL-0356 and 14420-2008-SL-0357) from the FWS Office (Boise) to the FS Regional Office (Missoula) for the proposed Modified Idaho Roadless Rule.
June 5, 2008	Conference call regarding draft biological assessment determinations of effects for listed species and considerations of options for section 7 consultation for Modified Idaho Roadless Rule. Participants included Brad Gilbert, FS (Coeur d'Alene, ID); Joan Dickerson, FS (Missoula, MT); Vince deWitt, OGC (Washington DC); Eric Nagle (USFWS, Portland); Johnna Roy, USFWS (Boise, ID); Suzanne Audet, USFWS (Spokane, WA); Bryon Holt, USFWS (Spokane, WA); Danielle Chi, FS (Ogden, UT); Paul Moroz, USFWS Contractor; Larry Salata, USFWS (Portland, OR); Rich Torquemada, USFWS (Spokane, WA); Jeff Foss, USFWS (Boise, ID); Dale Brege, NMFS (Grangeville, ID); and Ann Carlson, FS (Missoula, MT).
June 11, 2008	Species list (SP #1-9-08-SP-0067) for the Final Environmental Impact Statement (FEIS) for the Idaho Roadless Rule was received from the FWS Office, Spokane, Washington.

June 23, 2008	Meeting in Boise, Idaho to have managers and biologists reach a shared understanding of the Modified Idaho Roadless Rule proposed action and preliminary effect determinations for listed species. Also discussed section 7 consultation pathways and time lines. Participants included Johnna Roy, USFWS (Boise, ID); Mark Robertson USFWS (Boise, ID); Bryon Holt, USFWS (Spokane, WA); Jeff Foss, USFWS (Boise, ID); Larry Salata, USFWS (Portland, OR); David Mabe, NMFS, (Boise, ID); Dale Brege, NMFS (Grangeville, ID); Paul Moroz, USFWS Contractor; Tom Perry (Idaho Governor's Office); Tom Tidwell (Missoula, MT), FS; Danielle Chi, FS (Ogden, UT); Bradley Gilbert, FS (Coeur d'Alene, ID); Joan Dickerson, FS (Missoula, MT); and Ann Carlson, FS (Missoula, MT). By phone Doug Laye, USFWS (Chubbuck, ID); Sandi Arena, USFWS (Chubbuck, ID).
July 18, 2008	Forest Service Regions 1 & 4 receive separate Semi-annual Species List Update Addendums (14420-2008-SL-0448 & 14420-2008-SL-0449 respectively) from the USFWS adding slickspot peppergrass as proposed for listing as endangered to each Region's species list.
July 18, 2008	U.S. Federal District Court in Missoula, Montana issued a preliminary injunction that immediately reinstated the ESA protections for gray wolves in Montana, Idaho, and Wyoming, the eastern-third of Washington and Oregon and portions of north-central Utah.
July 21-22, 2008	The FWS informs the Forest Service of the preliminary injunction that immediately reinstated the ESA 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 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) FWS review timeline for the draft BA to be submitted electronically by the FS to the USFWS. Participants included Johnna Roy, USFWS (Boise, ID); Bryon Holt, USFWS (Spokane, WA); Paul Moroz, USFWS Contractor; Suzanne Audet, USFWS (Spokane, WA); and Danielle Chi, FS (Ogden, UT).

July 30, 2008	Conference call to provide MIRR project 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: Johnna Roy, USFWS (Boise, ID); David Mabe, NMFS, (Boise, ID); Dale Brege, NMFS (Grangeville, ID); Rich Torquemada, USFWS (Spokane, WA); Suzanne Audet, USFWS (Spokane, WA); Jeff Foss, USFWS (Boise, ID); Eric Nagle USFWS (Portland, OR); Paul Moroz, USFWS Contractor; Tom Perry, Idaho Governor’s Office (Boise, ID); Danielle Chi, FS (Ogden, UT); Teresa Prendusi, FS (Ogden, UT); Bradley Gilbert, FS (Coeur d’Alene, ID); Joan Dickerson, FS (Missoula, MT); Shanda Dekome, FS (Coeur d’Alene, ID); and Ann Carlson, FS (Missoula, MT).
August 5, 2008	Conference call to provide Consultation Tech. Team update and discussion on status of grizzly bear environmental baseline letter for Idaho Panhandle National Forest. Conference call participants included: Johnna Roy, USFWS (Boise, ID); Jeff Foss, USFWS (Boise, ID); Rich Torquemada, USFWS (Spokane, WA); Suzanne Audet, USFWS (Spokane, WA); Larry Salata, USFWS (Portland, OR); Paul Moroz, USFWS Contractor; Danielle Chi, FS (Ogden, UT); Bradley Gilbert, FS (Coeur d’Alene, ID); Joan Dickerson, FS (Missoula, MT); and Shanda Dekome, FS (Coeur d’Alene, ID).
August 7, 2008	Idaho Panhandle National Forest issues letter to clarify the environmental baseline for grizzly bear management in Idaho Roadless Areas (Panhandle & Kootenai N.F.) for MIRR. Letter received by USFWS on August 11, 2008.
August 11, 2008	Consultation Technical Team conference call held to discuss USFWS comments on 2nd draft MIRR BA, conference/consultation for candidate species and grizzly bear letter from Idaho Panhandle N.F. Conference call participants included Johnna Roy, USFWS (Boise, ID); Suzanne Audet, USFWS (Spokane, WA); Paul Moroz, USFWS Contractor; Danielle Chi, FS (Ogden, UT); Teresa Prendusi, FS (Ogden, UT); and Ann Carlson, FS (Missoula, MT).
August 21, 2008	Conference call with Consultation Tech. Team to discuss the major tasks ahead and timeline for the BA and BOs. BA will be signed next week (8/27/08). FWS (Boise) developed a work schedule to get the FWS BO work done. Conference call participants included: Johnna Roy, USFWS (Boise, ID); Jeff Foss, USFWS (Boise, ID); Mark Robertson USFWS (Boise, ID); Sandra Brewer, USFWS (Boise, ID); Rich Torquemada, USFWS (Spokane, WA); Suzanne Audet, USFWS (Spokane, WA); Bryon Holt, USFWS (Spokane, WA); Larry Salata, USFWS (Portland, OR); Paul Moroz, USFWS Contractor; Dale Brege, NMFS (Grangeville, ID); David Mabe, NMFS (Boise, ID); Danielle Chi, FS (Ogden, UT); Bradley Gilbert, FS (Coeur d’Alene, ID); Ann Carlson, FS (Missoula, MT); and Teresa Prendusi, FS (Ogden, UT).

IV. Effects of the Modified Idaho Roadless Rule on Federally Listed Aquatic Species

Background

Federally listed threatened and endangered aquatic species that occur in Idaho include Snake River Basin steelhead, Snake River spring/summer Chinook salmon, Snake River fall-run Chinook salmon, Snake River sockeye salmon, bull trout, and Kootenai River white sturgeon (Table IV-1).

Table IV-1: Aquatic threatened and endangered species with ranges overlapping Idaho Roadless Areas

Species	Status	Boise	Caribou	Challis	Clearwater	Idaho Panhandle	Nez Perce	Payette	Salmon	Sawtooth	Targhee
Fish											
Snake River Basin Steelhead *(Oncorhynchus mykiss)*	T	X		X	X		X	X	X	X	
Snake River Sockeye salmon *(Oncorhynchus nerka)*	E			X			X	X	X	X	
Snake River fall-run Chinook salmon (*Oncorhynchus tshawytscha)*	T						X	X			
Snake River spring/summer Chinook salmon (*Oncorhynchus tshawytscha)*	T	X		X	X		X	X	X	X	
Bull trout (*Salvelinus confluentus*)	T	X		X	X	X	X	X	X	X	
Kootenai River white sturgeon (*Acipenser transmontanus)*	E					X					

Information Used

Information on critical habitat and essential habitat features, and the biological requirements, distribution, factors leading to decline, population trends, status, etc., for T&E fish species exists in numerous documents including:

- Federal Register final rules for the species listings and critical habitat.
- Status reviews for steelhead and salmon species, available on the NMFS website at http://www.nwr.noaa.gov/
- Review of bull trout, available on the FWS website at http://www.fws.gov/pacific/bulltrout/and Kootenai River white sturgeon available on the FWS website at http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=E087

- Idaho Comprehensive Wildlife Conservation Strategy (Idaho Department of Fish and Game 2005).
- Inland Native Fish Strategy: Interim strategies for managing fish-producing watersheds in Eastern Oregon and Washington, Idaho, Western Montana, and portions of Nevada (INFISH) (USDA, Forest Service 1995).
- Interim Strategy for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California, (PACFISH) (USDA, Forest Service and USDI, Bureau of Land Management 1995).
- Biological Opinion for the effects to bull trout from continued implementation of land and resources management plans and resource management plans as amended by the Interim Strategy for Managing Fish Producing Watersheds in Eastern Oregon, 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) (USDI, Fish and Wildlife Service 1998a).
- Biological Opinion: Land and resource management plans for National Forests and Bureau of Land Management resource areas in the Upper Columbia River Basin and Snake River Basin evolutionary significant units (USDC, NOAA-NMFS 1998).
- Making ESA Determinations of Effect for Individual or Grouped actions at the Watershed Scale. (USDC, NOAA-NMFS 1996).
- An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins Volume III (Lee et al. 1997).
- Forest Ecosystem Management: An Ecological, Economic, and Social Assessment report of the Forest Ecosystem Management Assessment Team, (FEMAT) (USDA et al. 1993).
- Current literature – see References cited section.

Analysis Process Used

Threatened and endangered (T&E) fish characteristics considered in this analysis included both characteristics important for species sustainability and ecosystem integrity. Fish species key characteristics included: Range of the species in Idaho, T&E species designated critical habitat, Essential Fish Habitat (EFH), native fish strongholds, native fish priority watersheds, bull trout core areas, and bull trout key recovery habitat. In addition, characteristics of habitat integrity (e.g. water quality, channel processes, sediment regime, instream flows, riparian vegetation) were considered in relation to the MIRR alternative.

Aquatic Assumptions and Conservation Rules of Thumb Considered During Analysis

- Areas with low road densities are better for aquatic resources than areas with higher road densities.
- Areas with more ground cover are better for aquatic resources because they have less surface erosion and lower sedimentation in aquatic habitats. Ground cover is often reduced from road construction, road reconstruction, timber cutting and minerals activities.
- The larger the fish population’s size, the greater the chance of persistence.

- Interconnected fish populations that form a metapopulation are more likely to survive disturbances than fragmented isolated populations.
- Recovery potential is greater the closer you are to a source population.
- Preserving genetic and phenotypic diversity requires maintaining populations through a wide geographic range in a variety of habitats.

Questions Utilized to Determine Effects to Aquatic Species and Their Habitat

1. What T&E fish species are present, and what is the overlap between the species range and Idaho Roadless Areas (IRAs)?
2. What are the themes within the areas of overlap? Is there a fairly high percentage of overlap between the more permissive themes and the species? Is there a fairly high percentage of overlap between the more permissive themes and fish strongholds, priority watersheds, bull trout core areas and/or key recovery habitat?
3. For IRAs that provide larger areas (acres) of habitat for a species what are the themes within those IRAs? Is there a fairly high percentage of overlap between the more permissive themes and these larger areas?
4. What is the overlap between the species critical habitat (including EFH) and IRAs?
5. What are the themes within the areas of overlap? Is there a fairly high percentage of overlap between the more permissive themes and critical habitat (including EFH)?
6. For species that have fish strongholds and/or priority watersheds identified, what is the overlap with IRAs?
7. For bull trout what is the overlap between IRAs, core areas, and key recovery habitat?
8. What is the overlap between the species range and Idaho Roadless Areas (IRAs)?
9. For IRAs that provide habitat for multiple T&E fish species what are the themes within those areas of overlap? Is there a fairly high percentage of overlap between the more permissive themes and these areas that contribute to high T&E fish species diversity?
10. What is the current population trend for the species?
11. What potential effects and pathways could projects have that will now be authorized under the MIRR?

Tribal Values

The fisheries resources in Idaho are very important for several Tribes. In Idaho, there are five federally-recognized Tribes: Coeur d'Alene, Kootenai, Nez Perce, Shoshone-Bannock, and Shoshone-Paiute. The Tribes rely on the fisheries resources for subsistence and spiritual values.

The Federal government maintains a special trust relationship with Indian Tribes pursuant to treaties, statutes, Executive Orders, judicial decisions and other legal instruments.

The Forest Service and Indian Tribes have a common policy of conserving native fish species and the ecosystems upon which they depend. Indian lands are not federal public lands or part of the public domain, and are not subject to federal public land laws. They were retained by Tribes or were set aside for tribal use pursuant to treaties, statutes, judicial decisions, executive orders or agreements. These lands are managed by Indian Tribes in accordance with tribal goals and objectives, within the framework of applicable laws.

The Forest Service works closely with Idaho Tribes, honoring their rights as sovereign nations, and working on a government-to-government level to conserve, protect and enhance fish and their habitats.

General Aquatic Species Information

Table IV-2 displays acres of threatened and endangered fish species range in Idaho and the percent overlap of the range with the Idaho Roadless Areas.

Table IV-2: Acres of threatened and endangered fish species range in Idaho and percent overlap with Idaho Roadless Areas

Species	Acres of species range in Idaho	Acres of species range in Idaho Roadless Areas	Percent of species range that overlaps Idaho Roadless Areas
Snake River Basin Steelhead	11,533,800	3,313,800	27
Snake River spring/summer Chinook	10,512,900	2,980,900	28
Snake River fall-run Chinook	790,400	40,300	5
Snake River Sockeye	1,655,700	346,800	21
Bull trout	16,746,400	5,581,700	33
Kootenai River white sturgeon	167,800	16,000	10

All Idaho Roadless Areas that support threatened and endangered fish species are listed in Appendix A, Table A-1.

Evolutionarily Significant Units and Distinct Population Segments within the Action Area

The NMFS and the FWS place fish species into groupings for purposes of listing, delisting and recovery planning. For salmon, these groupings are called *evolutionary significant units* (ESUs). For steelhead and bull trout, they are called *distinct population segments* (DPS).

Two criteria define an ESU or DPS under the ESA: 1) it must be substantially reproductively isolated from other conspecific units, and 2) it must represent an important component of the evolutionary legacy of the species (Waples 1991). An ESU or DPS may contain multiple populations that are connected by some degree of migration, and hence may have broad geographic areas, transcending political borders.

Within the action area, there are three Snake River Basin salmonid ESUs: Snake River spring/summer Chinook salmon, Snake River fall Chinook salmon, and Snake River sockeye salmon. Snake River steelhead are in the Snake River DPS. Bull trout within the action area occur in both the Columbia River DPS and Jarbridge River DPS. The Snake River Basin ESUs/DPSs for these species contain diversity in their genetic and life history traits and in habitat features and often extend across a geographic area larger than Idaho. Maintaining the genetic, life history and habitat feature diversity found within the ESUs/DPSs is critical to maintaining the overall health of these species and potential recovery.

Snake River Spring/Summer Chinook Salmon ESU

The Snake River Spring/Summer Chinook Salmon ESU includes those fish that spawn in the Snake River drainage and its major tributaries, including the Grande Ronde River and the Salmon River, and that complete their adult, upstream migration (passing Bonneville Dam) between March and July. These stream-type fish rear in freshwater for slightly more than a year before smoltification and seaward migration. Since the late 1800s, the ESU has suffered dramatic declines because of heavy harvest pressures, habitat modification and loss, and likely inadvertent negative effects of hatchery practices. More recent declines, since the 1950s, have occurred with the construction of the hydropower system on the Snake and Columbia Rivers. Because of these declines in abundance, this ESU was listed as threatened under the ESA in 1992.

Snake River Fall Chinook ESU

The Snake River fall Chinook ESU includes fish spawning in the lower mainstem of the Snake River, and lower reaches of the Clearwater, Imnaha, Grande Ronde, Salmon, and Tucannon rivers. The Lyons Ferry Hatchery stock, originally derived from returns to the lower Snake River, was included in the ESU. Unlike the other listed Chinook ESUs in the Interior Columbia River basin, Snake River fall Chinook exhibit a subyearling, ocean-type life history. These fish return to the Snake River basin in September and October and spawn shortly thereafter. Juveniles outmigrate the next summer. This ESU has lost approximately 80 percent of its habitat as a result of construction of dams on the mainstem Snake River, culminating in the completion of the Hells Canyon Dam complex in the 1960s. The Interior Columbia Technical Recovery Team (ICTRT) identified a single population in this ESU based on current spawning distribution and abundance.

Snake River Sockeye Salmon ESU

The Snake River Sockeye Salmon ESU had the dubious distinction of being the first Pacific Northwest salmon species to be listed under the ESA. A number of genetic studies have been conducted to determine the relationships between the variety of life-history types and stocks in the interior Columbia River Basin. These analyses indicate that in the Sawtooth Valley sockeye salmon are genetically distinct from all other kokanee and sockeye salmon sampled in Idaho, Washington, and British Columbia. Waples et al. (1997) allozyme-based analysis further indicates that Redfish Lake sockeye and beach spawners are distinct from Redfish Lake kokanee. Importantly, although the residual sockeye salmon are morphologically most similar to kokanee (small size), they spawn in the same location and at the same time as anadromous sockeye, whereas kokanee spawning is segregated both temporally and spatially from the anadromous fish (Brannon et al. 1994). Otolith microchemistry analyses (Rieman et al. 1994) revealed that some Redfish Lake sockeye outmigrants were progeny of resident females. Based on this information, the Snake River sockeye salmon ESU was determined to include Redfish Lake anadromous sockeye and residual/resident beach spawners (Waples et al. 1991). The anadromous component of this ESU travels a greater distance from the sea (approximately 900 miles) to a higher elevation (6,500 feet) than any other sockeye salmon population.

Snake River Basin Steelhead DPS

Initially steelhead were listed as a threatened ESU on August 18, 1997 (USDC, NOAA-NMFS 1997). Later, NMFS revised its species determinations for West Coast steelhead under the ESA

(USDC, NOAA-NMFS 2006), delineating steelhead-only distinct population segments (DPSs). The former steelhead ESU included both the anadromous steelhead and resident, non-anadromous, rainbow trout. The steelhead DPS does not include rainbow trout, which are under the jurisdiction of USFWS. Several artificial propagation programs are considered part of the Snake River Basin steelhead DPS: the Tucannon River natural stock, the North Fork Clearwater River stock reared at Dworshak National Fish Hatchery (NFH) and Clearwater Fish Hatchery and released in the Clearwater and Salmon rivers, East Fork Salmon River local stock, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery programs. (USDC, NOAA-NMFS 2006).

The Snake River steelhead DPS includes only the anadromous steelhead that spawn in the Snake River and its tributaries. These fish are genetically differentiated from other Interior Columbia steelhead populations; they spawn at higher altitudes (up to 2,000 m) and after longer freshwater migrations (up to 1,500 km) (Busby et al. 1996). Like other salmonid species in the Snake River basin, these populations have been affected by a wide variety of impacts, from the development of the hydropower corridor to reduced habitat quality and loss to inadvertent negative effects of hatchery practices. Although total abundance is relatively high, the large majority of these fish are of hatchery origin. In addition, the ESU/DPS has suffered dramatic declines in at least the last 20 years.

Columbia River and Jarbridge River Bull Trout DPSs

Population units of bull trout exist in which all fish share an evolutionary legacy and which are significant from an evolutionary perspective (Spruell et al. 1999). These population units can range from a local population to multiple recovery units and theoretically should represent a distinct population segment. Although such population units are difficult to characterize, genetic data have provided useful information on bull trout population structure. For example, genetic differences between the Klamath and Columbia River populations of bull trout were revealed in 1993 (Leary et al. 1993). Based largely on this 1993 information and the lack of additional information, the current distinct population segment structure of bull trout in the Klamath and Columbia Rivers, Jarbidge River, St. Mary-Belly Rivers and Coastal-Puget Sound was developed for the listings in 1998 and 1999.

Bull trout addressed in this assessment occur in the Columbia River Distinct Population Segment (DPS) and the Jarbidge River DPS. The Columbia River DPS is significant because the overall range of the species would be substantially reduced if this discrete population were lost. Idaho Forests contribute to portions of nine recovery units within the Columbia River DPS: Kootenai River, Clark Fork River, Coeur d'Alene Lake Basin, Clearwater River, Imnaha-Snake River, Salmon River, Southwest Idaho, Hells Canyon, and Little Lost River. The Jarbidge River Distinct Population Segment includes the Jarbidge River and Bruneau River watersheds†, which are tributary to the Snake River. The Jarbidge River DPS, which includes the Jarbidge River recovery unit, is smaller yet still very important for the recovery of these genetically unique bull trout. These recovery units are the major units identified by the FWS for managing bull trout recovery efforts.

Essential Fish Habitat

The identification of EFH is a requirement of the Magnuson-Stevens Act (MSA), as is consultation on actions that may affect EFH (USDC, NOAA-NMFS 2002) (Section 305(b) of the

MSA, implementing regulations in 50 CFR Part 600.920). This designation applies to Chinook and Coho salmon habitat within Idaho.

In Idaho, Chinook EFH overlaps with, and is similar to designated critical habitat for Snake River Basin steelhead, although steelhead are often found higher up in the smaller drainages. The location of Chinook EFH, and effects on Chinook EFH would therefore be similar to those described for steelhead designated critical habitat within this analysis.

Coho EFH occurs in one watershed[5] which overlaps with three Idaho Roadless Areas. Approximately 6,000 acres of Eldorado Creek and small acreages of North Lochsa Slope and Bighorn-Weitas Roadless Areas overlap in this watershed.

Bull Trout Key Recovery Habitat

Note that no bull trout critical habitat is designated on NFS lands (USDI, Fish and Wildlife Service 2005). However, the analysis of bull trout includes areas identified as bull trout key recovery habitat. Bull trout key recovery habitat includes known and potential areas of bull trout spawning and rearing. Since critical habitat is not designated on NFS lands it is important to recognize and evaluate the potential effects of the proposed action to the key recovery habitat for this species. There are about 1,320 miles (14 percent) of bull trout key recovery habitat that overlap with Idaho Roadless Areas (Figure IV-1).

[5] Watershed number 17060306.

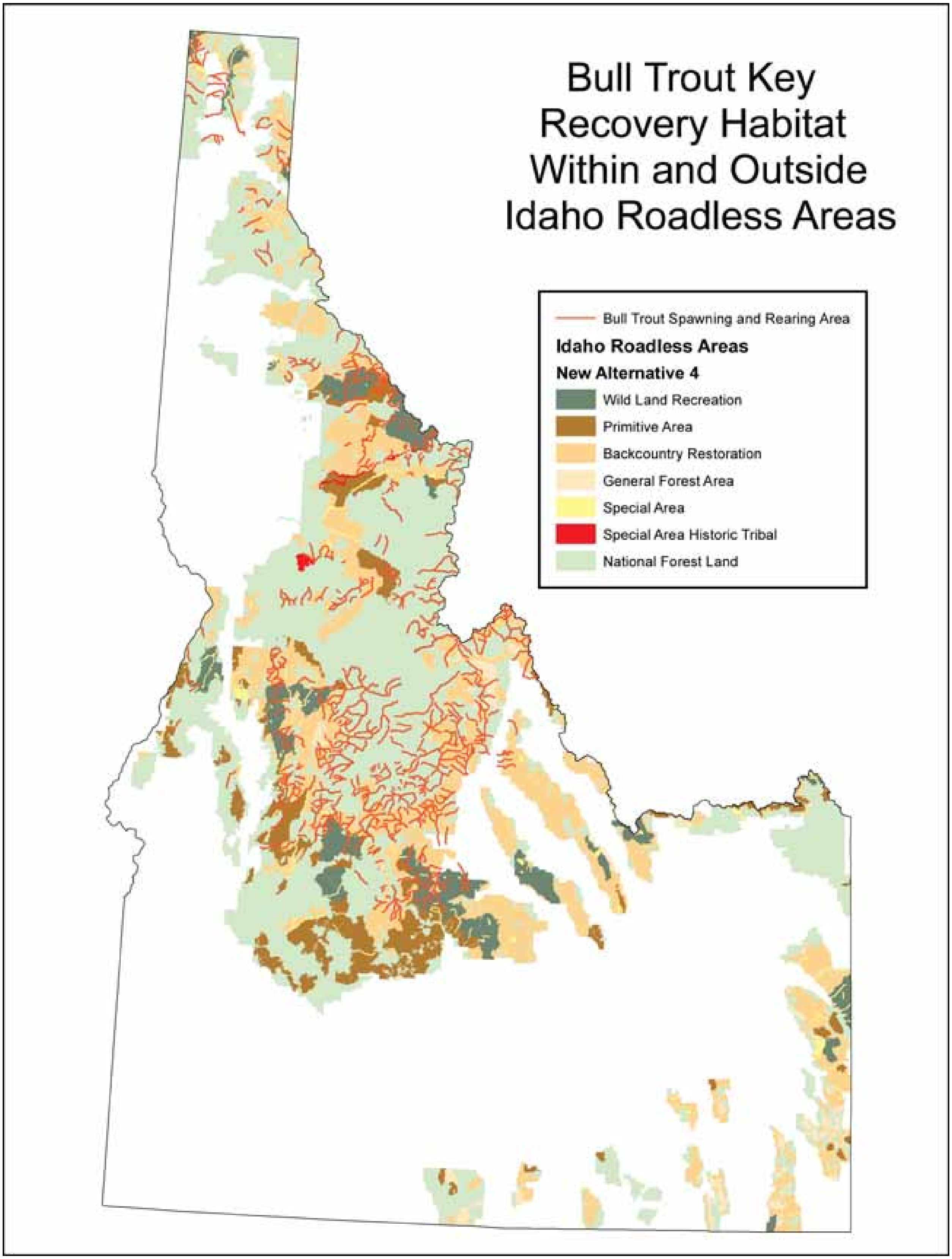

Figure IV-1. Bull Trout key recovery habitat within and outside Idaho Roadless Areas

Bull Trout Core Areas

The draft recovery plan (USDI, Fish and Wildlife 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) and a core population (a group of one or more local bull trout populations that exist within core habitat) constitutes the basic unit on which to gauge recovery (USDI, Fish and Wildlife Service 2002).

Core areas require both habitat and bull trout to function, and the number and characteristics of local populations inhabiting a core area provide a relative indication of the core areas likelihood to persist (USDI, Fish and Wildlife Service 2008). A core area is a system of watersheds within larger basin. Each watershed is the habitat for a local population that interacts with other local populations throughout the larger basin. Local populations within a core area have the potential to interact because of connected aquatic habitat. A local population is defined as a group of bull trout that spawn within a particular stream or portion of a stream system. A local population is considered to be the smallest group of fish that is known to represent an interacting reproductive unit. In most areas a local population is represented by a single headwater tributary or complex of headwater tributaries where spawning occurs. Gene flow may occur between local populations (*e.g.*, those within a core population), but is assumed to be infrequent compared with that among individuals within a local population.

The bull trout draft recovery plan describes 121 bull trout core areas across the species range in five states (USDI, Fish and Wildlife Service 2002). At the time of listings, the assessment of the status of bull trout and its threats was reported by subpopulation. During the recovery planning process beginning in 2002, new information on fish movement supported refining the delineation of the 187 subpopulations into 121 bull trout core areas, 95 core areas are within the Columbia River basin, 1 is located in the Jarbridge River basin.

The scale of the analysis for this programmatic BA was focused on core areas and did not include the smaller scale of the local population. Priority watersheds discussed in the following section fit within core areas. Similar to fish strongholds and priority watersheds, minimal ground disturbing management activities in these special areas is desirable. 6,714,414 acres (28 percent) of bull trout core areas are within Idaho Roadless Areas (Figure IV-2).

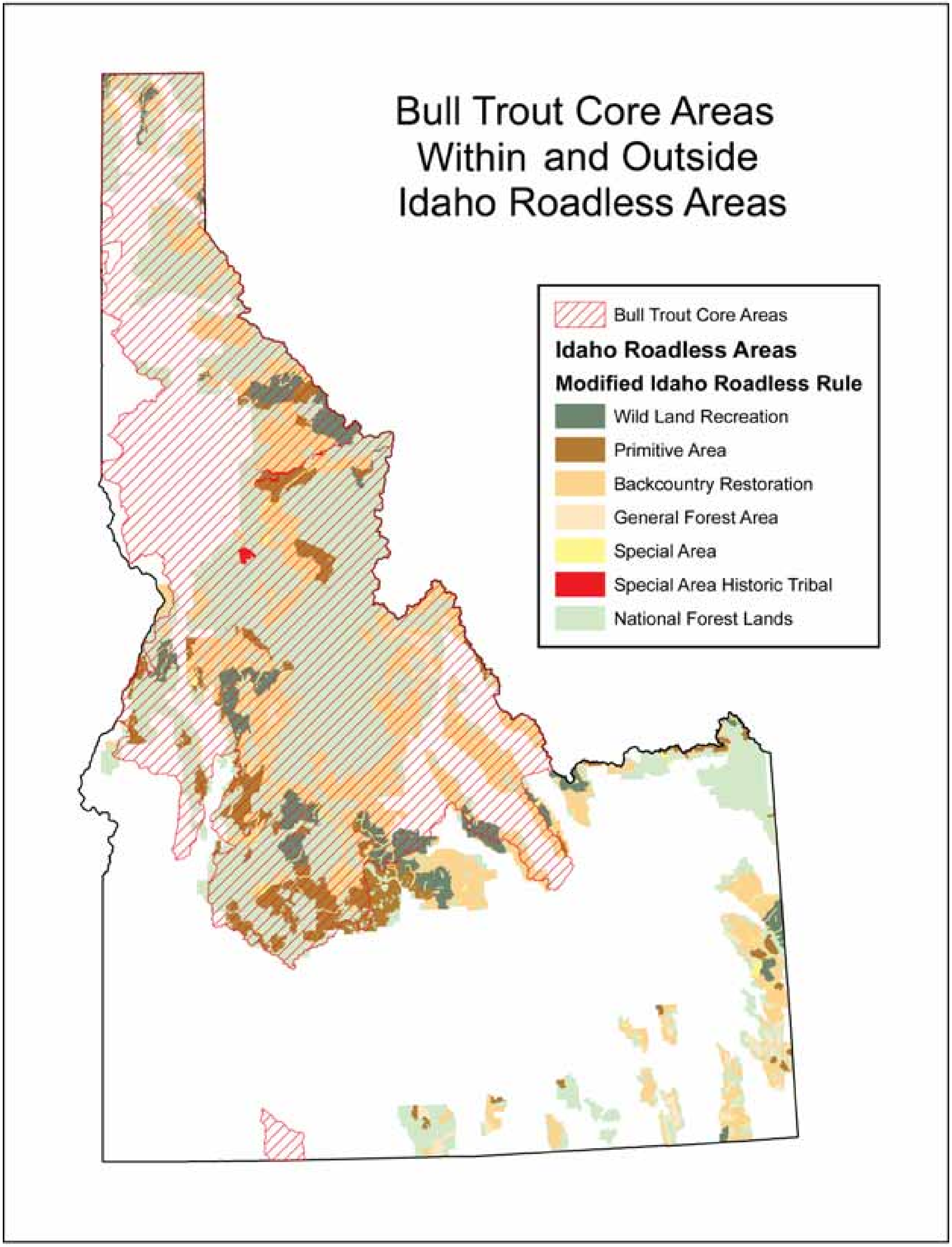

Figure IV-2. Bull Trout core areas within and outside Idaho Roadless Areas

Priority Watersheds

Priority watersheds (also called “special emphasis” or “key” watersheds) are areas that provide for high-quality habitat and stable populations of listed fish species. Priority watersheds are a cornerstone of most species conservation strategies (Lee et al. 1997) and were designated as part of the strategies for managing anadromous and inland native fish in the Columbia Basin. Concern for the continued viability of salmonids on federally managed forest lands has led to establishment of the concept of “priority watersheds” in which high priority is given to protecting stream habitat (Reeves and Sedell 1992). The goal for these watersheds is to maintain the best habitats and fish populations, and generally watersheds are chosen that have the highest potential for rehabilitation. Priority watersheds have been identified for spring/summer Chinook, steelhead, and bull trout.

Of the Idaho Roadless Areas, 57 percent contain priority watersheds identified for conservation of threatened and endangered fish species, including steelhead, spring-summer Chinook salmon, and bull trout. In Idaho, no priority watersheds are designated for fall-run Chinook. More than 40 percent of the acreage in designated priority watersheds for these aquatic species is located in roadless areas. Table IV-3 displays percent of priority watersheds in Idaho Roadless Areas by species.

Table IV-3. Threatened and endangered fish priority watersheds in Idaho Roadless Areas

Fish species	Acres of priority watersheds	Acres of priority watersheds in Idaho Roadless Areas	Percent of priority watersheds in Idaho Roadless Areas
Snake River Basin Steelhead	3,955,900	1,111,600	28
Snake River spring/summer Chinook salmon	4,888,100	1,885,800	38
Bull trout	7,996,500	3,477,200	43

Several of the T&E fish priority watersheds contribute to species richness by providing habitat for several of the species. Of the Idaho Roadless Areas that contain priority watersheds, 15 provide priority watershed areas for all three species (steelhead, Chinook salmon, and bull trout) (Table IV-4). About 50 Idaho Roadless Areas are priority watersheds for two species. These roadless areas provide important habitat for multiple species and are of very high value to aquatic biodiversity, warranting management that will maintain their aquatic integrity.

Table IV-4: Idaho Roadless Areas that provide threatened & endangered fish priority watershed areas for all 3 species: steelhead, Chinook salmon and bull trout

Idaho Roadless Area	National forest
Challis Creek	Challis
Loon Creek	Challis/Sawtooth
Dixie Summit - Nut Hill	Nez Perce
East Meadow Creek	Nez Perce
John Day	Nez Perce
Little Slate Creek	Nez Perce
Little Slate Creek North	Nez Perce
Mallard	Nez Perce
North Fork Slate Creek	Nez Perce
Salmon Face	Nez Perce
West Meadow Creek	Nez Perce
Rapid River	Nez Perce/Payette
Camas Creek	Salmon/Challis
Lemhi Range	Salmon/Challis
Taylor Mountain	Salmon/Challis

**Note: East Meadow Creek Idaho Roadless Area and West Meadow Creek Idaho Roadless Area function as a complex since they are located on either side of the Meadow Creek drainage. Both have equal influence on Meadow Creek aquatic resources.*

Fish Strongholds

Fish strongholds were identified in the Interior Columbia Basin Ecosystem Management Plan (ICBEMP) assessment (Lee et al. 1997) for seven key native salmonids including: steelhead, spring/summer Chinook salmon, fall-run Chinook salmon, bull trout, redband trout, westslope cutthroat trout, and Yellowstone cutthroat trout. ICBEMP salmonid strongholds are directly associated with strong populations. In Idaho, there were no ICBEMP strongholds identified for either spring/summer or fall-run Chinook salmon, due to their lower population levels and ESA-listings due primarily to out-of-basin issues, and not because the IRAs did not contain habitat suitable to sustain fish strongholds. Strongholds identified in Idaho for the five remaining salmonid species are used in this analysis.

Strong populations have the following characteristics:

1. All major life-history forms (for example: resident, fluvial, adfluvial) that historically occurred within the watershed are present;
2. Numbers are stable or increasing and the local population is likely to be at half or more of its historic size or density; and
3. The populations or meta-population within the watershed, or within a larger region of which the watershed is a part, probably contains at least 5,000 individuals or 500 adults.

Both fish strongholds and priority watersheds are valuable for their contribution to conservation and recovery of species and their habitats. The Deputy Regional Executives for the Forest Service (Regions 1, 4, and 6), National Marine Fisheries Service (NW Region), Bureau of Land Management (Oregon/Washington and Idaho), Fish and Wildlife Service (Pacific Region) and EPA (Region 10) issued a letter (dated July 9, 2004) stating that protection of population strongholds for listed or proposed species and narrow endemics is a key component of a framework for incorporating the aquatic and riparian habitat component of the Interior Columbia Basin Strategy May 2000 (Heller 2000) into BLM and Forest Service Plan revisions. The intent of protecting population strongholds is that these areas will provide high quality habitat for species, and support expansion and recolonization of species to adjacent watersheds.

Strongholds should conserve key processes likely to influence the persistence of populations or metapopulations (Rieman and Dunham 2000). Even small areas can contribute significant value depending on their location and contribution to interconnecting populations, providing for a larger metapopulation, distance to a source population and contribution to genetic and phenotypic diversity.

Analysis conducted for ICBEMP (Lee et al. 1997) indicates that strong fish populations are often associated with areas of low road density. That analysis showed that increasing road densities (miles of road per square mile) and their attendant effects were associated with declines in the status of bull trout, westslope cutthroat trout, Yellowstone cutthroat trout, and redband trout.

A substantial amount of Idaho Roadless Areas (23 percent) provides important habitat for the five key salmonids used in this analysis. In Idaho, 32 percent of the strong populations for these species are in roadless areas. Acres of Idaho Roadless Areas contributing to Idaho fish strongholds by species are shown in Table IV-5.

Table IV-5. Idaho Roadless Areas contributing to fish strongholds (acres)

Fish species	Idaho Roadless Area acres contributing to fish strongholds
Bull trout	453,500
Redband trout	660,300
Steelhead	54,000
Yellowstone cutthroat trout	279,400
Westslope cutthroat trout	915,000

ICBEMP fish strongholds for bull trout, redband trout, steelhead, Yellowstone cutthroat trout, and westslope cutthroat trout overlap about half of the roadless areas (Figure IV-3), with 33 roadless areas providing larger stronghold areas (>100,000 acres) and/or strongholds for multiple (2 or more) fish species (Table IV-6). These larger areas are of interest because they have a greater potential to provide for larger interconnected populations (metapopulations) of the species due to their lack of roads and associated culverts. Larger populations are able to better withstand disturbances and therefore have a greater chance of persistence.

Table IV-6: Idaho Roadless Areas that provide larger stronghold areas (>100,000 ac) and/or strongholds for multiple fish species

Forest	Idaho Roadless Area		Forest	Idaho Roadless Area
Boise	Deadwood		Clearwater	North Lochsa Slope
Boise	Peace Rock		Clearwater	Weir - Post Office Creek
Boise	Sheep Creek		Clearwater/ Idaho Panhandle	Mallard-Larkins
Boise	Ten Mile/Black Warrior		Clearwater/Idaho Panhandle	Meadow Creek - Upper North Fork
Boise/Challis	Red Mountain 916		Clearwater/Nez Perce	Rackliff - Gedney
Boise/Payette	Needles		Idaho Panhandle	Mt. Willard-Lake Estelle
Boise/Payette	Snowbank			
Boise/Sawtooth	Lime Creek		Nez Perce/Payette	Rapid River
Boise/Sawtooth	Smoky Mountains		Payette	Cottontail Point/Pilot Peak
Challis	Challis Creek		Payette	Cuddy Mountain
Challis	Seafoam		Payette	French Creek
Challis	Squaw Creek		Payette	Patrick Butte
Challis/Sawtooth	Boulder-White Clouds		Payette	Secesh
Challis/Sawtooth	Loon Creek		Salmon/Challis	Camas Creek
Clearwater	Bighorn - Weitas		Salmon/Challis	Lemhi Range
Clearwater	Hoodoo		Sawtooth	Buttercup Mountain
Clearwater	Lochsa Face			

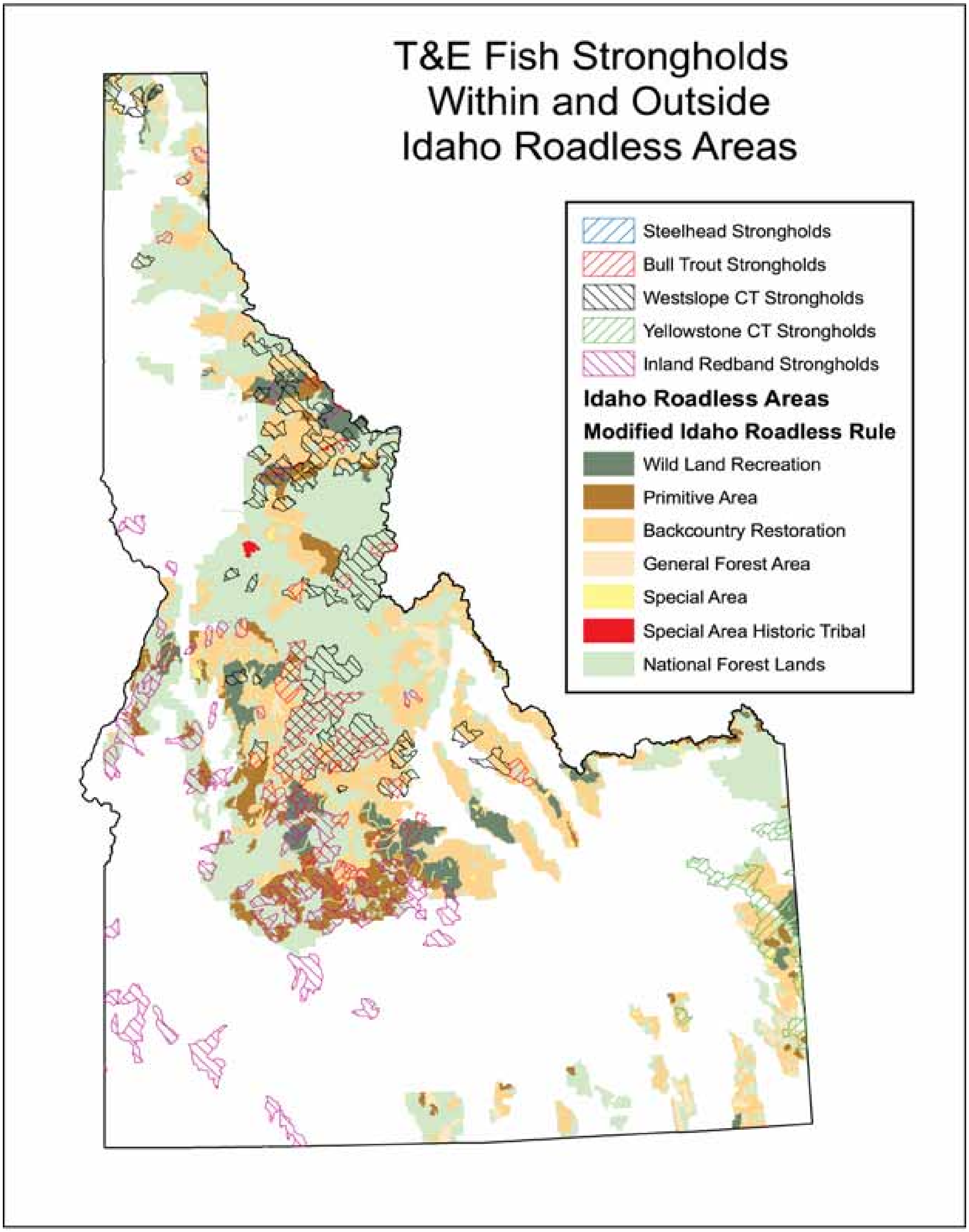

Figure IV-3. Threatened and endangered fish strongholds within and outside Idaho Roadless Areas

Threatened and Endangered Fish Species Richness

The total number of aquatic T&E fish species known to occur in each Idaho Roadless Area was used to characterize species richness within a roadless area. Out of a total of 250 roadless areas in Idaho, there are 173 roadless areas that are within the range for aquatic threatened and endangered species (Appendix A, Table A-1). Idaho Roadless Areas with the greatest overlap of threatened and endangered fish species are especially valuable for their species richness and contribution to biodiversity. Four roadless areas overlap five threatened and endangered species (Table IV-7); 30 roadless areas overlap with four threatened and endangered species (Table IV-7); 66 roadless areas overlap with three aquatic species; three roadless areas overlap with two species; 70 roadless areas overlap with one species and 77 roadless areas overlap with no species. Figure IV-4 shows Idaho Roadless Areas that provide habitat for multiple (1–5) threatened and endangered aquatic species.

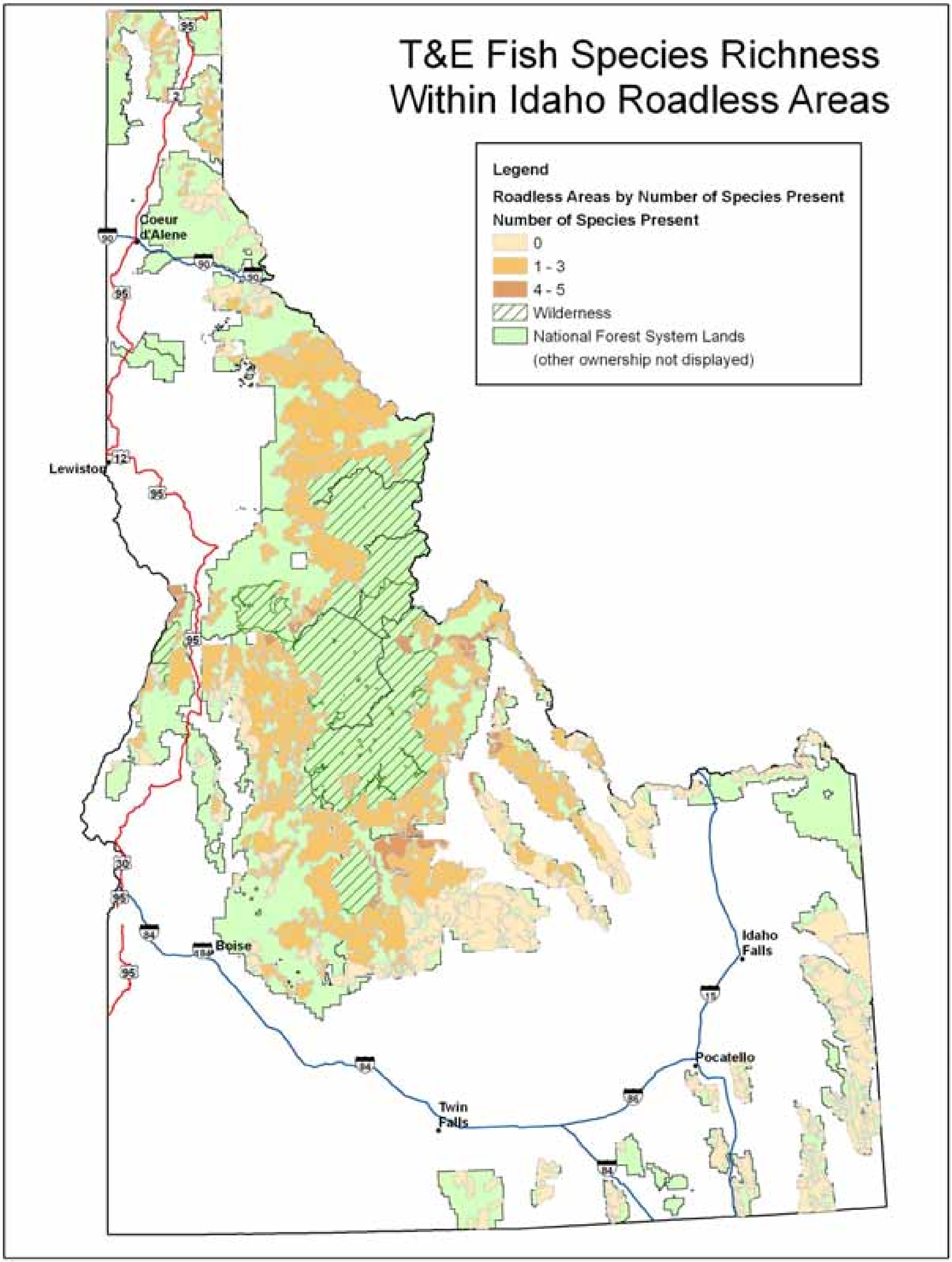

Figure IV-4. Threatened and endangered fish species richness within Idaho Roadless Areas

Table IV-7. Idaho Roadless Areas that overlap the range for multiple (four or five) threatened and endangered fish species.

Forest	Idaho Roadless Area	Species
Boise/Challis/Sawtooth	Hanson Lakes	BT, SC, FC, SH, SS
Boise/Sawtooth	Smoky Mountains	BT, SC, SH, SS
Challis	Grouse Peak	BT, SC, SH, SS
Challis	Red Hill	BT, SC, SH, SS
Challis	Squaw Creek	BT, SC, SH, SS
Salmon/Challis	Camas Creek	BT, SC, SH, SS
Salmon/Challis	Lemhi Range	BT, SC, SH, SS
Salmon/Challis	Taylor Mountain	BT, SC, SH, SS
Challis/Sawtooth	Boulder-White Clouds	BT, SC, SH, SS
Challis/Sawtooth	Railroad Ridge	BT, SC, SH, SS
Nez Perce	Gospel Hump Adjacent to Wilderness	BT, SC, SH, SS
Nez Perce	Gospel Hump	BT, SC, SH, SS
Nez Perce	John Day*	BT, SC, FC, SH, SS
Nez Perce	Mallard	BT, SC, SH, SS
Nez Perce	North Fork Slate Creek*	BT, SC, FC, SH, SS
Payette	Cottontail Point/Pilot Peak	BT, SC, SH, SS
Payette	Hells Canyon/7 Devils Scenic	BT, SC, SH, SS
Payette	Patrick Butte*	BT, SC, FC, SH, SS
Salmon	Goldbug Ridge	BT, SC, SH, SS
Salmon	Haystack Mountain	BT, SC, SH, SS
Salmon	Jesse Creek	BT, SC, SH, SS
Salmon	Long Tom	BT, SC, SH, SS
Salmon	Napais	BT, SC, SH, SS
Salmon	Napoleon Ridge	BT, SC, SH, SS
Salmon	Perreau Creek	BT, SC, SH, SS
Salmon	Phelan	BT, SC, SH, SS
Salmon	Sal Mountain	BT, SC, SH, SS
Salmon	Sheepeater	BT, SC, SH, SS
Salmon	West Big Hole	BT, SC, SH, SS
Sawtooth	Huckleberry	BT, SC, SH, SS
Sawtooth	Loon Creek	BT, SC, SH, SS
Sawtooth	Pettit	BT, SC, SH, SS
Wallowa-Whitman	Big Canyon ID	BT, SC, SH, SS
Wallowa-Whitman	Klopton Creek – Corral Creek ID*	BT, SC, FC, SH, SS

**Overlap range for five species*
Bull trout (BT), Spring/Summer Chinook salmon (SC), Fall-run Chinook salmon (FC), Steelhead (SH) and Sockeye salmon (SS)

General Effects of Management Activities on Aquatic Habitats and Species

The following section summarizes the general effects that roads, timber cutting, and discretionary mineral development could have on aquatic species 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). Section 3.6 in the FEIS, the Physical Resources Section, provides a full discussion of potential geomorphic and hydrologic effects of roads on watershed and stream channel conditions.

Potential effects from roads include (Furniss et al. 1991, USDA, Forest Service 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 (USDA Forest Service 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 FWS (USDI, Fish and Wildlife 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.

Road construction and timber harvest were identified as important factors in the regional decline and loss of populations of some inland cutthroat trout subspecies (Duff 1996, Young 1995). Adverse effects related to roads were identified for Colorado River, westslope, Bonneville, and Yellowstone cutthroat.

The biological opinion issued by the National Marine Fisheries Service for PACFISH (USDA, Forest Service and USDI, Bureau of Land Management 1995) identified roads as a primary cause of salmonid decline, and indicated that roads may have unavoidable effects on streams, regardless of how well they are located, designed, or maintained. In discussing the effects of management activities in inventoried roadless areas in the Pacific Northwest, the ecosystem management assessment team headed by Jack Ward Thomas (USDA, Forest Service et al. 1993) concluded that such activities would increase the risk of damage to aquatic and riparian habitat and could potentially reduce the capacity and capability of key watersheds important for maintaining salmonid populations.

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 alternations 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 to 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. In addition, 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.

Idaho's Strategic Action Plan for invasive species (Idaho Invasive Species Council 2005) recognizes the problem invasive species pose to Idaho and the need to prevent the entry and spread of unwanted species in the state. 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, USDA, Forest Service 1999). Illegal introduction and harvest of aquatic species is less likely to occur in inventoried roadless areas due to lack of ready access.

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). Some amphibians, especially western toads, use roads for travel routes and are susceptible to crushing by vehicles on roads (Maxell 2000).

In considering the contributions of large unroaded areas for conservation of aquatic habitats and species, comparisons can be drawn from research in other areas lacking roads and with minimal levels of human disturbance. For example, in evaluating the role of Wilderness Areas in conserving aquatic biological integrity in Western Montana, Hitt and Frissell (1999) concluded that, although the presence of designated Wilderness does not guarantee aquatic biological integrity due to factors such as fish stocking practices and impacts from adjacent roads, "the importance of Wilderness in aquatic conservation is extraordinary." Their analysis showed that more than 65 percent of waters that were rated as having high aquatic biological integrity were found within subwatersheds containing Wilderness. They also concluded that, given the relative rarity of unprotected areas that support a relatively greater degree of aquatic biological integrity, undisturbed areas warrant permanent protection. Reeves et al. (1995) suggest reserves on the scale of watersheds are needed for anadromous salmonid conservation and that reserves with good habitat conditions and functionally intact ecosystems are likely to be found in wilderness and roadless areas on federal lands.

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). Thus, it is critical to retain remaining roadless or near-roadless portions of the landscape in their natural state (Trumbulak and Frissell 2000).

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 may 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).

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). Affects 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

Idaho Roadless Areas 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 Modified Idaho Roadless Area alternative 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. 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).

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).

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).

Of particular concern to aquatic resources in Idaho is selenium contamination resulting from phosphate mining. Selenium contamination has occurred world-wide in association with common and economically important activities such as fossil fuel processing, mining, and irrigation, resulting in dozens of cases in which fish and wildlife populations have been affected (Van Kirk and Hill 2006). The southeast Idaho phosphate mining region, with includes the Caribou National Forest, is one of the most extensive and productive phosphate fields in the world (Jasinski et al. 2004). The bioaccumulative nature of selenium in aquatic systems is well-documented (Presser et al. 1994, Dobbs et al. 1996, Maier et al. 1998, Garcia-Hernandez et al. 2000, Hamilton 2002). Documented individual-level effects of selenium in fish include decreased egg incubation period, hatch rate, pre-swim-up fry survival, post-swim-up fry survival, juvenile winter survival, juvenile growth, adult survival, and adult growth (Van Kirk and Hill 2006). Modeling results from Van Kirk and Hill (2006) concluded that decreased juvenile survival in cutthroat trout due to selenium toxicity could result in decreased population size.

The effects of mining phosphate to aquatic threatened and endangered species is not further discussed in this BA because there is no overlap of areas where road construction or reconstruction ,and surface use and occupancy could occur and threatened and endangered aquatic species habitat.

Extent and Duration of Effects

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.

Consideration of Non-Federal Activities Outside the Idaho Roadless Areas

Many of the T&E fish species being evaluated in this biological assessment migrate in and out of the IRAs, therefore activities outside the IRAs which may affect species sustainability and recovery within the IRAs area are being considered.

State, Local Government, Tribal and Private Actions

Predominant ongoing activities on state, tribal, and private lands include timber harvest, range management and grazing of domestic livestock, and road construction. Land uses also include limited amounts of cultivation and irrigation of hay fields and pastures, water diversions and water-right allocations, and residential development. State laws regulate these activities.

Idaho administers the allocation of water resources within its borders. Water resource development in the state has slowed in recent years. Most cultivatable lands have already been developed, the increasingly diversified regional economy has decreased demand, and there are increased environmental protections. NMFS and USFWS, as appropriate, cooperate with state water resource management agencies in assessing water resource needs in the Columbia River Basin. Interested parties have applied substantial pressure, including ongoing litigation, on the state water resource management agencies to reduce or eliminate restrictions on water development.

States regulate and license recreational fishing and hunting within their borders. Sport and tribal harvesting can claim significant adult salmon and steelhead in the rivers. In addition, fishing for resident species can reduce adult native resident fish numbers. In some cases, listed fish can be inadvertently taken as well. Stocking of native and non-native game fish by states can lead to competition for habitat and food, predation, disease, and hybridization to native wild populations of resident fish in many areas. Stocking of non-native fish can also increase predation on and competition with young salmon and steelhead. Stocking programs have recently recognized impacts to native fish and have begun to change stocking locations and species in the state.

Hatcheries run by the state and tribes can contribute to developing weaker fish populations by diluting natural genetics and encouraging competition between hatchery fish and wild fish stocks.

In July 2000, the governors of Idaho, Montana, Oregon, and Washington released their “Recommendation for the Protection and Restoration of Fish in the Columbia River Basin,” with the stated goal of “protection and restoration of salmonids and other aquatic species to sustainable and harvestable levels meeting the requirements of the ESA, the Clean Water Act, the Northwest Power Act, and tribal rights under treaties and executive orders while taking into account the need to preserve a sound economy in the Pacific Northwest." The recommendations include habitat reforms, harvest reforms, hatcheries reforms, and funding and accountability.

Idaho Forestry Practices Act (IFPA), under the Idaho Department of Lands (IDL), regulates private land timber harvest and related road construction activities within Idaho. The IFPA does not provide the same level of protection and conservation for ESA listed species and critical habitat as the Forest Service and BLM provide on federally administered lands. Components of the IFPA that may not provide adequate protection for ESA listed species and their habitat include: road construction and maintenance, stream protection zones, retention of large woody debris, management of land slide prone areas, assessment of baseline conditions, and monitoring and adaptive management.

State lands leased for grazing are currently operated under BMPs established under Grazing Management Plans, overseen by the IDL. Grazing BMPs as identified in the Idaho State Agricultural Pollution Abatement Plan (State Plan) are not mandatory but recommended for private lands. Because compliance to the State Plan is not required on private lands, no monitoring plan is in place to evaluate potential impacts to ESA listed species or designated critical habitat. The IDL does perform monitoring of larger tracts of leased lands to ensure compliance with established grazing management plans. However, smaller, more isolated blocks of leased land are often not monitored for compliance and are managed according to lands surrounding them (private or federal). Grazing management plans as currently required by IDL are authorized for 10-year terms, leading to an inability to incorporate new and more ecologically friendly practices as these practices evolve. State management plan BMPs typically revolve around season of use and animal unit months (AUMs), not focusing on riparian area monitoring and protection.

The Idaho Department of Environmental Quality (IDEQ) will establish Total Maximum Daily Loads (TMDLs) in the Snake River basin, a program regarded as having positive water quality effects. The TMDLs are required by court order.

The State of Idaho has created an Office of Species Conservation to work on subbasin planning and to coordinate the efforts of all state offices addressing natural resource issues. The state actions targeted by this office include the following:

1. Continue diversion screening, in cooperation with BPA and BOR.
2. Improve flow augmentation for fish passage through state programs.
3. Implement the Forest Practices Act to maintain forest tree species, soil, air, and water resources and provide habitat for wildlife and aquatic life.
4. Complete cumulative watershed effects assessments on more than 100 watersheds to support watershed planning.
5. Require 30-foot stream protection zone (SPZ) along Class II streams (streams without a fishery whose principal value lies in their influence on downstream water quality).
6. Idaho Wolf Conservation and Management Plan.

Demands for Idaho's groundwater resources have caused groundwater levels to drop and reduced flow in springs for which there are senior water rights. The Idaho Department of Water Resources (IDWR) has begun studies and promulgated rules that address water right conflicts and demands on a limited resource. The studies have identified aquifer recharge as a mitigation measure with the potential to affect the quantity of water in certain streams, particularly those essential to listed species.

In the past, Idaho's economy depended on natural resources, with intense resource extraction. Changes in the states' economies have occurred in the last decade and are likely to continue, with less large-scale resource extraction, more targeted extraction, and significant growth in other economic sectors. Growth in new businesses, primarily in the technology sector, is creating urbanization pressures and increased demands for land to build on, electricity, water supplies, waste-disposal sites, and other infrastructure.

Economic diversification has contributed to population growth and movement in Idaho, a trend likely to continue for the next few decades. Such population trends will result in greater overall and localized demands for electricity, water, and land suitable for development in the action area; these trends will affect water quality directly and indirectly; and will increase the need for transportation, communication, and other infrastructure.

Local Government Actions

Local governments will be faced with similar and more direct pressures from population growth and movement. There will be demands for intensified development in rural areas, as well as increased demands for water, municipal infrastructure, and other resources. The reaction of local governments to growth and population pressure is difficult to assess without certainty in policy and funding. In the past, local governments in Idaho generally accommodated growth in ways that adversely affected listed fish habitat.

Local governments may also participate in regional watershed health programs, although political will and funding will determine participation and, therefore, the effect of such actions on listed species.

Tribal Actions

There are no Tribal lands within the Idaho Roadless Areas; however the Tribes do have ceded lands and are often partners in the management of public lands and natural resources within the State. The Tribes will continue to be active in certain watersheds during their harvest seasons when they can harvest species of interest, which include anadromous fish. In addition, the Tribes are active in the management and restoration of anadromous and inland fish species and operate several traps used for data collection.

Private Actions

The effects of private actions are the most uncertain. Private landowners may convert their lands from current uses, or they may intensify or diminish those uses. Individual landowners may voluntarily initiate actions to improve environmental conditions, or they may abandon or resist any improvement efforts. New laws may compel their actions, or they may result from growth and economic pressures. Changes in ownership patterns will have unknown impacts. Whether any of these private actions will occur is highly unpredictable, and the effects are even more so.

Ongoing and Reasonably Foreseeable Federal Actions

There has been, and continues to be, strong direction from Federal authorities to restore and maintain healthy watersheds and associated aquatic ecosystems. The Clean Water Action Plan (CWAP), the Forest Service and Bureau of Land Management Protocol for Addressing Clean Water Act Section 303(d) Listed Waters, listings of the salmon, steelhead, bull trout, and sturgeon and their associated BOs, strongly direct the need to prioritize and restore degraded watersheds and improve the aquatic habitat for these aquatic species. This direction has a direct influence as to the management of other land ownerships within and adjacent to Idaho Roadless Areas.

Dams maintained and operated by the Bureau of Reclamation and Army Corps of Engineers, on the Snake and Columbia Rivers, continue to reduce anadromous fish numbers. Dams and associated reservoirs have reduced migration success for both downstream migrating smolt and returning adults. These dams have also increased mortality to these fish through predation, disease, and mechanical injury. Dams, water diversions, channel dewatering, and stream modifications have disrupted migration and connectivity for many resident fish species, especially fluvial and adfluvial bull trout.

Federally operated fish hatcheries have contributed to developing weaker fish populations by diluting natural genetics and encouraging competition between hatchery fish and wild fish stocks.

Measures Common to All Species to Avoid or Minimize Effects

Three primary documents 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) (USDA, Forest Service and USDI, Bureau of Land Management 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) (USDA, Forest Service 1995) and;
3. Southwest Idaho Eco-group (Boise, Payette, and Sawtooth National Forests) land management plans (USDA, Forest Service 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 Idaho Roadless Areas and would result in benefits to all aquatic species and their habitats.

The Forest Service and BLM developed the Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho and Portions of California, known as PACFISH. PACFISH is intended to be an ecosystem-based, aquatic habitat and riparian-area management strategy for Pacific salmon, steelhead, and sea-run cutthroat trout habitat on lands administered by the two agencies and outside the area subject to implementation of the Northwest Forest Plan (USDA Forest Service, USDI Bureau of Land

Management 1995). PACFISH amended Regional Guides, forest plans and land use plans by applying management measures for all ongoing and proposed or new projects that pose an unacceptable risk to anadromous fish involving the management of timber, roads, grazing, and other land uses.

The Inland Native Fish Strategy (INFISH) was developed by the Forest Service to provide an interim strategy for inland native fish in eastern Oregon and Washington, Idaho, western Montana and portions of Nevada (USDA, Forest Service 1995).

In 1995 PACFISH and INFISH amended the Forest Plans for all National Forests in the Columbia and Klamath River Basins. Forests in Idaho covered by the 1995 PACFISH and INFISH amendment include: Idaho Panhandle, Clearwater, Nez Perce, Boise, Payette, Sawtooth, Salmon-Challis, and Wallowa-Whitman. PACFISH and INFISH provide programmatic direction for management of lands administered by the USFS and BLM. Both PACFISH and INFISH are interim strategies intended to provide protection against extinction or further endangerment of fish stocks and intended to maintain long-term management options.

PACFISH and INFISH share similar goals, objectives, standards, and guidelines, which are collectively considered an Aquatic Conservation Strategy (ACS). Management direction is applied to all proposed and ongoing management activities for the mitigation of environmental effects relative to the ACS. There are seven general components of the PACFISH/INFISH ACS:

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 and priority 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.

In 2003 the Southwest Idaho Ecogroup (SWIG) comprised of the Boise, Payette, and Sawtooth National Forests revised their Forest Plans. The revised Forest Plans replaced the PACFISH and INFISH interim strategies. Biological Opinions provided by USFWS (May 30, 2003) (USDI, Fish and Wildlife Service 2003) and NMFS-NOAA (June 9, 2003) (USDC, NOAA-NMFS 2003) for the revised Forest Plans replaced the PACFISH and INFISH Biological Opinions.

The SWIE Forest Plans have an ACS that is very similar to the PACFISH and INFISH ACS. The SWIE ACS provides direction to maintain and restore characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. The eight components of the SWIE ACS include:

1. Goals to maintain and restore soil, water, riparian, aquatic (SWRA) resources
2. Watershed Condition Indicators for SWRA resources
3. Delineation of Riparian Conservation Areas (RCAs)
4. Objectives, standards, and guidelines for management of SWRA resources, including RCAs

5. Determination of Priority subwatersheds within subbasins
6. Multi-Scale analyses of subbasins and subwatersheds
7. Determination of the appropriate type of subwatershed restoration and prioritization
8. Monitoring and adaptive management provisions

Each of these components is discussed in detail in the Boise, Payette and Sawtooth Forest Plans (see the Forest Plan BA, Chapter 3, Aquatic Conservation Strategy – Eight Components) including their role in addressing reduction of threats associated with the factors of decline and/or their role in a comprehensive recovery and restoration strategy for listed fish species and their habitats. Any of these components has the potential to influence any of the factors of decline or the recovery/restoration strategy.

None of the management direction for aquatic species is inconsistent with the Modified Rule. The management direction provides design criteria for specific activities when and if they are proposed; therefore it would be applied during project design.

Effects of the Proposed Action – Modified Idaho Roadless Rule on Aquatic T&E Species

Unlike most Forest Service project analyses of alternatives and environmental consequences, the analysis of the Modified Idaho Roadless Rule 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 Modified Rule 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 Idaho Roadless Rule would designate a system of lands (Idaho Roadless Areas) and establish five management themes as described in Section II of this BA. 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 Forest Service 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;
- Mineral activities.

This effects analysis includes a description of the nature of potential effects that could occur given the prohibitions and permissions in the Modified Rule. Because of the programmatic nature of this decision the potential effects cannot be measured or quantified. The time frame for this Idaho Roadless Area effects analysis is 15 years. Future actions in Idaho Roadless Areas would be subject to NEPA and Section 7 ESA consultation.

Specific Effects of Management Activities on Aquatic Species in Idaho Roadless Areas

This section presents the risk of the selected management activities – road construction/ reconstruction, timber cutting, and discretionary mining – to T&E aquatic species in Idaho. These estimates are based on the degree to which the species might be *exposed* to the selected management activities (improbable, probable). Exposure is a function of the species overlap with Idaho Roadless Areas and expected management activities that might occur in the Idaho

Roadless Areas under various themes. The likelihood and intensity of species *response* to management activities is also considered. An estimate of the risk (low, moderate, high) to that species is based on the exposure and anticipated response of a species. Determinations made at each juncture were based on scientific information presented in the previous section, and the Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005), and species specific information provided by FWS, NMFS, Management Plans, and Recovery Plans. Table IV-8 summarizes the risk levels for aquatic species.

Table IV-8. Estimate of the risk that roads and timber cutting could pose to threatened and endangered fish species

Species	Low	Moderate	High
Federally threatened and endangered			
Snake River Basin steelhead		X	
Snake River spring/summer Chinook		X	
Snake River fall-run Chinook		X	
Snake River Sockeye	X		
Bull trout		X	
Kootenai White Sturgeon	X		

In general, species associated with lake and deep river aquatic systems were categorized as a low risk for effects from the selected management activities. These habitats are not likely to be affected by road related activities, timber harvest, or discretionary minerals activities in the Idaho Roadless Areas. However, species that depend on stream habitats were categorized at a moderate risk because of the likelihood of exposure to indirect and direct effects resulting from the selected management activities. Three Forest Service aquatic sensitive species (not included in this document, see the Idaho Roadless Area Conservation: National Forest System Lands in Idaho, Specialist Report for Aquatic and Terrestrial Habitats and Species) were placed in the high risk category due to their overlap with the known phosphate leasing areas on the Caribou-Targhee National Forest. None of the federally listed threatened or endangered fish species were considered to be at a high risk from activities that might occur under the MIRR.

Cumulative Effects—Aquatic Species

The cumulative effects were addressed by considering land use and land conversion trends; laws, regulations, and policies that affect species, habitat characteristics, and biodiversity.

Since NFS lands, including inventoried roadless areas, provide habitat for many aquatic species, the anticipated beneficial effects of Roadless Area conservation in combination with the other Forest planning and broad scale assessments could cumulatively benefit aquatic species at state, regional, and local scales. Biological strongholds and other important habitat for aquatic species would receive substantial cumulative protection against future disturbance, considering the level of protection currently provided by existing policy, conservation strategies, forest plans, and other protected land designations.

The roadless areas when considered alone may not be as important as when considered in combination with other land conservation laws, policies, and strategies. For example, many roadless areas in combination with wilderness areas, Nature Conservancy preserves, some NFS land allocations, national parks, or conservation easements provide larger contiguous habitat blocks that provide for biodiversity conservation.

Non-Federal Habitat

There are about 52,961,000 acres of land in Idaho, of which about 20,464,000 acres are NFS lands. The Federal Government manages approximately 63 percent of all Idaho lands; the remaining 37 percent is in non-Federal ownership. Because non-Federal lands are a smaller percentage of all lands in Idaho, they are often influenced by management on Federal lands.

The role of non-Federal lands in maintaining and recovering species and their habitats is not well defined. Idaho's current population of 1.3 million people is expected to be 2 million by 2030 and much greater by 2100 (IDFG 2005). The increased demands these individuals will place on the land will increase the value of roadless areas on Federal land to terrestrial and aquatic species. In light of projected future population trends, the Idaho Roadless Areas can provide some of the best aquatic species habitat in Idaho into the future.

The Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005) provides a foundation for sustaining Idaho's fish and wildlife and the habitats upon which they depend. The strategy provides general directions for wildlife conservation and a stimulus to engage partners in conservation of Idaho's wildlife resources. In addition, there are several species-specific recovery plans and conservation strategies for species occurring in Idaho, such as the Idaho Bull Trout Plan (Batt 1996). Several of the tribal governments within Idaho have developed wildlife and fisheries conservation and restoration plans. Some lands may experience impacts on natural resources from urbanization and development, resource demands (for example, minerals), and recreation. Some conditions resulting in lower habitat quality on non-Federal land may limit the potential effectiveness of habitat conservation and restoration on Federal lands.

Non-native Invasive Species

Non-native invasive species are a problem throughout Idaho. Current State and Federal activities and authorities address some invasive species and their prevention and control, including the Idaho Invasive Plan (Idaho Invasive Species Council 2005) and the National Strategy and Implementation Plan for Invasive Species Management (USDA, Forest Service 2004). Of particular concern is that the presence or spread of aquatic invasive species could potentially limit the effectiveness of habitat improvements or efforts to recover species. Roads and recreational boating often provide vectors for spread of aquatic invasive species. In general, areas with fewer roads and boating access have a lower risk of having invasive species populations established.

Impacts of Past Direction

Since 1995, PACFISH and INFISH have provided interim direction for management of lands administered by the BLM and USFS including eight national forests within Idaho. Since 2003, for the Boise, Payette, and Sawtooth National Forests, the revised Forest Plans have replaced PACFISH and INFISH direction with comparable management direction for aquatic protection. Along with application of best management practices, the programmatic direction has cumulatively contributed to limitation on adverse effects of forest management on fish species and their habitat in Idaho and the Columbia River basin.

Past management, including maintenance, of the Forest Service's road transportation system, has often resulted in adverse conditions for aquatic resources. Newer Forest Service management guidance, especially the 2001 Forest Service Roads Management Policy (January 2001) and the 2005 Travel Management Rule (36 CFR 212, Subpart B, Designation of Roads, Trails, and Areas for Motor Vehicle Use), have contributed to improved management of NFS roads and reduced impacts to watershed and aquatic resources. Over the next few years as each Idaho National Forest adopts a new Travel Plan that defines a system of approved roads and restricts motorized travel off roads. Improvement in watershed and aquatic conditions are likely to occur if adequate funding is provided to implement the Forest Travel Plans.

More recently, expanded fuels management sparked by the Healthy Forests Initiative of 2002 and the Healthy Forests Restoration Act of 2003 has contributed some limited impacts to aquatic condition while reducing risk of wildfire-associated aquatic damages in the long run. Recreation Facility Master Planning now underway is intended to upgrade needed recreation sites while making them environmentally sound. Rehabilitating some sites while closing others would benefit nearby water and aquatic resources.

Impacts of Existing Management Practices

Existing management practices within and outside Idaho Roadless Areas have the potential to affect aquatic animal species and habitats. Land management activities such as timber harvest, road construction and maintenance, dams and diversions, livestock grazing, mining, and recreation can result in changes to vegetation composition and structure, successional processes, nutrient cycling, water quality and quantity, and habitat complexity. Other human activities related to urbanization can have dramatic effects on aquatic species and habitats.

Effects on aquatic habitats from human activities tend to be chronic disturbances rather than episodic. Native species did not evolve with chronic disturbances such as continual sediment inputs to aquatic habitats from poorly maintained roads. Species did, however, evolve and adapt to sediment inputs from events such as landslides. Human-caused impacts can be masked by natural disturbance processes such as flooding, fires, and soil mass movements. However, native species evolved with natural disturbances processes and they can often recover from these types of events, even when they appear to be catastrophic.

The Idaho Roadless Areas provide areas where natural process can largely occur without human management influences. Information gained from these areas can help us to better understand cumulative effects occurring elsewhere on the landscape and their impacts on terrestrial and aquatic species and habitats.

Fire

For many aquatic ecosystems, fire has played an important role in creating and maintaining suitable habitat at varying temporal and spatial scales (Minshall et al. 1989, Minshall 2003, Bêche et al. 2005). Many species evolved under the influence of recurrent fire, including stand-replacing events, and their long-term persistence relies heavily on the maintenance of important habitat components by these kinds of disturbance events.

Fire can pose a risk to aquatic organisms when populations are isolated or individuals are not very mobile and therefore do not have the capability to recolonize after local extirpation due to fire disturbance. Salmonids have evolved strategies to survive perturbations occurring at the frequency of wildland fire (10-100 years), but local populations of a species, especially if they are small and/or isolated, may be more ephemeral (Gresswell 1999). Perturbation associated with hydrological processes is probably the primary factor influencing postfire persistence of fishes, benthic macroinvertebrates, and diatoms in fluvial systems (Gresswell 1999). Fires can produce dramatic changes in aquatic and terrestrial ecosystems, including altered sediment and flow regimes, changes in vegetation structure and composition, fish mortality, and even local extinctions. More wildland fires are expected in Idaho due to changes in the climate regime (see Climate Change section below).

Factors Affecting Anadromous Fish

There are four anadromous fish species in Idaho: Snake River basin steelhead (threatened), Snake River spring/summer Chinook (threatened), Snake River fall-run Chinook (threatened), and Snake River sockeye salmon (endangered). Currently Idaho Roadless Areas provide some of the best habitat and strongest populations of these fish.

Human activities on Federal and non-Federal lands—including hydropower, hatcheries, harvest, and land management such as road building, grazing and recreation—have altered anadromous fish environments leading to widespread declines (Nehlsen et al. 1991). Idaho Roadless Areas are key to recovery of salmon and steelhead stocks in decline, providing habitat to protect species until longer term solutions can be developed for migration, passage, hatchery, and harvest problems associated with the decline of anadromous fish (USDA, Forest Service 2001). Maintaining current populations and future recovery of anadromous species in Idaho depends on reducing mortality from a variety of factors.

NMFS, in partnership with Idaho's Office of Species Conservation, has begun to draft Idaho's portion of the Snake River Salmon and Steelhead Recovery Plan (http://www.idahosalmonrecovery.net/index.html), which is scheduled to be completed in 2008 (USDC, NOAA-NMFS 2005a).

On April 24, 2007 the 9th circuit rejected the latest NMFS' 2004 Biological Opinion for federal Columbia River operations, finding the Opinion improperly determined such operations would not jeopardize the survival or recovery of eight listed salmon and steelhead species. The appellate court upheld the district court's requirement that NMFS consult on remand with States of Idaho, Montana, Oregon, and Washington, and any Tribes involved in the litigation, in developing a new Biological Opinion.

Climate Change

Warming of the global climate is unequivocal (ISAB 2007). Changes have already been observed in many species' ranges, consistent with changes in climate (ISAB 2007, Hansen et al. 2001). These changes include poleward and elevationally upward movements of many insects, birds, trees and forbs. Future climate change many 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.

Climate change is also affecting phenology (the biology of timing of organisms), involving aspects such as animal hibernation and migration. In addition, for species such as bull trout that require colder water temperatures to survive and reproduce, warmer temperatures could lead to significant decreases in available suitable habitat.

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 will cause a shift in the thermal suitability of aquatic habitats for resident species (Poff et al. 2002). The intensity of effects will vary spatially. These changes will have a variety of impacts on terrestrial and aquatic habitats in Idaho.

Climate change has the potential to affect most freshwater life history stages of trout and salmon (ISAB 2007, O'Neal 2002). Increased frequency and severity of flood flows during winter can affect over-wintering juvenile fish and incubating eggs in the streambed. Eggs of fall and winter spawning fish, including Chinook, Coho, chum and sockeye salmon and bull trout, may suffer highlevels of mortality when exposed to increased flood flows (ISAB 2007). Bull trout require very cold, headwater streams for spawning (Rieman et al. 2007). Therefore, warming may disproportionately impact this species.

Biodiversity

Based on current literature (Noss and Cooperrider 1994, Flather et al. 1999, Stein et al. 2000) it is possible to conclude that with or without conservation of roadless areas, biodiversity is at an increased risk of adverse cumulative effects from increased population growth and associated land uses, land conversions, and nonnative species invasions. Maintenance of roadless characteristics, however, may lessen this risk at least in the short term (20 years). By reducing the level of potential adverse impacts on roadless areas, some of the last relatively undisturbed large blocks of land outside of designated wilderness that contribute to species biodiversity would be conserved.

Conservation of roadless characteristics could have beneficial effects on biodiversity conservation at the local, regional, National Forest System, and national levels. There would be similar incremental beneficial effects on biodiversity conservation when any of the prohibitions is combined with past, present, and reasonably foreseeable land uses and conversions, laws, regulations, policies, and non-native species invasions. The local, regional, and national cumulative beneficial effects to aquatic species and biodiversity could include:

- Conserving and protecting large contiguous blocks of habitat that provide habitat connectivity and biological strongholds for a variety of aquatic species;
- Providing important local and regional components of conservation strategies for protection and recovery of aquatic species;
- Providing increased assurances that biological diversity would be conserved at a landscape level, including increased area of ecoregions protected, improved elevational distribution of protected areas, decreased risk of additional timber harvest and road caused fragmentation, and maintenance and restoration of some natural disturbance processes;
- Providing increased assurance that biodiversity would be supported within Idaho Roadless Areas, including the maintenance of native plant and animal communities where nonnative species are currently rare, uncommon, or absent.

To help assess the scope of the MIRR in relation to aquatic T&E species diversity, the overlap of the themes was compared against acres contributing to species richness (areas supporting several species) and strongholds (Table IV-9). Most of the acres shown in Table IV-9 are in the Backcountry theme. Within the Backcountry theme about 1,200,200 acres of overlap of roadless areas occurs with four or five threatened and endangered species (Table IV-9) and approximately 189,600 acres are within the Backcountry CPZ. Approximately 785,600 acres of the Backcountry theme overlap with priority watersheds for steelhead trout, Chinook salmon, and bull trout and approximately 30,100 acres are in the Backcountry CPZ; and approximately 1,747,600 acres overlaps with large strongholds or strongholds for multiple species and 136,100 acres are in Backcountry CPZ (Table IV-9).

Under the MIRR alternative 405,900 acres are in the GFRG theme. Road construction/ reconstruction, and timber cutting, are permissible in these areas. Road construction/reconstruction is permissible to access specific phosphate deposits on the Caribou portion of the Caribou-Targhee National Forest. Surface use and occupancy is permitted if allowed in the applicable land management plan. About 4,600 acres of Idaho Roadless Areas within the GFRG theme are located in strongholds for multiple species and about 83,300 acres are located in areas of high biodiversity (four or five threatened or endangered species) and the GFRG theme (Table IV-9). There is no GFRG theme in roadless areas that provide priority areas for steelhead trout, Chinook salmon, and bull trout. Portions of the Cuddy Mountain, French Creek, Needles, Red Mountain, and Ten Mile/Black Warrior Roadless Areas are in the GFRG theme and overlap with one of the fish strongholds (Table IV-9).

Table IV-9. Acres by theme overlapping important aquatic threatened and endangered species habitat, Modified Idaho Roadless Rule

Wild Land Recreation	Primitive	Backcountry	Backcountry CPZ	GFRG	Forest plan special areas[1]	SAHTS
Acres in Idaho Roadless Areas overlapping the range of 4 or 5 threatened and endangered species						
260,000	434,500	1,200,200	189,600	83,300	84,900	0
Acres in Idaho Roadless Areas overlapping priority watersheds for 3 species						
68,400	96,300	785,600	30,100	0	15,400	0
Acres in Idaho Roadless Areas overlapping large strongholds or strongholds for multiple fish species						
949,900	1,102,000	1,747,600	136,100	4,600	147,700	26,300

[1] Management direction under the Modified Rule would not apply to forest plan special areas such as research natural areas, wild and scenic rivers, developed sites, etc. (FEIS appendix Q, table Q-1).
[2] steelhead trout, Chinook salmon, and bull trout

The value of Idaho Roadless Areas in conserving biodiversity is likely to increase as habitat loss elsewhere increases in scope and magnitude. With these increasing trends, the importance of roadless area conservation and other laws, regulations, and policies in the management of biodiversity is also likely to increase. Whether the cumulative beneficial effects of the prohibitions and other past, present, and reasonably foreseeable actions would fully offset predicted future increases in land uses, land conversions, and nonnative species invasions is difficult to assess. Yet, it is possible to conclude that without the prohibitions, there would likely be an increased risk of adverse cumulative effects to biodiversity. Even under this scenario, Idaho Roadless Areas would likely still convey some beneficial effects relative to conservation of aquatic species and habitat in Idaho.

Cumulative Effects and the Modified Idaho Roadless Rule

In general, the Modified Rule—when considered with the effects of land uses; land conversions; laws, regulations, and policies; and nonnative species invasions—would be beneficial to biological diversity, including species habitats, populations, and landscape diversity compared to management under the Existing Forest Plans which do not include guidance specific to roadless areas and roadless area values. Some of the potential beneficial effects include:

- Large contiguous blocks of habitat protected by providing habitat connectivity for a variety of species that need large connected landscapes;
- Decreased risk associated with fragmentation and isolation from timber cutting, road construction/reconstruction, and discretionary minerals activities;
- Conservation and protection of biological strongholds and other important habitats for terrestrial and aquatic animals, including TES species;
- Decreased risk associated with invasive species introductions and spread;
- Maintenance of native animal communities where non-native-species are currently rare, uncommon, or absent;
- Increased assurances that biological diversity would be conserved, both within the area and the overall landscape in which it is found;
- Provision of important components of conservation strategies for protection and recovery of federally listed proposed, threatened, endangered, and NFS Regional Forester sensitive species; and
- Maintenance or restoration of some level of natural disturbance processes at a local level and landscape levels, which are important controls for ecosystem composition, structure, and function.

The Modified Rule has areas in all the themes. The less permissive of the themes (WLR, Primitive, and SAHTS) will have the least opportunity for road construction/ reconstruction and ground disturbance associated with mineral activities, and therefore will have the lowest risk of contributing to cumulative effects for aquatic species and their habitats. Activities permitted in the more permissive themes (BCR-CPZ and GFRG) will have a higher likelihood of contributing to cumulative effects in the IRAs. The BCR theme (outside of CPZ) falls somewhere in the middle of the other themes, since activities that might result in effects to aquatic species and their habitats are for the most part prohibited with limited exceptions.

The Modified Rule would permit phosphate development on 5,770 acres (unleased KPLA in the Modified Idaho Roadless Rule GFRG theme) in addition to existing leased lands. Phosphate development would not affect any of the T&E aquatic species because they do not overlap these areas in Idaho.

Snake River Basin Steelhead (*Oncorhynchus mykiss*)

Species-specific information used:

- NOAA's website http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Steelhead/Index.cfm
- Good, T.P., R.S. Waples, and P. Adams (editors). 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-NWFSC-66, 598p.
- Salmon and Steelhead Recovery Plan for Idaho (12/22/2005) (USDC, NOAA-NMFS 2005a): http://www.idahosalmonrecovery.net/recoverplans/srsteelhead.html
- Idaho Department of Fish and Game, Comprehensive Wildlife Conservation Strategy (IDFG 2005)

Status of the Species

Listing History

Snake River Basin steelhead were listed as a threatened species on August 18, 1997 (USDC, NOAA-NMFS 1997); threatened status reaffirmed on January 5, 2006 (USDC, NOAA-NMFS 2006). The Snake River Basin steelhead distinct population segment (DPS) includes all naturally spawned anadromous *O. mykiss* (steelhead) populations below natural and manmade impassable barriers in streams in the Snake River Basin of southeast Washington, northeast Oregon, and Idaho; also included are six artificial propagation programs: the Tucannon River, Dworshak National Fish Hatchery (NFH), Lolo Creek, North Fork Clearwater, East Fork Salmon River, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery programs.

Distribution

Steelhead, which are the anadromous life form of rainbow/redband trout, were historically found along the west coast of North America from southern California to central Alaska. the Interior Columbia River basin steelhead ranged from east of the Cascades upstream in the Columbia River and tributary streams to natural geologic barriers such as Shoshone Falls on the Snake River (Behnke 2002). In Idaho, steelhead had access to most of the Clearwater, Salmon, Weiser, Payette, Boise, Owyhee, Bruneau, and Salmon Falls Creek drainages. Populations using the tributaries above Hells Canyon Dam were eliminated with the construction of the Hells Canyon complex in the 1950s and earlier upriver dams.

The Snake River steelhead DPS occupies the Snake River Basin of southeast Washington, northeast Oregon and Idaho. The DPS includes all naturally spawned populations of A-Run and B-Run steelhead in the Snake River and its tributaries (USDC, NOAA-NMFS 2006). A-run steelhead are believed to occur throughout the Snake River Basin. B-run fish (steelhead with a 2-year ocean residence and larger body size) are thought to be produced only in the Clearwater, Middle Fork Salmon and South Fork Salmon Rivers. These subbasins have wild steelhead that are unaffected by hatchery production and are considered strongholds for genetically unique, B-run steelhead population (Lee et al. 1997).

The Dworshak Dam, completed in 1971, caused the extirpation of Chinook and steelhead runs in the North Fork Clearwater River drainage. Several artificial propagation programs are considered part of the DPS: the Tucannon River natural stock, the North Fork Clearwater River stock reared at Dworshak NFH and Clearwater Fish Hatchery and released in the Clearwater and Salmon Rivers, East Fork Salmon River local stock, and the Little Sheep Creek/Imnaha River Hatchery steelhead hatchery programs (USDC, NOAA-NMFS 2006).

Habitat Requirements

Snake River Basin steelhead are an anadromous species which have life history patterns that depend on the fresh water habitats for spawning and rearing, access to the ocean to grow to adults, and access back into their natal fresh water habitats to complete their life cycle.

Snake River Basin steelhead are summer steelhead, meaning they enter fresh water in a sexually immature condition and require several months to mature and spawn. Unlike Pacific salmon, steelhead are iteroparous, meaning that they are capable of spawning more than once before they die. Snake River steelhead spawning areas are well isolated from other steelhead populations and include the highest elevations for spawning (up to 2000m) as well as the longest migration distance from the ocean (up to 1500km).

Snake River Basin steelhead enter fresh water from June to October and spawn the following spring from March to June. Steelhead spawn and rear in stream and small river habitats. Spawning steelhead need clean gravels for successful egg development and fry emergence. Depending on water temperature, steelhead eggs may incubate in ''redds'' (nesting gravels) for 1.5 to 4 months before hatching as ''alevins'' (a larval life stage dependent on food stored in a yolk sac). Following yolk sac absorption, alevins emerge from the gravel as young juveniles or ''fry'' and begin actively feeding.

Emergence occurs by early June in low elevation streams and as late as mid July at higher elevations. Snake River steelhead usually smolt at age-2 or age-3 years. Steelhead typically reside in marine waters for 1 to 3 years prior to returning to their natal stream to spawn at 4 or 5 years of age. The majority of steelhead returning to Idaho cross Lower Granite Dam during September-November and over-winter in pools before spawning the next spring.

Factors of Decline/Threats

The primary reasons leading to declines in steelhead numbers in the Snake River Basin include widespread reduced habitat quality, recreational over-utilization, flow impairment throughout the Snake River basin, and substantial modification of the seaward migration corridor by hydroelectric power development on the Snake and mainstem Columbia Rivers (USDC, NOAA-NMFS 1997). Snake River steelhead are vulnerable to small scale habitat changes due to their long freshwater residence. Steelhead subpopulations should respond favorably to subbasin or watershed scale habitat improvements.

Of concern are threats to genetic integrity and displacement of naturally produced fish from past and present hatchery practices. Since the 1960s, the composition of the steelhead run entering Idaho has changed. The proportion of hatchery origin steelhead has steadily increased due to declining returns of natural fish and development of hatcheries. During 1965-69, the Snake River steelhead run was essentially 100% wild. From 1975-79, the steelhead run at Lower Granite Dam averaged 59 percent naturally-produced fish and from 1985-89, the run averaged 24 percent naturally-produced fish. From 1995-99, the run slipped further to an average of 11 percent naturally-produced steelhead. In the last five years the natural steelhead have rebounded slightly to comprise about 16 percent of the total steelhead production above Lower Granite Dam (Horton 2006 – Idaho Department of Fish and Game unpublished report).

Infectious disease is one of many factors that can influence adult and juvenile steelhead survival. Steelhead are exposed to numerous bacterial, protozoan, viral, and parasitic organisms in spawning and rearing areas, hatcheries, migratory routes, and the marine environments.

Introductions of non-native species and habitat modifications have resulted in increased predator populations in numerous river systems, thereby increasing the level of predation experienced by Snake River steelhead.

Conservation and Management

Successful conservation and recovery of Snake River Basin steelhead will require integrated actions in habitat, hatcheries, harvest as well as hydro power systems. Efforts such as regional conservation strategies and local watershed initiatives help to provide some protection to Snake

River Basin steelhead; however, they are often limited in scale and are insufficient to conserve the entire DPS. Improving fish passage through the federal hydro dam system is critical. Current scientific and economic information suggest that the removal of the four lower Snake River dams represents one of the best restoration opportunities for Snake River wild salmon and steelhead.

Critical Habitat

A final designation of Snake River Basin steelhead critical habitat was published on September 2, 2005 (USDC, NOAA-NMFS 2005b), with an effective date of January 2, 2006.

Primary constituent elements of critical habitat in Idaho for Snake River steelhead include sites and habitat components that support one or more life stages, including:

1. Freshwater spawning sites with water quantity and quality conditions and substrate supporting spawning, incubation and larval development;
2. Freshwater rearing sites with:
   i. Water quantity and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility;
   ii. Water quality and forage supporting juvenile development; and
   iii. Natural cover such as shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks.
3. Freshwater migration corridors free of obstruction and excessive predation with water quantity and quality conditions and natural cover such as submerged and overhanging large wood, aquatic vegetation, large rocks and boulders, side channels, and undercut banks supporting juvenile and adult mobility and survival.

There are also primary constituent elements for steelhead critical habitat in estuary and marine ecosystems that do not occur in Idaho and would not be affected by the Idaho Roadless Rule.

Environmental Baseline

Table IV-10 displays important information for Snake River Basin steelhead, their range in Idaho and overlap of that range with the Idaho Roadless Areas and the MIRR themes. Table IV-10 also displays Snake River Basin steelhead designated critical habitat (DCH), overlap of DCH with the Idaho Roadless Areas, overlap with MIRR themes, stronghold acres in Idaho as identified in the Interior Columbia River Basin Ecosystem Management Project (ICBEMP) and the overlap with the Idaho Roadless Areas, and steelhead priority watersheds as identified in PACFISH and their overlap with Idaho Roadless Areas. The information in Table IV-10 provides the foundation/baseline for the analysis used in this biological assessment. Forest Plan special areas are not included in Table IV-10 or Table IV-11 or other similar tables because the MIRR does not recommend management direction for these lands, which continue to be governed by the forest plans.

Table IV-10: Snake River Basin steelhead baseline information

	Total	Roadless Area overlap	WLR	Prim	BCR	BCR CPZ	GFRG	SAHTS
Range in Idaho (ac)	11,533,768	3,133,791 (27%)	470,666 (4%)	324,966 (2.8%)	1,858,244 (16%)	231,425 (2.0%)	81,434 (0.7%)	26,225 (0.2%)
Designated Critical Habitat (miles)	8,338	980 (12%)	67 (0.8%)	114.7 (1.4%)	472 (5.6%)	68.5 (0.8%)	7.6 (0.09%)	22 (0.3%)
Strongholds in Idaho (ac)	55,795	54,034 (97%)	0	44,902 (83%)	162 (0.3%)	0	0	8,970 (16.7%)
Priority Watershed in Idaho (ac)	3,955,900	1,111,588 (28%)	82,783 (2%)	193,899 (4.9%)	728,768 (18.4%)	52,660 (1.3%)	998 (0.03%)	21,776 (0.5%)

** Shaded numbers are indicated under themes that have greater permissions for activities in IRAs*
Table does not include ares associated with FPSAs

About 100 roadless areas in Idaho have habitat that supports Snake River Basin steelhead, and about 3.3 million acres overlap its range. Figure IV-5 displays the range of Snake River Basin steelhead in Idaho and the roadless areas. Figure IV-6 displays the overlap of Snake River Basin steelhead critical habitat and the Idaho Roadless Areas. Table IV-11 displays larger (>100,000 acres) IRAs which support Snake River Basin steelhead populations. These larger areas are of interest because they have a greater potential to provide for larger interconnected populations (metapopulations) of the species due to their lack of roads and associated culverts. Larger populations are able to better withstand disturbances and therefore have a greater chance of persistence.

Table IV-11: Larger (>100,000 ac) Idaho Roadless Areas supporting Snake River Basin steelhead

Forest	IRA	Acres	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS
Clearwater	Bighorn - Weitas	254,400	0	0	246,400	0	0	8,000
Clearwater	Hoodoo	153,900	151,900	0	0	0	0	2,000
Clearwater	North Lochsa Slope	111,900	0	82,500	15,100	0	0	14,300
Challis/Sawtooth	Boulder-White Clouds	427,300	231,300	87,300	79,800	28,900	0	0
Challis/Sawtooth	Loon Creek	109,600	0	0	102,100	7,500	0	0
Salmon/Challis	Camas Creek	103,900	0	0	93,400	10,500	0	0
Salmon/Challis	Lemhi Range	305,200	0	0	304,700	500	0	0
Boise	Peace Rock	191,700	0	137,400	44,700	2,500	0	0
Boise/Challis	Red Mountain 916	114,600	85,900	11,800	16,300	0	600	0
Boise/Payette	Needles	157,500	93,500	12,900	51,000	0	100	0
Boise/Sawtooth	Smoky Mountains	336,300	0	233,700	76,800	25,800	0	0
Payette	Secesh	236,500	110,300	7,700	106,100	12,400	0	0
Nez Perce	West Meadow Creek	115,600	0	0	112,500	3,100	0	0
		2,618,400	672,900	573,300	1,248,900	91,200	700	24,300

** Shaded numbers are indicated under themes that have greater permissions for activities in IRAs*
Table does not include ares associated with FPSAs

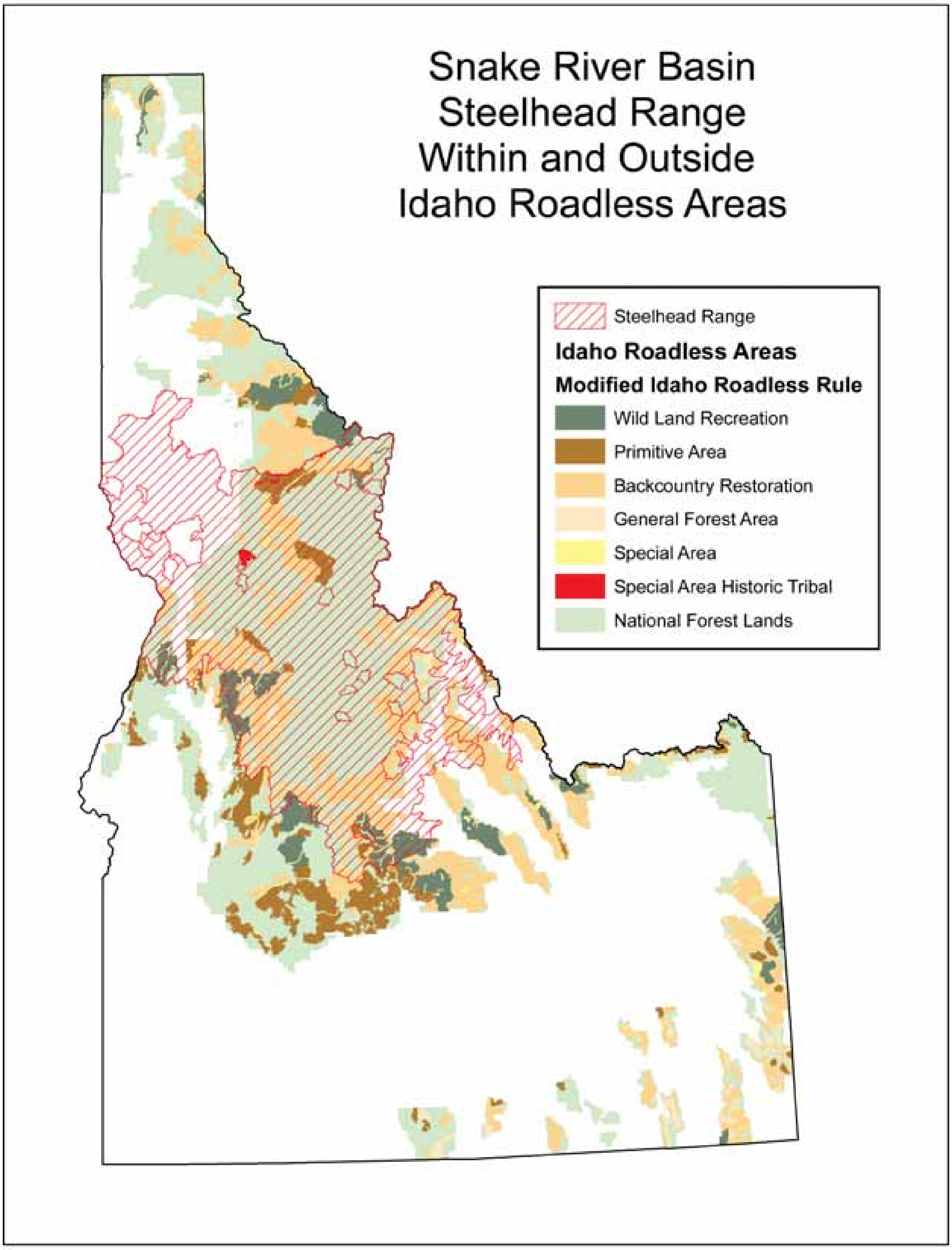

Figure IV-5. Snake River Basin steelhead range within and outside of Idaho Roadless Areas

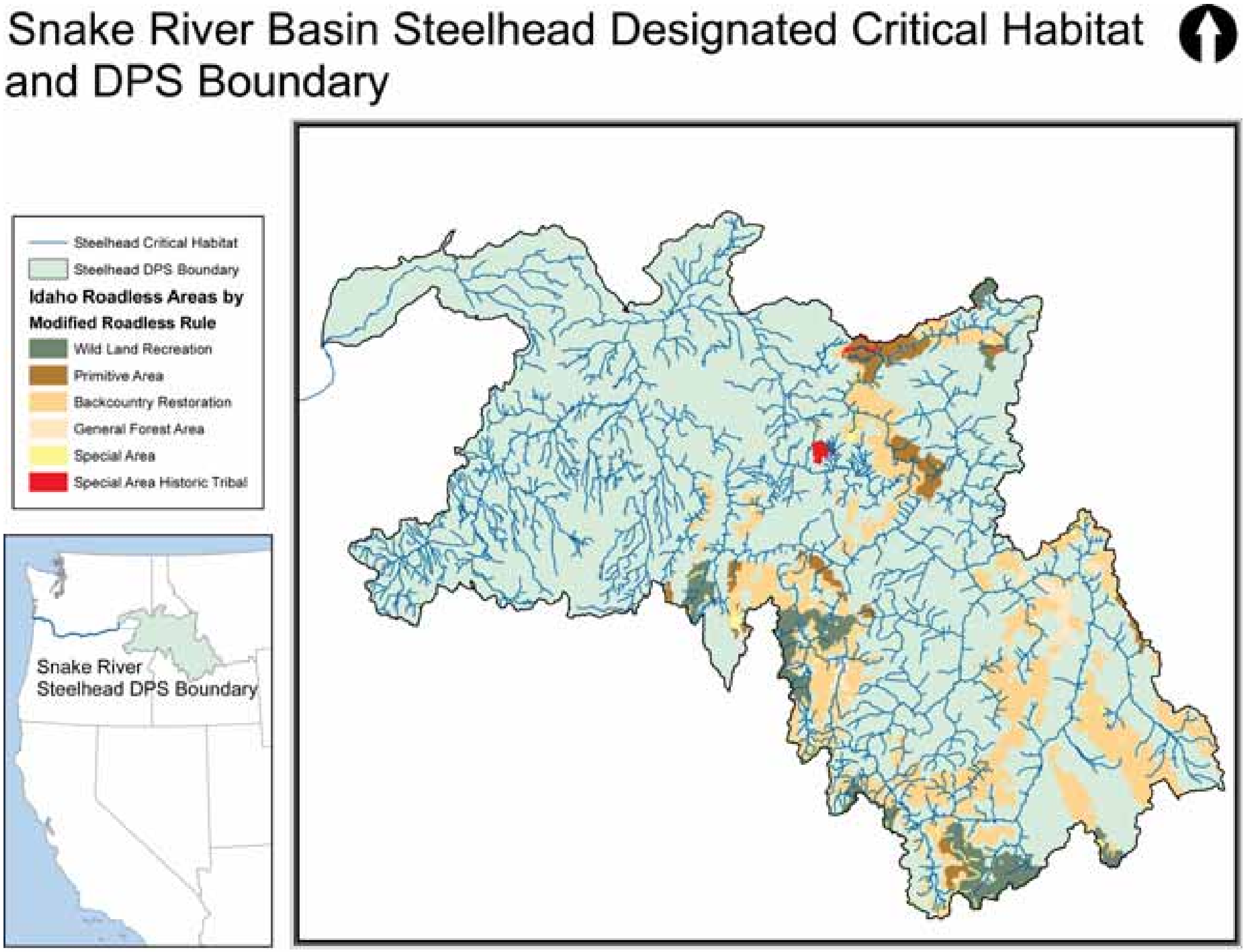

Figure IV-6. Snake River Basin steelhead designated critical habitat and DPS boundary

Effects of the Action

Each theme in the MIRR contains different prohibitions and permissions. Of the five themes, the WLR, Primitive, and SAHTS themes are the most restrictive because they only allow road construction, road reconstruction or timber cutting under very limited situations. Discretionary mineral activities are prohibited in these three themes; therefore there would be no effect to Snake River Basin steelhead from discretionary mineral activities in these three themes.

Because of the prohibitions on ground disturbing activities within the WLR, Primitive, and SAHTS themes they should provide for good conditions for aquatic species 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 Snake River Basin steelhead range overlaps approximately 821,857 acres in these three themes (Table IV-10 and Appendix A, Table A-2). 204 miles of designated Snake River steelhead critical habitat falls with these themes, which is a fairly small percent (4 percent) of the designated critical habitat in Idaho and only 2.4 percent of the total critical habitat for this species. Most of the stronghold areas identified for this species within IRAs falls within the WLR and SAHTS themes (99.7%). Snake River steelhead priority watersheds have a fairly high overlap with IRAs (28%). Within the area of overlap between IRAs and priority watersheds approximately 27 percent is within these three themes. The WLR, Primitive and SAHTS themes provide the highest protection for Snake River steelhead trout including their critical habitat, strongholds, and priority watersheds.

The Backcountry/Restoration theme is divided into two areas: (1) Backcountry (BCR) and (2) Backcountry community protection zone (BCR CPZ). Activities in the BCR CPZ are more permissive than in the BRC area. Emphasis of activities permitted 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, temporary 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 wildfire. 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. Under the MIRR alternative, the Forest Service would not authorize road construction/reconstruction for new mineral leases, including phosphates, in Idaho Roadless Areas managed in BCR and BCR CPZ. However, surface occupancy would be permitted.

Approximately 1,858,244 acres of the Snake River Basin steelhead range overlaps the BCR theme and 231,425 acres overlaps the BCR CPZ. A number of important Snake River steelhead areas fall into the BCR and BCR CPZ areas. Of particular interest are larger areas contributing to steelhead habitat. Table IV-11 displays the IRAs with >100,000 acres contributing the steelhead habitat. Of the 13 IRAs listed 11 have acres overlapping the BCR theme. IRAs contributing >2,000 acres to steelhead habitat in the BCR CPZ theme include: Loon Creek, Camas Creek, Peace Rock, Secesh and West Meadow Creek.

Only 68.5 miles of designated Snake River Basin steelhead critical habitat falls with the BCR-CPZ, which is a very small percent (0.8 percent) of the total designated critical habitat for this species. There are no Snake River steelhead stronghold areas within the BCR-CPZ. A fairly high amount of Snake River steelhead priority watersheds overlap with the BCR theme area (18.4 percent). Very little of the priority watershed area is within the BCR-CPZ and GFRG themes, 1.3 percent and 0.03 percent respectively.

The BCR theme is very similar to the 2001 Roadless Rule guidance for land management and therefore has a very low probability of leading to any future activities that would result in adverse effects to Snake River Basin steelhead. However, the BCR CPZ is more permissive and has a higher potential for future actions to occur that could result in adverse effects to Snake River Basin steelhead. Although this decision does not compel actions there is a ‘domino effect’ that this decision could lead to future actions of a ground disturbing nature which are not favorable to fish and their habitat.

The GFRG theme is the most permissive of all the themes. Road construction/reconstruction, timber cutting, would be permissible in these areas. Road construction/reconstruction associated with discretionary minerals would be limited to phosphate leasing. None of the phosphate areas overlap the range of Snake River Basin steelhead. Surface use and occupancy would be permitted in the GFRG theme is allowed in the applicable forest plan. 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 Snake River steelhead. There is a less than 1 percent overlap with GFRG and steelhead range, critical habitat, and priority watersheds (Table IV-10). There is no overlap between GFRG and steelhead strongholds. Less than 1,000 acres of the larger IRA areas contributing to steelhead habitat overlap with GFRG (Table IV-11).

Cumulative Effects

Under ESA, 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). The action area for the Idaho Roadless Rule is the Roadless Areas in Idaho (9.3 million acres) and areas downstream that could be affected by activities in the roadless areas.

Cumulative effects on Snake River Basin steelhead resulting from State, tribal, and local government actions could occur for the following reasons:

- 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 Idaho Roadless Areas.
- 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 downstream of Idaho Roadless Areas.

Determination of Effects on Snake River Basin Steelhead

As a result of the analysis documented in this Biological Assessment, it is my determination that actions that could occur pursuant to the Modified Idaho Roadless Rule that *may affect and are likely to adversely affect* Snake River Basin steelhead.

Determination of Effects on Snake River Basin Steelhead Critical Habitat

It is my determination that actions resulting from the implementation of the Modified Idaho Roadless Rule *may affect and are likely to adversely affect* Snake River Basin steelhead critical habitat. This determination is based on the low likelihood that the Modified Idaho Roadless Rule and the associated management requirements in INFISH, PACFISH and the SWIE land management plan ACS would result in adverse impacts to Snake River steelhead trout critical habitat primary constituent elements in Idaho including freshwater spawning sites, freshwater rearing sites and freshwater migration corridors.

Rationale for Determinations

Overall the Modified Idaho Roadless Rule alternative is unlikely to result in a substantial reduction of the quantity and/or quality of Snake River Basin steelhead critical habitat, fish strongholds, priority watersheds, or larger areas within the range of steelhead providing unroaded landscapes. Activities implemented under the Modified Idaho Roadless Rule should maintain key aquatic habitat elements. Limited adverse effects could occur due to short-term reduced habitat quality or increased chance for mortality from these activities. However, at the project level, all activities will be subject to existing INFISH, PACFISH, and/or SWIE ACS requirements (Appendix B) and NEPA that are designed to avoid or minimize adverse effects T&E fish and their habitats. In addition, project level NEPA will be required for timber cutting, sale and removal, road construction/reconstruction, mineral activities, and restoration activities in Idaho roadless areas. Given these factors, the Modified Rule poses a low risk to individuals, metapopulations, and the species.

Areas in the GFRG theme could be the exception to this generalization since these areas have the greatest permissions and a higher potential for risk of adverse effects to aquatic species, aquatic habitats, and key aquatic elements. 81,434 acres (0.7 percent) of the Snake River Basin steelhead range overlaps the GFRG theme.

Limited ground-disturbing activities are likely to occur in WLR, Primitive, and SAHTS themes because of the restricted permissions on activities related to road construction/reconstruction, and timber cutting. These three themes should provide for key aquatic habitat elements, natural processes, aquatic and riparian habitat integrity, and species diversity.

Areas in the Backcountry theme within the CPZ have a higher potential for ground-disturbing activities including road construction/reconstruction, timber cutting occurring depending on the risk of wildland fire. Some limited activities may occur outside the CPZ. Road construction/ reconstruction, and timber cutting activities may reduce key aquatic habitat elements in a limited portion of some roadless areas.

Key aquatic habitat elements include: 1) spawning habitat with water quality and quantity (including flow regimes) conditions and substrates favorable to incubation and larval development; 2) rearing habitat with water quality (including temperature conditions) and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; 3) rearing habitat with foraging to support juvenile development; 4) cover habitat including shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks; and 5) migration corridors for adults and juveniles free of obstruction and excessive predation with favorable water quantity and quality conditions.

Snake River Sockeye Salmon (*Oncorhynchus nerka*)

Species-specific information used:

- NOAA's website http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Steelhead/Index.cf
- Good, T.P., R.S. Waples, and P. Adams (editors). 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-NWFSC-66, 598p.
- Salmon and Steelhead Recovery Plan for Idaho (12/22/2005) (USDC, NOAA-NMFS 2005a): http://www.idahosalmonrecovery.net/recoverplans/srsteelhead.html
- Idaho Department of Fish and Game, Comprehensive Wildlife Conservation Strategy (IDFG 2005).

Status of the Species

Listing History

Snake River sockeye salmon were listed as an endangered species on November 20, 1991 (USDC, NOAA-NMFS 1991); endangered status was reaffirmed June 28, 2005 (USDC, NOAA-NMFS 2005c). The ESU includes all anadromous and residual sockeye salmon from the Snake River Basin, Idaho, as well as artificially propagated sockeye salmon from the Redfish Lake captive propagation program.

Distribution

Snake River sockeye salmon use the mainstem Snake River and mainstem Salmon River as a migration corridor to and from Redfish Lake, Idaho. This species spawns and rears only within the Sawtooth National Recreation Area on the Sawtooth National Forest. At the time of listing, the Snake River sockeye salmon ESU was limited to Redfish Lake but enhancement has increased distribution to Alturas and Petit Lakes.

Native populations of *O. nerka* from the Stanley Basin (including Redfish Lake sockeye salmon and kokanee and Alturas Lake kokanee) are genetically quite divergent from all other North American *O. nerka* populations that have been examined.

Habitat Requirements

Sockeye salmon in the Snake River Basin are an anadromous species which have life history patterns that depend on fresh water lakes for spawning and rearing, streams and rivers for migration to and from the ocean and favorable ocean conditions for reaching maturity. Snake River sockeye salmon migrate to and from the ocean through the Salmon, Snake, and Columbia Rivers.

Snake River sockeye salmon spawn at a higher elevation (6,500 ft) than any other sockeye salmon population in the world (Waples and Johnson 1991). Arrival into Redfish Lake peaks in August and spawning occurs near the shoals along the lake's shoreline primarily in October (Bjornn et al. 1968). Eggs hatch in the spring between 80 and 140 days after spawning. Fry remain in the gravel for 3-5 weeks, emerging April through May and, if hatched in inlet (or outlet) streams, move immediately into the lake, where juveniles feed on plankton for 1 to 3 years before migrating to the ocean. Juvenile residence of sockeye salmon in Redfish Lake rarely exceeds 2 years (Bowles and Cochnauer 1984).

Migrants leave Redfish Lake when temperatures are between 38o to 50o F, from late April through May (Bjornn et al. 1968), and smolts migrate almost 900 miles to the ocean where they remain inshore or within their home river's influence zone for the early summer. Later, they migrate through the northeast Pacific Ocean (Hartt and Dell 1986). Snake River sockeye salmon usually spend two years in the ocean and return in their fourth or fifth year of life.

Factors of Decline/Threats

In Idaho, sockeye salmon historically spawned and reared in the large lakes accessible to the ocean (Payette and Salmon River drainages). Access to all lakes in the Stanley Basin was seriously reduced in 1910 by the construction of Sunbeam Dam on the main stem Salmon River. The original adult fishway was ineffective at passing fish over the dam and was replaced with a concrete structure in 1920, but access continued to be impeded until the dam was partially removed in 1934. Even after passage was restored at Sunbeam Dam, sockeye salmon were unable to use spawning areas in two of the lakes in the Stanley basin because of fish eradication projects. Welsh (1991) reported such projects in Pettit Lake (treated with toxaphene in 1960) and Stanley Lake (treated with a mixture of rotenone and toxaphene in 1954). Agricultural water diversions cut off access to most of the lakes. During the 1950s and 1960s, Redfish Lake was probably the only lake in Idaho that was still used by sockeye salmon each year for spawning and rearing (Bjornn et al. 1968).

The Payette Lake population was eliminated in the early 1990s due to dam construction on the Payette River. Currently sockeye salmon are only found in lakes in the Stanley Basin of the upper Salmon River, primarily Redfish and Alturas Lakes. The very low numbers of naturally spawning individuals, limited habitat for spawning, and migration barriers have put Snake River sockeye salmon at a high risk for extinction (USDC, NOAA-NMFS 2005c).

Conservation Management

The Snake River Salmon Recovery Team (Bevan et al. 1994, USDC NOAA-NMFS 1995) suggested that to be considered recovered under ESA, the Snake River sockeye salmon ESU should have viable populations in three different lakes, with at least 1,000 naturally produced spawners per year in Redfish Lake and at least 500 in each of two other Stanley Basin lakes. As a step toward addressing this recommendation, progeny from the Redfish Lake captive broodstock program (overseen by the Stanley Basin Sockeye Technical Oversight Committee) were released in Pettit and Alturas lakes.

The captive broodstock program initiated as an emergency measure in 1991 has, at least temporarily, rescued this ESU from the brink of extinction, and associated research has provided a great deal of information about the biology of this species and its environment. The return of over 200 adults from the hatchery program in 2000 is considered encouraging, but the status of the natural population remains extremely precarious. Only 16 naturally produced adults have returned since the listing in 1991, and all were taken into the captive program. Currently, the captive broodstock program is being maintained as a short-term safety net, pending decisions about longer-term approaches to recovery of the ESU.

Critical Habitat

Critical habitat for Snake River sockeye salmon was designated on December 28, 1993 (USDC, NOAA-NMFS 1993).

Primary constituent elements of critical habitat in Idaho for Snake River sockeye salmon includes sites and habitat components that support one or more life stages as listed below:

(1) Spawning and juvenile rearing areas;
(2) Juvenile migration corridors;
(3) Areas for growth and development to adulthood, including these essential features: (i) spawning gravel; (ii) water quality; (iii) water quantity; (iv) water temperature, (v) food; (vi) riparian vegetation; and (vii) access.
(4) Adult migration corridors.

Environmental Baseline

Table IV-12 displays information for Snake River sockeye salmon, their range in Idaho and overlap of that range with the Idaho Roadless Areas and the MIRR themes. Table IV-12 also displays Snake River sockeye salmon designated critical habitat (DCH), overlap of DCH with the Idaho Roadless Areas, overlap with MIRR alternative themes. There are no strongholds or priority watersheds identified for this species in Idaho. The information in Table IV-12 provides the foundation/baseline for the analysis used in this biological assessment. Tables IV-12 and IV-13 do not include Forest Plan special area acres because these are not affected by the Idaho Roadless Rule.

Table IV-12: Snake River sockeye salmon baseline information

	Total	Roadless Area overlap	WLR	Prim	BCR	BCR CPZ	GFRG	SAHTS
Range in Idaho (ac)	1,655,707	346,822 (21%)	18,785 (1.1%)	19,640 (1.2%)	193,126 (12%)	56,999 (3.4%)	37,947 (2.3%)	0
DCH (miles of stream)	1,583	216 (14%)	10 (0.6%)	21 (1.3%)	78 (4.9%)	29 (1.8%)	0	0
DCH (lake acres)	3098	0						

Shaded numbers are indicated under themes that have greater permissions for activities in IRAs
Table does not include ares associated with FPSAs

Figure IV-7 displays the range of Snake River sockeye salmon in Idaho and the Roadless areas. Approximately 346,800 acres of the Snake River sockeye range overlaps Idaho Roadless Areas. However, none of the areas of overlap occurs in sockeye spawning or rearing habitat. The only areas of overlap are with sockeye migration route habitat. Figure IV-8 displays the overlap of Snake River sockeye salmon critical habitat and the Idaho Roadless Areas. There is no overlap with Snake River sockeye salmon designated critical habitat that occurs in lakes, the only overlap of Idaho roadless areas and designated critical habitat is along stream and river migration corridors to the ocean.

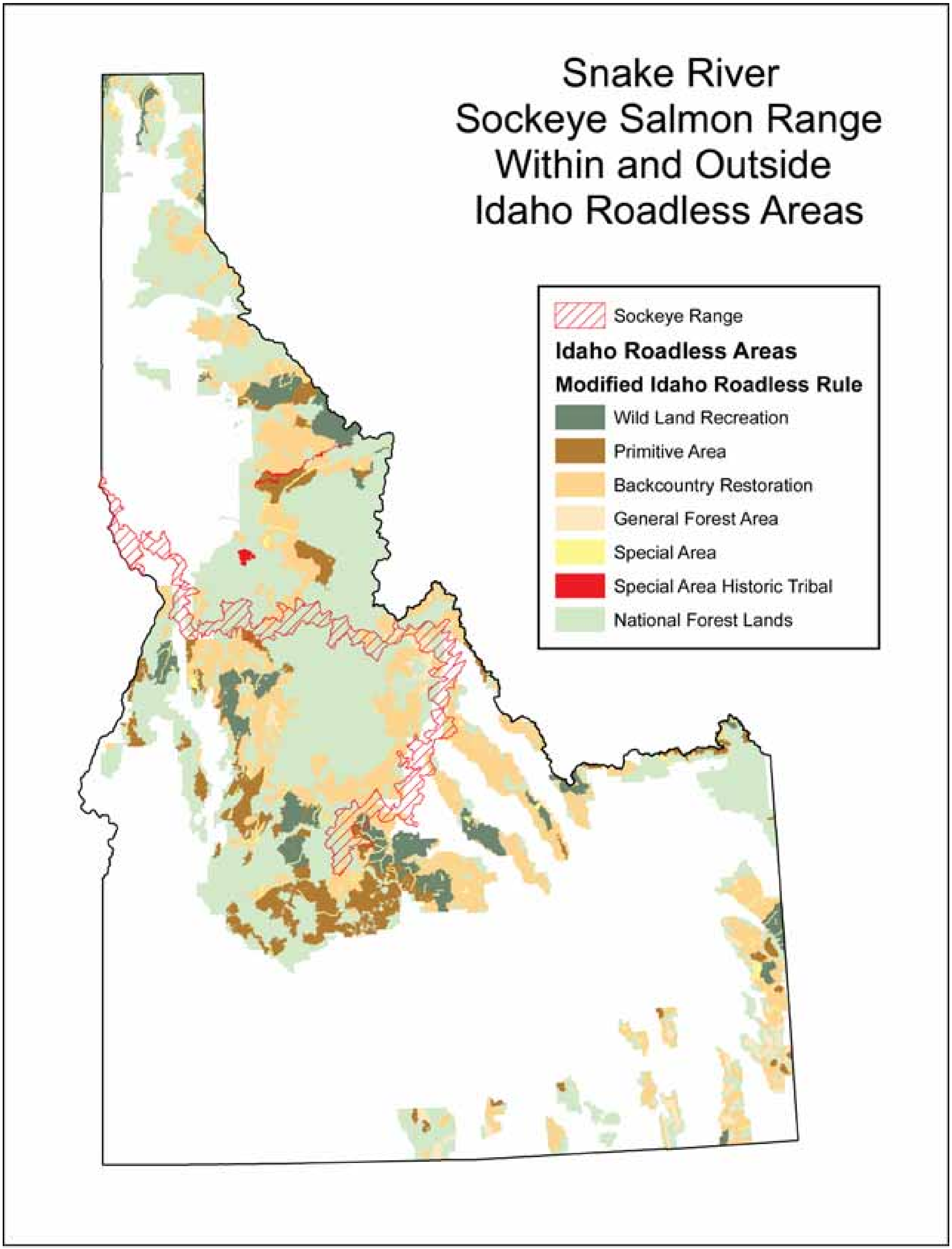

Figure IV-7. Snake River sockeye salmon range within and outside of Idaho Roadless Areas

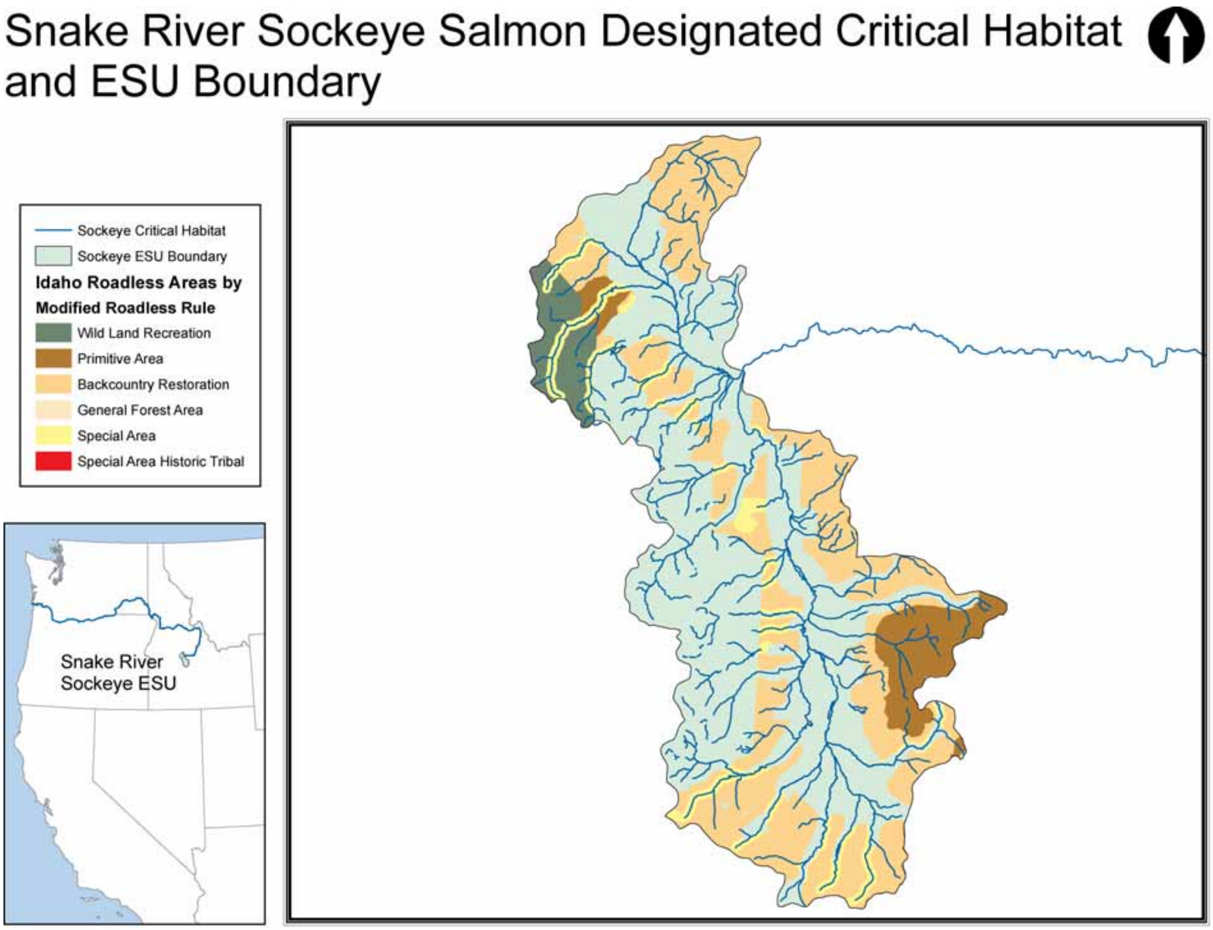

Figure IV-8. Snake River sockeye salmon designated critical habitat and ESU boundary

Table IV-13 displays the IRAs which are near lakes used for Snake River sockeye spawning or artificial propagation recovery efforts. None of the IRAs overlap with the lakes – the IRAs end at the lake edge. All lakes have at least one "side" that has no roadless adjacency. All lakes except one touch BCR theme.

Table IV-13: Idaho Roadless Areas near lakes supporting Snake River sockeye salmon spawning and/or recovery efforts

Name	Adjacent Roadless Area	Acres
Alturas Lake	Smoky Mountains	825
Pettit Lake	Smoky Mountains	391
Redfish Lake	Huckleberry & Hanson lakes	1,511
Stanley Lake	None immediately adjacent	176
Yellow Belly Lake	Pettit	195

Effects of the Action

As mentioned previously the WLR, Primitive, and SAHTS themes are the most restrictive of the five themes because they only allow road construction, road reconstruction or timber cutting under very limited situations. Discretionary mineral activities are prohibited in these three themes; therefore there would be no effect to Snake River sockeye salmon from discretionary mineral activities in these three themes. Aquatic ecological values including water quality, channel processes, sediment regimes, instream flows and riparian vegetation should be maintained under these themes. The Snake River sockeye salmon range overlaps approximately 38,425 acres of the WLR and Primitive themes (Table IV-12 and Appendix A, Table A-2). The range of the Snake River sockeye salmon does not overlap the SAHTS theme. None of the designated critical habitat for Snake River sockeye salmon falls within the WLR, Primitive or SAHTS themes (Table IV-12). The WLR and Primitive and SAHTS themes provide the highest protection for Snake River sockeye salmon.

The two areas of BCR: 1) Backcountry and 2) Backcountry community protection zone (BCR CPZ) have different permissions and prohibitions and therefore have different potential effects that could result from projects implemented in the future in these areas. Activities in the BCR CPZ are more permissive than in the BCR areas. The emphasis on fuels reduction in the BCR CPZ could lead to a higher level of ground disturbing activities than the BCR area. Approximately 193,126 acres of the Snake River sockeye salmon range overlaps the BCR and 56,999 acres overlaps the BCR CPZ.

The GFRG theme is the most permissive of all the themes. The GFRC theme provides the least protection for aquatic habitats and species. There is no overlap with the GFRG theme and Snake River sockeye salmon.

Cumulative Effects

Under ESA, 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). The action area for the Idaho Roadless Rule is the Roadless Areas in Idaho (9.3 million acres) and areas downstream that could be affected by activities in the roadless areas.

Cumulative effects on Snake River sockeye salmon resulting from State, tribal, and local government actions could occur for the following reasons:

- 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 Idaho Roadless Areas.
- 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 downstream of Idaho Roadless Areas.

Determination of Effects on Snake River Sockeye Salmon

Because of the analysis documented in this Biological Assessment, it is my determination that the Modified Idaho Roadless Rule contains permissions that allow future activities to occur in Idaho Roadless areas that *may affect and are likely to adversely affect* Snake River sockeye salmon.

Determination of Effects on Snake River Sockeye Salmon Critical Habitat

It is my determination that actions resulting from the implementation of the Modified Idaho Roadless Rule *may affect and are likely to adversely affect* Snake River sockeye salmon critical habitat. This determination is based on the low likelihood that the Modified Idaho Roadless Rule and the associated management requirements in INFISH, PACFISH and the SWIE land management plan ACS would result in adverse impacts to Snake River sockeye salmon critical habitat constituent elements in Idaho including 1) spawning and juvenile rearing areas, 2) juvenile migration corridors, 3) areas for growth and development to adulthood, and 4) adult migration corridors.

Rationale for Determinations

The range of Snake River sockeye salmon in Idaho is fairly limited (Figure IV-7). This species spends most of its time in freshwater lakes and only inhabits streams to migrate to and from the ocean. Snake River sockeye salmon have critical habitat designated in both stream and lake habitats. It is unlikely lake environments would be adversely affected by activities permitted under the MIRR in Idaho Roadless Areas. There is a greater risk of steam habitats being adversely affected by activities that could occur under MIRR.

Similar to the other T& E fish species, key aquatic habitat elements include: (1) spawning habitat with water quality and quantity (including flow regimes) conditions and substrates favorable to incubation and larval development; (2) rearing habitat with water quality (including temperature conditions) and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; (3) rearing habitat with foraging to support juvenile development; (4) cover habitat including shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks; and (5) migration corridors for adults and juveniles free of obstruction and excessive predation with favorable water quantity and quality conditions.

In addition, at the project level, all activities will be subject to existing INFISH, PACFISH, and/or SWIE ACS requirements (Appendix B) that are designed to avoid or minimize adverse effects T&E fish and their habitats. NEPA will be required for future timber cutting, sale and removal, road construction/reconstruction, and mineral activities in Idaho Roadless Areas. Given these factors, the Modified Idaho Roadless Rule poses a very low risk to individuals, metapopulations, and the species.

Snake River Fall-Run Chinook Salmon (*Oncorhynchus tshawytscha*)

Species-specific information used:

- NOAA's website http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Steelhead/Index.cfm
- Good, T.P., R.S. Waples, and P. Adams (editors). 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-NWFSC-66, 598p.

- Salmon and Steelhead Recovery Plan for Idaho (12/22/2005) (USCD, NOAA-NMFS 2005a): http://www.idahosalmonrecovery.net/recoverplans/srsteelhead.html
- Scott, C. 2003. "Oncorhynchus tshawytscha" (On-line), Animal Diversity Web. Accessed May 31, 2008 at http://animaldiversity.ummz.umich.edu/site/accounts/information/Oncorhynchus_tshawytscha.html
- Idaho Department of Fish and Game, Comprehensive Wildlife Conservation Strategy (IDFG 2005)

Status of the Species

Listing History

Snake River fall-run Chinook salmon were listed as threatened under ESA in 1992 (USDC, NOAA-NMFS 1992a, see correction USDC, NOAA-NMFS 1992b); threatened status reaffirmed in 2005 (USDC, NOAA-NMFS 2005c).

Distribution

Snake River fall-run Chinook salmon enter the Columbia River in July and August. The Snake River component of the Chinook salmon fall run migrates past the lower Snake River mainstem dams from August through November. Historically, Snake River fall-run Chinook salmon spawned in the Snake River upriver to the Hagerman Valley and in lower portions of the Salmon and Clearwater Rivers. Populations using the river above Hells Canyon Dam were eliminated with the construction of the Hells Canyon complex from 1955 to 1967 and earlier upriver dams.

The Idaho portion of the Snake River fall-run Chinook salmon Evolutionary Significant Unit (ESU) consists of the Clearwater drainage up to Lolo Creek except for the North Fork above Dworshak Dam, Salmon River drainage upstream to the Little Salmon River and the Snake River drainage upstream to Hells Canyon Dam. The Snake River fall-run Chinook salmon ESU includes hatchery stock from four propagation efforts: Lyons Ferry Hatchery, Nez Perce Tribal Hatchery, Oxbow Hatchery, and the Fall Chinook Acclimation Ponds Program. IRAs that have habitat supporting fall-run Chinook salmon are displayed in Table IV-14.

Table IV-14: Idaho Roadless Areas with fall-run Chinook salmon habitat

Forest	Roadless Area	Acres	WLR	Prim	BCR	BCR CPZ	GFRG	SAHTS
Nez Perce	John Day	10,300	0	0	10,300	0	0	0
Nez Perce	North Fork Slate Creek	10,400	0	0	10,400	0	0	0
Payette	Hells Canyon/ 7 Devils Scenic	29,200	0	29,200	0	0	0	0
Payette	Patrick Butte	68,700	0	20,800	43,700	4,200	0	0
Wallowa-Whitman	Big Canyon Id	14,100	0	0	14,100	0	0	0
Wallowa-Whitman	Klopton Creek – Corral Creek Id	21,300	0	0	21,300	0	0	0

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

Table does not include ares associated with FPSAs

Habitat Requirements

The fall-run Chinook salmon lifecycle involves adults maturing in the ocean, migrating back to their natal streams and spawning, embryos incubating, fry emerging, juveniles growing, and smolts migrating to the estuary to acclimate to saltwater and moving out into the ocean. Each phase of their life cycle may require use of and access to distinct habitats. Freshwater habitats in Idaho provide salmon with their basic habitat requirements including:

- cool, clean water
- appropriate water depth, quantity and flow velocities
- upland and riparian (stream bank) vegetation to stabilize soil and provide shade
- clean gravel for spawning and egg-rearing
- large woody debris to provide resting and hiding places
- adequate food
- varied channel forms.

Fall-run Chinook salmon use the mainstem of larger rivers to spawn compared to spring/summer Chinook salmon which spawn in smaller, higher tributary streams. Adult fall-run Chinook salmon enter the Snake River from late August through November. Spawning occurs from October through early December. Juveniles emerge from the gravels in March and April of the following year. Snake River fall-run Chinook salmon exhibit an ocean-type life history pattern, with juveniles migrating downstream from their natal spawning and rearing areas from June through early fall.

Fry emerge in March and juvenile fall-run Chinook salmon typically differ from spring/summer- fish in that they begin a slow downstream migration as subyearlings soon after emerging from the gravel, feeding on their way to the ocean. Most complete the journey in the first year.

Factors of Decline/Threats

Habitat loss and modification, including migration barriers, are believed to be the major factors of decline for fall-run Chinook populations. It is estimated that approximately 80% of historical spawning habitat was lost (including the most productive areas) with the construction of a series of Snake River mainstem dams (USDC, NOAA-NMFS 2005ac, 70 FR 37185). These factors have greatly reduced the abundance of natural-origin spawners in the Snake River. The loss of spawning habitats and the restriction of the ESU to a single extant naturally spawning population has increased the ESU's vulnerability to environmental variability and catastrophic events (USDC, NOAA-NMFS 2005c , 70 FR 37185). The diversity associated with populations that once resided above the Snake River dams has been lost, and the impact of straying out-of–ESU fish has the potential to further compromise ESU diversity.

Straying of out-of-ESU hatchery fall Chinook salmon from outside the Snake River Basin was identified as a major risk factor in the late 1980s to mid 1990s. Introgression of fish below Lower Granite Dam continues to be a concern. Improvements in the marking of out-of-ESU hatchery fish and their removal at Lower Granite Dam has reduced the impact of these strays.

Conservation and Management

Many agencies are participating on the protection and recovery of Snake River fall-run Chinook salmon. The Federal Magnuson-Stevens Act was made to protect the Essential Fish Habitat, the waters and substrates necessary to fish for spawning, breeding, feeding and growing to maturity. The Sustainable Fisheries Act has amended the Magnuson-Stevens Act. These efforts appear to be showing some benefits to the fish. The number of natural-origin spawners in 2001 was well in excess of 1,000 for the first time since counts at Lower Granite Dam began in 1975.

Management actions have reduced (but not eliminated) the fraction of fish passing Lower Granite Dam that are strays from out-of-ESU hatchery programs. Returns in the last 2 years also reflect an increasing contribution from supplementation programs based on the native Lyons Ferry Hatchery broodstock. With the exception of the increase in 2001, the ESU has fluctuated between approximately 500 and 1,000 adults, suggesting a somewhat higher degree of stability in growth rate and trends than is seen in many other salmon populations.

Increasing returns reflect improved ocean conditions, improved management of the mainstem hydrosystem regime, decreased harvest, an increasing contribution from Lyons Ferry Hatchery program. However, due to the large fraction of naturally spawning hatchery fish, it is difficult to assess the productivity of the natural population.

Critical Habitat

Critical habitat for Snake River fall-run Chinook salmon was designated on December 28, 1993 (USDC, NOAA-NMFS 1993). Primary constituent elements of critical habitat in Idaho for Snake River fall-run Chinook salmon includes sites and habitat components that support one or more life stages as listed below:

1. Spawning and juvenile rearing areas;
2. Juvenile migration corridors;
3. Areas for growth and development to adulthood, including these essential features: (i) spawning gravel; (ii) water quality; (iii) water quantity; (iv) water temperature, (v) food; (vi) riparian vegetation; and (vii) access.
4. Adult migration corridors.

Environmental Baseline

Table IV-15 displays important information for Snake River fall-run Chinook salmon, their range in Idaho and overlap of that range with the Idaho Roadless Areas and the MIRR themes. Table IV-15 also displays Snake River fall-run Chinook salmon designated critical habitat (DCH), overlap of DCH with the Idaho Roadless Areas, and overlap with MIRR themes. There are no strongholds or priority watersheds identified for this species in Idaho. The information in Table IV-15 provides the foundation/baseline for the analysis used in this biological assessment. Forest Plan special areas are not included in Tables IV-14 and IV-15 because the MIRR does not recommend management direction for these lands, which continue to be governed by the forest plans. Figure IV-9 displays the range of fall-run Chinook salmon in Idaho and the Roadless Areas. About 40,300 acres of the Snake River fall-run Chinook salmon range overlaps Idaho Roadless Areas. Figure IV-10 displays Snake River fall-run Chinook salmon designated critical habitat, note there is no overlap with the Idaho roadless areas.

Table IV-15: Snake River fall-run Chinook salmon baseline information

	Total	Roadless Area overlap	WLR	Prim	BCR	BCR CPZ	GFRG	SAHTS
Range in Idaho (ac)	790,397	40,307 (5%)	0	131 (0.02%)	28,513 (3.6%)	11,650 (1.5%)	0	0
DCH (miles of stream)	792	0	0	0	0	0	0	0

** Shaded numbers are indicated under themes that have greater permissions for activities in IRAs*
Table does not include ares associated with FPSAs

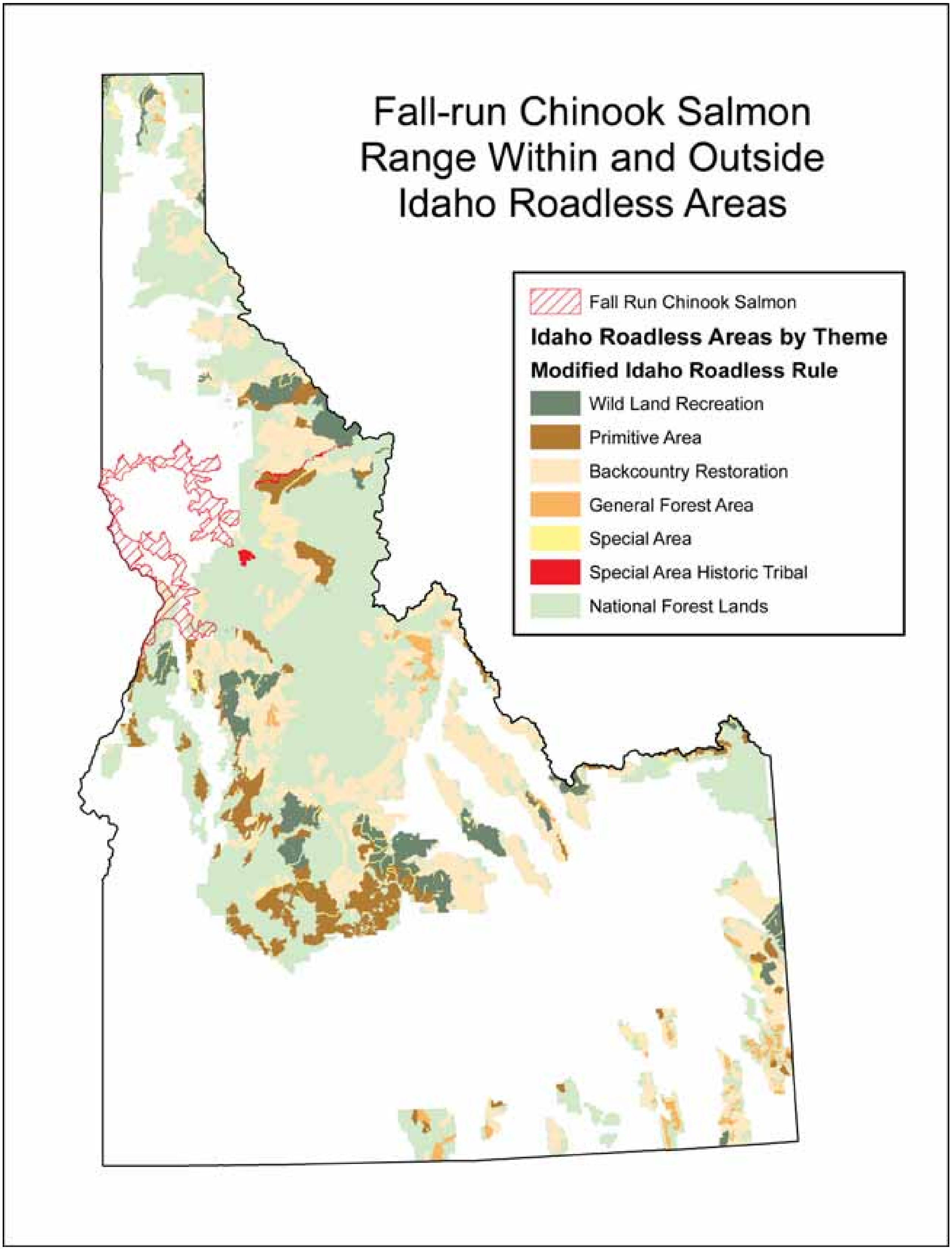

Figure IV-9. Snake River fall-run Chinook salmon range within and outside of Idaho Roadless Areas

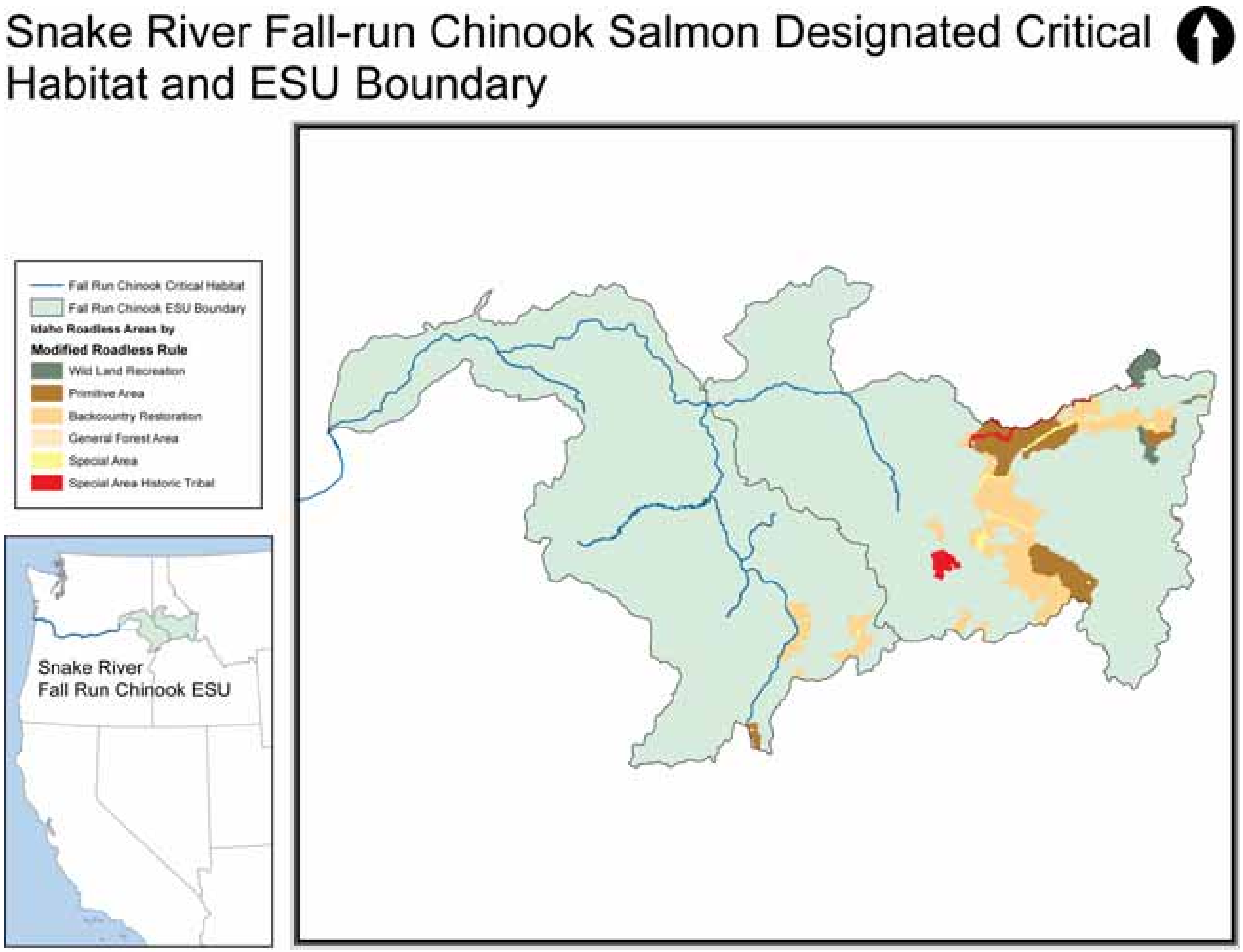

Figure IV-10. Snake River fall-run Chinook salmon designated critical habitat and ESU boundary

Effects of the Action

Very little of the Snake River fall-run Chinook salmon range overlaps IRAs (5 percent) (Table IV-14 and Appendix A, Table A-2). Most of the overlap is in the BCR theme (28,513 acres, 3.6 percent). There is some overlap with the BCR CPZ 11,650 acres (1.5 percent), which could be a concern at a local level since this is a fairly permissive theme with an emphasis on fuel reduction to decrease the risk of wildland fire.

There are 131 acres of range that overlap with the Primitive theme. As previously mentioned the Primitive theme has few permissions for vegetation treatments or ground disturbing activities. Aquatic ecological values including water quality, channel processes, sediment regimes, instream flows and riparian vegetation should be maintained under the Primitive theme. The Primitive theme should provide protection for Snake River fall-run Chinook salmon.

Two of the more conservative themes are the WLR and SAHTS, there is no overlap between the range of Snake River fall-run Chinook and these two themes. Also there is no overlap between the range of Snake River fall-run Chinook and the GFRG theme which is good because this is the most permissive theme and carries the highest risk of adverse effects to the species.

Cumulative Effects

Under ESA, 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). The action area for the Idaho Roadless Rule is the Roadless Areas in Idaho (9.3 million acres) and areas downstream that could be affected by activities in the roadless areas.

Cumulative effects on Snake River fall-run Chinook salmon resulting from State, tribal, and local government actions could occur for the following reasons:

- 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 Idaho Roadless Areas.
- 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 downstream of Idaho Roadless Areas.

Determination of Effects on Snake River Fall-run Chinook Salmon

As a result of the analysis documented in this Biological Assessment, it is my determination that the Modified Idaho Roadless Rule contains permissions that allow future activities to occur in Idaho Roadless areas that *may affect and are likely to adversely affect* Snake River fall-run Chinook salmon.

Determination of Effects on Snake River Fall-run Chinook Salmon Critical Habitat

It is my determination that activities implemented pursuant to the Modified Idaho Roadless Rule *may affect and would likely adversely affect* Snake River fall-run Chinook salmon critical habitat. This determination is based on the low likelihood that the Modified Idaho Roadless Rule and the associated management requirements in INFISH, PACFISH and the SWIE land management plan ACS would result in adverse impacts to this species critical habitat primary constituent elements in Idaho including (1) spawning and juvenile rearing areas, (2) juvenile migration corridors, (3) areas for growth and development to adulthood, and (4) adult migration corridors.

Rationale for Determinations

Although there is little overlap between the range of Snake River fall-run Chinook salmon and the Idaho roadless areas, because these are stream-dwelling fish they are susceptible to adverse effects from timber cutting, sale and removal, and road construction/ reconstruction permitted in IRAs under limited permissions in the Modified Idaho Roadless Rule. Adverse effects could occur due to short-term reduced habitat quality or increased chance for mortality from these activities. Overall, activities implemented under the Modified Idaho Roadless Rule should maintain key aquatic habitat elements.

Key aquatic habitat elements include: (1) spawning habitat with water quality and quantity (including flow regimes) conditions and substrates favorable to incubation and larval development; (2) rearing habitat with water quality (including temperature conditions) and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; (3) rearing habitat with foraging to support juvenile development; (4) cover habitat including shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks; and (5) migration corridors for adults and juveniles free of obstruction and excessive predation with favorable water quantity and quality conditions.

At the project level, all activities will be subject to existing INFISH, PACFISH, and/or SWIE ACS requirements (appendix B) that are designed to avoid or minimize adverse effects T&E fish and their habitats. In addition project level NEPA is required for all future projects involving timber cutting, sale and removal, road construction/ reconstruction, mineral activities, and restoration activities in Idaho roadless areas. Given these factors, the Modified Idaho Roadless Rule poses a low risk to individuals, metapopulations, and the species.

Snake River Spring/Summer Chinook Salmon (*Oncorhynchus tshawytscha*)

Species-specific information used:

- NOAA's website http://www.nwr.noaa.gov/ESA-Salmon-Listings/Salmon-Populations/Steelhead/Index.cfm
- Good, T.P., R.S. Waples, and P. Adams (editors). 2005. Updated status of federally listed ESUs of West Coast salmon and steelhead. U.S. Dept. Commerce, NOAA Tech. Memo. NMFS-NWFSC-66, 598p.
- Salmon and Steelhead Recovery Plan for Idaho (12/22/2005) (USDC, NOAA-NMFS 2005a): http://www.idahosalmonrecovery.net/recoverplans/srsteelhead.html
- Idaho Department of Fish and Game, Comprehensive Wildlife Conservation Strategy (IDFG 2005)

Status of the Species

Listing History

Snake River spring/summer Chinook salmon were listed as threatened under ESA in 1992 (USDC, NOAA-NMFS 1992a, see correction USDC, NOAA-NMFS 1992b); threatened status reaffirmed in 2005 (USDC, NOAA-NMFS 2005a).

Distribution

Snake River spring/summer Chinook salmon historically spawned in the Snake River tributaries of the Clearwater, Salmon, Weiser, Payette and Boise rivers. The Idaho portion of the Snake River spring/summer Chinook salmon Evolutionary Significant Unit (ESU) consists of all the Salmon River drainage and the Snake River drainage upstream to Hells Canyon Dam. This ESU includes production areas characterized by spring- and summer-timed returns, and combinations from the two adult timing patterns. Runs classified as spring-run Chinook salmon are counted at Bonneville Dam beginning in early March and ending the first week of June; runs classified as summer Chinook salmon return to the Columbia River from June through August.

Populations in the Clearwater drainage were eliminated or severely depressed by the Lewiston dam in the 1950s. The Clearwater drainage was not included due to loss of this population in the 1950s. Although not listed in the ESU, the reestablished Clearwater River populations have been considered as part of the historical range. Populations using the rivers above Hells Canyon Dam were eliminated with the construction of Hells Canyon complex from 1955 to 1967 and earlier upriver dams.

Habitat Requirements

Chinook salmon are the largest of any salmon, with adults often exceeding 40–60 pounds after 3–5 years in the ocean. Spring/summer Chinook salmon use smaller, higher elevation tributary systems for spawning and juvenile rearing compared to fall-run Chinook salmon which spawn in mainstem larger rivers. As with most salmon, adults die after spawning providing a large nutrient source for juvenile fish. Juvenile spring/summer Chinook salmon remaining headwater streams for a year and out-migrate the following spring.

Returning fish hold in deep mainstem and tributary pools until late summer, when they emigrate up into tributary areas and spawn. In general, spring-run type Chinook salmon tend to spawn in higher-elevation reaches of major Snake River tributaries in mid- through late August, and summer-run Snake River Chinook salmon spawn approximately one month later than spring-run fish. Summer-run Chinook salmon tend to spawn lower in the Snake River drainages, although their spawning areas often overlap with spring-run spawners.

Many of the Snake River tributaries that spring/summer Chinook salmon use exhibit two major features: (1) extensive meanders through high-elevation meadowlands and (2) relatively steep lower sections joining the drainages to the mainstem Salmon River (Matthews and Waples 1991). The combination of relatively high summer temperatures and the upland meadow habitat creates the potential for juvenile salmonid high productivity. Historically, the Salmon River system may have supported more than 40 percent of the total return of spring/summer Chinook salmon to the Columbia River system (e.g., Fulton 1968).

The Salmon River system contains a range of habitats used by spring- and summer-run Chinook salmon. The South Fork and Middle Fork Salmon River currently supports the bulk of natural production in the drainage. Two large tributaries entering above the confluence of the Middle Fork Salmon River, the Lemhi and Pahsimeroi Rivers, drain broad alluvial valleys and are believed to have historically supported substantial, relatively productive anadromous fish runs. Returns into the upper Salmon River tributaries were reestablished following the opening of passage around Sunbeam Dam on the mainstem Salmon River downstream of Stanley, Idaho. Sunbeam Dam in the upper Salmon River was a serious impediment to migration of anadromous fish and may have been a complete block in at least some years before its partial removal in 1934 (Waples et al. 1991).

Spring/summer Chinook salmon from the Snake River basin exhibit stream-type life history characteristics (Healey 1983). Eggs are deposited in late summer and early fall, incubate over the following winter, and hatch in late winter and early spring of the following year. Juveniles rear through the summer, overwinter, and migrate to sea in the spring of their second year of life. Depending on the tributary and the specific habitat conditions, juveniles may migrate extensively from natal reaches into alternative summer-rearing or overwintering areas. Snake River spring/summer Chinook salmon return from the ocean to spawn primarily as 4- and 5-

year-old fish, after 2 to 3 years in the ocean. A small fraction of the fish return as 3-year-old "jacks," heavily predominated by males.

Factors of Decline/Threats

Snake River spring/summer Chinook salmon must migrate past a series of mainstem Snake and Columbia River hydroelectric dams to and from the ocean. Snake River populations of spring/summer Chinook salmon must migrate through eight dams. In addition, hydropower development in the Columbia River Basin has resulted in inundation of habitat and predator populations have increased due to hydroelectric development that has created ideal foraging areas. Species status reviews have concluded that mainstem Columbia and Snake River hydroelectric projects have resulted in major disruption of migration corridors and have affected flow regimes and estuarine habitat.

Tributary habitat conditions vary widely among the various drainages of the Snake River basin. Habitat is reduced in many areas of the basin, reflecting the impacts of forest, grazing, and mining practices. Impacts relative to anadromous fish include lack of pools, higher water temperatures, low water flows, poor overwintering conditions, and high sediment loads. Substantial portions of the Salmon River drainage, particularly in the middle fork, are protected in wilderness areas.

Conservation and Management

Similar to fall-run Chinook many agencies are participating on the protection and recovery of Snake River spring/summer Chinook salmon. Because this species requires many different habitats, including freshwater and marine, during its life cycle it poses several major conservation and management challenges. Hydropower, habitat, harvest, and hatcheries have all contributed to the decline in this species and with improved management they can all contribute to the recovery.

Spring/summer Chinook salmon are produced from 15 artificial production facilities. Much of the production was initiated under the Lower Snake River Compensation Plan. Lyons Ferry Hatchery serves as a rearing station for Tucannon River spring-run Chinook salmon broodstock. Rapid River Hatchery and McCall Hatchery provide rearing support for a regionally derived summer-run Chinook salmon broodstock released into lower Salmon River areas. Two major hatchery programs have operated in the upper Salmon Basin—the Pahsimeroi and Sawtooth facilities. Since the mid- 1990s, small-scale natural stock supplementation studies and captive breeding efforts have been initiated in the Snake River basin.

The aggregate return (including hatchery and natural-origin fish) of Snake River spring/summer Chinook in 2001 exhibited a large increase over previous years' abundances. Many, but not all, of the 29 natural production areas within the ESU experienced large abundance increases in 2001 as well, with two populations nearing the abundance levels specified in the National Marine Fisheries Service's 1995 Proposed Snake River Recovery Plan (USDC, NOAA-NMFS 1995). However, approximately 79 percent of the 2001 return of spring-run Chinook was of hatchery origin. Overall the hatchery programs have contributed to the increases in total ESU abundance and in the number of natural spawners observed in recent years. However, the contribution of ESU hatchery programs to the productivity of the ESU in-total is uncertain.

Over a 10-year period from 1992 to 2001, natural-origin fish returning to Lower Granite Dam were roughly 42 percent of the total returns. Peak numbers of adult returns at Lower Granite in 2001-2004 have averaged 124,344 fish; however, from 2005-2007, aggregated counts of hatchery and natural-origin fish dropped and have averaged 40,660, but should be approximately 72,000 for 2008 (FPC 2008).

Critical Habitat

Critical habitat was designated for Snake River spring/summer Chinook salmon on December 28, 1993 (USDC, NOAA-NMFS 1993) and later revised on October 25, 1999 (USDC, NOAA-NMFS 1999). Critical habitat includes all river reaches presently or historically accessible and adjacent riparian zones, except reaches above impassable natural falls such as Upper Napias Creek. The Federal Register designation of critical habitat specifically defines geographic areas and essential habitat elements. Primary constituent elements of critical habitat in Idaho for Snake River spring/summer Chinook salmon includes sites and habitat components that support one or more life stages as listed below:

1. Spawning and juvenile rearing areas;
2. Juvenile migration corridors;
3. Areas for growth and development to adulthood, including these essential features: (i) spawning gravel; (ii) water quality; (iii) water quantity; (iv) water temperature, (v) food; (vi) riparian vegetation; and (vii) access.
4. Adult migration corridors.

Environmental Baseline

About 100 roadless areas (~2,980,900 acres) in Idaho have habitat that supports spring/summer Chinook salmon. Table IV-16 and Figure IV-11 displays information for the Snake River spring/summer Chinook salmon, their range in Idaho and overlap of that range with the Idaho Roadless Areas and the MIRR. Table IV-16 and Figure IV-12 displays Snake River spring/summer Chinook salmon designated critical habitat (DCH), overlap of DCH with the Idaho Roadless Areas, overlap with MIRR themes, and priority watersheds as identified for PACFISH and their overlap with Idaho Roadless areas. There are no strongholds identified for this species in Idaho. The information in Table IV-16 provides the foundation/baseline for the analysis used in this biological assessment. Tables IV-16 and IV-17 do not include Forest Plan special area acres because these are not affected by the Idaho Roadless Rule.

Table IV-16: Snake River spring/summer Chinook salmon baseline information

	Total	Roadless Area overlap	WLR	Prim	BCR	BCR CPZ	GFRG	SAHTS
Range in Idaho (ac)	10,512,895	2,980,941 (28%)	470,631 (4.5%)	300,460 (2.8%)	1,752,799 (16.7%)	211,990 (2%)	80,911 (0.8%)	26,115 (0.3%)
DCH (miles of stream)	6,415	643 (10%)	65 (1%)	32 (0.5%)	347 (5.4%)	46 (0.7%)	7 (0.1%)	0
Priority watershed (ac)	4,888,127	1,885,767 (38%)	431,466 (8.8%)	91,112 (1.9%)	1,124,360 (23%)	117,497 (2.4%)	20,908 (0.4%)	100,424 (2%)

** Shaded numbers are indicated under themes that have greater permissions for activities in IRAs*
Table does not include ares associated with FPSAs

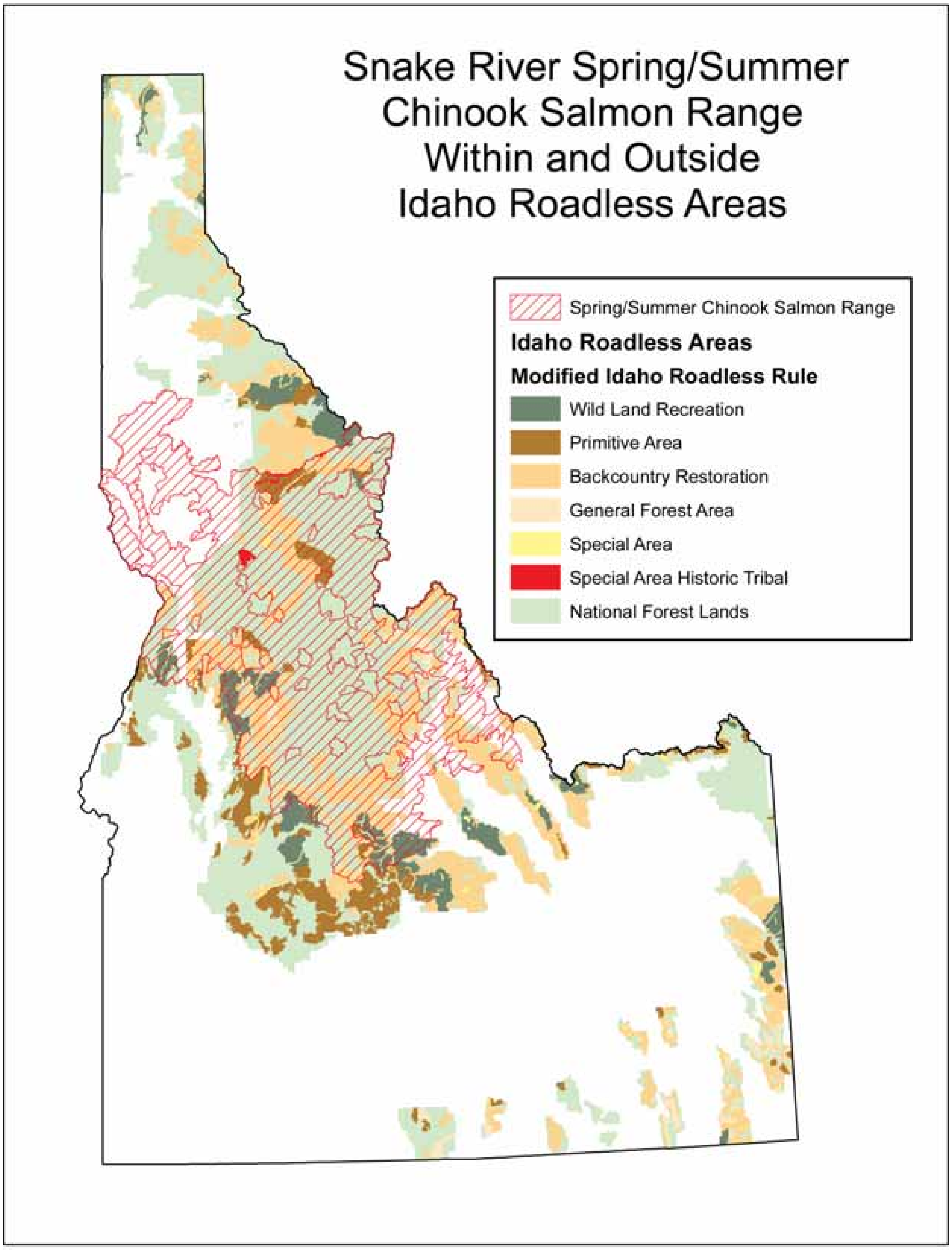

Figure IV-11. Snake River spring/summer Chinook salmon range within and outside of Idaho Roadless Areas

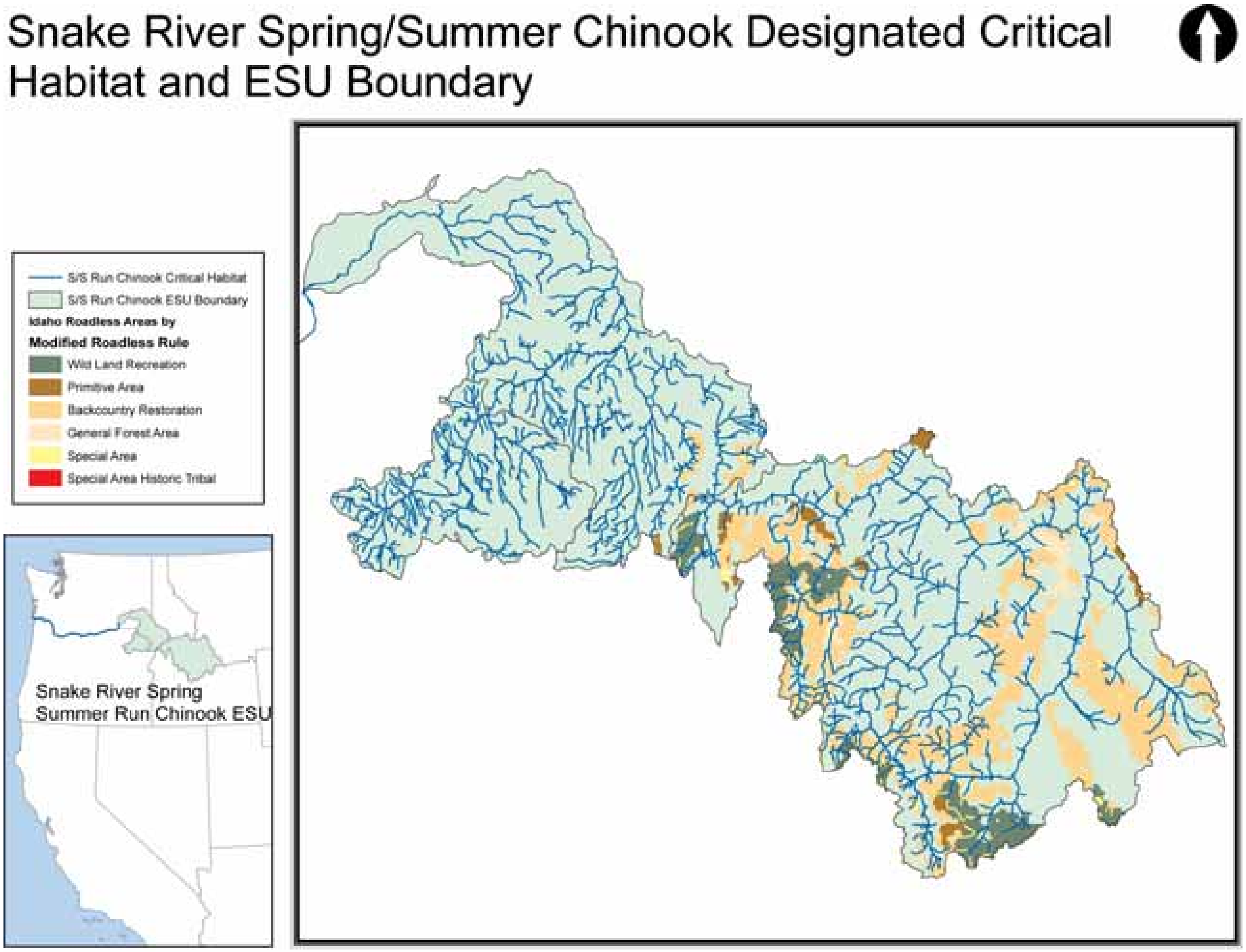

Figure IV-12. Snake River spring/summer Chinook salmon designated critical habitat and ESU boundary.

Table IV-17 displays larger (>100,000 acres) IRAs which support Snake River spring/summer Chinook salmon populations. Note that these same larger areas also support Snake River Basin steelhead (Table IV-11) and bull trout (Table IV-20). These larger areas are of interest because they have a greater potential to provide for larger interconnected populations (metapopulations) of the species due to their lack of roads and associated culverts. Larger populations are able to better withstand disturbances and therefore have a greater chance of persistence.

Table IV-17: Larger (>100,000 ac) Idaho Roadless Areas supporting Snake River spring/summer Chinook salmon

Forest	IRA	Acres	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS
Clearwater**	Bighorn - Weitas	254,400	0	0	246,400	0	0	8,000
Clearwater**	Hoodoo	153,900	151,900	0	0	0	0	2,000
Clearwater**	North Lochsa Slope	111,900	0	82,500	15,100	0	0	14,300
Challis/Sawtooth	Boulder-White Clouds	427,300	231,300	87,300	79,800	28,900	0	0
Challis/Sawtooth	Loon Creek	109,600	0	0	102,100	7,500	0	0

Forest	IRA	Acres	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS
Salmon/Challis	Camas Creek	103,900	0	0	93,400	10,500	0	0
Salmon/Challis	Lemhi Range	305,200	0	0	304,700	500	0	0
Boise	Peace Rock	191,700	0	137,400	44,700	2,500	0	0
Boise/Challis	Red Mountain 916	114,600	85,900	11,800	16,300	0	600	0
Boise/Payette	Needles	157,500	93,500	12,900	51,000	0	100	0
Boise/Sawtooth	Smoky Mountains	336,300	0	233,700	76,800	25,800	0	0
Payette**	Secesh	236,500	110,300	7,700	106,100	12,400	0	0
Nez Perce	West Meadow Creek	115,600	0	0	112,500	3,100	0	0
Total		2,618,400	672,900	573,300	1,248,900	91,200	700	24,300

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

*** Note: Although found within these IRAs, Spring/Summer Chinook salmon are not listed in these areas.*

Table does not include ares associated with FPSAs

Effects of the Action

As mentioned previously each theme in the MIRR contains different prohibitions and permissions. Of the five themes, the WLR, Primitive, and SAHTS themes are the most restrictive because they only allow road construction, road reconstruction or timber cutting under very limited situations. Discretionary mineral activities are prohibited these three themes. Because of the prohibitions on ground disturbing activities within the WLR, Primitive, and SAHTS themes they should provide for good conditions for aquatic species 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 Snake River spring/summer Chinook salmon range overlaps approximately 797,206 acres in the WLR, Primitive and SAHTS themes (Table IV-16 and Appendix A, Table A-2). The WLR, Primitive and SAHTS themes contain approximately 129 miles of designated Snake River spring/summer Chinook salmon critical habitat, which is 2 percent of the total designated critical habitat for this species. Snake River spring/summer Chinook salmon priority watersheds have a fairly high overlap with IRAs (38 percent). Within the area of overlap between IRAs and priority watersheds approximately 13 percent is within these three themes. The WLR, Primitive and SAHTS themes provide the highest protection for Snake River spring/summer Chinook salmon including their critical habitat and priority watersheds.

The Backcountry/Restoration theme is divided into two areas: (1) Backcountry/ Restoration (BCR) and (2) Backcountry/ Restoration Community Protection Zone (BCR CPZ). Activities in the BCR CPZ are more permissive than activities in the BCR. 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, temporary 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 wildfire. 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.

Approximately 1,752,799 acres of the Snake River spring/summer Chinook salmon range overlaps in the BCR theme and 211,990 acres overlaps the BCR CPZ. Similar to Snake River steelhead a number of important Snake River spring/summer Chinook salmon areas fall into the BCR and BCR CPZ areas. Of particular interest are larger areas contributing to steelhead habitat. Table IV-17 displays the IRAs with >100,000 acres contributing to spring/summer Chinook salmon habitat. Of the 13 IRAs listed 11 have acres overlapping the BCR theme. IRAs contributing >2,000 acres to steelhead habitat in the BCR CPZ theme include: Loon Creek, Camas Creek, Peace Rock, Secesh and West Meadow Creek.

Only 41 miles of designated Snake River spring/summer Chinook salmon critical habitat falls with the BCR CPZ, which is a very small percent (0.3%) of the total designated critical habitat for this species. A fairly high amount of Snake River spring/summer Chinook salmon priority watershed area overlaps with the BCR theme areas (23%). Very little of the priority watershed area is within the BCR CPZ and GFRG themes, 2.4% and 0.04% respectively.

The BCR theme is very similar to the 2001 Roadless Rule guidance for land management and therefore has a very low probability of leading to any future activities that would result in adverse effects to Snake River spring/summer Chinook salmon. However, there are more permitted activities in the BCR CPZ and these areas have a higher potential for future actions to occur that could result in adverse effects to Snake River spring/summer Chinook salmon. Although this decision does not compel actions there is a linkage between this decision that could lead to future actions of a ground disturbing nature which are not favorable to fish and their habitat.

The GFRG is the most permissive of all the themes. Road construction/reconstruction, and timber cutting activities would be permissible in these areas. 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 Snake River spring/summer Chinook salmon. There is a less than 1% overlap with GFRG and spring/summer Chinook salmon range, critical habitat, and priority watersheds (Table IV-16). Less than 1,000 acres of the larger IRA areas contributing to steelhead habitat overlap with GFRG (Table IV-17).

Cumulative Effects

Under ESA, 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). The action area for the Idaho Roadless Rule is the Roadless Areas in Idaho (9.3 million acres) and areas downstream that could be affected by activities in the roadless areas.

Cumulative effects on Snake River spring/summer Chinook salmon resulting from State, tribal, and local government actions could occur for the following reasons:

- 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 Idaho Roadless Areas.
- 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 downstream of Idaho Roadless Areas.

Determination of Effects on Snake River Spring/Summer Chinook Salmon

As a result of the analysis documented in this Biological Assessment, it is my determination that the Modified Idaho Roadless Rule contains permissions that allow future activities to occur in Idaho Roadless areas that *may affect and are likely to adversely affect* Snake River spring/summer Chinook salmon.

Determination of Effects on Snake River Spring/Summer Chinook Salmon Critical Habitat

It is my determination that actions resulting from the implementation of the Modified Idaho Roadless Rule *may affect and are likely to adversely affect* Snake River spring/summer Chinook salmon critical habitat. This determination is based on the low likelihood that the Modified Idaho Roadless Rule and the associated management requirements in INFISH, PACFISH and the SWIE land management plan ACS would result in adverse impacts to this species critical habitat constituent elements in Idaho including (1) spawning and juvenile rearing areas, (2) juvenile migration corridors, (3) areas for growth and development to adulthood, and (4) adult migration corridors.

Rationale for Determinations

Overall the Modified Idaho Roadless Rule alternative is unlikely to result in a substantial reduction of the quantity and/or quality of Snake River spring/summer Chinook salmon critical habitat, priority watersheds, or larger areas within the range of Snake River spring/summer Chinook salmon providing unroaded landscapes. Activities implemented under the Modified Rule should maintain key aquatic habitat elements. Limited adverse effects could occur due to short-term reduced habitat quality or increased chance for mortality from these activities. However, at the project level, all activities will be subject to existing INFISH, PACFISH, and/or SWIE ACS requirements (Appendix B) and NEPA that are designed to avoid or minimize adverse effects T&E fish and their habitats. In addition, project level NEPA will be required for timber cutting, sale and removal, road construction/reconstruction, mineral activities, and restoration activities in Idaho roadless areas. Given these factors, the Modified Rule poses a low risk to individuals, metapopulations, and the species.

Areas in the GFRG theme could be the exception to this generalization since these areas have the greatest permissions and a higher potential for risk of adverse effects to aquatic species, aquatic habitats, and key aquatic elements. 80,911 acres (0.8 percent) of the Snake River spring/summer Chinook salmon range overlaps the GFRG theme.

Limited ground-disturbing activities are likely to occur in WLR, Primitive, and SAHTS themes because of the restricted permissions on activities related to road construction/reconstruction, and timber cutting. These three themes should provide for key aquatic habitat elements, natural processes, aquatic and riparian habitat integrity, and species diversity.

Areas in the Backcountry theme within the CPZ have a higher potential for ground-disturbing activities including road construction/reconstruction, timber cutting occurring depending on the risk of wildland fire. Some limited activities may occur outside the CPZ. Road construction/ reconstruction, and timber cutting activities may reduce key aquatic habitat elements in a limited portion of some roadless areas.

Similar to the other T&E fish species key aquatic habitat elements for Snake River spring/summer Chinook include: (1) spawning habitat with water quality and quantity (including flow regimes) conditions and substrates favorable to incubation and larval development; (2) rearing habitat with water quality (including temperature conditions) and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; (3) rearing habitat with foraging to support juvenile development; (4) cover habitat including shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks; and (5) migration corridors for adults and juveniles free of obstruction and excessive predation with favorable water quantity and quality conditions.

Bull Trout (*Salvelinus confluentus*)

Species-specific information used:

- Bull Trout Draft Recovery Plan (October 2002) (USDI, Fish and Wildlife Service 2002): http://ecos.fws.gov/docs/recovery_plan/021129_1.pdf
- FWS webpage: http://www.fws.gov/pacific/bulltrout/
- Idaho Governor's Office of Species Conservation http://species.idaho.gov/list/bulltrout.html
- Idaho Department of Fish and Game, Comprehensive Wildlife Conservation Strategy (IDFG 2005)

Status of the Species

Listing History

The bull trout in the coterminous United States was listed as threatened on November 1, 1999 (USDI, Fish and Wildlife Service 1999a). Earlier rulemakings had listed the Columbia River distinct population segment of bull trout as threatened (USDI, Fish and Wildlife Service 1998b). The Columbia River DPS occurs throughout the entire Columbia River basin within the United States and its tributaries, excluding bull trout found in the Jarbidge River, Nevada. The DPS serves as an interim recovery unit in the absence of an approved recovery plan (USDI, Fish and Wildlife Service 2008). The Columbia River DPS is significant because the overall range of the species would be substantially reduced if this discrete population were lost.

Distribution

Bull trout occur in the northwestern portion of North America from Nevada to the Yukon Territory (Behnke 2002). Bull trout occupy portions of 14 major tributaries in the Snake River basin of Idaho, Oregon, and Washington. Bull trout occurred in all but the eastern section of

Idaho, including the Snake River basin and tributaries of the upper Columbia River basin (Batt 1996). Most of the Idaho bull trout populations are included in the Columbia River distinct population segment. One small population is included in the Jarbridge River distinct population segment.

The Columbia River bull trout distinct population segment is represented by relatively widespread populations that have declined in overall range and numbers of fish. 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 (USDI, Fish and Wildlife Service 2002). A majority of Columbia River bull trout occur in isolated, fragmented habitats that support low numbers of fish and are inaccessible to migratory bull trout. The few remaining bull trout ‘‘strongholds’’ in the Columbia River basin tend to be found in large areas of contiguous habitats in the Snake River basin of central Idaho mountains, upper Clark Fork and Flathead Rivers in Montana, and several streams in the Blue Mountains in Washington and Oregon.

The Columbia River distinct population segment of bull trout includes 22 management units (major units for managing recovery efforts), nine of these have areas in Idaho (Table IV-18) (USDI, Fish and Wildlife Service 2008). The Jarbridge River distinct population segment is also a management unit and is shared between Idaho and Nevada (Table IV-18).

Table IV-18. Bull trout management units in Idaho by distinct population segment

Management unit	Distinct population segment	State(s)
Clark Fork River	Columbia River	Idaho, Montana Washington
Kootenai River	Columbia River	Idaho, Montana
Imnaha-Snake River	Columbia River	Idaho, Oregon
Hells Canyon Complex	Columbia River	Idaho, Oregon
Coeur d’Alene Lake Basin	Columbia River	Idaho
Clearwater River	Columbia River	Idaho
Salmon River	Columbia River	Idaho
Southwest Idaho	Columbia River	Idaho
Little Lost River	Columbia River	Idaho
Jarbridge River	Jarbridge River	Idaho, Nevada

Idaho contains approximately 48 percent of the stream miles and 39 percent of the lakes and reservoirs for this species (Reighn, personal communication, June 15, 2007). Although Idaho contributes to a significant portion of the occupied habitat for bull trout, the populations in Idaho have declined severely (46 percent) within their historic range in the State.

Habitat Requirements

Bull trout have more specific habitat requirements than most other salmonids. Habitat components that influence bull trout distribution and abundance include water temperature, cover, channel form and stability, substrate for spawning and rearing, and migratory corridors. Bull trout are found in colder streams and require colder water than most other salmonids for incubation, juvenile rearing, and spawning. Spawning and rearing areas are often associated with cold-water springs, groundwater infiltration, and/or the coldest streams in a watershed.

Throughout their lives, bull trout require complex forms of cover, including large woody debris, undercut banks, boulders, and pools (USDI, Fish and Wildlife Service 2002). Bull trout exhibit 3 life history types in Idaho: adfluvial, fluvial, and resident, all which require cold water temperatures <16°C (<60°F) during portions of their life cycle to persist. 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, macrozooplankton and small fish (Boag 1987, Goetz 1989, Donald and Alger 1993). Adult migratory bull trout are primarily piscivorous, known to feed on various fish species (Fraley and Shepard 1989, Donald and Alger 1993).

For spawning and early rearing, bull trout require loose, clean gravel relatively free of fine sediments. Bull trout typically spawn from August to November during periods of decreasing water temperatures. However, 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). Because bull trout have a relatively long incubation and development period within spawning gravel (greater than 200 days), transport of bedload in unstable channels may kill young bull trout. Bull trout use migratory corridors to move from spawning and rearing habitats to foraging and overwintering habitats and back. Different habitats provide bull trout with diverse resources, and migratory corridors allow local populations to connect, which may increase the potential for gene flow and support or refounding of populations.

Maintaining bull trout habitat requires stream channel and flow stability (Rieman and McIntyre 1993). Juvenile and adult bull trout frequently inhabit side channels, stream margins, and pools with suitable cover (Sexauer and James 1997). These areas are sensitive to activities that directly or indirectly affect stream channel stability and alter natural flow patterns. For example, altered stream flow in the fall may disrupt bull trout during the spawning period and channel instability may decrease survival of eggs and young juveniles in the gravel during winter through spring (Fraley and Shepard 1989, Pratt 1992, Pratt and Huston 1993).

In summery, key aquatic habitat elements for bull trout include: (1) spawning habitat with water quality and quantity (including flow regimes) conditions and substrates favorable to incubation and larval development; (2) rearing habitat with water quality (including temperature conditions) and floodplain connectivity to form and maintain physical habitat conditions and support juvenile growth and mobility; (3) rearing habitat with foraging to support juvenile development; (4) cover habitat including shade, submerged and overhanging large wood, log jams and beaver dams, aquatic vegetation, large rocks and boulders, side channels, and undercut banks; and (5) migration corridors for adults and juveniles free of obstruction and excessive predation with favorable water quantity and quality conditions.

Factors of Decline/Threats

Bull trout distribution, abundance, and habitat quality have declined rangewide. Declines in bull trout distribution and abundance are the results of combined effects of the following: reduced habitat quality and fragmentation, the blockage of migratory corridors, poor water quality, angler harvest and poaching, entrainment (process by which aquatic organisms are pulled through a diversion structure or other device) into diversion channels and dams, and introduced nonnative species. Specific land and water management activities that continue to depress bull trout populations and degrade habitat include dams and other diversion structures, forest management practices, road construction and maintenance, livestock grazing, agriculture, mining, and urban and rural development (USDI, Fish and Wildlife Service 2002). Some threats to bull trout are the continuing effects of past land management activities.

Dams affect bull trout by changing various biological and physical processes. Dams can alter habitats; flow, sediment, and temperature regimes; migration corridors; and interspecific interactions, especially between bull trout and introduced species (Rode 1990, Washington Department of Wildlife 1992, Rieman and McIntyre 1993, Wissmar et al. 1994). Impassable dams have caused declines of bull trout primarily by preventing access of migratory fish to spawning and rearing areas in headwaters and precluding recolonization of areas where bull trout have been extirpated (Rieman and McIntyre 1993).

Forest management activities have also affected bull trout. Timber extraction and road building has affected stream habitats by altering recruitment of large woody debris, erosion and sedimentation rates, runoff patterns, the magnitude of peak and low flows, and annual water yield (Furniss et al. 1991, Wissmar et al. 1994, Spence et al. 1996). In addition, non-forest roads have resulted in degraded bull trout habitat by creating flow constraints in ephemeral, intermittent, and perennial channels; increasing erosion and sedimentation; creating passage barriers; channelization; and reducing riparian vegetation (Furniss et al. 1991, Ketcheson and Megahan 1996).

Livestock grazing has degraded bull trout habitat by removing riparian vegetation, destabilizing streambanks, widening stream channels, promoting incised channels and lowering water tables, reducing pool frequency, increasing soil erosion, and altering water quality (Platts 1981, Kauffman and Krueger 1984, Henjum et al. 1994, Overton et al. 1993). These effects increase summer water temperatures, promote formation of anchor ice in winter, and increase sediment into spawning and rearing habitats. Cover for bull trout is also reduced from livestock grazing.

Mining can degrade aquatic habitat by altering water acidity or alkalinity, changing stream morphology and flow, and causing sediment, fuel, and heavy metals to enter streams (Martin and Platts 1981, Spence et al. 1996). The types of mining that occur within the range of bull trout include extraction of hard rock minerals, coal, gas, oil, and non-minerals. Past and present mining activities have adversely affected bull trout and bull trout habitats in Idaho, Oregon, Montana, and Washington (Martin and Platts 1981, Moore et al. 1991, Washington Department of Wildlife 1992, Platts et al. 1993).

Widespread introductions of non-native fishes, including brook trout (*S. fontinalis*), lake trout (*S. namaycush*) (west of the Continental Divide), and brown trout (*Salmo trutta*), have also occurred across the range of bull trout. These non-native fish have resulted in declines in abundance, local extirpations, and hybridization of bull trout (Leary et al. 1993, Donald and Alger 1993, Pratt and Huston 1993). Non-native species may exacerbate stresses on bull trout from habitat degradation, fragmentation, and isolation (Rieman and McIntyre 1993). Negative effects of interactions with introduced non-native species may be the most pervasive threat to bull trout throughout the Columbia River basin.

Conservation and Management

Recovery of bull trout will require reducing threats to the long-term persistence of populations, maintaining multiple interconnected populations of bull trout across the diverse habitats of their native range, and preserving the diversity of bull trout life-history strategies (e.g., resident or migratory forms, emigration age, spawning frequency, local habitat adaptations). To recover bull trout, the following four objectives have been identified:

- Maintain current distribution of bull trout within core areas as described in recovery unit chapters and restore distribution where recommended in recovery unit chapters.
- Maintain stable or increasing trend in abundance of bull trout.
- Restore and maintain suitable habitat conditions for all bull trout life history stages and strategies.
- Conserve genetic diversity and provide opportunity for genetic exchange.

The Idaho Department of Fish and Game, in cooperation with several Federal and State agencies, developed a management plan for bull trout in 1993 (Conley 1993), and the State of Idaho approved the State of Idaho Bull Trout Conservation Plan for the conservation of bull trout in July 1996 (Batt 1996). The Plan identified an overall mission of maintaining or restoring interacting groups of bull trout throughout the species' native range in the State, and four goals to accomplish the mission: (1) maintenance of habitat conditions in areas supporting bull trout, (2) instituting cost-effective strategies to improve bull trout abundance and habitats, (3) establishing stable or increasing bull trout populations in a set of well-distributed sub-watersheds, and (4) providing for the economic viability of industries in Idaho (Batt 1996). The overall approach of the plan was to use existing, locally-developed groups established by Idaho legislation, i.e., watershed advisory groups and basin advisory groups, which were formed to strengthen water quality protection and improve compliance with the Clean Water Act. The draft chapters of the bull trout recovery plan for Idaho rely on information contained in the draft and final problem assessments for the key watersheds developed under the State of Idaho Bull Trout Conservation Plan.

Critical Habitat

Critical habitat has been designated for bull trout (USDI, Fish and Wildlife Service 2005); however, none is designated on NFS lands. Bull trout critical habitat downstream of NFS lands and the Idaho Roadless Areas was considered in this analysis (Figure IV-14).

Primary constituent elements of bull trout critical habitat include: (1) Water temperatures that support bull trout use; (2) Complex stream channels with features such as woody debris, side channels, pools, and undercut banks to provide a variety of depths, velocities, and instream structures; (3) Substrates of sufficient amount, size, and composition to ensure success of egg and embryo overwinter survival, fry emergence, and young-of-year survival; (4) A natural hydrograph, including peak, high, low, and base flows within historic ranges or, if regulated, currently operate under a biological opinion that addresses bull trout, or a hydrograph that demonstrates that ability to support bull trout populations by minimizing daily and day-to-day fluctuations and minimizing departures from the natural cycle of flow levels corresponding with seasonal variation; (5) Springs, seeps, groundwater sources, and subsurface water to contribute to water quality and quantity as a cold water source; (6) Migratory corridors with minimal physical, biological, or water quality impediments between spawning, rearing, overwintering, and foraging habitats, including intermittent or seasonal barriers induced by high water temperatures or low flows; (7) An abundant food base including terrestrial organisms of riparian origin, aquatic macroinvertebrates, and forage fish; (8) Permanent water of sufficient quantity and quality such that normal reproduction, growth, and survival are not inhibited.

In addition to bull trout critical habitat bull trout key recovery habitat was also considered in this analysis (Figure IV-1).

Environmental Baseline

Table IV-19 displays important information for bull trout, their range in Idaho and overlap of that range with the Idaho Roadless Areas and the MIRR themes. Table IV-19 also displays acres of bull trout key recovery habitat (spawning and rearing), overlap of key recovery habitat with the Idaho Roadless Areas, overlap with MIRR alternative themes, stronghold acres in Idaho as identified in the Interior Columbia River Basin Ecosystem Project (ICBEP) and the overlap with the Idaho Roadless Areas, steelhead priority watersheds as identified in PACFISH and their overlap with Idaho Roadless Areas, and bull trout core area over lap with IRAs and IRA themes. The information in Table IV-19 provides the foundation/baseline for the analysis used in this biological assessment. Tables IV-19 and IV-20 do not include Forest Plan special area acres because these are not affected by the Idaho Roadless Rule.

Table IV-19: Bull trout baseline information

	Total	Roadless Area 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%)
Key Recovery Habitat in Idaho (miles of stream)	9,112	1,317 (14.4%)	214 (2.4%)	131 (1.4%)	684 (7.5%)	43 (0.5%)	24 (0.3%)	7 (0.08%)
Strongholds in Idaho (ac)	1,219,371	453,465 (35.7%)	139,516 (11.4%)	66,437 (5.4%)	202,552 (16.6%)	26,470 (2.2%)	752 (0.06%)	206 (0.02%)
Priority watershed in Idaho (ac)	7,996,510	3,477,233 (43.4%)	845,685 (10.6%)	705,361 (8.8%)	1,647,084 (20.6%)	88,488 (1.1%)	24,395 (0.3%)	35,656 (0.4%)
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*
Table does not include ares associated with FPSAs

About 170 roadless areas in Idaho have habitat that supports bull trout. Figure IV-13 displays the range of bull trout in Idaho and the Roadless Areas.

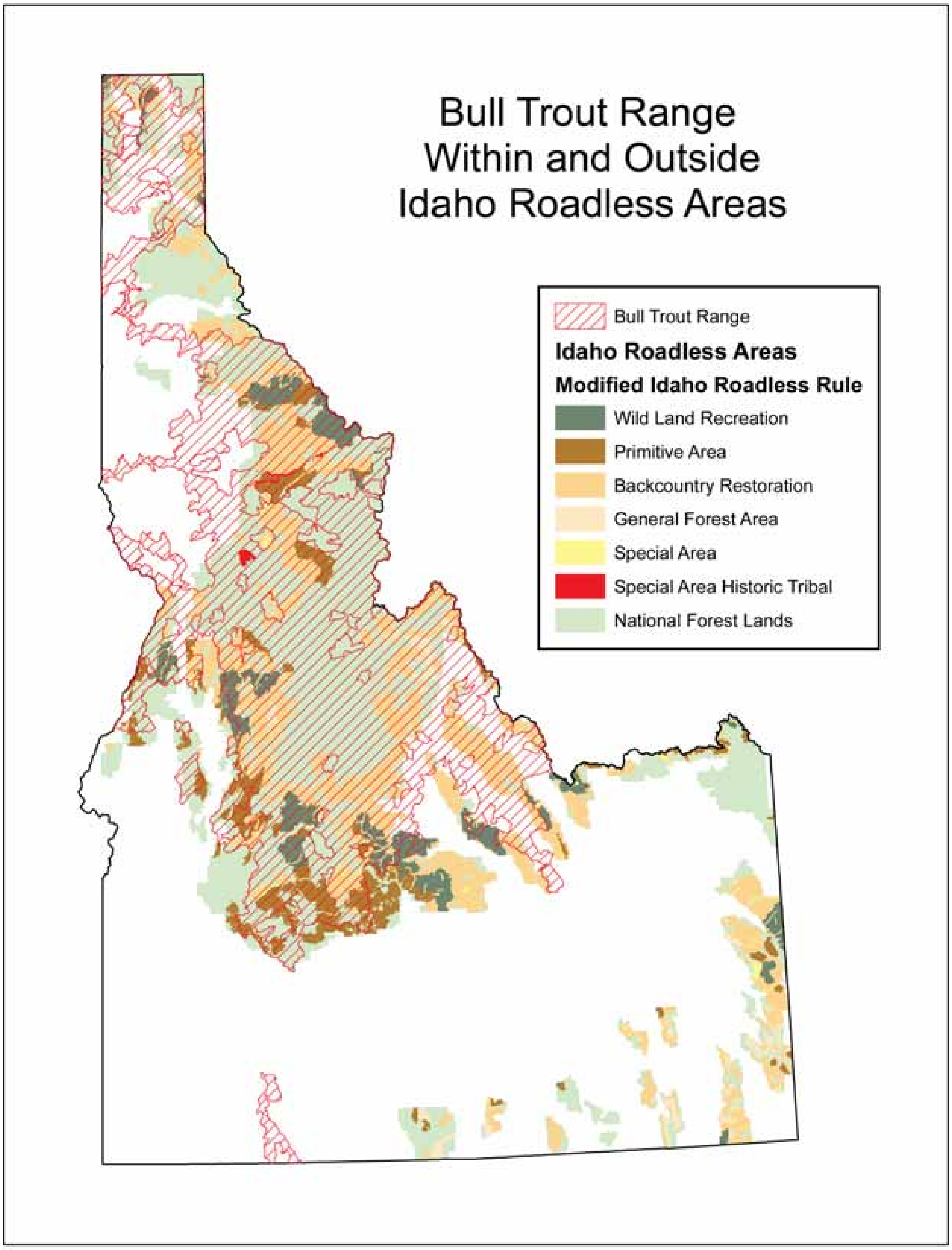

Figure IV-13. Bull trout range within and outside of Idaho Roadless Areas

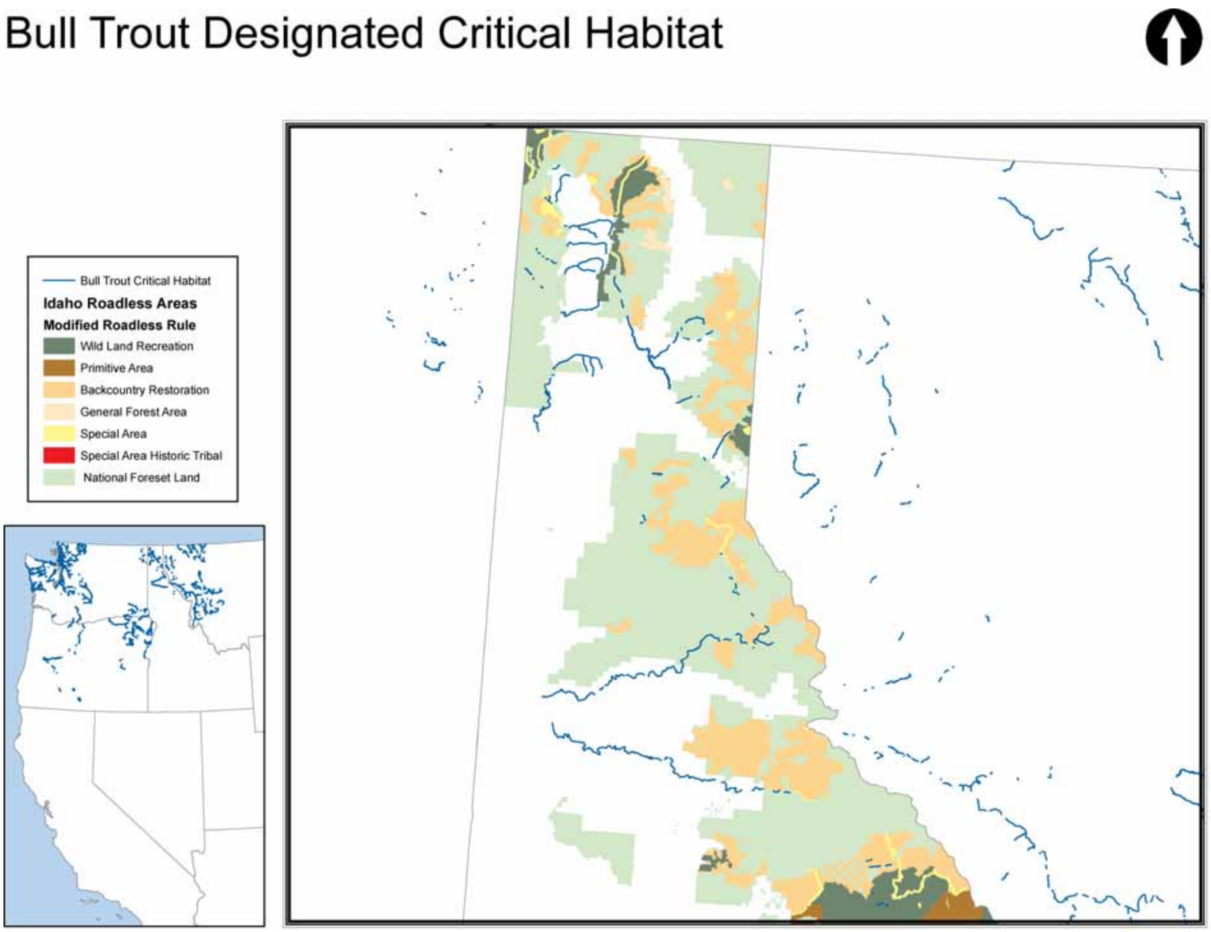

Figure IV-14. Bull trout designated critical habitat

Table IV-20 displays larger (>100,000 acres) IRAs which support bull trout populations. These larger areas are of interest because they have a greater potential to provide for larger interconnected populations (metapopulations) of the species due to their lack of roads and associated culverts. Larger populations are able to better withstand disturbances and therefore have a greater chance of persistence.

Table IV-20: Larger (>100,000 ac) Idaho Roadless Areas supporting bull trout

Forest	IRA	IRA acres	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS
Clearwater	Bighorn - Weitas	254,400	0	0	246,400	0	0	8,000
Clearwater	Hoodoo	153,900	151,900	0	0	0	0	2,000
Clearwater	North Lochsa Slope	111,900	0	82,500	15,100	0	0	14,300
Clearwater/Idaho Panhandle	Mallard-Larkins	255,700	131,200	31,600	84,400	0	0	0
Challis	Borah Peak	126,100	190,200	0	15,400	1,500	0	0
Challis/Sawtooth	Boulder-White Clouds	427,300	231,300	87,300	79,800	28,900	0	0
Challis/Sawtooth	Loon Creek	109,600	0	0	102,100	7,500	0	0

Forest	IRA	IRA acres	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS
Challis/Targhee	Diamond Peak	167,700	29,500	8,900	106,000	0	16,100	0
Salmon/Challis	Camas Creek	103,900	0	0	93,400	10,500	0	0
Salmon/Challis	Lemhi Range	305,200	0	0	304,700	500	0	0
Boise	Peace Rock	191,700	0	137,400	44,700	2,500	0	0
Boise	Ten Mile/Black Warrior	114,600	76,500	37,000	0	0	1,100	0
Boise/Challis	Red Mountain 916	114,600	85,900	11,800	16,300	0	600	0
Boise/Payette	Needles	157,500	93,500	12,900	51,000	0	100	0
Boise/Sawtooth	Smoky Mountains	336,300	0	233,700	76,800	25,800	0	0
Payette	Secesh	236,500	110,300	7,700	106,100	12,400	0	0
Nez Perce	West Meadow Creek	115,600	0	0	112,500	3,100	0	0
Salmon/Targhee	Italian Peak	191,300	48,700	0	139,500	0	0	0

** Shaded numbers are indicated under themes that have greater permissions for activities in IRAs*
Table does not include ares associated with FPSAs

Effects of the Action

Of the five themes, the WLR, Primitive, and SAHTS themes are the most restrictive because they only allow road construction, road reconstruction or timber cutting under very limited situations. Discretionary mineral activities are prohibited in these three themes. The bull trout range overlaps approximately 2,019,125 acres (12 percent) in these three themes (Table IV-19 and Appendix A, Table A-2). Some 352 miles of bull trout key recovery habitat fall with these themes, which is a fairly small percent (3.9 percent) of the total key recovery habitat in Idaho. Some 206,159 acres (17 percent) of the stronghold areas identified for this species fall within the WLR, Primitive, and SAHTS themes. Bull trout priority watershed overlap within these three themes is 1,586,702 acres (4.6 percent). Because of the prohibitions on ground-disturbing activities within the WLR, Primitive, 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, in-stream flows and riparian vegetation should be maintained under these themes.

The Backcountry/Restoration theme is divided into two areas: (1) Backcountry/ Restoration (BCR) and (2) Backcountry/ Restoration Community Protection Zone (BCR CPZ). The BCR theme is very similar to the 2001 Roadless Rule guidance for land management and therefore 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, temporary 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 wildfire. 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. Under the MIRR alternative, the Forest Service would not authorize road construction/reconstruction for new mineral leases, including phosphates, in Idaho Roadless Areas managed in the BCR and BCR CPZ sub-themes. Surface use and occupancy would be permitted if allowed in the applicable forest plan; however it is unlikely new mineral development would occur in this theme without road access because of the additional expenses, low potential for certain minerals (oil and gas), and the abundance of others (geothermal) outside roadless areas.

The majority of the bull trout range within the IRAs overlaps with the BCR theme (2,917,368 acres, 17 percent). Of the BCR/bull trout overlap, 289,931 acres (2 percent) are 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) because of their lack of potential population fragmentation factors such as roads and associated culverts. Table IV-20 displays the 18 IRAs with >100,000 acres overlapping bull trout habitat.

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 IV-21 displays bull trout core areas with moderate acres in the BCR CPZ or GFRG themes.

Table IV-21: Bull trout core areas with moderate acres in the BCR CPZ and GFRG themes

Forest	Core area name
Boise/Payette	South Fork Salmon River
Challis/Salmon/Sawtooth	Upper Salmon River
Idaho Panhandle	Lake Pend Oreille
Idaho Panhandle	Kootenai River
Idaho Panhandle/ Clearwater	Coeur D'Alene Lake
Salmon/Challis	Middle Salmon River Panther
Nez Perce/Payette	Middle Salmon River Chamberlin
Nez Perce	South Fork Clearwater River

Most of the bull trout stronghold areas are in the BCR theme (202,552 acres, 16.6 percent). There are 26,470 acres (2.2 percent) of bull trout stronghold areas within the BCR CPZ theme. A fairly high amount of bull trout priority watersheds overlap with the BCR theme areas (1,647,084 acres). 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 t rout 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.

The GFRG theme is the most permissive of all the themes. Road construction/reconstruction, timber cutting would be permissible in these areas. Road construction and reconstruction would be permitted to access specific phosphate deposits. There is no overlap between the range of bull trout and phosphate deposits. Surface use and occupancy would be allowed if permitted in the applicable land management plan. Although areas in the GFRG theme continue to be included in the Idaho Roadless Areas, 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. There is a less than 1 percent overlap with GFRG and bull trout range, key recovery habitat, strongholds, and priority watersheds (table IV-19). Two percent of the bull trout core areas overlap the GFRG theme.

Although the Modified Rule 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. The MIRR applies to 9.3 million acres in Idaho. Future 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. Areas that have the highest likelihood of resulting in future activities include: GFRG and BCR in the CPZ. Areas of high overlap with these themes have the highest risk of disturbance. 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 TEPS habitat or ecosystem composition or structure.

Cumulative Effects

Under ESA, 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). The action area for the Idaho Roadless Rule is the Roadless Areas in Idaho (9.3 million acres) and areas downstream that could be affected by activities in the roadless areas.

Cumulative effects on bull trout resulting from State, tribal, and local government actions could occur for the following reasons:

- 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 Idaho Roadless Areas.
- 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 downstream of Idaho Roadless Areas.

Determination of Effects on Bull Trout

As a result of the analysis documented in this Biological Assessment, it is my determination that actions that could occur pursuant to the Modified Idaho Roadless Rule that *may affect and are likely to adversely affect* bull trout.

Rationale for Determination

Limited activities are likely to occur in WLR, Primitive, and SAHTS themes because of the restricted permissions on activities related to road construction/reconstruction, and timber cutting. These three themes should provide for key aquatic habitat elements, natural processes, aquatic and riparian habitat integrity, and species diversity.

There is a moderate potential for disturbing activities to occur in CPZ within the BCR theme. Activities in the CPZ are designed to address the risk of wildland fire and the need for future fuels treatment. 1.7 percent (289,931 acres) of CPZ overlaps with the range of bull trout. Ground-disturbing activities such as road construction/reconstruction, and timber cutting activities in the CPZ could affect key aquatic habitat elements in a limited portion of some roadless areas.

The BCR theme areas outside of CPZ have the highest overlap with the range of bull trout (2,917,368 acres, 17 percent). Compared to areas within the CPZ, areas in BCR outside the CPZ have a lower potential for adverse effects to occur to bull trout and their habitats because of additional conditions that apply to timber cutting in these areas including: required 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, must maintain or improve one or more roadless area characteristic over the long-term, and requires Regional Forester approval. Due to these additional conditions that must be met for timber cutting, it is anticipated that temporary road building in BCR outside of CPZ would be done infrequently.

Areas in the GFRG theme have the greatest permissions and the highest potential for risk of adverse effects to aquatic species, aquatic habitats, and key aquatic elements from activities. 139,219 acres (0.8 percent) of the bull trout range overlaps the GFRG theme. At a local scale bull trout populations in the GFRG theme could be adversely affected by activities permitted under the MIRR alternative.

Limited adverse effects could occur to bull trout due to short-term reduced habitat quality or increased chance for mortality from activities that could occur under the MIRR alternative. At the project level, all activities will be subject to existing INFISH, PACFISH, and/or SWIE ACS requirements (appendix B) and NEPA that are designed to avoid or minimize adverse effects T&E fish and their habitats. In addition, project level NEPA will be required for timber cutting, sale and removal, road construction/reconstruction, mineral activities, and restoration activities in Idaho roadless areas. Given these factors, the Modified Idaho Roadless Rule poses a low risk to individuals, metapopulations, and the species.

Determination of Effects on Snake River Bull Trout Critical Habitat

It is my determination that actions resulting from the implementation of the Modified Idaho Roadless Rule *may affect but are not likely to adversely affect* bull trout critical habitat.

Rationale for Determination

This determination is based on the low likelihood that the Modified Idaho Roadless Rule and the associated management requirements in INFISH, PACFISH and the SWIE land management plan ACS would result in adverse impacts to bull trout critical habitat primary constituent elements (PCEs) downstream of the Idaho Roadless areas.

Activities implemented under the Modified Rule should maintain key aquatic habitat elements for bull trout within and downstream of Idaho Roadless Areas. It is likely that the size and scope of projects implemented under the MIRR will not result in adverse effects to water temperature, stream channels, woody debris, pools, undercut banks, instream structure, substrate, the hydrograph (peak, high, low and base flows), springs, seeps, groundwater, migratory corridors, or the food base. All these factors are important for bull trout critical habitat.

It is expected that the activities implemented pursuant to the MIRR would result in very little to no downstream effects outside of the roadless area. No bull trout critical habitat is designated within any of the Idaho Roadless Areas. It is likely that off-site effects to bull trout critical habitat from activities in IRAs would be so low that they would be difficult to measure. The effects to bull trout critical habitat under this alternative are therefore discountable and insignificant.

Kootenai River White Sturgeon (*Acipenser transmontanus)*

Species-specific information used:

- Idaho Governor's Office of Species Conservation: http://species.idaho.gov/list/sturgeon.html
- FWS webpage: http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=E087
- Idaho Department of Fish and Game, Comprehensive Wildlife Conservation Strategy (IDFG 2005)
- Recovery Plan for the Kootenai River Population of the White Sturgeon (USDI, Fish and Wildlife Service 1999b): http://ecos.fws.gov/speciesProfile/SpeciesReport.do?spcode=E087

Status of the Species

Listing History

The Kootenai River white sturgeon was listed as an endangered species in 1994 (USDI, Fish and Wildlife Service 1994).

Distribution

The white sturgeon is an ancient fish that inhabits large river, lake, and marine environments from southern California to Cook Inlet of Alaska. It is a migratory species reaching lengths nearly 20 ft, weights of 1,970 lb, and ages of 100 years or more. The Kootenai River white sturgeon exhibits both riverine and adfluvial life histories.

The Kootenai River white sturgeon is restricted to 168 miles of the Kootenai River from Cora Linn Dam, Canada, upstream to Kootenai Falls, Montana. The white sturgeon is native to the Kootenai River drainage of Montana, Idaho, and British Columbia (Brown 1971), and has been geographically isolated from the lower Columbia River stocks by Bonnington falls (Cora Linn Dam), near Nelson, British Columbia. White sturgeon migrate freely throughout the Kootenai River (Andrusak 1980), but are uncommon upstream of Bonners Ferry, Idaho (Graham 1981, Apperson and Anders 1991). There are no published reports of sturgeon using lateral tributaries in Idaho or Montana (Partridge 1983); however, some accounts suggest that sturgeon may occur, if not actually rear, in several lateral tributaries of the Kootenai River. The majority of adult fish reside in Kootenay Lake, and make extended (> 100 km) migrations to spawn in a 19 km stretch below Bonners Ferry, ID. Some adult fish remain in the river and overwinter in the deep (> 30 m) pools.

The most recent population estimate from the Idaho Department of Fish and Game indicates there are approximately 600 adult sturgeon in the Kootenai system. Natural reproduction has been confirmed in the Kootenai River. Currently the majority of juvenile fish in the population are hatchery-reared fish (USDA, Forest Service 2002).

Habitat Requirements

The Kootenai River white sturgeon require rocky substrates (boulder and cobble) and high water velocities (three to seven ft/sec) for spawning. These appear to be the two most critical spawning elements known to date. White sturgeon spawn during spring peak flows when velocities are high and turbidity is elevated. The fertilized eggs sink to the bottom, and then hatch within a few weeks. The newly hatched sac-fry briefly drift with the current before retreating into the substrate for up to a month. The juveniles eventually emerge from the substrate and begin a free-roaming life. Juvenile fish use a wide range of depths and water velocities as habitat.

Older white sturgeon are relatively sedentary in the deepest locations of the Kootenai River drainage, often selecting low velocity waters greater than twenty feet deep. Kootenai River white sturgeons are typically found over sand substrates. There are very few areas within the lower Kootenai River that contain substrates greater in size than sand. Due to the dominance of these small diameter substrates it is not known whether these fish are selecting for sand or are forced to use them. White sturgeon are opportunistic feeders, and subsist on insects, clams, snails, plant material and fish (Brown 1971). Kokanee from Kootenay Lake were once an important prey item prior to the collapse of the salmon fishery in the mid-1970s.

Historically, the Kootenai River stock supported commercial and recreational fisheries, as well as a subsistence fishery for the native Kootenai Tribe. These fish supported a commercial fishery until 1944, a sport harvest of 10 to 20 fish per year from 1944 through the 1970's, and a sport harvest of 50 to 52 fish per year from 1979 to 1981 (Partridge 1983). The legal harvest of white sturgeon was closed in Montana in 1979 (Graham 1981), and was closed in Idaho in 1984 (Apperson and Anders 1990).

Factors of Decline/Threats

The Kootenai River population of white sturgeon has been in general decline since the mid-1960’s (USDI, Fish and Wildlife Service 1999b). Several factors have contributed to the reduced productivity of Kootenai River white sturgeon. In December 2000, the U. S. Fish and Wildlife Service (FWS) issued a biological opinion stating that Libby Dam (completed in 1974) is the primary factor affecting the Kootenai River white sturgeon. Operation of Libby Dam has changed the natural hydrograph (magnitude and timing of flows) and eliminated the spring (May to July) high flows required for successful reproduction, and has produced large daily/weekly fluctuations in discharge that degrade habitat as well as increase mortality risk.

Operation of the dam has also modified the annual thermal regime that sturgeon likely use (in part) as cues for spawning (Holton 1980, Apperson and Anders 1991).

Other factors of decline include the closure of the fertilizer plant in 1987, a significant source of nutrients, near Kimberly, British Columbia and the installation of a treatment facility in 1979 to remove heavy metals being discharged from the St. Mary River near Kimberly (Knudson 1994).

Mining (copper) pollution and other chemical pollutants (lead, zinc, vermiculite, PCB's and organochlorides) are suspected to be potential threats to sturgeon reproduction (Partridge 1983, Apperson 1992). Evidence of declining Kootenai River and Kootenay Lake productivity due to pollution abatement and dam operations has led to speculation that population recovery will be inhibited as a result (Daley et al. 1981). The degree of threat that water quality represents is unknown.

Non-point source pollution from forest management activities has not been identified as a factor in the decline of the Kootenai River white sturgeon. However, the direct and indirect effects of timber harvest and related actions can influence the magnitude and timing of peak stream flows (Harr 1981). Forestry and related actions can also affect stream temperatures and nutrient and sediment loads (Scrivener 1982, Furniss et al. 1991). Depending on the magnitude of cumulative actions and the proximity of activities to potentially affected habitat, a host of other physical characteristics of the environment may also be affected. Forestry and related activities rarely result in chemical pollution, but could indirectly remobilize materials stored in stream substrate by altering peak flows.

Another contributing factor to the white sturgeon decline is the elimination of side channel slough habitat in the Kootenai River floodplain due to diking and bank stabilization to protect agricultural lands from flooding.

Conservation and Management

At present, there are several State, Federal, Tribal, and Canadian programs and conservation efforts that may help achieve recovery objectives or the Kootenai River population of white sturgeon (USDI, Fish and Wildlife Service 1999b). The primary efforts include the Libby Dam water management program and the Kootenai Tribe white sturgeon hatchery program. To be successful both these programs need to consider the habitat needs of white sturgeon reproduction and juvenile rearing in the Kootenai River.

Critical Habitat Status

Critical habitat was designated for Kootenai River white sturgeon on September 6, 2001 (USDI, Fish and Wildlife Service 2001). Critical habitat included 11.2 miles of river below Bonners Ferry, Idaho. Through an interim rule an additional 6.9 miles of critical habitat were designated on February 8, 2006 (USDI, Fish and Wildlife Service 2006). Kootenai River white sturgeon critical habitat was revised on July 9, 2008 with a final rule (USDI, Fish and Wildlife Service 2008b) to include a total of 18.3 miles of the Kootenai River within Boundary County, Idaho. The final rule becomes effective August 8, 2008. The Federal Register designation of critical habitat specifically defines geographic areas and essential habitat elements.

Primary constituent elements of critical habitat for Kootenai River white sturgeon focuses on spawning and rearing habitats which are limiting factors to sturgeon conservation. All of the following primary constituent elements must be present in order for successful spawning, incubation and survival to occur. These primary constituent elements are:

1. During the spawning season of May into July, a flow regime that periodically (not necessarily annually) produces flood flows capable of producing intermittent depths of at least 5 meters (Barton et al. 2005, Paragamian and Duehr 2005), and mean water column velocities of at least 3.3 ft/s (1.0 m/s) (Anders et al. 2002, Berenbrock 2005) throughout, but not uniformly within the braided reach.
2. Stable temperatures of roughly 50 degrees F in May into July with no sudden drops in temperature exceeding 3.6 degrees F at Bonners Ferry during the spawning season and water temperatures suitable for natural rates of development of embryos.
3. Presence of approximately 5 miles of continuous submerged rocky substrates for normal free embryo redistribution behavior and downstream movement (Brannon et al. 1984).
4. A flow regime that limits sediment deposition and maintains appropriate rocky substrate for sturgeon egg adhesion, incubation, escape cover, and free embryo development (Stockley 1981, Parsley et al. 1993, Parsley and Beckman 1994).

Environmental Baseline

Table IV-22 displays important information for Kootenai River white sturgeon, their range in Idaho and overlap of that range with the Idaho Roadless Areas and the MIRR themes. Table IV-22 also displays acres of Kootenai River white sturgeon designated critical habitat (DCH), overlap of key DCH with the Idaho Roadless Areas, and overlap with MIRR alternative themes. The information in Table IV-22 provides the foundation/baseline for the analysis used in this biological assessment.

Table IV-22: Kootenai River white sturgeon baseline information

	Total	Roadless Area overlap	WLR	Prim	BCR	BCR CPZ	GFRG	SAHTS
Range in Idaho (ac)	167,818	16,041 (9.6%)	774 (0.5%)	0	9,596 (5.7%)	135 (0.08%)	5,507 (3%)	0
DCH	18.3	0	0	0	0	0	0	0

** Shaded numbers are indicated under themes that have greater permissions for activities in IRAs*
Table does not include ares associated with FPSAs

Figure IV-15 displays the range of Kootenai River white sturgeon in Idaho and the Roadless Areas based on information provided by the Idaho Fish and Wildlife Information System and is displayed using the 6th code hydrologic units (IDFG 10 August 2005). About 16,000 acres in the Katka Peak, Mt. Willard, Lake Estelle, and Selkirk Roadless Areas on the Idaho Panhandle National Forest overlap the range of the Kootenai River white sturgeon. There is no overlap with Kootenai white sturgeon designated critical habitat (Figure IV-16).

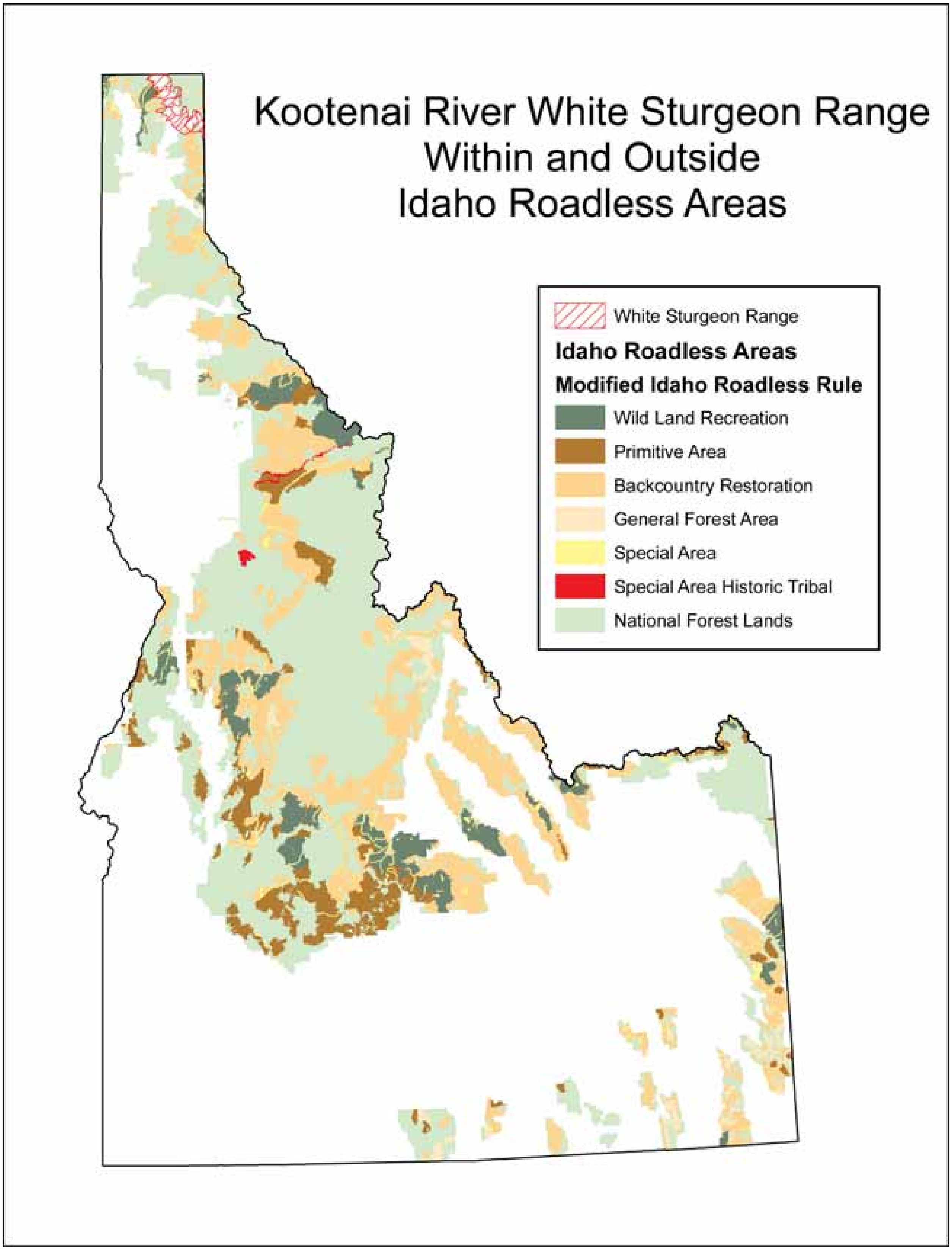

Figure IV-15. Kootenai River white sturgeon range within and outside of Idaho Roadless Areas

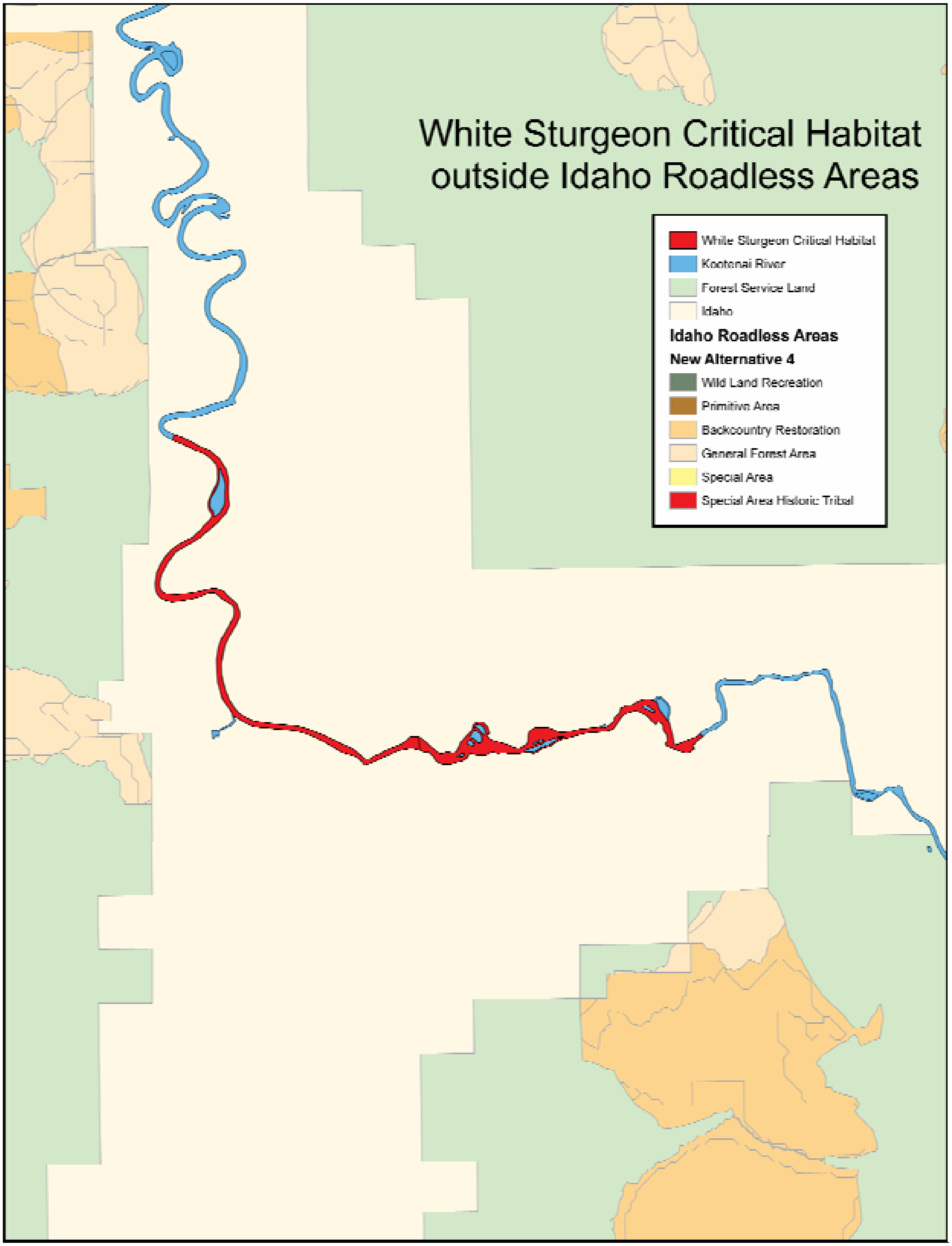

Figure IV-16. Kootenai River white sturgeon designated critical habitat

Effects of the Action

The potential activities that could occur under the MIRR (road construction/reconstruction, Timber cutting, sale and removal and discretionary minerals) are unlikely to affect the Kootenai white sturgeon and its habitat because there is very little overlap between watersheds used to determine the range of the sturgeon and the more permissive themes (BCR, BCR CPZ, and GFRG). In addition, future activities that could occur under the MIRR in sturgeon watersheds are not likely to influence the mainstem Kootenai River where the sturgeon lives because the scope and size of the potential future activities would not be large enough to adversely affect river habitat features such as substrate, side channels, flow, and water temperature.

The primary adverse effect to Kootenai River white sturgeon is from the operation of the Libby Dam. None of the activities that could occur under the MIRR would out-weigh the influence of the Libby dam to this species.

Determination of Effects on Kootenai River White Sturgeon

As a result of the analysis documented in this Biological Assessment, it is my determination that actions that could occur pursuant to the Modified Idaho Roadless Rule *may affect but are not likely to adversely affect* Kootenai River white sturgeon.

Determination of Effects on Kootenai River White Sturgeon Critical Habitat

It is my determination that actions resulting from the implementation of the Modified Idaho Roadless Rule *may affect but are not likely to adversely affect* Kootenai River white sturgeon critical habitat.

Rationale for Determinations

These determinations are based on the low likelihood that the Modified Idaho Roadless Rule and the associated management requirements in INFISH, PACFISH and the SWIE land management plan ACS would result in adverse impacts to Kootenai River white sturgeon and its critical habitat primary constituent elements including: (1) spawning season flow regime, (2) stable temperatures, (3) submerged rocky substrates, and (4) a flow regime that limits sediment deposition and maintain rocky substrates needed for spawning.

The designated critical habitat for Kootenai River white sturgeon does not overlap the Idaho Roadless Areas. The only overlap of IRAs with the range of Kootenai River white sturgeon is within the 6^{th} code hydrologic units within which they occur. There is no overlap with occupied habitat in the main stem Kootenai River.

At the project level, all activities will be subject to existing INFISH, PACFISH, and/or SWIE ACS requirements (appendix B) that are designed to avoid or minimize adverse effects T&E fish and their habitats. In addition project level NEPA is required for all future projects involving timber cutting, sale and removal, road construction/ reconstruction, mineral activities, and restoration activities in Idaho roadless areas. The activities permitted under the MIRR alternative are limited both in area and scope. The effects to Kootenai River white sturgeon and its critical habitat resulting from these activities are so low that they would be difficult to measure and are therefore discountable and insignificant.

V. Effects of the Modified Idaho Roadless Rule on Federally-Listed, Proposed, and Candidate Terrestrial Wildlife Species

Background

The purpose of this chapter is to evaluate the effects of the Modified Idaho Roadless Rule (MIRR) on federally-listed terrestrial wildlife species and designated critical habitat. The following terrestrial species are the subject of this analysis: northern Idaho ground squirrel (*Spermophilus brunneus brunneus*), Canada lynx (*Lynx canadensis*), woodland caribou (*Rangifer tarandus caribou*), grizzly bear (*Ursus arctos horribilis*) (excluding the Yellowstone population) and the gray wolf (*Canis lupus*). Revised designated critical habitat for the Canada lynx was proposed on February 28, 2008 (USDI, Fish and Wildlife Service 2008a), warranting conferencing with the U.S. Fish and Wildlife Service (FWS) on potential impacts.

Two wildlife species were delisted by the FWS in 2007: the Yellowstone distinct population segment (DPS) of the grizzly bear on March 29, 2007, and the bald eagle (*Haliaeetus leucocephalus*) on July 7, 2007 (USDI, Fish and Wildlife Service 2007a and b). These species no longer warrant consultation under the ESA, and are now classified as Forest Service Sensitive.

On February 27, 2008, the northern Rocky Mountain DPS of the gray wolf (USDI, Fish and Wildlife Service 2008c) was designated and delisted. On July 18, 2008, the district court of Montana issued a preliminary injunction on this FWS action, reinstating ESA protections previously provided to this species: the gray wolf north of Interstate 90 is listed as endangered and the gray wolf south of Interstate 90 is considered a non-essential experimental population under 10j of ESA. Consequently, as indicated above, effects to the gray wolf are addressed based on its reinstated status.

Candidate species are those plant and animal taxa considered for possible addition to the List of Endangered and Threatened Species for which the FWS has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions (USDI, Fish and Wildlife Service 1996c). Consultation with the FWS on action agency effects to candidate species is not required under Section 7(a)(2) of ESA and candidate species afford no legal protection. However, it is FWS internal policy to consider candidate species when making natural resource decisions, and candidate species are treated as if they are proposed for listing for purposes of conducting internal FWS conferencing. Although not required, the U.S. Forest Service (USFS) will be consistent with the FWS internal policy in evaluating effects of the MIRR on candidate species. Two terrestrial wildlife species are listed as 'candidates' in Idaho: the southern Idaho ground squirrel *(S. brunneus endemicus*) and the Western United States DPS of Yellow-billed cuckoo (*Coccyzus americanus occidentalis*). The USFS will follow the FWS process of review for these two candidates to ensure that the MIRR does not 'jeopardize' the continued existence of these species.

Data and Information Used

For ESA listed terrestrial species, we first examined two primary types of data to determine whether the species and their habitats might overlap Idaho Roadless Areas (IRA): predicted distribution and occurrences. Predicted distributions of species throughout Idaho are based on the Wildlife Habitat Relationships Models (WHR), A Gap Analysis of Idaho: Final Report. Idaho

Cooperative Fish and Wildlife Research Unit, Moscow, Idaho (Scott et al. 2002 as referenced in Idaho Department of Fish and Game 2005). These data provided a 'course filter' approach to evaluating likely distributions of species based on ecological conditions and habitat associations within known species' ranges in Idaho. The predicted distribution is pertinent to statewide and regional scale assessments of natural resources, but is not intended for site-specific analyses (gapmap.nbii metadata).

Occurrences represent point data provided by the Idaho Conservation Data Center, Idaho Department of Fish and Game (2005). These data vary in terms of their origin and how they were collected. In addition, individual points may represent more than one occurrence for a particular species. Consequently, their location on the landscape provides a good indication of where the species occurs or has occurred in the past, but their absence from other locations does not necessarily represent where the species does not occur. In combination, we used the predicted distribution and occurrence data to provide a measure of the likelihood that particular species will be found in Idaho Roadless Areas. As these data indicated species overlap with IRA to some degree for ESA-listed terrestrial wildlife species, we examined more detailed, site-specific information on species' presence, distribution and habitat associations to evaluate the effects of the MIRR on these species.

Modified Idaho Roadless Rule – Summary and Assumptions

A detailed description of the MIRR is provided in Chapter II of this Biological Assessment (BA). Like the 2001 Roadless Rule (see USDA, Forest Service 2000a), the MIRR proposes direction for the conservation and management of roadless areas, albeit specific to roadless areas within Idaho.

Unlike most Forest Service project analyses of alternatives and environmental consequences, the analysis of the Modified Idaho Roadless Rule 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 Modified Rule 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 Idaho Roadless Rule would designate a system of lands (Idaho Roadless Areas) and establish five management themes as described in Section II of this BA. 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 Forest Service 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.

This effects analysis includes a description of the nature of potential effects that could occur given the prohibitions and permissions in the Modified Rule.

All activities that could occur under management themes proposed by the MIRR would be subject to existing applicable land management plan components, such as standards and guidelines, or project design criteria intended to minimize impacts on species and their habitats. We reviewed the management direction provided for each species described in this BA 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, including projects proposed pursuant to the MIRR.

Approximately 334,500 acres of IRA fall in an additional category referred to as 'Forest Plan Special Areas', which includes designations such as research natural areas, wild and scenic rivers, and visual corridors. The MIRR does not apply to such areas and, consequently, these areas are not discussed further in this document other than to indicate degree of species overlap for completeness.

As indicated above, the MIRR provides direction for activities associated with discretionary mining in Idaho Roadless Areas. 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 right to access such minerals is not at the discretion of the Forest Service. Consequently, activities related to development of locatable minerals are not included as part of this 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) where it is 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.

Action Area

The action area for the MIRR consists of the IRAs on NFS lands throughout Idaho. These IRAs are based on the most current inventory of roadless areas in Idaho (FEIS, Appendix A). The boundaries of IRAs, and thus the 'action area', are fixed, and not anticipated to change, except where modifications are needed and approved by the Chief of the Forest Service as described in Chapter II of this BA. We recognize that effects of projects on the physical and biological environment that occur pursuant to this rule could extend beyond the actual IRA boundaries. For example, timber cutting activities along IRA boundaries have the potential to alter the environment through changes in forest microclimate, an effect that can extend beyond the footprint of a treatment unit and associated access roads and staging areas. Such activities may also introduce sediment into water bodies, particularly streams, and create noise disturbance, both of which are likely to extend beyond the project footprint. At this stage in the planning process, we cannot predict where, when, or to what extent this might occur. Further, the reach of project-level effects on listed species across the landscape will vary depending on the nature of activities proposed. Consequently, in describing the environmental baseline for threatened, endangered and candidate species evaluated in this document, we describe the presence of the species and their habitats in IRAs. However, where species are highly mobile and/or widely distributed (e.g., Canada lynx), we expand description of the environmental baseline to include the broader landscape within which the species are found such as NFS lands in Idaho or applicable recovery areas (i.e., woodland caribou and grizzly bear).

Northern Idaho Ground Squirrel (*Spermophilus brunneus brunneus)*

Status of the Species

Listing History

In March of 1998, the FWS proposed that the northern Idaho ground squirrel (NIDGS) be listed under the ESA as a threatened species. It was listed as threatened under the ESA by the FWS in April of 2000 (USDI, Fish and Wildlife Service 2000c). A Recovery Plan for this species was released by the FWS in 2003 (USDI, Fish and Wildlife Service 2003a).

Distribution and Abundance

Endemic to Adams and Valley counties near New Meadows, Lost Valley Reservoir and nearby surrounding areas in west-central Idaho, the entire range of the northern Idaho ground squirrel covers an approximate 1,200 square-mile area (USDI, Fish and Wildlife Service 2003a). The probable historic distribution (PHD) of the NIDGS, developed by the NIDGS Technical Working Group, delineates the species current and historical range. The PHD totals 843,412 acres and overlaps the Payette and Boise National Forests (Figure V-1), but currently the species is known to occur on fewer than 45 sites on the Payette National Forest.

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. Metapopulation sites were classified as ‘primary’ or ‘secondary’ to reflect the timing, but not necessarily the priority, of the agencies’ abilities to implement recovery activities within them. Twelve primary sites are predominantly on lands administered by the USFS, and are currently available for restoration and monitoring activities (Figure V-1). The five secondary sites are predominantly on private lands where easements, safe harbor agreements, or other negotiations will need to occur before recovery activities can begin (USDI, Fish and Wildlife Service 2003a).

This species declined from an estimated 5,000 individuals in 1985, to less than 1,000 individuals by 1998. Surveys conducted in 2001 indicated that the population contained from 250 to 500 animals. In 2007, the population estimate for NIDGS was 1,040 individuals (Evans Mack and Bond 2007). Based on results of surveys conducted throughout the PHD between 2004 and 2007, Evans Mack and Bond (2007) concluded that the NIDGS population was stable. Northern Idaho ground squirrels are still characterized by relatively high genetic diversity as a species, with only low to moderate differentiation between individual populations (Garner et al. 2005). As such, 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). However, given the extremely low population numbers and disjunct and isolated condition of current habitat, population viability could be a concern for this species (USDI, Fish and Wildlife Service 1996a, 2003a, Wisdom et al. 2000).

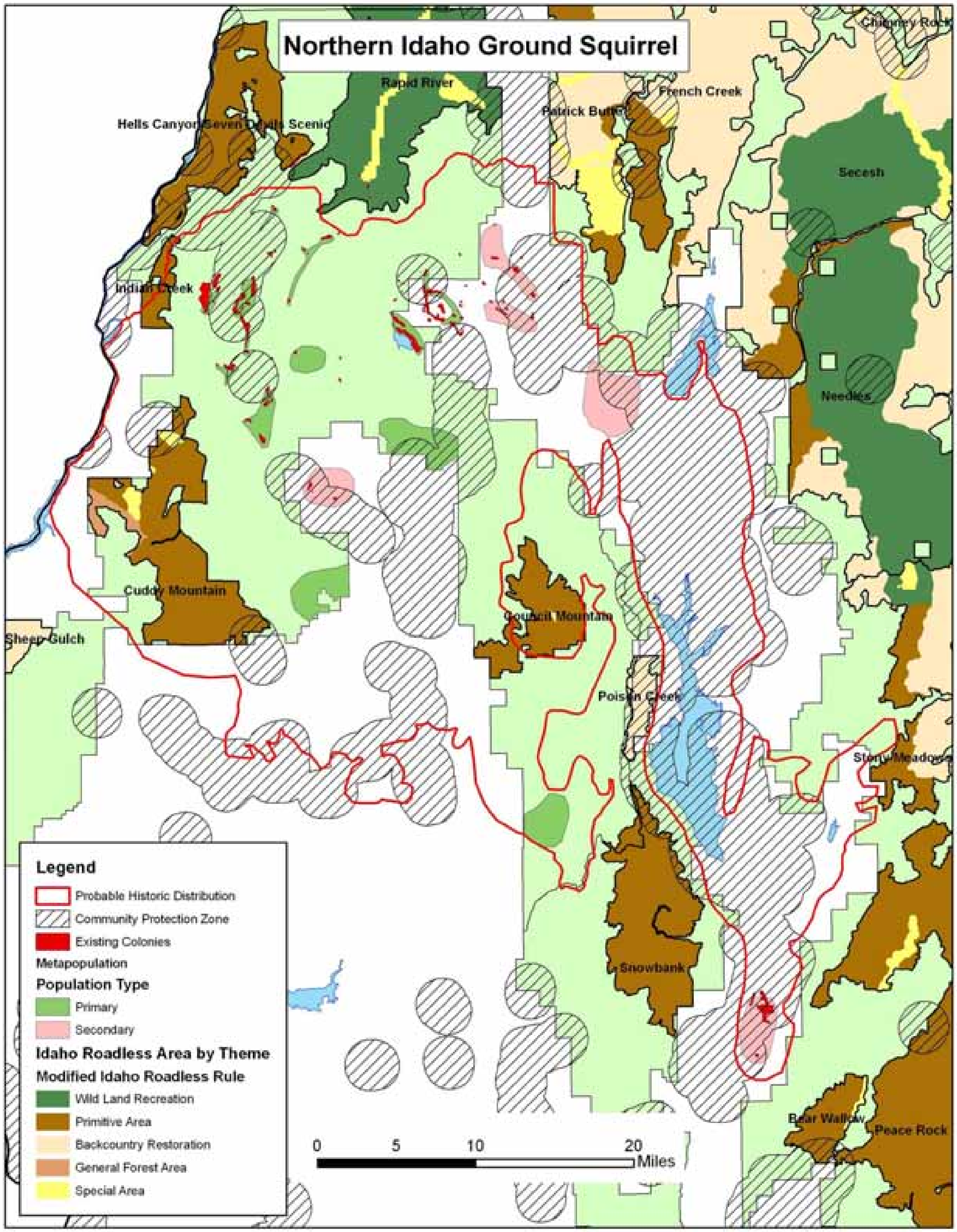

Figure V-1. Probable Historic Distribution (PHD), metapopulations, and existing colonies for northern Idaho ground squirrel.

Habitat Requirements

This species occurs in natural meadows (scab, scrub) and open areas adjacent to forest vegetation dominated by ponderosa pine and Douglas fir with open understories containing the desired forb communities. Prior to 2005, NIDGS were thought to be restricted to elevations between 1,160 to 1,830 meters (3,800 to 6,000 feet) and 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 than previously documented (Evans Mack 2006). At these higher elevations, NIDGS habitat is characterized by open meadows with scattered subalpine forest. The PHD for the NIDGS is being revised to reflect this new information (Egnew, personal communication, April 4, 2008). Ponderosa pine with shrub-steppe associated with south-facing slopes with less then 30 percent slope and below an elevation of 1,830 meters (6,000 feet) is also considered potentially suitable habitat. These naturally occurring pockets of habitat are open areas that usually have shallow soil with intrusions of deeper soil. These intrusions of deeper soil are necessary for nest burrows by the ground squirrels. The squirrels emerge usually in late March or early April and cease above ground activity in late July or early August; at higher elevations, emergence is a bit later – April to early May and above ground activity tapers off in later August. Squirrels move between patches of habitat by crossing open stands of forest vegetation. Dense stands of trees restrict movement of squirrels between habitat patches.

Factors of Decline/Threats

The FWS (2003a, 2007a) listed the chief threat to NIDGS as habitat loss, degradation, and fragmentation due to the following: conifer encroachment into meadow habitats, changes in vegetation composition and structure, agricultural conversions, and rural development. Other threats may include mortality associated with illegal recreational shooting, poisoning, and competitive exclusion by the larger Columbian ground squirrel.

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, 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 as cited in USDI, Fish and Wildlife Service 2003a) 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 (Yensen and Sherman 1997, as cited in USDI, Fish and Wildlife Service 2003a). Because of the current low population numbers and limited number of locations where animals are present, impacts to individual squirrels from any cause are of concern.

Conservation and Management

In 1996, while the NIDGS was still a candidate species, a Conservation Agreement (CA) between the Payette Forest and the FWS was developed to address this viability concern and encourage habitat improvement opportunities. Prior to and since the CA, the Payette Forest has been implementing habitat improvement projects to decrease conifer encroachment on currently occupied sites, and to connect adjacent populations (USDI, Fish and Wildlife Service 1996a). 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 NFS lands (i.e., the Payette and Boise National Forests) is guided by the following: The Recovery Plan for the Northern Idaho Ground Squirrel (USDI, Fish and Wildlife Service 2003a), the Land and Resource Management Plans for the Boise, Payette and Sawtooth National Forests (see USDA, Forest Service 2003), a Habitat Restoration Plan for activities to be conducted to pro-actively enhance and restore habitat up to 2006[6], and a Participating Agreement in 2003 with the Payette NF and the IDFG committing to provision of long-term protection of the NIDGS.

The Land and Resource Management Plans (LRMPs) for the Boise, Payette, and Sawtooth National Forests (Southwest Idaho Ecogroup) describe a Forest-wide measure that pertains directly to NIDGS and additional Management Area direction for those areas where the NIDGS is known to occur – Management Areas 2, 3, and 5 on the Payette National Forest (Table V-1). In general, this direction promotes conservation of the NIDGS through proactive maintenance and restoration of NIDGS habitat and minimization of effects to individuals through restrictions on other management disciplines (e.g., grazing, recreation, fire) in occupied NIDGS habitat.

Table V-1. Existing conservation and management direction for northern Idaho ground squirrel 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.

[6] The Habitat Restoration Plan is in the process of being updated.

Direction	Description
	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: ▪ The line officer or designee determines that imminent safety to human life or protection of structures is an issue; OR ▪ 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. ▪ 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

The LRMPs for the Southwest Idaho Ecogroup also outline more general goals, objectives, standards and guidelines intended to avoid, minimize, or mitigate adverse effects to threatened, endangered, proposed, and candidate species (Table V-2). 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 V-2. 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

Land management on the Payette and Boise National Forests is considered critically important to this species and its habitat because these Forests constitute the primary Federal action agency with the potential to affect its survival and possibly to assist in conservation under section 7(a)(1) of the Act (USDI, Fish and Wildlife Service 2003a).

For more comprehensive information regarding the habitat requirements, life history, and threats to this species, see FWS (2003a) and Evans Mack and Bond (2007).

Environmental Baseline

Of the 843,412 acres encompassed by the PHD for NIDGS, 5.61 percent (47,313 acres) falls within IRA (Figure V-1). Of 40 known metapopulation sites[7] for NIDGS within the PHD, none were within Idaho Roadless Areas as of 2008. Four existing NIDGS population sites, or 'colonies' have been documented within IRA: Bear-lick Ridgeline, Lick Creek Lookout, Lick Creek Lookout Lower, and the Smith Mountain Lookout (Table V-3). These four colonies occur outside of metapopulation sites. It is important to note that comprehensive survey information for NIDGS is currently lacking in many areas, particularly within higher elevation modeled suitable habitat (Roy, personal communication, July 2, 2008). Therefore, there may be additional populations throughout the PHD that have not yet been discovered due to a lack of surveys.

Table V-3. Existing northern Idaho ground squirrel 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.*

The PHD of the NIDGS overlaps five IRAs: Indian Creek, Cuddy Mountain, Council Mountain, and tiny slivers of Rapid River and Poison Creek (Figure V-1). One additional IRA is situated between metapopulations – Snowbank – and seven IRAs surround the outer boundaries of the probable historic distribution – Bear Wallow, Peace Rock, Stony Meadows, Needles, French Creek, Patrick Butte, and Hells Canyon/Seven Devils Scenic Area. Based on the proximity of these 13 IRAs to the PHD, primary and secondary metapopulation sites, and existing colonies, 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. At this time, IRAs do not support many known NIDGS populations; consequently, IRAs may contribute NIDGS conservation by facilitating movement between and dispersal from existing populations.

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 meadows historically had large, widely-spaced ponderosa pine and Douglas-fir that have been replaced by dense stands of younger trees with dense understories due to past fire exclusion and livestock grazing. This fragmentation and loss of meadow habitat may now inhibit movement of squirrels between colonies.

Effects of the Action

As indicated above, the MIRR establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across Idaho

[7] Defined as clusters of population sites.

Roadless Areas based on management area 'themes'. This section begins with a general discussion of the potential effects that these management activities can have on the northern Idaho ground squirrel and then describes 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 NIDGS. We do not discuss the impacts of phosphate mining on NIDGS as none is anticipated to occur within the range of the species as a result of the MIRR – all permitted road construction reconstruction to access unleased phosphate deposits within Idaho Roadless Areas would be restricted to specific known phosphate lease areas on the Caribou portion of the Caribou-Targhee National Forest in southeastern Idaho under the MIRR (Abing 2008).

Where specific information on effects to NIDGS was unavailable, we relied on studies conducted on related species.

Road construction and reconstruction

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 et al. (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 (USDA, Forest Service 2000b).

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 select situations, such as for some rodents with highly restricted home ranges, populations or rare animals may be reduced to dangerous sizes by road kills (USDA ,Forest Service 2000b). Ground squirrels often are a target of recreational shooting, which is facilitated by human developments and road access (Ingles 1965). Many local endemic ground squirrels, such as the northern Idaho ground squirrel, with small, isolated populations are vulnerable to recreational shooting facilitated by roads (USDI, Fish and Wildlife Service 2003a). 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/harvest

Northern Idaho ground squirrels 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' (excerpted from USDI, Fish and Wildlife Service 2003a, pg. 53). Further, winter logging has the potential to adversely impact NIDGS where activities compact snow above subnivian habitats (Roy, personal communication, July 2, 2008).

Northern Idaho ground squirrels are not typically abundant in meadows that contain a high density of small trees (Sherman and Yensen 1994, as cited in USDI, Fish and Wildlife Service 2003a, pg. 44). 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 (USDI, Fish and Wildlife Service 2003a). Such prescriptions improve habitat conditions for NIDGS and are likely to be either benign or beneficial to the species in the long-term.

Prescribed Fire[8]

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.

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, 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

[8] Excerpted from U.S. Fish and Wildlife Service 2003a.

NIDGS habitat, which could contribute to increased mortality where recreational shooting of rodents, including NIDGS, is not prevented.

Effects of the Modified Idaho Roadless Rule on Northern Idaho Ground Squirrel

Approximately 5.61 percent (47,313 acres) of the PHD of NIDGS and some recently discovered colonies overlap IRA (Table V-4). 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, Primitive and SAHTS, BCR outside of community protection zones, BCR inside community protection zones, 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 NIDGS.

Wild Land Recreation and Primitive - Of the 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 Primitive (42,783 acres) (Table V-4 and Figure V-1). 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 V-4).

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 reducing disturbance and human access.

Table V-4. 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		47,313	5.61%	100%
Total Area of PHD		843,434		

** The MIRR does not apply to these other special areas.*

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 (e.g., trail clearing). Consequently, we would not anticipate adverse effects to NIDGS under this theme resulting from timber cutting. Timber cutting is permitted in Primitive in three additional circumstances: to improve habitat for threatened, endangered, proposed, or sensitive species (TEPS); 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 in implementation (e.g., retention of large trees, Regional Forester approval, etc.). Therefore, timber cutting activities (and related activities such as prescribed burning) could occur in Primitive where they are designed to restore or improve NIDGS habitat, such as removal of encroaching conifers montane meadows. Such activities would likely have benign or long-term beneficial effects on northern Idaho ground squirrels (USDI, Fish and Wildlife Service 2003a).

Watersheds that contain municipal water sources do occur within the probable historic distribution for NIDGS, and appear to overlap the following IRAs: Cuddy, Council Mountain, Snowbank, Needles, Peace Rock, Wallows, Patrick Butte, and French Creek (see Figure II-3). Further, small portions of IRAs classified as Primitive are within 1 ½ miles of an at-risk community or a municipal water supply system within the PHD for the NIDGS (Figure V-1). 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 prescriptions possible. 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 beneficial to NIDGS. Short-term adverse effects could occur due to disturbance to individual squirrels or temporary changes in habitat quality. Further, 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 Primitive. 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 (BCR) – Only 1.49 acres of the PHD for NIDGS overlap BCR, entirely within CPZ in the Poison Creek Roadless Area. No known colonies overlap this theme. Within BCR CPZ, temporary roads could be constructed or reconstructed under six primary exceptions (See Chapter II for more details) and to address hazardous fuels surrounding at-risk communities and municipal water supply systems. Timber cutting could also occur to reduce hazardous fuel conditions 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 Primitive (e.g., improve TEPS habitat, maintain characteristics of ecosystem composition and structure, etc.). Effects to NIDGS resulting from construction of temporary roads or timber cutting (as described under Primitive) 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 without road construction where it is consistent with applicable plan 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 (see Abing 2008). 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 Backcountry CPZ would take place in NIDGS habitat.

General Forest, Rangeland, and Grassland (GFRG) –About 2,675 acres of the PHD fall in GFRG. This represents 0.32 percent of the entire PHD, and 5.65 percent of the PHD overlapping IRA. No known colonies exist in IRA proposed as GFRG.

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. As mentioned early, phosphate mining will not likely occur within the range of the NIDGS, and thus effects from this activity are not anticipated. Surface occupancy to facilitate extraction of other leaseable minerals (e.g., oil and gas, geothermal), using existing roads, would be allowed where it is consistent with applicable plan components. The likelihood of new leases for oil, gas, coal or geothermal development in IRAs, particularly outside of the Caribou-Targhee National Forest, again is exceptionally low (see Abing 2008). This likelihood is further reduced under this theme without the ability to build new roads. 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 NIDGS via habitat loss, degradation, and human access where future activities overlap the range of this species.

Given the relatively few constraints on road construction and timber cutting in GFRG, northern Idaho ground squirrels would have the highest potential to be impacted by these activities (as described above) 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 components for NIDGS – Implementation of any projects in IRA would require consistency with applicable plan components. We have reviewed the components including the specific goals, objectives, standards, and guidelines that have been incorporated into the Forest Plans for the Southwest Idaho Ecogroup (i.e., Boise, Payette, and Sawtooth National Forests) to minimize adverse effects to the NIDGS and move the species towards recovery (Tables V-1 and V-2) and have determined they are not inconsistent with the MIRR; therefore these components would be applied during project design. 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 (Egnew, personal communication, July 2, 2008). 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.

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 ESA with the FWS.

Cumulative Effects

Under ESA, 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 northern Idaho ground squirrels resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the MIRR consists of Idaho Roadless Areas (see definition in Section II), 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 Idaho Roadless Areas.

Determination of Effects on Northern Idaho Ground Squirrel

The Modified Idaho Roadless Rule *may affect, and is likely to adversely affect* the northern Idaho ground squirrel.

Rationale for determination - Timber cutting activities and road construction and reconstruction in IRAs permitted under the Modified Rule, 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 be subject to existing plan components (see Tables V-1 and V-2) that are designed to avoid or minimize adverse effects to the small, isolated colonies of this species on Federal lands. Further, limited overlap of the PHD (<6%) and few known NIDGS locations within IRA (4 known colonies) decrease the likelihood that NIDGS will be exposed to activities that might have adverse impacts, and the risk these activities pose to the species as a whole. However, given we can not predict where future activities might take occur in place and time, we can not discount the potential for short-term adverse effects to habitat and the chance of increased mortality where roads intercept NIDGS habitat, as described above and by USFS (2003) and FWS (2003a).

Canada Lynx (*Lynx canadensis*)

Status of the Species

Listing History

The FWS listed the contiguous U.S. distinct population segment (DPS) of Canada lynx (lynx) as threatened under ESA in March 2000; 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 Land and Resource Management Plans and the BLM Land Use Plans (USDI, Fish and Wildlife Service 2000a).

Distribution and Abundance

The Canada lynx has a circumboreal distribution. In North America, the lynx ranges across nearly all of Canada and Alaska, and extends south into northern, forested portions of the U.S., including south through the Rocky Mountains, northern Great Lakes region, and northern New England. In the western U.S., lynx are known to occur in portions of Washington, Idaho, Montana, Colorado, and Wyoming along the spine of the Rocky Mountains. In general, lynx occupying the southern extent of the range occur at relatively low densities (McKelvey et al. 2000, pg. 24) in comparison to the northern portions of their range in Canada.

Habitat Requirements

This medium-sized felid is associated primarily with upper elevation (1,400 – 2,700 meters) coniferous forests dominated by one of the following vegetation types: Douglas-fir, spruce-fir, and fir-hemlock, and on drier sites, lodgepole pine (Aubry et al. 2000). Within these forested communities, vegetation structure (e.g., dense understory) that provides for an abundance of snowshoe hares, the principal prey item of lynx, and denning (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 the cycle when hares become scarce, the proportion and importance of other prey species, especially red squirrel, increases in the diet. However, it is thought that a diet of alternate prey species alone is not sufficient to support lynx reproduction (Koehler 1990).

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. 2000b), 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.

Factors of Decline/Threats

The Final Rule listing the Canada lynx as 'threatened' under ESA stated that current plans lacked adequate guidance (e.g., regulatory mechanisms) for the conservation of lynx in the National Forest Land and Resource Management Plans, which was threatening the lynx (USDI, Fish and Wildlife Service 2000a).

Ruediger et al. (2000) and Ruggiero et al. (2000a and 2000b) identified more specific risk factors to lynx mortality, movement, and productivity. These are outlined in more detail below[9].

Risk Factors Affecting Mortality:

- Highways;
- Predation by other species;
- Predator control activities;
- Shooting;
- Trapping.

Major high use highways such as I-90, I-15, US-2, US-12 and US-93 may result in lynx mortalities of both resident and dispersing individuals through vehicle collisions (Ruediger et al. 2000). Although the trapping of lynx is currently not permitted within Idaho, lynx may be trapped incidentally. 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.

Risk Factors Affecting Movement:

- Highways and associated developments;
- Private land development.

Major highways and associated development within rights-of-way may also affect movement by lynx (Ruediger et al. 2000). 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. However, it is not understood how highways and associated development may impact population connectivity. The highways that may have the highest potential of impacting lynx in the west include: State Route (SR) 83 in Montana; SR 12, 55, 75 and 95 in Idaho; I-70 in Utah and SRs 14, 26 and 189 in Wyoming may also impede lynx movement across the landscape. Private land development, especially along road corridors in mountain valleys, may also fragment habitat and impede movement of lynx (Ruediger et al. 2000).

Risk Factors Affecting Lynx Productivity:

- Conversion or alteration of native plant communities;
- Fire suppression and fuel reduction;
- Grazing;
- Precommercial thinning;

[9] Excerpted from USDA Forest Service (2007)

- Recreational use;
- Road and trail access;
- Timber management.

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).

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.

Management and Conservation Direction

In 2000, an interagency team composed of representatives from the USFS, FWS, Bureau of Land Management (BLM), and National Park Service (NPS) developed the Canada Lynx Conservation Assessment and Strategy (LCAS) (Ruediger et al. 2000), based on a comprehensive compendium on lynx ecology (Ruggiero et al. 2000a) (herein referred to as the Science Report). The intent of the LCAS was to provide a consistent and effective approach to conserving Canada lynx on federal lands. The USFS and FWS committed to applying information and conservation principles outlined in the Science Report and LCAS via the Lynx Conservation Agreement (LCA) until LRMPs were amended or revised to provide for lynx conservation. These principles revolved around several primary goals (Ruediger et al. 2000), including but not limited to:

- Mapping lynx habitat on USFS units and identifying lynx analysis units (LAU) across the landscape as a framework for analyzing project effects on individual lynx and monitoring habitat changes;
- Maintaining/restoring lynx habitat quality, quantity, and configuration within/to some historic range of variability when managing vegetation, wildland fire, recreation, roads and trails, livestock grazing, and other human developments;
- Collaborating with the FWS and state agencies to reduce incidental harm or capture of lynx.

Conservations measures in the LCAS were presented in terms of “objectives”, “standards”, and “guidelines” which provided direction at landscape, programmatic, and project scales, particularly until relevant LRMPs were amended or revised. Since 2000, most National Forests have either revised or amended their LRMPs to include or incorporate the conservation measures outlined in the LCAS. See Appendix B for more detailed descriptions of these measures relevant to the Idaho National Forests.

“In 2005, the [FWS], along with representatives from the Forest Service, completed the Recovery Outline for the Contiguous United States Distinct Population Segment of the Canada Lynx

(USDI, Fish and Wildlife Service 2005a). The outline identifies core, secondary, and peripheral areas for lynx and preliminary recovery actions" (USDI, Fish and Wildlife Service 2007d, pg. 4) and is to serve as an interim strategy to guide recovery efforts until a final recovery plan is completed.

Environmental Baseline

The action area for the Modified Idaho Roadless Rule is defined as the Idaho Roadless Areas. However, given the broad distribution of lynx across the Idaho, we discuss the status of the lynx and its habitat on National Forests in the western States, including Idaho, and then address lynx presence and lynx habitat within Idaho Roadless Areas.

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. Primary vegetation that contributes to lynx habitat is lodgepole pine, subalpine fir, and Engelmann spruce (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 types 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 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 five separate locations across the survey area (Weaver 1999). Interviews with 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. 2000a, pg. 4-7).

The following National Forests in Idaho have mapped primary and secondary vegetation as lynx habitat and identified 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). Based on the lack of appropriate vegetation types, there is no mapped lynx habitat on the Caribou National Forest. In total, mapped lynx habitat on these Forests covers 7,354,755 acres (Table V-5). Approximately 3,641,858 acres (~48%) of mapped lynx habitat on Idaho's National Forests overlap Idaho Roadless Areas (Table V-5).

The Occupied Mapped Lynx Habitat Amendment to the Canada Lynx Conservation Agreement (USDA, Forest Service and USDI Fish and Wildlife Service 2006) established criteria for defining occupied lynx habitat. According to this amendment, all mapped lynx habitat on an entire national forest is considered "occupied" by lynx when:

- There are at least two verified lynx observations or records since 1999 on the national forest unless they are verified to be transient individuals; or
- There is evidence of lynx reproduction on the national forest.

Forests that meet these occupied criteria were then examined to evaluate whether portions of the forest had isolated regions, disjunct mountain ranges, or peripheral areas that did not meet the "occupied" criteria stated above. Portions of some forests were removed from occupied status.

Based on the criteria outlined above, mapped lynx habitat is consider 'occupied' on the following National Forests in Idaho (USDA, Forest Service and USDI, Fish and Wildlife Service 2006): Idaho Panhandle, Clearwater, Kootenai, and Targhee. Due to the absence of recent records of lynx presence and reproduction, the Nez Perce, Wallowa-Whitman, and Salmon-Challis are considered 'unoccupied'. The FWS includes Canada lynx on 90-day species lists for Payette, Boise, and Sawtooth, also referred to as the 'Southwest Idaho Ecogroup.' Based on criteria applied to the other Forests in Idaho, occupancy by lynx within the Southwest Idaho Ecogroup planning area, would be considered unlikely. However, systematic surveys have not been conducted on these Forests since 2001 to verify the absence of lynx, and the Idaho Conservation Data Center has documented observations of lynx on all three Forests up to 2002 (USDA, Forest Service 2003). Consequently, the 'occupancy' status for lynx on these three Forests remains undetermined.

Table V-5. Mapped lynx habitat, overlap of habitat with Idaho Roadless Areas, likelihood of occupancy, and management direction for lynx on National Forests in Idaho.

National Forest	Mapped Lynx habitat	Mapped lynx habitat in IRA	%	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	700,800[2]	305,599	63%	Likely
Kootenai	36,405[2]	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	868,582	380,555	44%	Likely
Wallowa-Whitman	25,555[2]	41	0.16%	Not likely
Total	7,354,755	3,503,401	48%	

[1]*Based on criteria described in USDA Forest Service and FWS (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 undetermined).*
[4]*Status could change pending results of surveys to be completed during winter, 2008.*

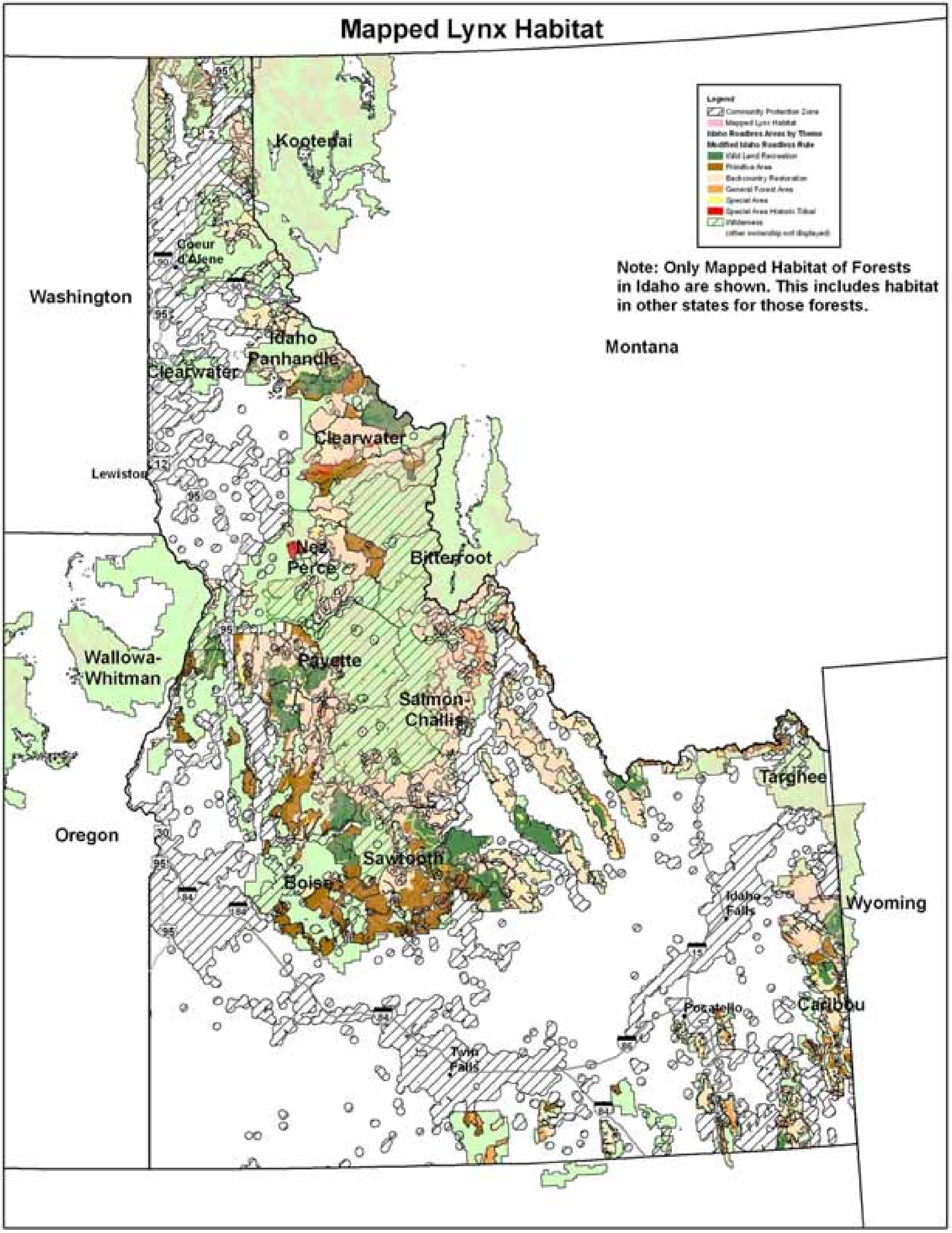

Figure V-2. Mapped lynx habitat on National Forests in Idaho and its overlap with Idaho Roadless Areas.

Management and Conservation Direction for Canada Lynx in Idaho

All National Forests in Idaho, except the Wallowa-Whitman, have revised or amended their LRMPs to incorporate specific standard, guidelines, and conservation recommendations as outlined in the LCAS. The Wallowa-Whitman NF remains subject to the conditions of the Lynx Conservation Agreement (LCA), pending revision of its LRMP (Table V-6). See Appendix B of this document for a description of the standards and guidelines relevant to management of lynx habitat in the LCAS, Land Resource and Management Plans for the Southwest Idaho Ecogroup, and the Northern Rockies Lynx Amendment (NRLA).

Table V-6. 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?	LCAS (2000), committed to through the LCA

[1]*As determined by USDI FWS (2005a)*
[2] *Only applicable to the Targhee National Forest.*

Effects of the Action

The Modified Idaho Roadless Rule establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across Idaho roadless areas, based on management area 'themes'. This section begins with a general discussion of the potential effects that these management activities can have on Canada lynx and then describes the implications of the management area themes proposed by the Modified Idaho Roadless Rule on the species. Use of prescribed fire is not permitted or prohibited 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 Canada lynx.

Road Construction and Reconstruction[10]

In general, construction and reconstruction of forest roads are not considered a primary threat to resident lynx populations in and of themselves (USDI, Fish and Wildlife Service 2000a and 2007d). 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. Further, although recreational, administrative and commercial uses of forest roads are known to disturb

[10] Excerpted from FWS 2007, USFS 2007, and Ruggiero et al. 2000.

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). 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%) 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.

Timber cutting/harvest[11]

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 site. 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.

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 (USDI, Fish and Wildlife Service 2008a).

Prescribed Fire

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

[11] Excerpted in part from FWS 2007, USFS 2007, and Ruggiero et al. 2000.

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

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 (USDI Bureau of Land Management and USDA Forest Service 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.

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. Development associated with mining operations can also promote recreational activity into some areas. Roads, which are plowed during the winter to access these operations, could provide improved access for competing predators into lynx habitat.

Effects of the Modified Idaho Roadless Rule to Canada Lynx

Of over 7.3 million acres of mapped lynx habitat on National Forests in Idaho, 48 percent (~3.5 million acres) overlaps IRAs (Table V-7). Conditions under which road construction or reconstruction, timber cutting, and discretionary mining could occur within IRAs vary with themes proposed by the Modified Idaho Roadless Rule. Generally, these themes rank in restrictiveness as follows (from most restrictive to least): WLR, Primitive and SAHTS, BCR outside of community protection zones), BCR inside community protection zones, 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 on Canada lynx.

Table V-7. Overlap of mapped lynx habitat with the Modified Idaho Roadless Rule 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 Areas1	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 Modified Idaho Roadless Rule. They are only included here for sake of completeness.

Wild Land Recreation (WLR) – About 7.5 percent of total mapped lynx habitat in Idaho (549,101 acres) overlaps WLR (Table V-7).

Road construction and reconstruction is prohibited under the WLR theme, unless provided for by statue or treaty, or pursuant to reserved or outstanding rights, or other legal duty of the United States. 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. Road construction and reconstruction and surface use and occupancy is also prohibited. 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 snow shoe hare habitat would also be precluded in WLR.

Primitive and SAHTS – A total of 685,531 acres (9.3%) of mapped lynx habitat falls within Primitive 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, and mineral activities could occur in Primitive under the same two exceptions as WLR (See Chapter II) and for three 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 in implementation (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 Primitive 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/harvest* above). About 43,346 acres of mapped lynx habitat in Primitive are within 1 ½ 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 (Figure II-3), 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 (BCR) – 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. 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 (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 from existing roads or using aerial systems are permitted in BCR to address a number of purposes, including but not limited to: treating hazardous fuels, improving TEPS habitat, and restoring/maintaining characteristics of ecosystem composition and structure. 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. The likelihood of new leases for oil, gas, coal, or geothermal development in IRAs, particularly outside of the Caribou-Targhee National Forest, under this theme is exceptionally low. This likelihood is further reduced under this theme without the ability to build new roads. 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 lynx via habitat loss, and degradation where future activities overlap the range of this species.

In summary, 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 moderate (see Aquatic and Terrestrial Specialist Report).

General Forest, Rangeland, and Grassland (GFRG) – 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 deposits are located on the Caribou portion of the Caribou-Targhee National Forest. Since there is no lynx habitat mapped on the Caribou portion of the Caribou-Targhee National Forest due to lack of appropriate vegetation types, there is little potential risk to lynx on these 5,770 acres when and if this development should occur.

Surface occupancy to facilitate extraction of other leaseable minerals (e.g., oil and gas, geothermal), using existing roads, would be allowed where it is consistent with applicable plan components. The likelihood of new leases for oil, gas, coal or geothermal development in IRAs, particularly outside of the Caribou-Targhee National Forest, again is exceptionally low (see Abing 2008). This likelihood is further reduced under this theme without the ability to build new roads. 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 lynx via habitat loss, degradation, and human access where future activities overlap the range of this species.

All activities that take place in GRFG 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).

Most of the road construction/reconstruction and timber cutting projected under the Modified Idaho Roadless Rule is expected to occur in GFRG. No GFRG is proposed in the following Forests: Challis, Clearwater, Kootenai, Nez Perce, or the Wallowa-Whitman (Table V-8). 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 only 20,028 acres are documented as “occupied” by lynx at this time, suggesting the potential for individuals to be exposed and possibly adversely impacted, but a relatively low risk to the species as a whole from select management activities (i.e., road construction/reconstruction, timber cutting, discretionary mining) in IRAs statewide.

Table V-8. Overlap of mapped lynx habitat with the Modified Idaho Roadless Rule 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.

Applicable LRMP components for Canada lynx – Implementation of any projects in IRA would need to be consistent with applicable plan components. For lynx, these constitute specific goals, objectives, standards, and guidelines have been incorporated into the Forest Plans for the Southwest Idaho Ecogroup (i.e., Boise, Payette, and Sawtooth National Forests), the Northern Rockies Lynx Amendment (see USDA, Forest Service 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 (See Appendix B). We have reviewed the land management direction for lynx and have determined that none of the direction is inconsistent with the MIRR. The direction provides project design criteria for specific activities, when and if projects are proposed.

All activities proposed in IRA pursuant to the MIRR that may affect Canada lynx in the future will be subject to subsequent section 7 consultation under ESA with the FWS. However, within the Forests covered under the NRLA, effects to lynx, particularly from timber cutting, were analyzed within the Biological Opinion (BO) on the NRLA (USDI Fish and Wildlife Service 2007d). The extent of take and up to 6 percent of mapped lynx habitat associated with fuel management projects were exempt through that BO. 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..

Cumulative Effects

Under ESA, 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 Modified Idaho Roadless Rule consists of Idaho Roadless Areas (see definition in Section II), 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 Idaho Roadless Areas.

Determination of Effects on the Canada Lynx

The Modified Idaho Roadless Rule *may affect, and is likely to adversely affect* the Canada lynx.

Rationale for Determination – Over 25 percent of GFRG includes mapped lynx habitat. Given road construction/reconstruction and timber cutting projected under the Modified Idaho Roadless Rule are expected to be concentrated in GFRG, the potential for these activities to take place in lynx habitat is relatively high. Further, 2,037,273 acres of mapped lynx habitat fall within BCR, including 152,410 acres within CPZ, where activities could take place under certain circumstances. Although any activities proposed in the future would be subject to existing standards and guidelines intended to minimize impacts to lynx, the potential for adverse effects (e.g., habitat loss, degradation, fragmentation) can not be discounted.

Proposed Critical Habitat for Canada Lynx

Status of Designated Critical Habitat

Listing History

On February 28, 2008, the FWS proposed revised designated critical habitat for the contiguous United States distinct population segment of the Canada lynx (*Lynx canadensis*) under the ESA (USDI, Fish and Wildlife Service 2008a). The boundaries of proposed revised critical habitat encompass approximately 42,753 square miles (mi^2) [110,727 square kilometers (km^2)] and include portions of Idaho, Maine, Minnesota, Montana, Washington, and Wyoming. See the Federal Register (USDI, Fish and Wildlife Service 2008a, page 10860) for specific geographic descriptions.

Description of Proposed Lynx Critical Habitat

In proposing critical habitat for Canada lynx, the FWS considered essential physical and biological features, also referred to as 'primary constituent elements' (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.

For lynx, the primary constituent element 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, 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 (USDI, Fish and Wildlife Service 2008a, page 10882).

The area proposed for designation by the FWS 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 V-9. These units overlay lands under various ownerships including Federal, State, private, tribal, and other.

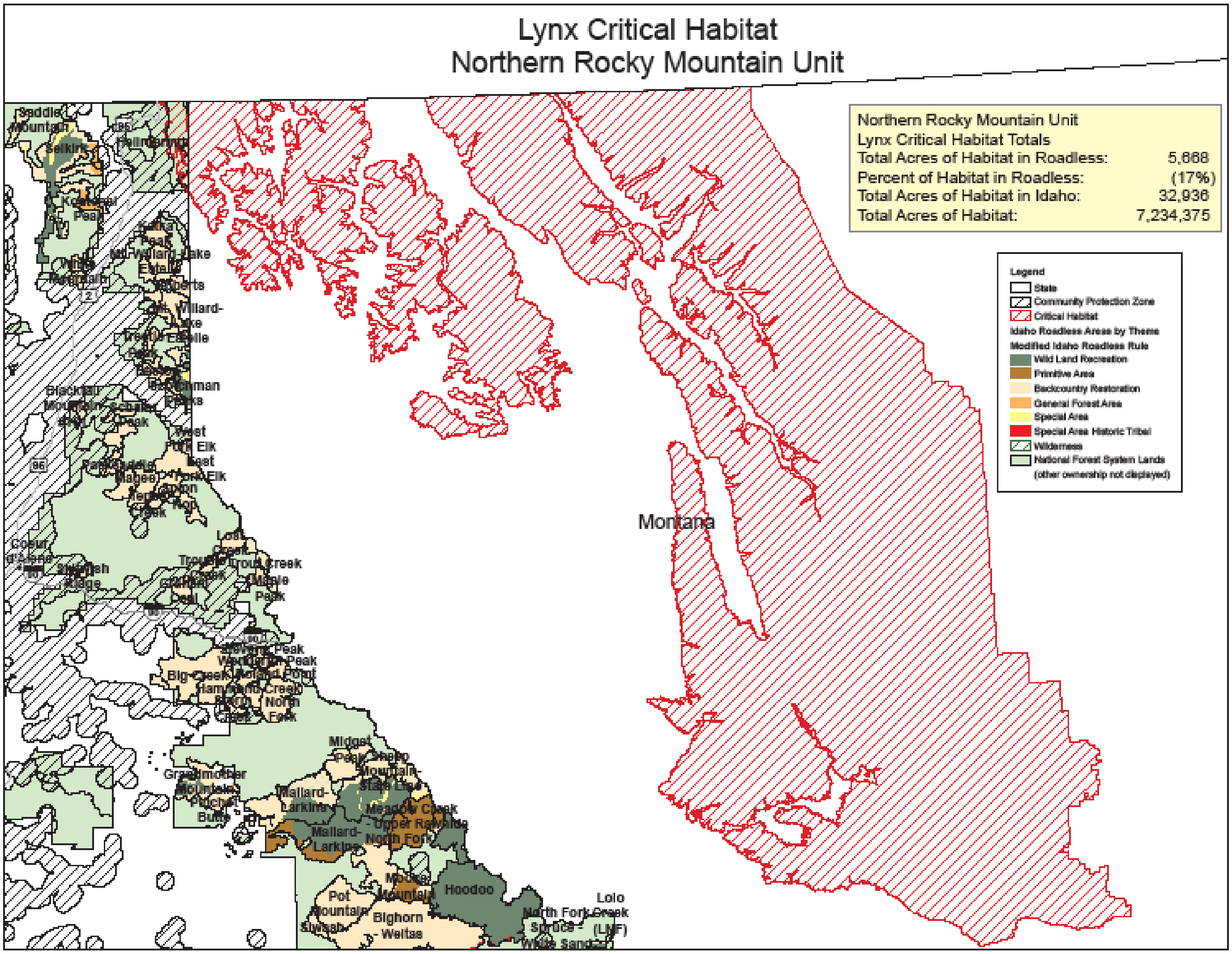

Figure V-3. Proposed designated critical habitat for lynx in the Northern Rocky Mountain Unit.

Table V-9. 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.*

Environmental Baseline

Approximately 51 miles² (~32,940 acres) of the Northern Rocky Mountains Unit (Figure V-3) overlap into Idaho, which represents about 17 percent of that unit (Table V-10). The majority (98%) of proposed lynx critical habitat in Idaho occurs on Federal lands in northeastern Idaho (Figure V-4). "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. Timber harvest and management is a dominant land use…; therefore, special management is required depending on the silvicultural practices conducted. Timber management practices that provide for a dense understory are beneficial for lynx and snowshoe hares. In this area, 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)."(USDI, Fish and Wildlife Service 2008a, page 10874).

Table V-10. Critical habitat proposed for the Canada lynx by land ownership and state (mi^2/acres)[1].

State	Land Ownership				
	Federal	State	Private	Tribal	Other
ID	50/ 32,000	1[2] / 649	0	0	0
ME	13/ 8,320	758/ 485,120	9,741/ 6,234,240	86/ 55,039	35/ 22,400
MN	4,279/ 2,738,560	1,099/ 703,360	1,548/ 990,720	72/ 46,080	1,149/ 735,360
MT	11,182/ 7,156,479	372/ 238,080	1,985/ 1 270,400	347/ 222,080	72/ 46,080
WA	1,831/ 1,171,840	164/ 104,960	5/ 3,200	0	0.1/ 64
WY	7,695/ 924,800	14/ 8,960	133/ 85,119	0	43/ 27,520
Total	25,050/ 16,032,000	2,408/ 1,541,120	13,412/ 8,583,680	505/ 323,200	1,299/ 831,360

[1] *From USDI Fish and Wildlife Service 2008a.*

[2] *This acreage is a mapping anomaly as there is no state land proposed for designation as lynx critical habitat in Idaho (Holt, personal communication. August 6, 2008.*

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 V-4). This equates to approximately 0.08 percent of the entire Northern Rocky Mountains unit. See Appendix C of the FEIS on the MIRR for more detailed information on the Buckhorn Roadless Area.

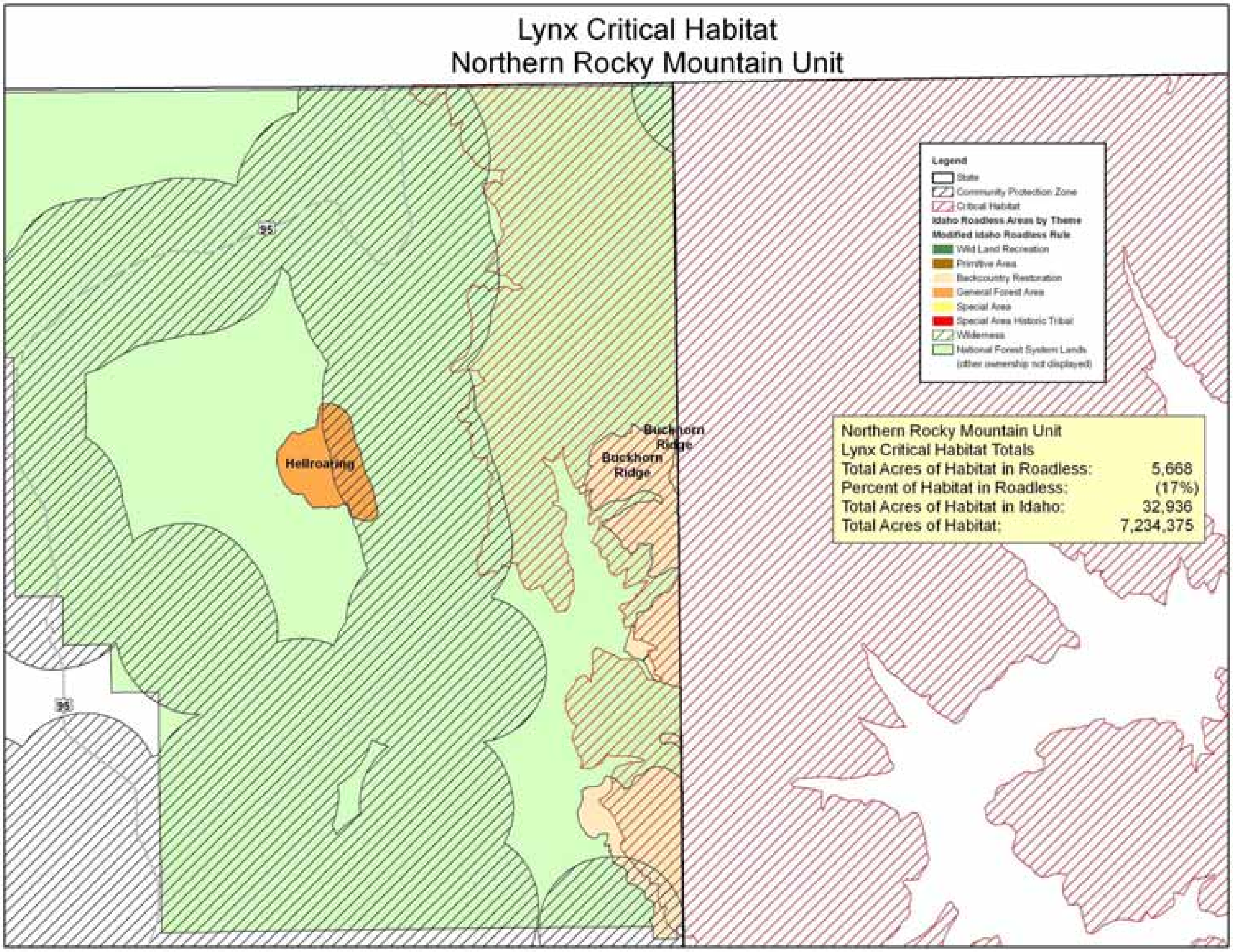

Figure V-4. Proposed designated critical habitat for lynx in the Northern Rocky Mountain Unit in Idaho Roadless Areas.

Effects of the Modified Idaho Roadless Rule

Under the Modified Idaho Roadless Rule, all 5,668 acres of proposed lynx critical habitat in IRA are included in Backcountry (BCR), of which 323 acres fall within the community protection zone (CPZ). There is no overlap with any of the other themes – Wild Land Recreation (WLR), Primitive, General Forest (GFRG), or Special Areas of Historic and Tribal Significance (SAHTS).

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. 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.

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 from existing roads or using aerial systems are permitted in BCR to address a number of purposes, including but not limited to: treating hazardous fuels, improving TEPS habitat, and restoring/maintaining characteristics of ecosystem composition and structure.

Under the MIRR, 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 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 BA 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 (USDI, Fish and Wildlife 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.

Temporary roads constructed/reconstructed in proposed lynx critical habitat has the potential to fragment the boreal forest, possibly increasing the potential for road-related mortality of lynx given their highly mobile nature (USDI, Fish and Wildlife Service 2008a, page 10876).

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. This 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 would be permitted should serve to minimize and reduce the degree and scope of adverse effects in critical habitat. Most timber harvest and road construction would be concentrated in GFRG, which does not include any proposed lynx 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 Northern Rockies Lynx Amendment (see Appendix B for details), many of which are designed to limit impacts to lynx habitat both on spatial and temporal scales. These standards and guidelines should function similarly in minimizing adverse effects to proposed lynx critical habitat. Further, for the Forests covered under the NRLA (including the Idaho Panhandle), effects to lynx, particularly from timber cutting, were analyzed within the Biological Opinion (BO) on the NRLA (USDI, Fish and Wildlife Service 2007d). The extent of take and up to 6 percent of mapped lynx habitat associated with fuel management projects were exempt through that BO.

Thus, relative to those types of activities, the Forest Service may not need to consult with the FWS as effects have already been analyzed and consulted upon.

Determination of Effects on Proposed Critical Habitat for the Canada Lynx

The Modified Idaho Roadless Rule 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.

Rationale for Determination – At a programmatic scale, activities permitted under the Modified Idaho Roadless Rule could affect structural components within the boreal forest (PCE) that may reduce the ability of those areas to support snowshoe hare, the primary prey species of lynx. However, only 5,668 acres, or 0.08 percent, of the entire Northern Rocky Mountains Unit has the potential to be affected (adversely or beneficially) as a result of the MIRR. Further, application of existing standards and guidelines associated with the Northern Rockies Lynx Amendment will minimize the nature and extent of adverse effects to mapped lynx habitat, including lynx critical habitat (see Appendix B). As such, this small potential for adverse effect is not likely to appreciably diminish the capability of the Northern Rocky Mountains Critical Habitat Unit to satisfy essential requirements of the species – to support high density lynx populations and to provide connectivity to other portions of the lynx's range in the Rocky Mountains.

Woodland Caribou (*Rangifer tarandus caribou*)

Status of the Species

Listing History

In 1980, the FWS received a petition from a private citizen and another from the Idaho Department of Fish and Game requesting the listing of the Selkirk caribou under the ESA. On January 14, 1983, the Secretary of the Interior listed the Selkirk woodland caribou population as endangered under an emergency rule due to concerns about poaching, habitat loss, and genetic problems associated with small populations (USDI, Fish and Wildlife Service 1983). The first emergency rule expired on September 12, 1983. A second emergency rule was published October 25, 1983, and the final rule published February 29, 1984 (USDI, Fish and Wildlife Service 1984). Under this final rule, the Selkirk Mountains woodland caribou population was listed as endangered under the ESA in northern Idaho, northeast Washington, and southeast British Columbia.

Distribution and Abundance

Woodland caribou are considered one of the most critically endangered mammals in North America (USDI, Fish and Wildlife Service 1993a). Historically, caribou were widely distributed throughout the northern tier of the coterminous United States (U.S.) 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 (USDI, Fish and Wildlife Service 1993a). Historical caribou numbers in the northwestern U.S. are difficult to determine with certainty because early records are comprised primarily of accounts gathered from trappers, early settlers, prospectors, and forest workers, as compiled by Flinn (1956), Layser (1974), and others. Nevertheless, these accounts 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 British Columbia (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 percent. Currently, the entire global population of mountain caribou occurs within B.C., Idaho, and Washington, where they are provincially "red-listed" (considered to be threatened or endangered) by B.C. and listed as threatened under Canada's Species at Risk Act. The Selkirk Mountain caribou population is listed as endangered under the U.S. ESA (Hatter et al. 2004, Apps and McClellan 2006). The population, which was estimated at 25-30 animals at the time of listing in 1984, is now estimated at 46 animals. Most of the population typically occupies habitat in the British Columbia portion of the recovery area, although a small number of caribou occur within the United States portion of the recovery area as well.

Habitat Requirements[12]

Caribou habitat is typically segregated into two distinct vegetation zones, the cedar/hemlock zone at lower elevations and the subalpine fir/Engelmann spruce zone at higher elevations. Seasonal habitats consist of early winter, late winter, spring, calving, summer, and late summer habitats. Of primary management concern are the early winter and late winter habitats as they provide accessible forage (USDI, Fish and Wildlife Service 1993a) during a period when available vegetation is limiting to mountain caribou on the landscape (USDA, Forest Service 2004).

The cedar/hemlock forests and the lower limits of the subalpine fir/Engelmann spruce habitats are important to caribou during the early winter period, which generally extends from November through January. During this timeframe caribou may seek out more closed timber stands which contain a high level of internal diversity. Components such as a high 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 time period before the snow pack consolidates and they are able to move more freely atop the snow pack. Early winter habitat consists of mature to old growth forests with a dominant overstory of western red cedar/western hemlock and subalpine fir/Engelmann spruce cover types. Ideal habitats or suitable habitats are multi-storied and have an overstory canopy cover greater that 70 percent. During this time period caribou will utilize these habitats until the snow pack consolidates; they will feed on a combination of arboreal lichens and shrub component.

The late winter period which immediately follows the early winter extends until approximately late April to May. During this time period caribou utilize subalpine fir and Engelmann spruce habitats which are at the upper portion of the ridge systems. Suitable habitat consists of mature to old stands of subalpine fir and Engelmann spruce witch are relatively open-canopied. An overstory canopy of 10 to 50 percent is considered as optimal. During this timeframe arboreal lichens are extremely important, as the caribou diet is almost entirely lichen at this time.

As indicated above, arboreal lichens, specifically *Bryoria* spp., comprise a critical winter food source. This species of lichens as with many other species is generally most abundant on trees that are generally more than 100 years old, but factors such as relative humidity, wetting and

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[12] Excerpted from USFS 2004, pg. 18

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. One reason for this association is that most other conifer species in this region tend to lose their branches as they age, providing less substrate for arboreal lichens (Detrick 1984). Forage during spring and summer consists of succulent forbs and graminoids in subalpine meadows, and huckleberry leaves.

Factors of Decline/Threats

Current threats to the woodland caribou include habitat loss and degradation due to timber harvest and fire, illegal or accidental harvest, predation, and winter recreation (USDI, Fish and Wildlife Service 1993a, Idaho Department of Fish and Game 2005). For more detailed information on woodland caribou habitat associations, life history, and threats, see FWS (1993a).

Conservation and Management

Direction regarding management of caribou habitat in the U.S. is found within various documents, including the Idaho Panhandle National Forests (IPNF) Forest Plan (USDA, Forest Service 1987), the revised Caribou Recovery Plan (USDI, Fish and Wildlife Service 1993a), the Amended Biological Opinion for the IPNF Forest Plan (USDI, Fish and Wildlife Service 2001a), Emergency Action Plan for Selkirk Mountains Woodland Caribou Recovery (USDI, Fish and Wildlife Service 2002), and the Situation Summary and Management Strategy for Mountain Caribou and Winter Recreation on the Idaho Panhandle National Forests (USDA, Forest Service 2004a).

The Idaho Panhandle National Forests (IPNF) Forest Plan (LRMP)

As indicated earlier, approximately 255,456 acres of the South Selkirk Ecosystem caribou recovery area falls on the IPNF. This represents almost 57 percent of the U.S. portion of the recovery area. Consequently, land management practices on the IPNF have implications to conservation of caribou. To address caribou conservation, the IPNF Forest Plan (USDA, Forest Service 1987) includes goals, objectives, standards and guidelines (i.e., ‘land management components’) that pertain to management of caribou and its habitats, particularly within the recovery area.

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 standard, to be applicable to projects regardless of Management Areas (MA). The IPNF 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.

Further, the IPNF describes a number of additional goals and standards within the specific Management Areas intended to promote caribou conservation and minimize impacts resulting from Forest management actions within these MAs. For example, the goals for MA-7 on the IPNF include, but are not restricted to the following: a) manage caribou habitat to provide a proper mix of seasonal habitats needed to support the National Forests’ share of a recovered Selkirk woodland caribou population; and b) reduce the potential for caribou and/or grizzly bear conflicts with human activities. Numerous standards for MA-7 are intended to assist in meeting these goals (e.g., seasonal closures to protect caribou, provision of specific seasonal habitat requirements, retention of caribou travel corridors, protection of old growth, etc). Additional standards applicable within other Management Areas, although not intended to directly address needs of caribou, may also indirectly benefit this species. See Appendix B for a detailed description of standards and guidelines intended to address caribou conservation on the Idaho Panhandle National Forests.

Environmental Baseline

Currently, woodland caribou in the continental U.S. are restricted to northern Idaho (i.e., panhandle) and the northeastern corner of Washington. These caribou are managed as part of the South Selkirk subpopulation, which extends north into British Columbia. Caribou census efforts for the South Selkirk subpopulation 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 provide a more accurate means of counting total numbers of animals within each group(s). The most recent surveys completed using these methods for the South Selkirk subpopulation estimated a minimum of 46 individuals in 2008 (Wakkinnen et al. 2008), three of which were detected as a group within U.S. boundaries (Table V-11). The last five years of surveys throughout the Recovery area have indicated an increasing trend in individuals detected (Wakkinnen et al. 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 (Audet, personal communication, August 6, 2008).

Table V-11. Results of woodland caribou winter census, Selkirk Mountains, 1999-2008[13].

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 winter conditions – low snowpack					
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	

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.
d Based on helicopter count in BC portion of ecosystem.
e this table footnote missing from Wakkinnen et al. 2008.

The recovery area for woodland caribou within the South Selkirk Ecosystem encompasses a total of 959,923 acres across the U.S. and Canada (Figure V-5): 319,860 acres in Idaho, 138,229 acres in Washington and 501,166 acres in British Columbia.[14] As it is currently delineated, the recovery area includes lands above 4,000 feet in elevation within British Columbia and on the Colville National forest, and lands above 4,500 feet on the Idaho Panhandle National Forest (IPNF) and the Idaho Department of Lands (USDI, Fish and Wildlife 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.

Approximately 255,456 acres of the 959,923-acre South Selkirk Ecosystem caribou recovery area (27%) fall on the IPNF, 131,813 acres (~14%) of which are in Idaho Roadless Areas. Seven IRAs

[13] Excerpted in full from Wakkennin et al. 2008.
[14] Based on the GIS analysis conducted for the purposes of this document. Differs only slightly from acreage reported in FWS 1993a.

fall within or overlap the caribou recovery area: Continental Mountain, Kootenai Peak, Little Grass Mountain, Saddle Mountain, Salmo/Priest, Selkirk, and Upper Priest (Table V-12).

Table V-12. Idaho Roadless Areas that overlap the South Selkirk Ecosystem caribou recovery area.

Roadless Name	#	Acres overlapping caribou recovery area	% overlap of IRA 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 South Selkirk Ecosystem caribou recovery area were initiated in 1997 as a cooperative project between British Columbia Ministry of Environment, the Colville National Forest, Washington Department of Fish and Wildlife, Idaho Department of Fish and Game, and the Idaho Panhandle National Forests. Recent habitat modeling by Kinley and Apps (2007) builds upon early cooperative efforts and further classified the relative suitability of seasonal habitats[15]. 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' (Almack, personal communication, March 3, 2008). The terms 'suitable' and 'capable' are more fully defined by USFS (2004a) below:

- 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 inappropriate seral stage, cover type, or stand density. Capable habitat is based on fixed attributes such as slope, elevation, and habitat type. Capable habitat for caribou is utilized for travel between suitable feeding sites, movement within the ecosystem, and as lower quality feeding sites.
- Suitable habitat currently has both the fixed and variable stand attributes for a given species' habitat requirements. Variable attributes change over time and may include seral stage, cover type, and overstory canopy cover

An estimated 14 percent of caribou habitat (all seasons) in the South Selkirk Ecosystem recovery area overlaps IRA (Table V-13). 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. Consequently, we report acreages for all seasonal habitats, but focus on the recovery area boundaries to generally represent the distribution of caribou and its habitat.

[15] For a detailed description of these habitats and mapping methods, see Kinley and Apps (2007).

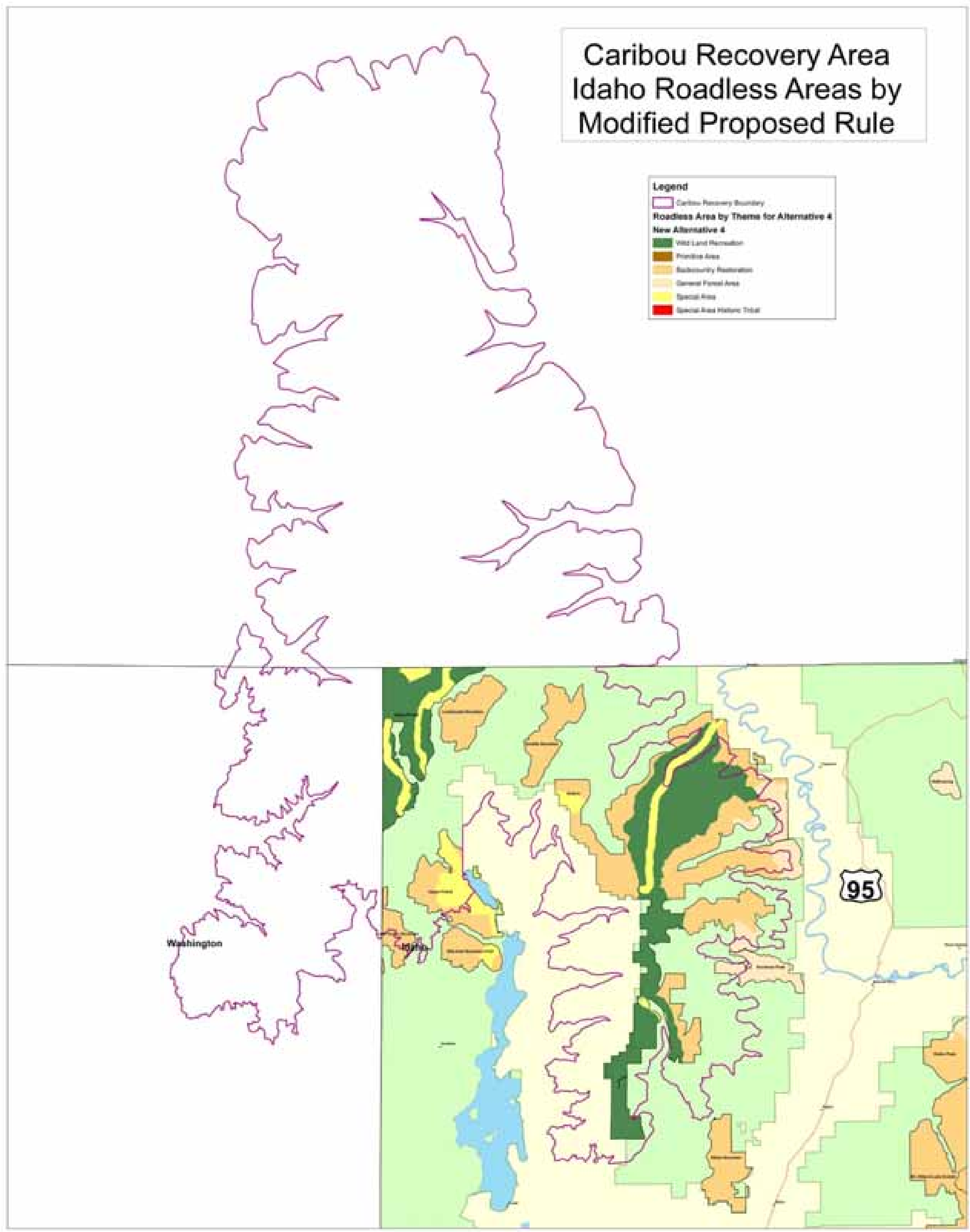

Figure V-5. Caribou Recovery Area overlapping Idaho Roadless Areas.

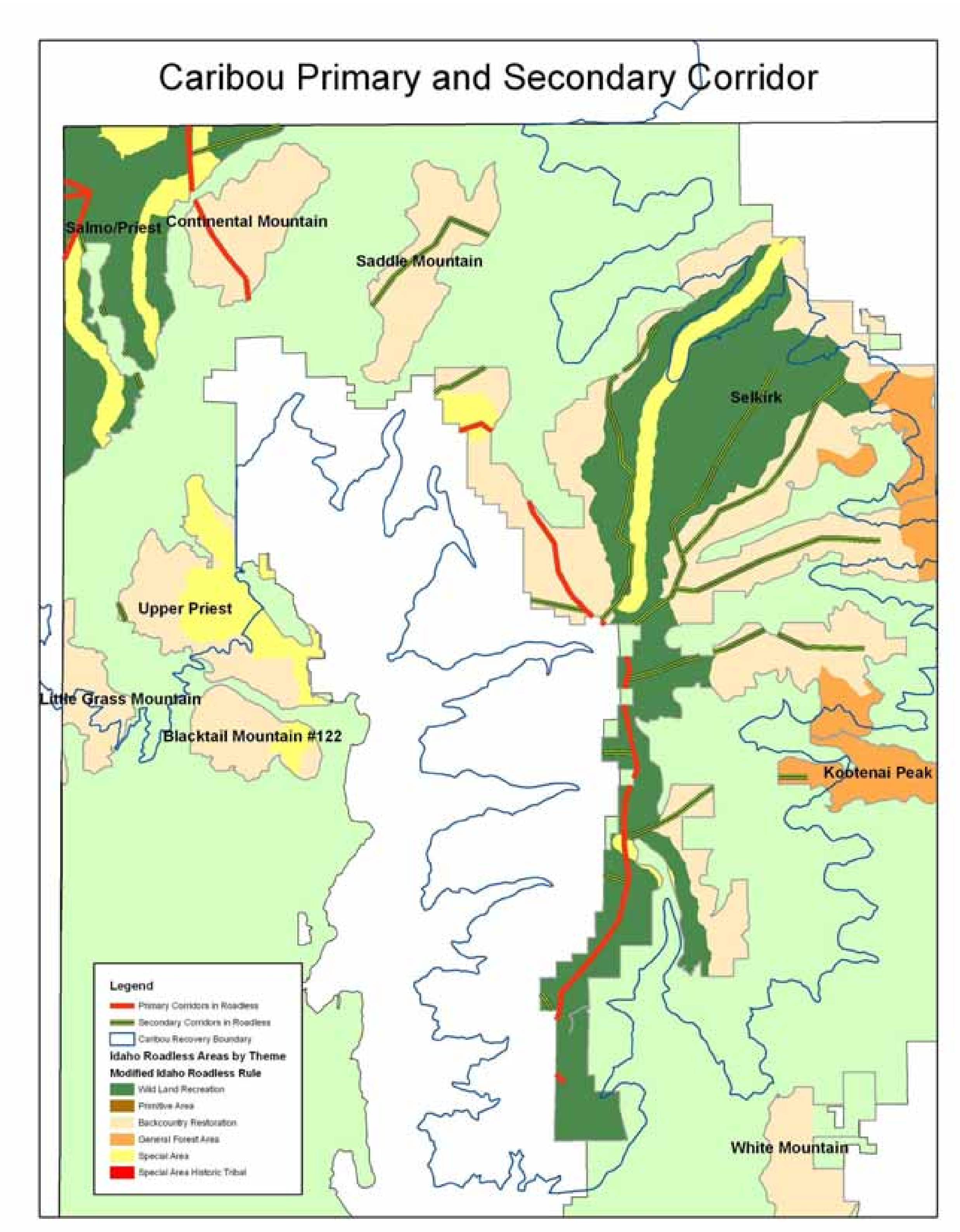

Figure V-6. Primary and secondary caribou movement corridors in northern Idaho.

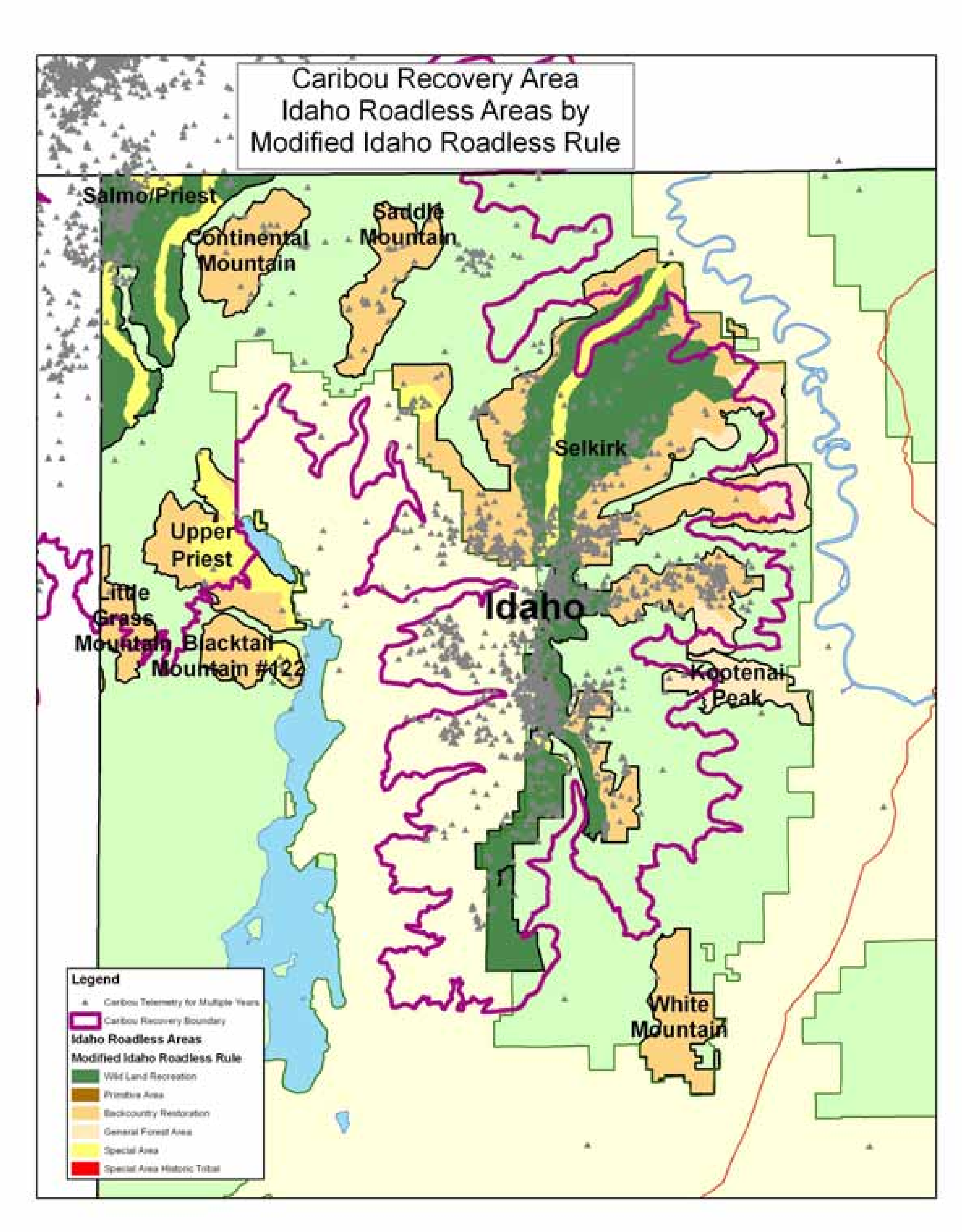

Figure V-7. Woodland caribou telemetry points and Idaho Roadless Areas within the Caribou Recovery Area in northern Idaho.

Table V-13. Caribou seasonal habitats[1] with 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[2]	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.*
[2] *Habitat suitability classified as 'low' is considered 'capable' as defined above, but not necessarily 'suitable'.*

Movement corridors for woodland caribou were mapped based on historical information on such corridors, topographic features, caribou habitat, and recent observations and telemetered locations of caribou (See USDA, Forest Service 2004a, 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 corridors and 62 miles of secondary corridors intersect IRAs, including the Salmo-Priest, Continental Mountain, Saddle Mountain, Selkirk, Kootenai Peak, and Upper Priest (Figure V-6).

As indicated above, recent surveys conducted for woodland caribou have detected individuals within the U.S. boundaries. In 2007, census identified two individuals in Idaho that appear to have been in or within close proximity to two Idaho Roadless Areas: the Salmo-Priest Roadless Area and the Selkirk Roadless Area (see Wakkinnen et al. 2008). Further, based on a comprehensive dataset of telemetry points collected on caribou over the past 15-20 years via collaborative work of BC and U.S. biologists, at least 2,500 caribou locations were identified within numerous Idaho Roadless Areas: Blacktail Mountain, Continental Mountain, Little Grass Mountain, Saddle Mountain, Selkirk, Upper Priest, White Mountain, Kootenai Peak, and the Salmo/Priest IRAs. This dataset includes points collected within years, across years, and involving multiple animals (Layser, personal communication, August 15, 2008). In the absence of specific information on these variables for each point, we can not make conclusions regarding the temporal use patterns of caribou over the years or population size within the U.S. portion of the Recovery Area However, these points do speak to relative use by caribou of various IRAs within this dataset. Of 2,523 telemetry points, 89% (2,235 points) were detected within the Selkirk IRA and 8% (202 points) were detected within the Salmo-Priest IRA. The remaining IRAs contained less than 1% of points, suggesting limited use by these monitored caribou (Figure V-7).

Effects of the Action

The MIRR establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across Idaho roadless areas, based on management area 'themes'. This section begins with a general discussion of the potential effects that these management activities can have on woodland caribou and then describes 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 Idaho Roadless Areas likely 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).

Road construction/reconstruction

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. 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 these wildlife species, 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 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). 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.

Because early and late winter habitats are important to caribou survival (USDI, Fish and Wildlife Service 1993a), 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 Modified Idaho Roadless Rule, we discuss their impacts here as the construction or reconstruction of new roads, as outlined in the MIRR, may facilitate such activities, providing another mechanism for effect whether authorized or not.

Research on the effects of snowmobiling on caribou are somewhat limited in number and primarily focus on barren ground caribou and reindeer. These studies and others conducted on other ungulates suggest numerous mechanisms through which caribou may be negatively impacted by this activity.

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 USDA, Forest Service 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, as cited in USDA, Forest Service 2004a) concluded that large groups of fast moving snow-mobile 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. Seip (2007) reported similar adverse effects of snowmobiling on caribou where abandonment of suitable habitat could not be explained by habitat conditions alone.

Kinley et al. (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 areas formerly used, and declined in numbers within some areas that are still occupied. Where suitable winter range is scarce, disturbance to caribou may shift them into less preferred habitat, increasing the risk of mortality. In addition, alpine dwelling caribou displaced to steeper, less preferred habitats may suffer increased mortalities from avalanches.

"Snowmobile trails provide hard packed travel corridors for predators to move into the alpine (Bloomfield 1979, Neumann and Merriam 1972). Wolf predation is often responsible for adult mortality and low recruitment in caribou populations within Canada (Bergerud and Ballard 1988, Gasaway et al. 1983, Seip 1991); this has not been documented to be a problem during the late winter season as of yet. …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 USDA, Forest Service 2004a, pg. 26).

In summary, research conducted on woodland caribou suggest the high sensitivity of this species to human disturbance through a number of mechanisms, which is frequently facilitated by the presence of roads.

Timber cutting

Mountain caribou are closely tied to old growth coniferous forests of the Interior Wet-belt ecosystem of British Columbia and the U.S., and their survival depends on their ability to spread out over large areas of suitable habitat where it is difficult for predators to find them. Further, a primary long-term threat to this species is the ongoing loss and fragmentation of contiguous old growth forests due to timber harvest and wildfires (USDI Fish and Wildlife Service 1993a, Apps and McLellan 2006). Consequently, timber cutting activities that could occur in caribou habitat within IRAs pursuant to the MIRR is a concern.

Timber cutting activities typically modify vegetation structure and composition, which can have the following impacts on the quality and quantity of caribou habitat within the Wet-belt ecosystem: 1) a reduction in arboreal lichens, the caribou's key winter food source; 2) alteration of caribou migration and habitat use patterns, particularly where old growth forests are fragmented; and 3) increased predation risk where security cover has been removed or modified (USDI, Fish and Wildlife Service 1993a). There is ongoing research on various silvicultural practices (e.g., partial cutting) and habitat enhancement techniques that could protect caribou habitat while allowing some level of timber harvest (Coxson et al. 2003). However, the results of these efforts, some of which are encouraging, are preliminary and inconclusive at this time (Audet, personal communication, August 6, 2008).

Timber harvest can also contribute to altered predator-prey dynamics, which may increase mortality of caribou. Vegetation management that removes or fragments old forest and creates more early- or mid-seral conditions may improve habitat conditions for other ungulates (e.g., deer, elk, and moose), which can lead to an expansion of predators such as cougars and wolves into caribou habitat where they may opportunistically prey on caribou in addition to other ungulates, increasing predation rates on this species (COSEWIC 2002, Hebblewhite et al. 2007,Wittmer et al. 2007). Restricting caribou to remaining old grown patches may increase the search efficiency of predators, and contribute to higher predation rates on caribou. James and Stuart-Smith (2000) found that documented predation events on caribou by wolves were closer to linear corridors than live telemetered locations of all caribou. The authors hypothesized that such linear features may increase the search rate of wolves in caribou habitats. Lastly, as discussed above, roads constructed in association with timber harvest activities may facilitate predator movement into caribou habitat, thus increasing opportunities for predation events (Bloomfield 1979, Neumann and Merriam 1972).

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. Caribou habitat that has burned in wildfire experiences a short-term reduction in suitability where arboreal lichens have burned or are less accessible due to increased snow accumulations where crown cover has burned (Metsaranta et al. 2003). Fire can also contribute to increased deadfall in forested stands, which may impede travel by caribou (Metsaranta et al. 2003). Looking over longer time frames, fire appears to stimulate forage growth, particularly in the 40 years following a fire event, which may result in improved habitat conditions for caribou in the long term.

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 (Lee and Jonkel 1981, Zager 1980, as cited in IGBC 1987). Where the fire regime has been interrupted, forested stands, may be more susceptible to uncharacteristic, stand-replacing fire events where there has been significant fuel buildup. At a landscape scale, stand-replacing fire could change the configuration and availability of forested stands which affects the cover and security these stands provide caribou from predators, human disturbance, and the elements (Courtois et al. 2007, Shepherd et al. 2007). Impacts of wildfire on caribou habitat have been identified as a concern in the Recovery Plan for the species (USDI, Fish and Wildlife Service 1993a). To avoid such impacts, prescribed fire, in combination with mechanical treatments, might assist in protecting and/or restore caribou habitat in the long-term with the understanding that short-term impacts to forage availability may occur.

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). Development of oil, coal and gas plants require similar intra-structure components.

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.

Effects of the Modified Idaho Roadless Rule to Woodland Caribou

Over 131,802 acres of the South Selkirk Ecosystem recovery area and the seasonal caribou habitats they encompass overlap IRA (Tables V-12, V-13). Further, over 2,500 telemetry points have detected caribou within IRAs (primarily the Selkirk IRA) over the past 15-20 years. As such, it is possible that individual woodland caribou could be exposed to select management activities (i.e., road construction/reconstruction and timber cutting) within IRA. Conditions under which road construction/reconstruction and timber cutting could occur within IRAs vary with themes proposed by the Modified Idaho Roadless Rule. Generally, these themes rank in restrictiveness as follows (from most restrictive to least): WLR, Primitive and SAHTS, BCR outside of CPZ), BCR inside community protection zones, 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 woodland caribou.

Table V-14. Overlap of the South Selkirk Ecosystem caribou recovery area with the Modified Idaho Roadless Rule themes.

	Recovery Area (acres)	% of total Recovery Area
Wild Land Recreation	54,507	5.68%
Primitive	0	0%
Backcountry	58,507	6.10%
Backcountry 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.*

Table V-15. Overlap of primary and secondary caribou corridors and telemetry points with the Modified Idaho Roadless Rule themes.

	Primary corridor (miles)	Secondary corridor (miles)	Telemetry Points
Wild Land Recreation	15.80	24.69	1,171
Primitive	0	0	0
Backcountry	8.90	33.90	1,206
Backcountry CPZ	0	0	2
General Forest, Rangeland, Grassland	0	.91	5
Special Areas of Historical and Tribal Significance	0	0	0
Other Forest Plan Special Areas[1]	3.12	1.57	139
Total in IRA	27.82	61.93	2,523

[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.*

Table V-16. Overlap of the Modified Idaho Roadless Rule themes with caribou seasonal habitats within the South Selkirk Ecosystem caribou recovery area.

Seasonal Habitat[1]	Total in recovery area	WLR	BCR	GFRG	FPSA
Calving					
High	78,791	6,734	5,416	112	467
Moderate	324,559	21,545	31,477	1,512	1,668
Low[2]	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

[1]Habitat suitability based on HSI scores: Low = 0-.29, Moderate = .30-.69, High = .70-1.00.
[2] Habitat suitability classified as 'low' is considered 'capable' as defined above, but not necessarily 'suitable'.

Wild Land Recreation (WLR) – 54,507 acres (5.68%) of the South Selkirk Ecosystem caribou recovery area [and the seasonal habitats they contain (Table V-16)] overlap WLR (Table V-14), in the following IRAs: Salmo/Priest (14,315 acres) and Selkirk (40,192 acres). Further, 15.80 miles and 24.69 miles of primary and secondary caribou movement corridors, respectively, intersect this theme (Table V-15) and 1,171 telemetry locations over 15-20 years were detected within WLR.

Road construction and reconstruction is prohibited in the WLR theme, unless provided for by statue or treaty, or pursuant to reserved or outstanding rights, or other legal duty of the United States. Timber cutting, sale, or removal is also prohibited in WLR except for personal or administrative uses, or where incidental to the implementation of management activities not otherwise prohibited.

Activities related to leasable mineral extraction[16] are also prohibited under this theme. Consequently, adverse effects to woodland caribou or its habitat resulting from roads, timber cutting, and discretionary mining under the MIRR (see section 'Discretionary Mining' above), 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 free from human disturbance. Beneficial effects to woodland caribou (as discussed above) of certain vegetation management activities, such as those designed to reduce the risk of wildfire related loss of habitat, would also be precluded in WLR.

Primitive and SAHTS – There is no overlap of the South Selkirk Ecosystem caribou recovery area, caribou habitat, movement corridors, or telemetry points with IRAs proposed under these management themes.

Backcountry (BCR) – 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 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. There is no overlap of habitat in the Caribou Recovery area and Backcountry 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.

[16] Is not relevant to locatable minerals subject to the 1872 General Mining Law.

Temporary road construction and timber cutting outside Backcountry 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 II-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, thus impacts to important components of 'older forests' that provide for caribou are not likely to be significant under this theme. In addition, management direction specific to old growth forests would apply [i.e. forest-wide direction and MA-7 (Caribou habitat) direction (Appendix Table B-11)].

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 plan 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 (see Abing 2008). This likelihood is further reduced under this theme without the ability to build new roads. 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 this species.

General Forest, Rangeland, and Grassland (GFRG) – 4,545 acres (0.47%) of the South Selkirk Ecosystem caribou recovery area (and encompassed caribou habitats) overlap GFRG (Table V-14) in the Kootenai Peak (943 acres) and Selkirk (3,602 acres) IRAs. Approximately 0.91 miles of secondary caribou movement corridors, intersect this theme (Table V-15). Only five telemetry locations for caribou over the past 15-20 years were detected within GFRG.

Both forest and temporary roads can be constructed, reconstructed and/or maintained in GFRG to facilitate timber cutting, under other exceptions (as identified in Chapter II) and/or in association with certain phosphate deposits in IRA on the Caribou-Targhee National Forest, but 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 plan 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 (see Abing 2008) based on a low potential for resource occurrence/presence (i.e., oil and gas), lack of industry interest, and difficulties associated with transportation. This likelihood is further reduced under GFRG without the ability to build new roads to facilitate such development. 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 human access where future activities overlap the range of this species.

All activities that take place in GFRG would be subject to applicable land management plan components as well as to specific conditions promulgated by this rule (See Chapter II for description of conditions).

Road construction/reconstruction (3.3 miles/year) and timber cutting (1,000 acres/year) projected in IRAs over the next 15 years are most likely to occur within GFRG. Given the permissions allotted in GFRG for road construction/reconstruction and timber cutting activities, there is the potential for woodland caribou to be negatively affected (as discussed in previous sections) in GFRG via habitat loss/modification, and human disturbance facilitated by roads. Although possible, we do not anticipate effects to caribou from mineral leasing due to the exceptionally low likelihood of surface occupancy for new energy developments without road construction (e.g., oil, gas, geothermal),. Because only 1.1percent (4,545 acres) of all IRA allotted to GFRG (405,900 acres) overlaps the caribou recovery area and caribou habitat, the likelihood that caribou might be exposed to road construction/reconstruction or timber cutting in GFRG is relatively low. However, given that we can not predict exact locations of future projects nor are there restrictions on the distribution of effects spatially or temporally, we can not discount the possibility of adverse effects to caribou. As only 0.47percent (4,545 acres) of the entire caribou recovery area (959,923 acres) could be impacted by any activities in GFRG, the magnitude of impact to the species throughout the recovery area is relatively small.

Applicable LRMP components for woodland caribou– As referenced earlier, goals, objectives, standards, and guidelines have been incorporated into the Idaho Panhandle National Forest LRMP (see Appendix B, Table B-4 for a comprehensive list of applicable plan components) to minimize adverse effects to threatened, endangered, proposed, and sensitive species. We have reviewed this management direction and have determined it is not inconsistent with the MIRR; therefore it would be applied at the project level.

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 – effects discussed in more detail in the previous section. Below, we provide examples of specific Forestwide and Management Area standards from the IPNF LRMP that have, and will continue to minimize these types of effects, including those that could occur under the MIRR.

<u>Human disturbance</u>

- 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-2,3, see also MA-4);
- 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);
- 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 and 11).

In addition to these standards, the IPNF is also completing a strategy for managing winter recreation in caribou habitat (see USDA, Forest Service 2004a) which is intended to reduce snowmobiling impacts on caribou (see discussion on *The Situation Summary and Management Strategy for Mountain Caribou and Winter Recreation on the IPNF* below). Such a strategy could help minimize some of the effects road construction and reconstruction can have on caribou (e.g., facilitation of human access).

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);
- 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 (USDA, Forest Service 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 (Audet, personal communication, August 6, 2008). New scientific data on how caribou use their habitat resulted in a revised habitat analysis procedure (USDA Forest Service 2006). 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 (Dekome, personal communication, August 21, 2008).

Lastly, although not explicitly stated as a standard in the LRMP, currently the IPNF does not conduct timber harvest that removes allocated old growth stands (USDA, Forest Service 2006). 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 USDA, Forest Service 2006), in addition to allocated potential old growth. 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. 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.

At the programmatic level, the FWS determined that a) the IPNF LRMP, including the measures outlined above, should reduce impacts to woodland caribou; and b) continued implementation of the LRMP is not likely to jeopardize the continued existence of the woodland caribou (USDI, Fish and Wildlife Service 2001a). These findings were based on a broader set of permissions than the Idaho Roadless Rule because part of the Caribou Recovery Area is outside of Idaho Roadless Areas. The Biological Opinion has been in place since 2001.

The USFS has reinitiated consultation on the management of winter recreation. *The Situation Summary and Management Strategy for Mountain Caribou and Winter Recreation on the IPNF* (Situation Summary) was prepared in 2004 (USDA, Forest Service 2004a). This document was compiled in part to describe the known resource overlap between caribou habitat, use and winter recreational activities within the Selkirk Mountains in the Idaho Panhandle National Forests. The impetus for this summary and proposed strategy elements is in response to actions and tasks outlined within the Caribou Recovery Plan (USDI, Fish and Wildlife Service 1993a), Idaho Panhandle National Forest Plan(USDA, Forest Service 1987), the Emergency Action Plan for Selkirk Caribou (USDI, Fish and Wildlife Service 2002) and the requirement of the amended Biological Opinion for the IPNF forest Plan (USDI, Fish and Wildlife Service 2001a).

The Situation Summary presented an update on and evaluation of important seasonal caribou habitats on the Forest. On the Idaho Panhandle, 24 percent of capable early winter habitat was found to be suitable habitat. Moreover, 43 percent of the capable late winter habitat was found to be suitable. The Situation Summary concluded the following based on this evaluation: “Habitats are not considered limiting to caribou for the foreseeable future because of the low population numbers of caribou in relation to the distribution and amount of forage and the increasing amount of suitable habitats being created as stands reach maturity. Although large stand replacing wildfires could change the distribution and abundance for available forage in the future.” (USDA, Forest Service 2004a, pg. 19). Based on this conclusion, impacts to individual caribou are less likely, although management related changes to caribou habitat would still have implications to recovery of the species.

To date, the IPNF has proposed no vegetation management projects that were ‘likely to adversely affect’ caribou since 2001 (Dekome, personal communication, August 21, 2008). Based on this history, the goals, objectives, standards, and guidelines included in the IPNF LRMP have been successful in minimizing adverse effects to caribou. Consequently, continued application of these LRMP components under the MIRR should remain effective in addressing the impacts of forest management activities on woodland caribou.

Cumulative Effects

Under ESA, 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., in-holdings).

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

- The action area for the Modified Idaho Roadless Rule consists of Idaho Roadless Areas (see definition in Section II), 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 Idaho Roadless Areas.

Determination of effects

The Modified Idaho Roadless Rule *may affect*, *and is likely to adversely affect* the woodland caribou.

Rationale for Determination – Timber cutting activities and road construction and reconstruction in IRAs permitted under the Modified Idaho Roadless Rule, particularly in GFRG, have the potential to adversely affect individual woodland caribou via habitat degradation and increased disturbance facilitated by roads. At the project level, all activities will be subject to existing plan components (see Appendix B) that are designed to avoid or minimize adverse effects to individual woodland caribou and its habitats on Federal lands. Further, limited overlap of the Caribou Recovery Area, the habitats it contains, and the limited presence of individual woodland caribou in IRA, decrease the likelihood and magnitude of impact to the species as a whole. However, given that we can not predict exact locations of future projects nor are there restrictions on the distribution of effects spatially or temporally, we can not discount the potential for adverse effects to caribou.

Grizzly Bear (*Ursus arctos horribilis*)

Status of the Species

Listing History

In 1975, the FWS listed the grizzly bear as threatened in the conterminous United States (USDI, Fish and Wildlife Service 1975). At that time, the FWS identified two primary threats to the species as the following: 1) the substantial decrease in range resulting from habitat loss, particularly habitat restricted from human access and disturbance and; 2) direct and indirect human-caused mortality.

Because of the generally low populations numbers for grizzly bears within the Cabinet-Yaak (CYE) and Selkirk (SE) Ecosystems and existing threats to recovery, the FWS determined that the CYE and SE populations warranted uplisting to endangered status in 1999. However, this action has been precluded by higher priority listing actions (USDI, Fish and Wildlife Service 1999).

On March 29, 2007, the FWS delisted the Yellowstone Distinct Population Segment (DPS) of grizzly bears (USDI, Fish and Wildlife Service 2007c). Thus the remainder of this section focuses primarily on grizzly bear populations that remain listed under the ESA.

Distribution and Abundance

The historic range of the grizzly bear in the continental United States extended from the central Great Plains, west to California, and south to Texas and Mexico. Between 1800 and 1975, grizzly bear populations in the lower 48 states declined from over 50,000 to less than 1,000, resulting in extirpation of this species from most of its historical range. Currently, only five areas in the lower 48 states support self-sustaining or remnant grizzly bear populations: the Yellowstone Ecosystem, Northern Continental Divide Ecosystem, Cabinet-Yaak Ecosystem, Selkirk Ecosystem, and Northern Cascades Ecosystem. The Recovery Plan for the Grizzly bear (USDI, Fish and Wildlife Service 1993b) identifies these five areas as recovery zones, outlining specific bases for recovery in each zone. The Recovery Plan also identified the Bitterroot Ecosystem in east central Idaho and western Montana as a recovery zone, although few if any grizzly bears are known to occur in this area. Within recovery zones, bear management units (BMUs) were established to assist in monitoring grizzly bear populations and habitat conditions within each ecosystem.

Habitat Requirements

Grizzly bears are habitat generalists, using a variety of habitats including the coniferous forests of northwestern Montana and northern Idaho. Habitat is generally dictated by food availability and distribution, as well as security from human disturbance and mortality. Because grizzly bears have large home ranges, large areas of secure habitat (e.g., free from human disturbance) are required. Grizzlies occupy low-elevation riparian areas, snow chutes, and meadows in the spring and late fall, and move up to higher sub-alpine forests in the summer, early fall and winter. Natural caves or excavated dens, often above 6,000 feet, are entered after the first snowfall and occupied for four to five months. The majority of their diet is composed of vegetation (forbs, sedges, grasses, roots, berries, pine nuts), but grizzly bears will also feed on fish, rodents, ungulates and insects where accessible.

As indicated above, the availability of large tracts of relatively undisturbed land that provides some level of security from human depredation and competitive use of habitat by humans (including roading, logging, grazing, and recreation) (USDI, Fish and Wildlife Service 1993b) is of particular importance to grizzly bears. To that end, 'effective' habitat is often described in terms of *core* areas – areas free of motorized access and high human use during the non-denning period (Interagency Grizzly Bear Committee 1994) – for each season of use. *Open road* (those roads and trails that do not have restrictions on motorized use) and *total road* (all roads, open, closed, and restricted) densities are important measurements in determining core areas and understanding the extent of habitat security for grizzly bears. Road density considerations are addressed in more detail in the 'Current Conservation and Management' section of this biological assessment.

Factors of Decline/Threats

Primary threats to grizzly bear in the lower 48 states at the time of listing in 1975 included habitat modification or loss, and human-caused direct mortality. Recent threats to grizzly bear populations that remain listed revolve around those same principles. The FWS (1999) identified the primary threats to the Selkirk and Cabinet-Yaak Recovery Ecosystems as follows:

- habitat alteration and human intrusion into grizzly bear habitat;
- a small population facing potential isolation by activities across the border in Canada;
- cumulative impacts of recreation, timber harvest, mining, and other forest uses with associated road construction have reduced the amount of effective habitat for grizzly bears.

Current Conservation and Management

In general, conservation of grizzly bears throughout the U.S., including NFS Lands, is guided by principles outlined in the Recovery Plan for the Grizzly bear (USDI, Fish and Wildlife Service 1993b). This Plan outlines a series of goals and objectives necessary to provide for conservation and recovery of grizzly bears in each of the Recovery Ecosystems. Three indicators of population status, based on reproduction, numbers, and distribution, are 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;
3. A limit on total human-caused mortality.
4. These indicators are evaluated using the following metrics, some of which vary depending on the ecosystem:
5. Specific number females with cubs documented over a running 6-year period;
6. A certain number of BMUs must be occupied by females with young from a running 6-year sum of verified sightings and evidence, with no two adjacent BMUs being unoccupied;
7. Known human-caused mortality is not to exceed four percent of the population estimate based on the most recent 3-year sum of females with cubs;
8. No more than 30 percent of the four percent shall be females, and mortality limits can not be exceeded during any two consecutive years for recovery to be achieved.

Security is a critical element of grizzly bear habitat. Habitat security is influenced by motorized use of forest roads and trails. Current scientifically accepted measures of security in grizzly bear habitat include Open Motorized Route Density (OMRD), Total motorized Route Density (TMRD), and Core defined as follows (see Interagency Grizzly Bear Committee 1998):

Total Motorized Route Density (TMRD) - Calculation made with the moving windows technique that includes open roads, restricted roads, roads not meeting all reclaimed criteria, and open motorized trails. Density is displayed as a percentage of the analysis area in a defined density category (e.g., 20% that is >2.0 miles per square mile).

Open Motorized Route Density (OMRD) - Calculation made with the moving windows technique that includes open roads, other roads not meeting all restricted or obliterated criteria, and open motorized trails. Density is displayed as a percentage of the analysis area in a defined density category.

Core area - An area of secure habitat within a BMU that contains no motorized travel routes or high use non-motorized trails during the non-denning season and is more than 0.3 miles (500 meters) from a drivable road. Core areas do not include any gated roads but may contain roads that are impassible due to vegetation or constructed barriers. Core areas strive to contain the full range of seasonal habitats that are available in the BMU.

The Interagency Grizzly Bear Committee (1998) Taskforce Report stipulated that these parameters be relied upon in conjunction with other factors (e.g., food and cover availability, human use areas, etc.) to define acceptable levels of motorized access within individual Recovery Ecosystems.

Individual Forest Plans within the range of listed populations of grizzly bears also contain standards and guidelines that either indirectly or directly address conservation and management of grizzly bears and their habitats (e.g., see Appendix B), some of which include concepts outlined above. The existing LRMPs for the KNF and IPNF require management of *secure grizzly bear habitat* (but see discussion in paragraph below), which is defined as habitat at least one quarter mile from open roads, developments, and high levels of human activity. Habitat effectiveness is then defined as the amount of secure grizzly bear habitat within BMUs. The KNF and IPNF stipulate that a minimum of 70 mi^2 (or 70%) of secure habitat in each BMU be maintained to provide the minimum viable habitat needed to avoid grizzly bear displacement.

Wakkinen and Kasworm (1997) recommended the minimum levels for OMRD, TMRD and core, based on local bear research, believed needed to maintain grizzly bear populations in the CYRZ and SRZ (i.e., OMRD 33%, TMRD 26%, Core 55%). In 2004, as per direction from the Interagency Grizzly Bear Committee, the Kootenai, Idaho Panhandle, and Lolo National Forests completed an amendment to their LRMPs [i.e., The Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yak Recovery Zones (2004 Access Amendment)] that addressed access management in the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones based on the concepts described above. This Access Amendment and the 2004 FWS Biological Opinion on the Access Amendment, established goals and requirements for road densities and core areas for each BMU reflecting the unique biological and social features in specific BMUs. In 2006, the 2004 Record of Decision for the Access Amendment was set aside pursuant to a court order, pending completion of a supplemental EIS. On May 17, 2007, the FWS officially withdrew their 2004 Biological Opinion. Although these BMU-specific goals and requirements for road densities and core areas are no longer in place, we report them here merely as a specific goal for these BMUs that might be relevant to management of these BMUs at some future point in time.

Environmental Baseline

Three recovery zones overlap National Forest System (NFS) lands within Idaho – the Cabinet-Yaak (CYE), Selkirk (SE), and Bitterroot (BE) Ecosystems. These three recovery zones include or are adjacent to IRA, and consequently are described in more detail below. Grizzly bears have been documented outside of recovery zone boundaries for the CYE and SE (USDI, Fish and Wildlife Service 2007e). Although we report parameters relevant to habitat within the recovery zone boundaries, we acknowledge that the areas adjacent to and surrounding these recovery zones also provide for and contain grizzly bears, albeit likely at lower densities.

Cabinet Yaak Ecosystem

The Cabinet-Yaak Ecosystem (CYE) encompasses a total of 1,692,290 acres in northeastern Idaho and northwestern Montana. This recovery zone overlaps three National Forests – Idaho Panhandle, Kootenai, and the Lolo – and contains 22 BMUs (Table V-17 and Figure V-8). The CYE includes 929,607 acres of grizzly bear core habitat, areas typically characterized by limited roads[17] and low potential for human disturbance. As of 2006, ten of 22 BMUs in the CYE met all habitat standards that research conducted within these recovery zones suggests provide conditions necessary (except for seasonal habitat considerations) to support the home range use and habitat needs of an average adult female grizzly bear (Johnson and Roberts 2007, USDA, Forest Service 2002) (Table V-17).

Table V-17. Cabinet/Yaak Bear Management Unit summary 2006 Bear Year
(excerpted from Johnson and Roberts 2007).

BMU	Open Roads >1mi/mi^2 (%)	Total Roads >2 mi/mi^2 (%)	% Federal Land	% Core	Priority	Habitat Effectivenes s 70% or 70 mi^2 \1	ORD (≤0.75)
1 (Cedar)	12 (15)	8 (15)	99	85 (80)	2	88	0.19
2 (Snowshoe)	20 (20)	15 (18)	94	76 (75)	2	79	0.32
3 (Spar)	27 (33)	24 (26)	95	62 (59)	3	73	0.59
4 (Bull)	36 (36)	26 (26)	84	63 (63)	2	64	0.30
5 (St. Paul)	27 (30)	23 (23)	97	60 (60)	1	72	0.52
6 (Wanless)	35 (34)	33 (32)	85	54 (55)	1	66	0.63
7 (Silver Butte)	23 (26)	21 (23)	92	67 (63)	2	77	0.41
8 (Vermilion)	32 (32)	23 (20)	93	56 (55)	3	77	0.68
9 (Callahan)	28 (33)	26 (26)	90	58 (55)	2	76	0.56
10 (Pulpit)	41 (44)	28 (34)	95	51 (52)	2	64	0.76
11 (Roderick)	28 (33)	28 (26)	96	52 (55)	1	75	0.44
12 (Newton)	42 (45)	30 (31)	92	56 (55)	1	62	0.54
13 (Keno)	34 (33)	25 (26)	99+	59 (60)	1	64	0.86
14 (NW Peak)	28 (33)	26 (26)	99+	55 (55)	1	76	0.58
15 (Garver)	30 (33)	33 (26)	94	45 (55)	1	71	0.43
16 (EF Yaak)	28 (33)	26 (26)	96	53 (55)	1	73	0.47
17 (Big Cr.)	31 (33)	20 (26)	99	54 (55)	2	74	0.55
18 (Boulder)	29 (33)	35 (29)	92	50 (55)	3	73	n/a
19 (Grouse) \2	60 (59)	59 (55)	54	32 (37)	3	51	n/a
20 (North Lightning)	40 (35)	21 (26)	94	60 (61)	1	71	n/a
21(Scotchman)	35 (35)	26 (26)	81	63 (62)	2	67	n/a
22 (Mt. Headley)	38 (33)	37 (35)	89	51 (55)	3	67	n/a

1 The Kootenai and Lolo NFs report 70%, whereas, the IPNF report 70 mi2, per Forest Plans.
2 Grouse BMU numbers assume no contribution to core or low road densities from private land.
Note: ORD only applies to BMUs on KNF
Shaded BMU meets all habitat standards for core, OMRD and TMRD

[17] Core areas may have roads, but they must be undrivable (e.g., vegetated in or barriered) (Holt, personal communication, August 6, 2008).

( ) Represents the Standards that were agreed to in the Forest Plan Amendment for Motorized Access and the associated Biological Opinion. These standards are no longer in place as the Amendment was set aside and the Biological Opinion withdrawn. However, they still provide a specific goal that might be relevant to those BMUs at some future point in time.

The minimum population goal for the CYE is 100 bears (USDI, Fish and Wildlife Service 1993b). The grizzly bear population in the CYE is estimated conservatively at 30 to 40 bears (USDI, Fish and Wildlife Service 2007e). From the 1980s through 1999, the population appeared to be slowly increasing (λ = 1.067), although the confidence interval around the estimate included zero, making it difficult to conclude an increasing population with statistical certainty. Mortalities during 1999 through 2002, may have put the population on a slightly declining trend, but again the confidence interval around this estimate of population change makes this conclusion statistically uncertain (Wakkinen and Kasworm 2004). In spite of this statistical uncertainty, Wakkinnen and Kasworm (2004, pg. 71) determined the probability that the population was indeed declining was 75.1 percent.

In Idaho, the CYE includes portions of the Kootenai (KNF) and Idaho Panhandle (IPNF) National Forests. Approximately 122,875 acres (~7%) of the CYE overlaps IRAs in seven BMUs: Boulder, Callahan, Grouse, Keno, North Lightening, Scotchman, and Spar. This overlap includes 108,899 acres of grizzly bear core habitat, which constitutes approximately 12 percent of total grizzly bear core habitat in the CYE. Of these 7 BMUs, Spar, Scotchman, and Spar currently meet habitat standards that research conducted within these recovery zones suggests provide conditions necessary (except for seasonal habitat considerations) to support the home range use and habitat needs of an average adult female grizzly bear. The low overlap of CYE with IRA is due to the relatively limited acreage overlapping into Idaho; the majority of this Recovery Zone is in Montana.

Selkirk Ecosystem

The Selkirk Ecosystem (SE), approximating 688,734 acres in size, spans portions of northwestern Idaho, northeastern Washington, and southwest Canada (Figure V-8). This recovery zone overlaps two National Forests – the IPNF and the Colville - and consists of ten BMUs delineated within the U.S. portion of the SE. Approximately 47 percent of the Selkirk Ecosystem (325,498 acres) is considered grizzly bear core habitat. As of 2006, five of ten BMUs in the U.S. portion of the SE met all habitat standards that research conducted within these recovery zones suggests provide conditions necessary (except for seasonal habitat considerations) to support the home range use and habitat needs of an average adult female grizzly bear (Johnson and Roberts 2007, USDA, Forest Service 2002) (Table V-18).

Table V-18. Selkirk Management Unit Summary 2006 Bear Year for the nine Bear Management Units (BMUs) managed in part by the Forest Service.

Excerpted from Johnson and Roberts 2007. Information on the Idaho State land BMU was not included as it encompasses very little federal lands.

BMU	Open Roads >1mi/mi^2 (%)	Total Roads >2 mi/mi^2 (%)	% Federal Land	% Core	Priority	Habitat Effectiveness 70% or 70 mi^2 \[1]
Blue Grass	30 (31)	28 (26)	96	50 (55)	1	67
Long-Smith	21 (25)	14 (15)	92	73 (67)	1	85
Kalispell-Granite	29 (33)	27 (26)	96	48 (55)	1	101
Salmo-Priest	30 (33)	26 (26)	99	66 (64)	2	76
Sullivan-Hughes	24 (23)	19 (18)	99	61 (61)	1	81
Myrtle	31 (33)	21 (22)	85	58 (56)	2	72
Ball-Trout	17 (20)	11 (13)	94	72 (69)	2	77
Lakeshore	79 (82)	51 (56)	86	20 (20)	3	10
Le Clerc[2]	38	58	64	27	3	61
Idaho state lands[3]	?	?	0	?	?	?

[1] The Kootenai and Lolo NFs report 70%, whereas, the IPNF report 70 mi^2, per Forest Plans.

[2] Le Clerc has no standards due to low percentage of Federal Land

[3] No data available for the IDL BMU.

Shaded BMU meets all habitat standards for core, OMRD and TMRD

( ) Represents the Standards that were agreed to in the Forest Plan Amendment for Motorized Access and the associated Biological Opinion. These standards are no longer in place as the Amendment was set aside and the Biological Opinion withdrawn. However, they still provide a specific goal that might be relevant to those BMUs at some future point in time.

The minimum population goal for the SE is 90 bears (USDI, Fish and Wildlife Service 1993b). Wakkinen and Kasworm (1997) estimated about 45 to 55 bears in the SE, with a slowly increasing population. As of 2002, this slight trend towards an increasing population was still apparent, although like the CYE, the confidence interval still included a lambda (λ) of 1 (Wakkinen and Kasworm 2004). The probability that the population was increasing was 67.3 percent (Wakkinen and Kasworm 2004). A primary threat to the grizzly bear population in the SE is related to its small size and potential isolation it may face due to activities across the border in Canada (USDI, Fish and Wildlife Service 1999).

Twenty-three percent of the Selkirk Ecosystem (~158,530 acres) consists of IRA, with nine of ten Bear Management Units overlapping IRA to some degree: Ball-Trout, Blue-Grass, Sullivan-Hughes, Kalispel-Granite, Lakeshore, Long-Smith, Myrtle, Salmo-Priest, and State-land. Approximately 136,917 acres of grizzly bear core habitat within the SE fall within IRAs; this equates to 42 percent of total grizzly bear core habitat for the SE. The following BMUs that overlap IRA meet all habitat standards that research conducted within these recovery zones suggests provide the conditions necessary to support the home range use and habitat needs (except for seasonal habitat considerations) of an average adult female grizzly bear.: Ball-Trout, Lakeshore, Long-Smith, Myrtle, and Salmo-Priest.

Bitterroot Ecosystem

"The Bitterroot Ecosystem (BE) is one of the largest contiguous blocks of Federal land remaining in the lower 48 United States (Figure V-9). The foundation of the BE contains the Selway-Bitterroot Wilderness and Frank Church-River of No Return Wilderness. Together these two wilderness areas make up the largest block of wilderness habitat in the Rocky Mountains. The BE also contains significant areas of multiple use lands where wildlife and fisheries values coexist with resource use and recreation. The BE formerly contained grizzly bears, but they are now considered extirpated due to excessive human-caused mortality" (USDI, Fish and Wildlife Service 1996b, pg. 6-131).

A comprehensive Environmental Impact Statement was completed and a Record of Decision (ROD) was signed on November 13, 2000 to reintroduce 25 grizzly bears over 5 years into the Bitterroot Ecosystem (USDI, Fish and Wildlife Service 2000d). These reintroduced bears would have been designated an Experimental Population under section 10(j) of the ESA. As part of this strategy, an Experimental Population Area was designated which included and expanded upon the BE recovery zone that is depicted in Figure V-9. On June 22, 2001, the FWS announced its intent to reevaluate the ROD on the FEIS and Selection of Alternatives for Grizzly Bear Recovery in the Bitterroot Ecosystem (USDI, Fish and Wildlife Service 2001b). Public comment was received on this proposal and no final decision has been made.

"On September 3, 2007, a black bear hunter shot a grizzly bear in the upper Kelly Creek drainage of Idaho within the Bitterroot Experimental Population Area. The grizzly bear was a male estimated between [five] and [ten] years of age. Results of the DNA analysis conducted on this bear determined that this individual originated in the Selkirk Mountains of North Idaho and that this bear has never been captured before. The distance between the southern end of the Selkirk ecosystem and the location where this bear was shot was 140 air miles. Prior to the confirmed grizzly bears in the Experimental Population Area in more than 60 years.

At various times other grizzly bears have been reported in the Bitterroot Experimental Area but conclusive evidence for their presence has not previously existed. The Kelly Creek bear illustrates that it is possible for a grizzly bear to reach the BE through natural dispersal. Other grizzlies have been verified to occur in close proximity to the Bitterroot Experimental Area in several different areas. At this time, the FWS does not consider this one male grizzly bear to constitute a population. Future surveys are planned in this area, upon which the FWS in conjunction with other agencies, will determine whether the BE contains a grizzly bear population." http://www.fws.gov/mountain%2Dprairie/species/mammals/grizzly/bitterroot.htm

The BE recovery area does not include any Idaho Roadless Areas, although it is proximate and adjacent to IRAs. Further, the Experimental Population Area established in the Final EIS does overlap IRA. Consequently, the BE and the grizzly bear habitat, although currently considered 'unoccupied' has the potential to be impacted by the MIRR.

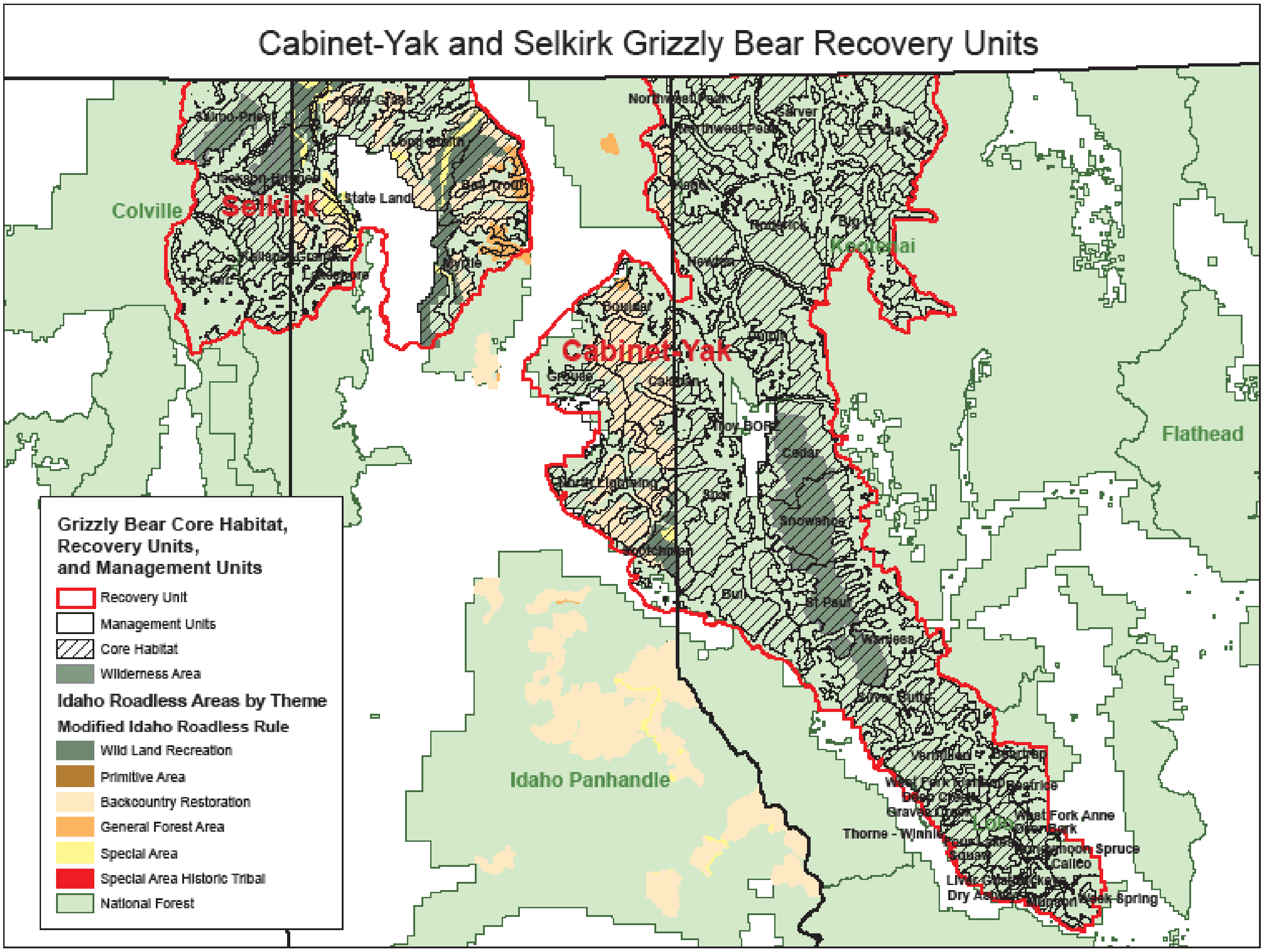

Figure V-8. Grizzly bear core habitat, bear management units (BMUs), and Idaho Roadless Areas in the Selkirk and Cabinet-Yaak Ecosystems

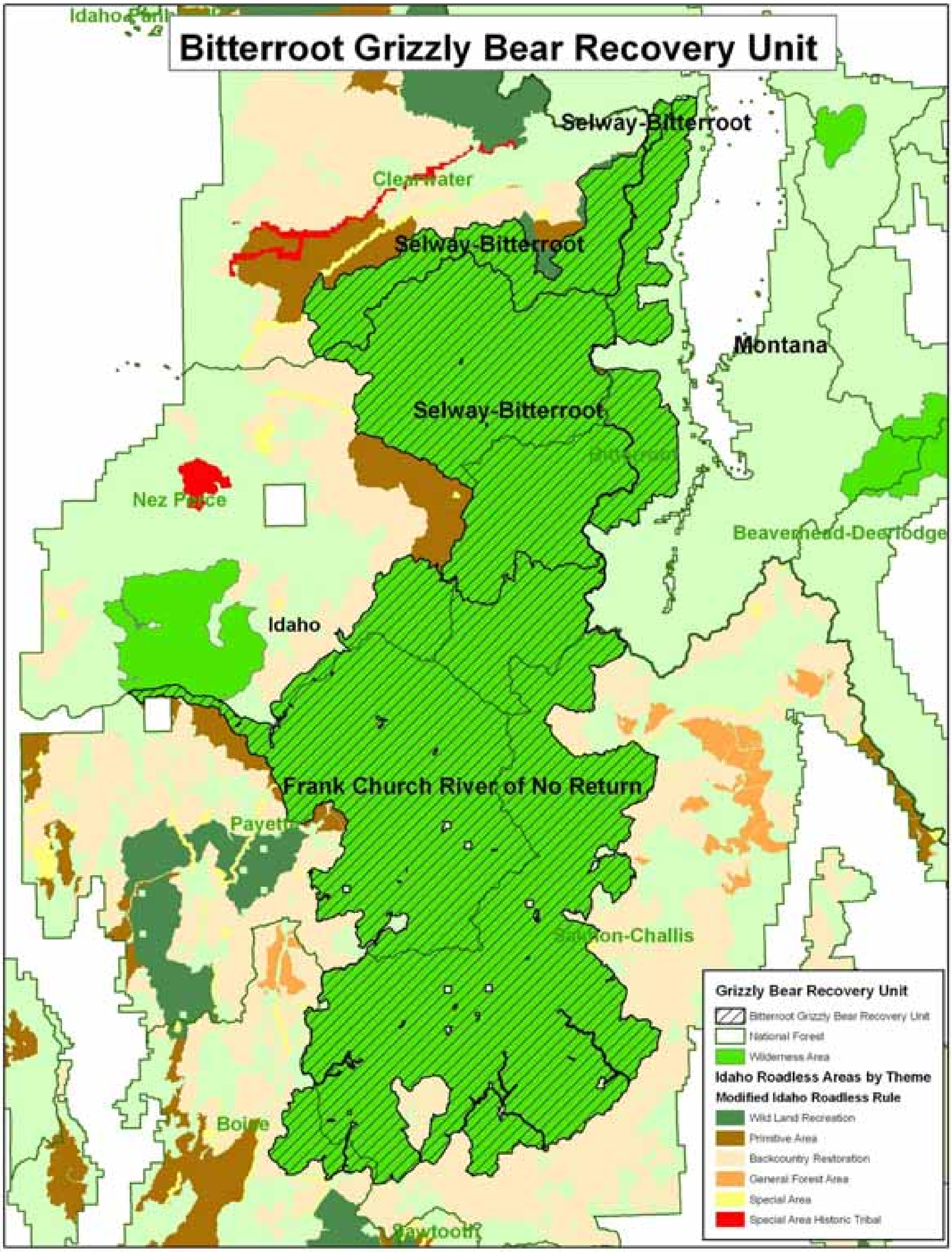

Figure V-9. The Grizzly Bear Bitterroot Ecosystem.

Figure indicates Recovery boundaries as designated by Alternative 2 of the FEIS for Grizzly Bear Recovery in the Bitterroot Ecosystem (USDI Fish and Wildlife Service 2000d).

Effects of the Action

The MIRR establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across Idaho roadless areas, based on management area 'themes'. This section begins with a general discussion of the potential effects that these management activities can have on grizzly bear and then describes 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 grizzly bear. We do not discuss the impacts of phosphate mining on grizzly bear as none may occur within the range of the species as a result of the MIRR – all phosphate mining within Idaho Roadless Areas likely 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).

Road construction/reconstruction

The relationship between grizzly bears and roads has been extensively studied (Mace et al. 1996, Mace and Waller 1997, Wakkinen and Kasworm 1997, McLellan and Shackleton 1988). Roads can have several effects on grizzly bears, including contributing to direct mortality.

For grizzly bears, the primary mechanism through which roads impact this species is through the human activities they facilitate. Human use of motorized roads and trails within occupied grizzly bear habitat have the potential to adverse affect grizzly bears, in a number of ways, including the following:

- Direct shooting mortality may occur through mistaken identity for black bears or other game animals, through defense of life actions, through poaching for trophy animals, and through malicious killings;
- Attractants (human and animal foods and garbage) that arrive in grizzly bear habitat in motorized vehicles may result in habituated bears that must eventually be destroyed;
- Some bears may become conditioned to the presence of vehicles and humans on roads and thus become more vulnerable to direct mortality through the means identified above;
- Other bears may be displaced from preferred habitat by the human disturbance associated with road use, with a resultant reduction in habitat availability and quality and potential effects on nutrition and reproduction.

Since most grizzly bear mortalities are human-caused, and most human-caused mortalities are within 500 meters of open roads, the management of roads is one of the most powerful tools available to balance the needs of grizzly bears with the activities of humans (USDI, Fish and Wildlife Service 1993b). However, it is important to note that tighter access restrictions on NFS lands would not have prevented all of the past mortalities in the CYE and SE. Of 15 human-caused mortalities within 500 meters of open roads in or near the SE in the past 20 years, ten have been in British Columbia and one was outside the recovery zone in Washington. The remaining four (27%) were on NFS lands within the analysis area and potentially may have been prevented by tighter access controls. In the CYE, two out of ten grizzly bear mortalities within 500 meters of open roads over the past 20 years were in British Columbia, one was a management removal on private land, one was a research-related mortality, and one was outside the recovery zone. The remaining five (50%) were on NFS lands within the analysis area that may potentially have been prevented by tighter access controls.

Timber cutting, sale, or removal

In general, grizzly bears are considered habitat generalists, where the most important habitat characteristics revolve around the availability of sufficient food resources and areas free from human disturbance (i.e., 'secure' habitat). Timber cutting, sale, or removal has the potential to alter both of these characteristics as follows (as reported in Interagency Grizzly Bear Committee 1987, pg. 137):

- Vegetation management, including timber cutting, in grizzly bear habitat may alter forest conditions sufficiently to change the composition, distribution, and abundance of forage for grizzly bears.
- Existing water regimes may be indirectly impacted by timber harvest activities, where changes in surface and/or subsurface water movement and/or distribution contribute to changes in key grizzly bear foraging habitats, such as *carex* spp. meadows.
- Timber cutting activities that require construction of new roads or reconstruction of currently undriveable roads may increase human access to grizzly bear habitat previously remote from such activities, which as discussed above, has the potential to increase grizzly bear mortality where human/bear interactions result.
- Timber cutting activities in and of themselves introduce human disturbance into the environment during implementation, which can displace bears from key habitats, at least temporarily.

Prescribed Fire

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 (Lee and Jonkel 1981, Zager 1980, as cited in Interagency Grizzly Bear Committee 1987). Such changes have likely impacted the availability of many key forage species for bears. Use of prescribed fire has the potential to improve grizzly bear habitat, particularly where it creates openings which can support berries, bulbs and other important grizzly foods, reduces conifer encroachment into brushfields and meadow habitats, and increases understory plant growth where nutrients are released from conifer litter. Short-term adverse effects to grizzly bears from prescribed fire could occur where implementation overlaps grizzly bear activity in space and time. Limited operating periods intended to avoid periods of high grizzly bear use may assist in minimizing such effects.

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). Development of oil, coal and gas plants require similar intra-structure components.

Generally, the impacts of discretionary mining on terrestrial wildlife species, including grizzly bears, 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.

Effects of the Modified Idaho Roadless Rule to Grizzly Bear

Approximately 23 percent of the Selkirk Ecosystem (158,530 acres) and 7.26 percent of the Cabinet-Yaak Ecosystem (122,875 acres), overlap IRAs. This overlap includes a total of 245,896 acres of grizzly bear core habitat in the Selkirk (136,917 acres, equating to 42% of total core in SE) and Cabinet-Yaak (108,899 acres, equating to 12% of total core in CYE) Ecosystems in total. As such, it is possible that grizzly bears could be exposed to select management activities (i.e., road construction/reconstruction, timber cutting, and discretionary mining) within IRA. 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, Primitive and SAHTS, BCR outside of community protection zones, Backcountry inside community protection zones, and lastly General Forest, Rangeland, and Grassland (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 implications of these themes to the grizzly bear.

Wild Land Recreation – 55,872 acres (8.1%) of the Selkirk Ecosystem across seven BMUs overlap WLR (Table V-19), in the Salmo/Priest and Selkirk IRAs. Most of these acres (54,123 acres) also provide grizzly bear core habitat, whereby 16.63 percent of total core in the SE is in WLR (Table V-20).

About 10,875 acres of the Scotchman BMU in the Cabinet-Yaak Ecosystem (1%) overlap the Scotchman Peaks IRA. Most of these acres (10,340 acres) also provide grizzly bear core habitat whereby 1.1 percent of total core in CYE is in this theme (Tables V-19 and V-20).

Road construction and reconstruction is prohibited in the WLR theme, unless provided for by statue or treaty, or pursuant to reserved or outstanding rights, or other legal duty of the United States. Timber cutting, sale, or removal is also prohibited in WLR except for personal or administrative uses, or where incidental to the implementation of management activities not otherwise prohibited. Activities related to leasable mineral extraction[18] are also prohibited under this theme. Consequently, adverse effects to grizzly bears and their habitat resulting from roads, timber cutting, and discretionary mining as addressed under the MIRR (see *Effects of the Action* above), are not anticipated in IRAs managed as WLR. Further, grizzly bears will benefit from prohibitions, particularly on road construction and reconstruction, as such restrictions should help in maintaining habitats that are relatively free from human disturbance.

[18] Is not relevant to locatable minerals subject to the 1872 General Mining Law.

Table V-19. Grizzly Bear Recovery Ecosystems and Bear Management Units (BMU) that overlap Idaho Roadless Areas under the Modified Idaho Roadless Rule.

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

Recovery Unit	BMU	Total BMU (acres)	Modified Idaho Rule Themes					
			WLR	BC	BC/CPZ	GF	SA	Total IRA
Selkirk								
	Ball-Trout	57,912	12,222	20,189	0	6,746	0	39,157
	Blue-Grass	57,329	2,270	12,685	0	0	1,610	16,564
	Jackson-Hughes	78,213	4,405	2,693	152	0	7,773	15,023
	Kalispell-Granite	85,645	0	9,983	260	0	127	10,370
	Lakeshore	18,142	0	623	527	0	1,034	2,184
	Long-Smith	65,740	14,920	16,463	304	0	5,725	37,413
	Myrtle	63,784	14,241	6,838	0	6,088	392	27,558
	Salmo-Priest	87,118	7,640	0	0	0	2,219	9,859
	State Land	97,130	174	30	0	0	198	402
Sub-Totals		611,013	55,872	69,504	1,243	12,833	19,078	158,530
Cabinet-Yaak								
	Boulder	62,370	0	26,283	40	1,330	1,426	29,078
	Callahan	85,621	0	28,615	0	0	193	28,808
	Grouse	66,981	0	7,704	1,602	0	0	9,306
	Keno	51,238	0	6,053	687	0	0	6,740
	North Lightening	65,219	0	17,143	3,920	0	0	21,064
	Scotchman	61,616	10,875	5,626	7,638	0	1,296	25,434
	Spar	75,704	0	2,445		0	0	2,445
Sub-Totals			10,875	93,869	13,887	1,330	2,914	122,875
Total		1,080,395	66,747	163,373	15,130	14,163	21,993	281,405

Table V-20. Overlap of grizzly bear core habitat with the Modified Idaho Roadless Rule themes, in the Selkirk and Cabinet-Yaak Ecosystems.

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

Recovery Unit	BMU	Total Core Habitat	Modified Idaho Rule Themes					
			WLR	BC	BC/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
Sub-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 Lightening	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
Sub-Totals			10,340.32	82,966.99	11,718.89	979.31	2,893.91	108,899.42
Total								

Primitive and SAHTS – There is no overlap of the Selkirk or Cabinet-Yaak Ecosystems or grizzly bear core habitat with IRAs proposed under these management themes.

Backcountry Restoration– 70,938 acres of the Selkirk Ecosystem (10.30%) fall into the BCR theme, of which 1,243 acres overlap community protection zones (CPZ); 60,359 acres of grizzly bear core habitat within the SE (18.54% of total core in SE) are in the BCR theme, of which only 471 acres overlap CPZ. About 107,756 acres of the Cabinet-Yaak Ecosystem (6.37%) overlap BCR, of which 13,886 fall in CPZ; a total of 94,686 acres of grizzly bear core habitat in the Cabinet-Yaak Ecosystem (10.19%), including 11,719 acres of CPZ, overlap BCR (Tables V-19 and V-20).

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. 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. Consequently, grizzly bears 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.

Such impacts would likely be concentrated in the following BMUs that overlap BCR CPZ:

- Selkirk – Kalispel-Granite, Lakeshore, and Long-Smith;

- Cabinet-Yaak – All (except Callahan), and mostly the Scotchman which has 7,638 acres in BCR/CPZ.

Of the list of BMUs referenced above, the Spar, Scotchman, Lakeshore and Long-Smith currently meet informal habitat goals for individual BMUs as of 2006 (see discussion under *Current Conservation and Management* section); the remaining do not and thus new roads could further impact OMRD, TMRD and percent core habitat in these BMUs.

Similarly, timber cutting activities from existing roads or using aerial systems are permitted in BCR to address a number of purposes, including but not limited to: treating hazardous fuels, improving TEPS habitat, and restoring/maintaining characteristics of ecosystem composition and structure. Such vegetation management practices in BCR have the potential to adversely or beneficially affect grizzly bears 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. 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. 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 grizzly bears via habitat loss, degradation, and disturbance where future activities overlap the range of this species.

Given 18 percent and 10 percent of grizzly bear core habitat in the Selkirk and Cabinet-Yaak Ecosystems, respectively, and almost all BMUs (with exception of the Salmo-Priest) overlap the BCR theme, it is possible that grizzly bears could encounter and be affected by select management activities in BCR, particularly in CPZ.

Table V-21. Overlap of Bear Recovery Ecosystems, grizzly bear core habitat, and the predicted distribution of grizzly bears with GFRG and Backcountry themes in Idaho Roadless Areas.

Bear Recovery Unit (BRU)	Total acres	In IRA	% in IRA	GFRG	% GFRG	BCR	% BCR
Selkirk BRU	688,733	158,530	23%	12,833	1.9%	70,939	10.30%
Selkirk GB Core Habitat	325,498	136,917	42%	7,993	2.46%	60,359	18.54%
Cabinet-Yaak BRU	1,692,290	122,875	7.26%	1,330	0.1%	107,756	6.37%
Cabinet-Yaak GB Core habitat	929,607	108,899	11.71%	2,894	0.3%	94,686	10.19%
Predicted BG Distribution in Idaho	1,369,078	276,199	20%	16,541	1.2%	179,313	13.10%

General Forest, *Rangeland, and Grassland* – About 0.1 percent of the CYE overlaps GFRG in IRA (Table V-21); 1,330 acres of the Boulder BMU overlaps GFRG within the Katka Peak Roadless Area; this overlap includes 979 acres of grizzly bear core habitat which constitutes 0.1 percent of total grizzly bear core habitat within the CYE (Tables V-19 and V-20). Approximately 1.9 percent of the SE (12,833 acres) overlaps GFRG (Table V-21). Of eleven BMUs in the SRZ, only two – Ball-Trout and Myrtle – include any GFRG within this Recovery Zone (Tables V-19, V-20). The Ball-Trout BMU is 57,912 acres in size, of which 6,746 acres overlap GFRG within the

Selkirk Roadless Area, including 4,938 acres of grizzly bear core habitat. The Myrtle BMU overlaps the Selkirk and the Kootenai Roadless Areas, of which 6,088 acres fall within GFRG, including 3,054 acres of grizzly bear core habitat. In total, there are 7,993 acres of grizzly bear core habitat within the SE that overlap GFRG, which approximates 2.46 percent of total grizzly bear core habitat within the SE on the IPNF.

Both forest and temporary roads can be constructed, reconstructed and/or maintained in GFRG to facilitate timber cutting if applicable with land management components (and/or in association with certain phosphate deposits in IRA on the Caribou-Targhee National Forest. Road construction/reconstruction is prohibited to access other types of mineral leasing such as oil and gas or geothermal (new areas). 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. 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 (see 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 under GFRG without the ability to build new roads. 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 human access where future activities overlap the range of this species.

All activities that take place in GFRG would be subject to applicable land management plan components as well as to specific conditions promulgated by this rule (See Chapter II for description of 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 GFRG. Given the permissions allotted in GFRG for road construction/reconstruction and timber cutting activities, there is the potential for grizzly bears to be negatively affected (as discussed in previous sections) in GFRG via habitat loss/modification, and human disturbance facilitated by roads. Although possible, we do not anticipate effects to grizzly bears from mineral leasing due to the exceptionally low likelihood of surface occupancy for new energy developments without road construction (e.g., oil, gas, geothermal). Because only 3 percent of all IRA allotted to GFRG (405,900 acres) overlaps the grizzly bear recovery ecosystems and grizzly bear core habitat, the likelihood that grizzly bears might be exposed to road construction/reconstruction or timber cutting in GFRG is relatively low. However, given that we can not predict exact locations of future projects nor are there restrictions on the distribution of effects spatially or temporally, we can not discount the possibility of adverse effects to grizzly bears.

Effects of the MIRR on the Bitterroot Ecosystem and Experimental Population Area – The original Bitterroot Ecosystem Recovery Area boundaries do not contain IRA, but the Experimental Population Area does overlap IRA. As indicated earlier, the Bitterroot Ecosystem (including the Recovery area and Experimental Population Area) is not considered occupied by the FWS at this time. Consequently, there is little to no potential for individual grizzly bears to be impacted by projects that might occur in IRA pursuant to the MIRR. Should grizzly bears re-occupy these areas either naturally or through active re-introductions at some time in the future, there would be a potential for bears to be impacted by activities in IRAs. At this time, however, no impacts to grizzly bears in the BE resulting from the MIRR are anticipated.

Applicable LRMP components for Grizzly bears– Given we can not predict exactly where roads might be on landscape under the MIRR except to say that they will most likely be in GFRG or BCR/CPZ, and given the nature of the moving window analysis, it is difficult to say whether road construction or reconstruction would change OMRD or TMRD in any particular BMU. Current LRMPs for the KNF and IPNF stipulate that a minimum of 70 mi^2 (or 70%) of secure habitat in each BMU be maintained to provide the minimum viable habitat needed to avoid grizzly bear displacement. Further, the Kootenai, Idaho Panhandle, and Lolo National Forests are in the process of completing a programmatic SEIS to establish objectives, standards, and guidelines for OMRD, TMRD, and core habitat in the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones (See USDA, Forest Service 2002). Such efforts should assist in minimizing impacts to grizzly bears from projects that might be proposed in IRA pursuant to the MIRR.

Where there are few options other than to construct or reconstruct roads in BMUs that do not meet standards, the Forest Service may have opportunities in BMUs to close or decommission roads or gate other roads to maintain status quo of or decrease TMRD and OMRD. Although such measures may maintain TMRD and OMRD in the long-run and contribute to a 'no net loss' of grizzly bear core habitat, immediate or short-term effects might still include displacement of grizzly bears which can increase mortality risk as a result of the MIRR. To avoid increased mortality risk to grizzly bears from projects proposed pursuant to the MIRR in the absence of an overarching conservation framework for managing roads and human access within grizzly bear habitat [i.e., the pending Wheeled Motorized Access Management amendment to the IPNF, Kootenai NF, and Lolo NF LRMPs (Access Amendment)], the Forest Service has agreed to defer management decisions that would have a 'likely to adversely affect' determination for grizzly bears, 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 (see McNair 2008 and Appendix C).

All activities proposed in IRA pursuant to the MIRR that may affect grizzly bears in the future will be subject to subsequent Section 7 consultation under ESA with the FWS.

Cumulative Effects

Under ESA, 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 grizzly bear resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the Modified Idaho Roadless Rule consists of Idaho Roadless Areas (see definition in Section II), 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 Idaho Roadless Areas.

Determination of Effects

The Modified Idaho Roadless Rule *may affect, and is likely to adversely affect* the grizzly bear.

Rationale for Determination – Timber cutting activities, road construction and reconstruction and the low potential for discretionary mining in IRAs permitted under the MIRR, particularly in GFRG, have the potential to adversely affect individual grizzly bears via habitat alteration and increased human disturbance facilitated by roads. At the project level, all activities would be subject to existing plan components such as standards and guidelines (see Appendix B) designed to avoid or minimize adverse effects to individual grizzly bears and the habitats they occupy on Federal lands. These components are not inconsistent with the MIRR; therefore they can be applied during project design. Given that we can not predict exact locations of future projects nor are there restrictions on the distribution of effects spatially or temporally, we can not discount the potential for adverse effects to the grizzly bear. However, any adverse effects that do not contribute to long-term benefits to grizzly bears will be deferred by the Forest Service until the Access Amendment is finalized (see Appendix C) Projects proposed subsequent to completion of the Access Amendment will be subject to plan components outlined in that document. Consequently, until the Access Amendment is finalized, the only adverse effects that are anticipated under the MIRR are those with long-term beneficial effects to grizzly bears.

Gray Wolf (*Canis lupus*)

Wolves in Idaho are considered part of the Northern Rocky Mountain population of the gray wolf. Although we provide some information on the gray wolf range-wide in the U.S., the following analysis focuses on information pertinent to the Northern Rocky Mountain population, particularly within Idaho.

Status of the Species

Listing History[19]

In 1974, the FWS 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 (USDI Fish and Wildlife Service 1974). In 1978, the FWS 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 (USDI, Fish and Wildlife Service 1978).

On March 12, 2007, the FWS 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 (USDI, Fish and Wildlife Service 2007f).

On November 22, 1994, the FWS designated unoccupied portions of Idaho, Montana, and Wyoming as two nonessential experimental population (NEP) areas for the gray wolf under section 10(j) of the ESA (USDI, Fish and Wildlife Service 1994): the Greater Yellowstone Area experimental population, including all of Wyoming and parts of southern Montana and eastern

[19] Information primarily excerpted from FWS (2008x).

Idaho; and the central Idaho experimental population area, including most of Idaho and parts of southwestern Montana. Wolves were reintroduced to these NEP areas starting in 1995. On January 6, 2005, the FWS published a revised NEP 10(j) rule increasing management flexibility of these populations for those States and Tribes with Service-approved wolf management plans (USDI, Fish and Wildlife Service 2005b); this NEP special rule was revised again on January 28, 2008 (USDI, Fish and Wildlife Service 2008b). On February 27, 2008, the U.S. Fish and Wildlife Service (FWS) designated and delisted the Northern Rocky Mountain gray wolf DPS (USDI, Fish and Wildlife Service 2008c). On July 18, 2008, the district court of Montana issued a preliminary injunction on this FWS action, reinstating ESA protections previously provided for this species (USDI, Fish and Wildlife Service 2008d). Consequently the current status of the gray wolf in Idaho under ESA is as follows: the gray wolf north of Interstate 90 is listed as endangered and the gray wolf south of Interstate 90 is considered non-essential experimental population under 10j of ESA.

Distribution and Abundance

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 U.S. 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 (USDI, Fish and Wildlife Service 1978, pgs. 9610-9611). Through recovery efforts, wolves have significantly increased in abundance and distribution in targeted recovery areas since 1974 (Figure V-10), such that the Western Great Lakes DPS was removed as a listed species under ESA in 2007 (USDI, Fish and Wildlife Service 2007f), and the FWS has determined that the Northern Rocky Mountain population of gray wolves also no longer warrant protection under the ESA (USDI, Fish and Wildlife Service 2008c) (but see listing history above).

The Northern Rocky Mountain (NRM) gray wolf[20]– The NRM wolf population is a metapopulation comprised of three core recovery areas: northwest Montana (NWMT), central Idaho (CID), and the Greater Yellowstone area (GYA). As of 2007, there was a total minimum estimate of 1,513 wolves within the NRM distributed as follows: CID– 830; GYA – 453; NWMT – 230. Of 192 packs, 107 were classified as 'breeding pairs', defined as an adult male and adult female raising two or more pups until December 31st. At least ten breeding pairs and 100 wolves were documented within each recovery area, resulting in a well distributed wolf population across 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 (USDI, Fish and Wildlife Service et al. 2008, Table 4). 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 (USDI, Fish and Wildlife Service et al. 2008, Table 4).

[20] Excerpted from USDI Fish and Wildlife Service et al. 2008, pg. 1, and Tables 4a and 4b).

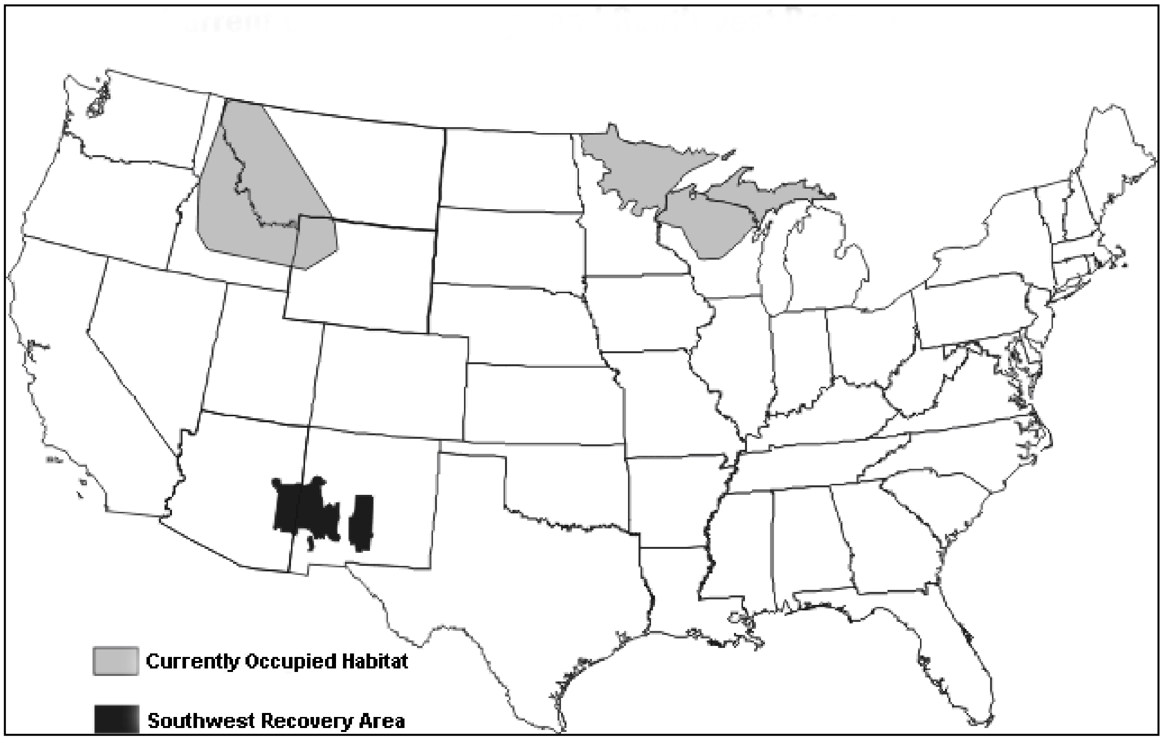

Figure V-10. Gray wolf populations in the United States as of 2006.
(from http://www.fws.gov/home/feature/2007/gray_wolf_factsheet_populations.pdf

Habitat Requirements

In general, wolves are habitat generalists in that they can use a wide array of habitat types. However, there are a several biological and behavioral characteristics of wolves that largely dictate where populations can persist successfully. First, 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 (USDI, Fish and Wildlife Service 1987, pg. 6). Wolves are considered relatively social, forming packs consisting on average of 2-12 animals, including a breeding pair (USDI, Fish and Wildlife Service 2008c, pg. 10514). Lastly, wolves appear most vulnerable to human disturbance in and around denning and rendezvous sites (USDI, Fish and Wildlife 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 (USDI, Fish and Wildlife Service 1987, pg. 7).

Factors of Decline/Threats

The Recovery Plan for the Northern Rocky Mountain gray wolf (USDI, Fish and Wildlife Service 1987) summarized the primary causes for decline of the eastern timber 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 FWS attributed population reductions in the Northern Rocky Mountain gray wolf to these same causes which contributed to habitat loss and direct mortality (e.g., poisoning, trapping, hunting) in this western population (USDI, Fish and Wildlife Service 1987, pg. 3). The demographic goals outlined in the Recovery Plan for the Northern Rocky Mountain gray wolf were achieved in 2000. This achievement was the basis for the FWS determination in 2008 that this population met the criteria of a 'recovered' population (USDI, Fish and Wildlife Service 2008c). This determination suggests that previous threats to the species have been removed or are no longer impacting the Northern Rocky Mountain gray wolf to the extent that it warrants listing under the ESA.

Conservation and Management

Northern Rocky Mountain Wolf Recovery Plan was approved in 1980 and revised in 1987 (USDI, Fish and Wildlife Service 1987, p. i).

On January 5, 2006, the Secretary of the Interior signed a Memorandum of Agreement transferring most of the responsibility for managing gray wolves in central Idaho from the FWS to state wildlife officials. The agreement, which was based on a federally-approved state of Idaho wolf conservation and management plan, covered the management of the non-essential experimental population of gray wolves south of Interstate 90, an area that encompasses most of the state. However, wolves north of Interstate 90 maintained protection under the ESA as an endangered species, for which the FWS retained the primary management responsibility.

The states of Idaho and Montana developed wolf conservation and management plans that were federally-approved by the FWS in 2004. The Wyoming wolf management law and plan met criteria required by the state of Wyoming and the FWS in February, 2008.

Environmental Baseline

Although most wolf packs tend to adhere geographically to their established home ranges, there are few real barriers to wolf movement across landscapes. Consequently, we described the distribution and status of wolves throughout Idaho, and then provide more detailed information on wolf overlap with IRAs. Further, as reported above, habitat needs of wolves revolve around sufficient big game and areas free of human disturbance, characteristics that are difficult to map based on vegetative communities. Consequently, we used data on the location of wolf packs and wolf activity as a surrogate for habitat, acknowledging that as wolves continue to expand, areas previously unoccupied by wolves may become occupied at some later date in time.

Wolves are native to Idaho and historically were fairly common in most parts of the state with abundant big game. Once considered extirpated from Idaho, the gray wolf now occurs in central and northern Idaho and along the Wyoming-Idaho border. 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.

As of 2007, there were 83 documented packs in Idaho, nine suspected packs, and 11 other documented groups or records of wolf activity, relatively well-distributed across the state "from the Canadian border, south to the Snake River Plain, and east to the Montana and Wyoming borders" (Nadeau et al. 2008, pg. 131). The home ranges of four wolf packs: Boundary, Solomon Mountain, Calder Mountain, and Silver Lake appear to overlap into the half of Idaho north of I-90, the latter (i.e., Silver Lake) only marginally. The remaining wolf packs in Idaho fall completely south of I-90. The minimum population estimate for wolves throughout Idaho in 2007 was 732, up 9 percent from 2006. 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).

The home ranges of 82 documented packs, four suspected packs and nine additional documented groups or records of wolf activity overlap Idaho Roadless Areas (see Appendix D for list of all packs). Two documented packs overlapping IRAs, the Calder Mountain and Solomon Mountain, fall north of I-90; one pack on the border of I-90, the Silver Lake pack, also overlaps IRAs. The remainder of wolf activity within IRAs was observed south of I-90 (Figure V-11). The majority of wolf records in Idaho, as of 2007, overlap Idaho Roadless Areas 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. These results highlight the importance of IRAs to wolves in providing both the prey base and a relatively large, undisturbed landscape to both persist and increase in numbers.

Effects of the Action

As indicated above, the MIRR establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across Idaho Roadless Areas 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 both north and south of I-90.

Use of prescribed fire is not prohibited or permitted by the Modified Idaho Roadless Rule. 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 gray wolves.

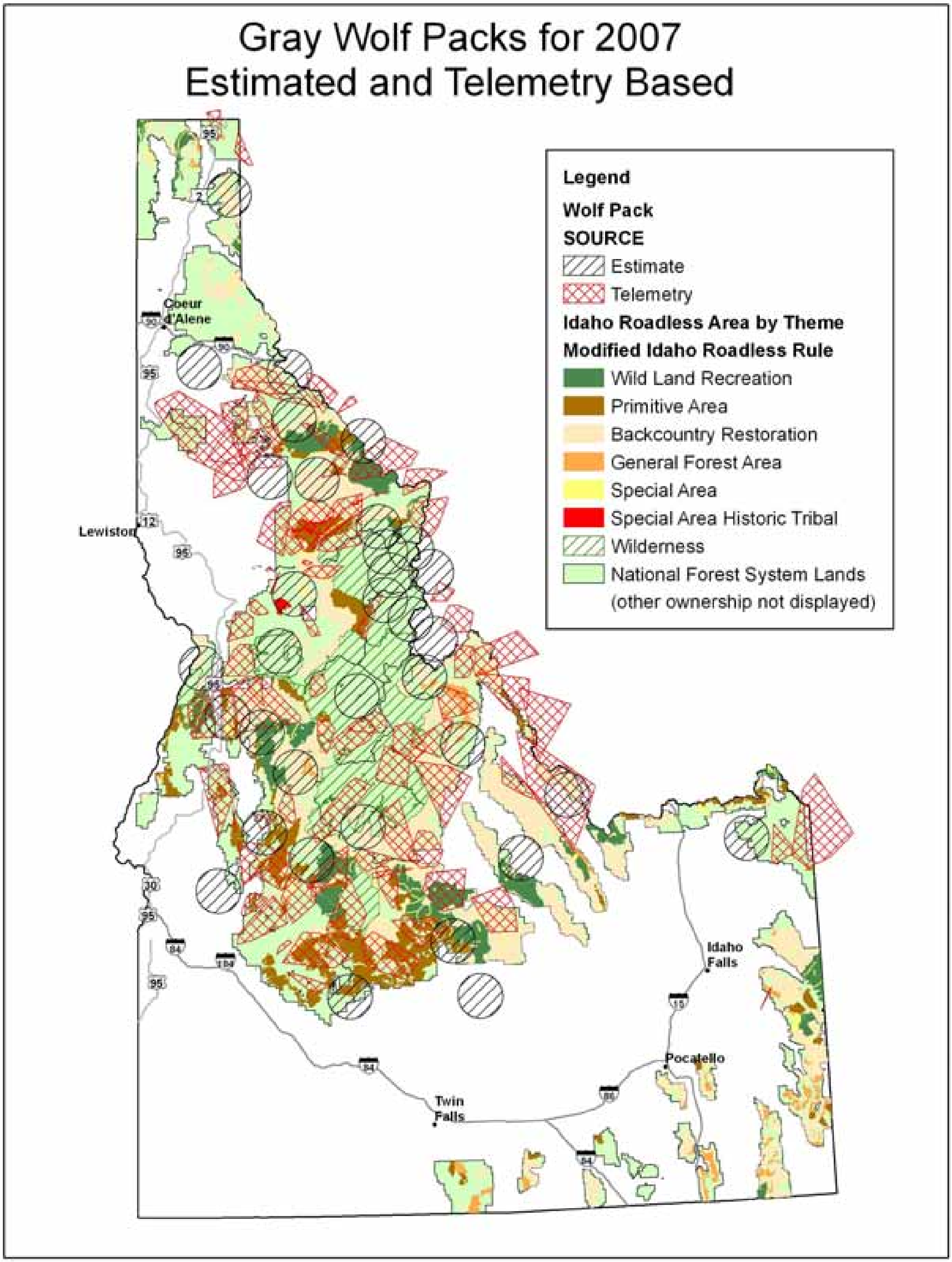

Figure V-11. Gray wolf packs and Modified Idaho Roadless Rule themes, north and south of Interstate-90.

Road construction and reconstruction

In general, roads in and of themselves were not considered a primary threat to the gray wolf at the time of listing (USDI Fish and Wildlife Service 1974, 2003b). But 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 (Sime et al. 2007, pg. 35). However, 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 (USDI, Fish and Wildlife 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. 1996, as cited in Trombulak and Frissell 2000, pg. 20). Although individual roads and trails may not impact wolf movements, increasing road/trail densities may eventually displace wolves from certain areas (Whittington et al. 2005, pg. 550). Such displacement functions as a reduction in habitat available to wolves, which may increase wolf densities in remaining habitat beyond carrying capacity.

The impact of human disturbance has been a particular concern in and around dens and rendezvous sites (USDI, Fish and Wildlife Service 1987, pg. 73) due to the potential implications to successful recruitment of pups. Consequently, recent studies have sought to disclose the individual and population level effects of such disturbance. Frame et al. (2007, pg. 319) found that older pups (>6 weeks of age) were more likely to be successfully moved from homesites 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 Frame et al. (2007) did not influence reproductive success or use of homesites 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 homesites, such changes in behavior did not appear to reduce individual survivability or population numbers. Limited operating periods on road construction, reconstruction and use intended to avoid periods during which wolf pups are vulnerable to disturbance may assist in minimizing these effects to individual wolves (see USDA, Forest Service 2004b).

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 (USDI, Fish and Wildlife 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, Courtois et al. 2007).
- Timber cutting activities and associated road construction increases human disturbance during implementation, and may increase road densities in areas utilized by wolves that were previously remote, which as discussed above, have the potential to displace wolves at least temporarily from key habitats, such as denning and rendezvous sites.

Prescribed Fire[21]

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 (Lee and Jonkel 1981, Zager 1980, as cited in Interagency Grizzly Bear Committee 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 understory plant growth increases as a result of nutrient release from conifer litter following a fire. 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.

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, 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.

[21] Excerpted in part from U.S. Fish and Wildlife Service 2003.

Effects of the Modified Idaho Roadless Rule to the Gray Wolf

Almost all records of wolf activity in Idaho (e.g., documented packs, suspected packs, etc.) overlap Idaho Roadless Areas to some degree. Consequently, management of IRAs is exceptionally relevant to wolves throughout the state. Most wolf packs, given the sizes of their estimated or telemetered home ranges, overlap several themes. Consequently, totals reported across themes in Table V-22 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, Primitive and SAHTS, BCR outside of community protection zones, BCR inside community protection zones, 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.

Table V-22. Overlap of documented and suspected wolf packs and other documented wolf activity and the Modified Idaho Roadless Rule themes by IDFG Region.

IDFG Region	Total[1]	MIRR Theme						
		WLR	Prim.	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Clearwater								
Documented Packs	30	6	11	19	5	0	5	11
Suspected Packs	3	1	1	0	0	0	0	0
Documented wolf activity	3	2	1	2	1	0	1	1
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
Southwest								
Documented Packs	27	10	18	15	11	6	0	18
Suspected Packs	1	0	0	0	0	0	0	0
Documented wolf activity	4	1	3	1	1	0	0	1
Magic Valley								
Documented Packs	4	2	4	3	2	0	0	3
Suspected Packs	0	0	0	0	0	0	0	0
Documented wolf activity	0	0	0	0	0	0	0	0
Upper Snake								
Documented Packs	4	1	1	3	1	1	0	1
Suspected Packs	1	0	0	0	0	0	0	0
Documented wolf activity	0	0	0	0	0	0	0	0
Salmon								
Documented Packs	20	3	6	18	13	6	0	11
Suspected Packs	2	0	0	2	2	1	0	0
Documented wolf activity	3	1	0	2	2	1	0	1
Totals across regions								
Documented Packs	86	24	42	67	35	15	5	50
Suspected Packs	9	2	2	3	2	2	0	1

IDFG Region	Total[1]	MIRR Theme						
		WLR	Prim.	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Documented wolf activity	11	4	4	6	5	1	1	4
		30	**48**	**76**	**42**	**18**	**6**	**55**

[1]*Total within the IDFG region.*

Wild Land Recreation, *Primitive*, *SAHTS* – Of 103 total records of wolf activity across Idaho (83 documented packs, 9 suspected packs – Table V-22), 30, 48, and six overlap IRAs that will be managed under relatively restrictive themes – WLR, Primitive, and SAHTS, respectively (Table V-22 and Figure V-11). The home ranges of these wolves may overlap other themes as well. However, almost 50 percent of all records overlap a restrictive theme to some degree. Neither the Calder Mountain nor Solomon Mountain packs north of I-90 fall in WLR, Primitive, SAHTS. The Silver Lake pack, for which a small portion of the home range falls north of I-90, also does not overlap WLR, Primitive, or 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.

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 Primitive in three additional circumstances: to improve habitat for TEPS; 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 in implementation (e.g., retention of large trees, Regional Forester approval, etc.). Therefore, timber cutting activities (and related activities such as prescribed burning) could occur in Primitive where they are designed to restore or improve TES 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. Short-term adverse effects could occur to individual wolves where timber cutting activities are located within close proximity to active wolf dens or rendezvous sites, particularly when pups are less than six weeks of age.

Given the widespread distribution of wolves across Idaho, watersheds that contain municipal water sources are likely to overlap areas occupied by wolves. Further, within Primitive some areas are within 1 ½ miles of an at-risk communities or municipal water supply system and 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 locations 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 Primitive. Consequently, effects associated with these activities on wolves (e.g., habitat loss, fragmentation, increased human access) are not anticipated under these themes.

Backcountry Restoration (BCR) – A total of 70 wolf packs (67 documented packs, 3 suspected packs) overlap BCR, of which 37 fall within CPZ; another six documented records of wolf activity overlap BCR (of which 5 are in CPZ) (Table V-22). The Calder Mountain, Solomon Mountain, and Silver Lake wolf packs north of I-90 overlap BCR to some degree; the home ranges for the Calder Mountain and Silver Lake packs also include 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. 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. Consequently, wolves 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 from existing roads or using aerial systems in BCR to address a number of purposes, including: improving TEPS habitat, and restoring/maintaining characteristics of ecosystem composition and structure and reducing the risk of uncharacteristic wildland fire effects. Again, timber cutting is not likely to adversely impact wolves except where disturbance, particularly around den and rendezvous sites, cannot be avoided.

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 wolves via habitat loss, disturbance, and reductions in prey availability and abundance where they overlap wolf packs or activity.

Given 77 of 103 total wolf packs and records in Idaho overlap the BCR theme, the likelihood that wolves may encounter activities under this theme is moderate, albeit the severity of effects on wolves from these activities is relatively low (see Effects of the Action above).

General Forest, Rangeland, and Grassland (GFRG) –The home ranges of 15 documented packs, two suspected packs, and one document record of wolf activity overlap GFRG. North of I-90, the Calder Mountain Pack overlaps GFRG (Appendix D).

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 (Figure II-4). However, as of 2007, there were no documented or suspected wolf packs or documented records of wolf activity on the portions of the Caribou-Targhee (IDFG southeast region – Nadeau et al. 2008), where phosphate mining might occur.

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 Modified Idaho Roadless Rule is expected to occur in GFRG. No GFRG is proposed in the following Forests: Challis, Clearwater, Kootenai, Nez Perce, or the Wallowa-Whitman. As at least 17 wolf packs may overlap GFRG, there is the potential for wolves to encounter activities under this theme. Again, the severity of adverse effects to wolves is low from the activities relevant to the MIRR.

Applicable LRMP components for gray wolves – Implementation of any projects in IRA would need to be consistent with applicable plan components. We have reviewed these components and determined they are not inconsistent with the MIRR; therefore they will be applied during project design. For wolves, these constitute specific goals, objectives, standards, and guidelines have been incorporated into the Forest Plans throughout Idaho National Forests. For example, on the IPNF, the following measures are typically applied to most projects that are proposed near active den and/or rendezvous sites (see USDA, Forest Service 2004b):

- 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. Lastly, all activities proposed in IRAs would be subject to ESA section 7 consultation with the FWS there the projects 'may affect' listed species, including the gray wolf north of I-90.

Cumulative Effects

Under ESA, 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 Idaho Roadless Areas (see definition in Section II), 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 Idaho Roadless Areas.

Determination of Effects on the Gray Wolf

North of I-90 – The Modified Idaho Roadless Rule *may affect, and is likely to adversely affect* the endangered gray wolf.

Rationale for determination - Timber cutting activities and road construction and reconstruction in IRAs permitted under the Modified Idaho Roadless Rule, particularly in GFRG, have small potential to adversely affect individual wolves within the Calder Mountain and Solomon Mountain Packs. 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 Idaho Panhandle National Forest have not resulted in adverse effects to wolves as they have avoided disturbance to dens and rendezvous sites either temporally or spatially (see USDA, Forest Service 2004b). However, as we can not predict where future activities might occur in place and time, or ensure such avoidance can always be incorporated into project design features, we can not discount the potential for adverse effects, primarily in the form of disturbance, to wolves north of I-90. The low potential for disturbance to wolves resulting from activities permitted under the MIRR is unlikely to result in mortality of any individual wolves. Consequently, no changes to existing population numbers, breeding pairs, or distribution are anticipated from the MIRR.

South of I-90 – The Modified Idaho Roadless Rule *may affect, and is likely to adversely affect* the experimental non-essential population of gray wolves. The MIRR is *not likely to jeopardize* the continued existence of the experimental non-essential population of gray wolves.

Rationale for determination – As indicated above, the potential for timber cutting and road construction and reconstruction to adversely affect wolves where they overlap areas occupied by wolves cannot be discounted. However, the wolf populations south of I-90 are part of the Northern Rocky Mountain non-essential experimental population of wolves, which has exceeded all demographic goals for recovery since 2003. The low potential for disturbance to wolves resulting from activities permitted under the MIRR is unlikely to result in mortality of any individual wolves. Consequently, no changes to existing population numbers, breeding pairs, or distribution are anticipated from the MIRR.

Western Yellow-Billed Cuckoo (*Coccyzus americanus occidentalis*)

Status of the Species

Listing History

The yellow-billed cuckoo was listed as a Candidate species west of the Rocky Mountain crest in 2001 (USDI, Fish and Wildlife Service 2001c).

Distribution and Abundance

The yellow-billed cuckoo is the only cuckoo west of the Rocky Mountains. In the western United States, this species is generally uncommon (USDI, Fish and Wildlife Service 2001c). Information suggests that the yellow-billed cuckoo's range and population numbers have declined substantially across much of the western United States over the past 50 years. Based on historic accounts, the species was widespread and locally common in California and Arizona, locally common in a few rivers in New Mexico, common very locally in Oregon and Washington, generally local and uncommon in scattered drainages of the arid and semiarid portions of western Colorado, western Wyoming, Idaho, Nevada, and Utah.

Currently, populations are rare in Idaho, but are known to occur in eastern Idaho on the South Fork of the Snake River below Palisades Reservoir, an area with extensive cottonwood forests (Groves et al. 1997, Saab 1996). The species is considered widespread in the Midwest and Eastern U.S. This species winters in Central and South America. It breeds and inhabits extensive deciduous cottonwood forests with dense shrub understories (USDI, Fish and Wildlife Service 2001c). This species is considered a peripheral species in Idaho by the Idaho Partners in Flight (Idaho Partners in Flight 2000, Saab 1992). Population numbers have declined substantially across much of the western United States over the past 50 years (USDI, Fish and Wildlife Service 2001c).

Habitat Requirements

Western yellow-billed cuckoos breed in large blocks of riparian habitat with a dense understory of foliage. This understory appears to be important for breeding success. The large blocks of riparian habitat for nesting are usually greater than 25 acres (USDI, Fish and Wildlife Service 2001c, Saab 1992). The yellow-billed cuckoo is a migratory land bird that winters in southern Central America and South America (Groves et al. 1997).

Factors of Decline/Threats

This species is declining in parts of its range due to deterioration and loss of riparian forest habitat in the western U.S. Principal causes of riparian cottonwood forest habitat loss are conversion to agricultural and other uses, dams and river flow management, stream channelization and stabilization, livestock grazing, pesticide use, and competition from exotic plants such as tamarisk. These factors have resulted in the remaining habitat being fragmented. Overuse by livestock has been a major factor in the degradation and modification of riparian habitats in the western United States (USDI, Fish and Wildlife Service 2001c, Saab 1992).

Current Conservation and Management

The Migratory Bird Treaty Act (MBTA) (16 U.S.C. Sec. 703–712) is the only current Federal protection provided the yellow-billed cuckoo. The MBTA prohibits ''take'' of any migratory bird, which is defined as: ''* * * to pursue, hunt, shoot, wound, kill, trap, capture, or collect, or attempt to pursue, hunt, shoot, wound, kill, trap, capture, or collect * * * .'' However, unlike the ESA, there are no provisions in the MBTA preventing habitat destruction unless direct mortality or destruction of active nests is expected to occur as a result.

Most LRMPs for Forests within the range of the western yellow-billed cuckoo contain objectives, standards, and guidelines that direct conservation and management of federally-listed species, including those listed as Candidates. Further, LRMP standards and guidelines intended to avoid or minimize effects to riparian corridors and vegetation (e.g., riparian buffers) will also assist in reducing impacts to cuckoo habitat.

Environmental Baseline

In Idaho, the yellow-billed cuckoo is a rare visitor and local breeder found in scattered drainages primarily in the southern portion of the state (Taylor 2000, Idaho Department of Fish and Game 2005). In southwestern Idaho, the yellow-billed cuckoo has historically been considered a rare summer visitor and breeder in the Snake River Valley[22]. The breeding population of yellow-billed cuckoos in Idaho is likely limited to a few breeding pairs, at most.

Albeit presence is rare in Idaho, there are documented occurrences of yellow-billed cuckoo in southeastern Idaho where the majority of its predicted breeding distribution is concentrated along riparian corridors (Figure V-12). Of the 488,430 acres of yellow-billed cuckoo predicted distribution in Idaho, 128,873 acres (26%) overlap IRA.

[22] Mostly excerpted from IDFG/CDC species accounts.

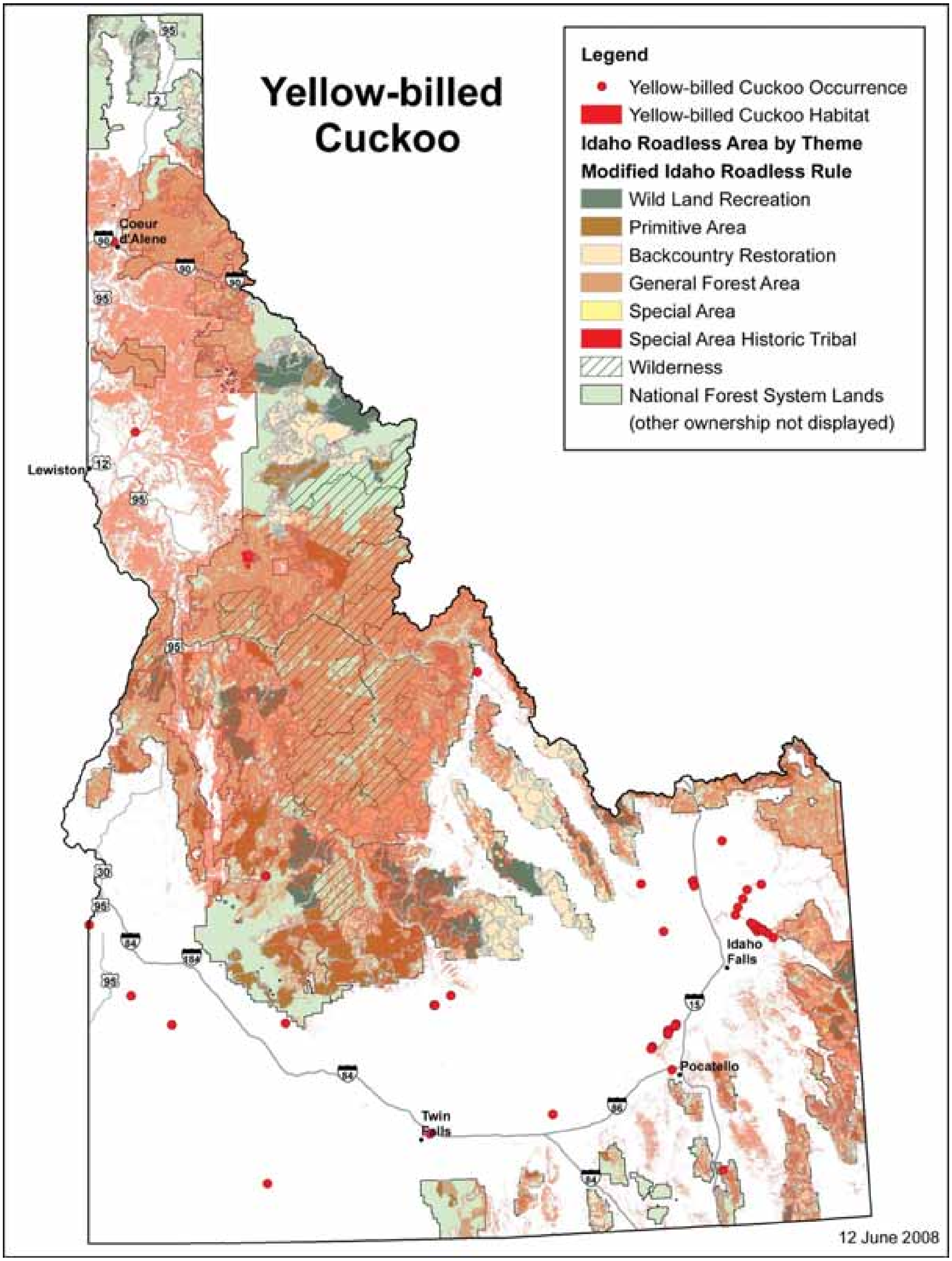

Figure V-12. Predicted distribution for the Western yellow-billed cuckoo in Idaho.

Effects of the Action

The Modified Idaho Roadless Rule establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across Idaho roadless areas, based on management area 'themes'. This section begins with a general discussion of the potential effects that these management activities can have on the yellow-billed cuckoo and then describes the potential impacts of the management area themes proposed by the Modified Rule on the species. 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, prescribed fire is considered interrelated and interdependent to timber cutting, and thus we also consider its impacts on yellow-billed cuckoo

Road Construction/reconstruction and Timber Cutting, Sale and Removal

The primary threat to the western yellow-billed cuckoo is the alteration of riparian ecosystems due to grazing, the spread of exotics (e.g., tamarisk), and dams and levees. Road construction and reconstruction and timber cutting are not considered primary threats to the species. However, these activities do have the potential to impact individuals depending on their nature, timing, and location. For example, construction and maintenance of roads can facilitate increase human disturbance into wildlife habitat, including the riparian corridors inhabited by cuckoos. Off-road vehicle use through cuckoo habitat may degrade riparian vegetation which provides for breeding and foraging. Timber cutting, sale and removal, including activities intended to address fuels also have the potential to alter riparian forests. However, these activities are not typically conducted within cuckoo habitat other than to reduce fuels or to remove encroaching conifers or exotic species. Consequently, vegetation management is not considered a primary threat to cuckoos and may actually contribute to improved habitat conditions in the long-term.

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 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 (USDI, Bureau of Land Management and USDA Forest Service 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.

Generally, many of the impacts discretionary mining could have on wildlife species, including yellow-billed cuckoo, 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. Development associated with mining operations can also promote recreational activity into some areas.

Implications of the Modified Idaho Roadless Rule to Western Yellow-billed Cuckoo

Approximately 128,873 acres of the predicted distribution for the Western yellow-billed cuckoo in Idaho overlap IRAs. As discussed above, road construction and reconstruction and timber cutting activities are not considered primary threats to the cuckoo. Further, adverse effects to individuals are unlikely or anticipated to be relatively minor given these activities are not likely to overlap with the species habitats without measures (e.g., riparian buffers) put in place to minimize effects. Consequently, we do not discuss the impacts of road construction/reconstruction or timber cutting further. However, the potential impacts of discretionary mining, particularly phosphate development, are possible given that development locations are directed by the presence of mineral deposits versus the nature and condition of above-ground vegetation. Discretionary mining is permitted under the BCR and GRFG themes under varying conditions. The implications of permissions for discretionary mining under these themes to yellow-billed cuckoo are discussed below.

Table V-23. Overlap predicted distribution for the western yellow-billed cuckoo in Idaho with the Modified Idaho Roadless Rule themes.

MIRR Theme	Breeding habitat	% of total distribution in Idaho
Wild Land Recreation	6,751	1.38%
Primitive	12,505	2.56%
Backcountry	78,102	16.01%
Backcountry CPZ	9,609	1.97%
General Forest, Rangeland, Grassland	14,033	2.86%
Special Areas of Historical and Tribal Significance	0	0%
Other Forest Plan Special Areas1	7,868	1.61%
Total in IRA	128,873	26.39%
Total Cuckoo predicted distribution in Idaho	488,430	

[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.

Backcountry Restoration (BCR) – Under the MIRR, a total of 87,788 acres of the predicted distribution for the cuckoo overlap BCR, including 9,609 acres (Table V-23). This represents about 18 percent of the predicted distribution for this species in Idaho.

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 cuckoos via habitat degradation where they overlap. Forest-wide standards and guidelines, particularly those designed to protect riparian corridors, will help minimize impacts to the western yellow-billed cuckoo and other riparian obligates

General Forest, Rangeland, and Grassland – Under the MIRR, the predicted distribution for the western yellow-billed cuckoo overlaps GFRG by 3 percent.

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. There is a potential risk to ecosystems, including cuckoo habitat, on these 5,770 acres when and if this development should occur. Site-specific analysis would occur prior to any future leasing and mitigations applied.

Consequently, although the risk to the species is low, we can not discount the potential for individuals to be affected by discretionary mining on the Caribou-Targhee, where the species may occur. Again, Forestwide standards and guidelines, particularly those designed to protect riparian corridors, will help minimize impacts to the western yellow-billed cuckoo and other riparian obligates

Cumulative Effects

Under ESA, 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 western yellow-billed cuckoo resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the Modified Idaho Roadless Rule consists of Idaho Roadless Areas (see definition in Section II), 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 Idaho Roadless Areas.

Determination of Effects on the Western Yellow-Billed Cuckoo

The Modified Idaho Roadless Rule *may affect, and is likely to adversely affect* the western yellow-billed cuckoo. The MIRR is *not likely to jeopardize* the continued existence of the western yellow-billed cuckoo.

Rationale for Determination – Management of IRAs proposed under the Modified Idaho Roadless Rule has a very low likelihood of impacting the western yellow-billed cuckoo, although we can not completely discount the potential for individuals to be affected, particularly in relation to discretionary mining activities.

Southern Idaho Ground Squirrel (*S. brunneus endemicus*)

Status of the Species

Listing History

The southern Idaho ground squirrel was listed as a Candidate species on October 30, 2001 (USDI, Fish and Wildlife Service 2001d).

Distribution and Abundance[23]

Recent surveys indicate that the southern Idaho ground squirrel occurs in 38 $miles^2$ in Idaho: extending from Emmett northwest to Weiser and the surrounding area of Squaw Butte, Midvale Hill, and over to the Henley Basin in Gem, Payette and Washington Counties. Its range is bounded on the south by the Payette River, on the west by the Snake River and on the northeast by lava flows with little soil. Currently, the distribution of the species is patchy, with areas of localized abundance and large areas of apparently suitable habitat that are unoccupied, or are sparsely occupied. The areas of localized abundance are typically concentrated around human-altered landscapes such as golf courses and row crop or farmed fields (particularly alfalfa and clover).

A status survey was conducted during 1984 (Yensen 1985), and the population was estimated to comprise 40,000 individuals. In 2001, the population size was estimated to be 2,000-4,500 individuals (Yensen 2001). Local population distribution and abundance is incompletely known. At present, most populations are small groups that are discontinuously distributed in the southern part of the former range. New populations have been discovered during recent years, but sampling effort has been uneven.

Approximately 90% of the population has been lost since the mid-1980s. The decline may have stabilized during recent years, possibly in response to mild winters and wet springs, but colonies remain small and fragmented. The population has been extirpated or is exceptionally small in the northern portions of the former range. The species is locally abundant near Emmett and Payette, where colonies are associated with anthropogenic habitat, such as agricultural land and golf courses. Populations are sparse and fragmented in formerly occupied native habitat, which is found primarily on public lands.

Habitat Requirements

This species inhabits rolling foothills at elevations between 670-1,090 meters (2,200-3,600 feet.). The southern Idaho ground squirrel (SIGS) lives on lower elevation, paler colored soils formed by granitic sands and clays from the Boise Mountains in comparison to the northern Idaho ground squirrel which typically is found at higher elevation areas with shallow reddish parent soils of basaltic origin. Southern Idaho ground squirrel habitat was originally dominated by big sagebrush, bitterbrush, and native bunchgrasses and forbs. The majority of native shrub and bunchgrass habitat has been replaced with stands of invasive annual plants, such as cheatgrass and medusahead rye. Populations in this altered habitat are usually restricted to the least disturbed or most productive sites (Yensen 2001).

[23] Excerpted from FWS Ecos database and IDFG/CDC species accounts

Factors of Decline/Threats

Threats to the southern Idaho ground squirrel include exotic grasses and weeds, habitat fragmentation, direct killing from shooting, trapping or poisoning, predation, competition with Columbian ground squirrels and inadequacy of regulatory mechanisms to protect the species or its habitat.

Current Conservation and Management

Southern Idaho Ground Squirrel Candidate Conservation Agreement with Assurances (CCAA) – This agreement (USDI, Fish and Wildlife Service and Idaho Department of Fish and Game 2005) was put in place to address some of the threats to SIGS on private lands. Conservation measures that may be implemented on private lands within the project areas that are enrolled in the Agreement include: (1) Implement habitat maintenance or enhancement measures such as seeding native vegetation species, fertilizing vegetation, prescribed burning, and providing escape cover; (2) prohibit shooting, trapping, or poisoning of SIGS; (3) minimize direct mortality from ground disturbing activities; (4) allow translocation of SIGS into unoccupied, suitable habitat; (5) control Columbian ground squirrels and badgers to reduce competition and predation; (6) monitor ground squirrel populations and habitat characteristics to monitor effectiveness and compliance with the Agreement; (7) actively pursue funding to implement the site- specific plan; and (8) coordinate/cooperate with non-federal third parties that hold conservation easements on or adjacent to enrolled lands, and that wish to participate in the Agreement.

The USFS is not currently a signatory on the SIGS CCAA. However, the revised LRMPs for the Southwest Idaho Ecogroup contain objectives, standards, and guidelines that direct conservation and management of federally-listed species, including those listed as Candidates.

> Example: TEPC Standard-4 – Management actions that have adverse effects on Proposed or Candidate species or their habitats, shall not be allowed if the effects of those actions would contribute to listing of the species as Threatened or Endangered under ESA.

Such standards should minimize project-level impacts on SIGS on NFS lands.

Environmental Baseline

As indicated above, the Southern Idaho Ground Squirrel is endemic to the state of Idaho, narrowly distributed in the southwest corner of the state. (See section on *Distribution and Abundance*). Currently, there are no known population sites for SIGS on lands managed by the Forest Service (including IRAs); rather existing population sites are located on private, BLM or Idaho state lands (Wolmack, personal communication, August 8, 2008).

Effects of the Action

As mentioned above, the Modified Idaho Roadless Rule establishes prohibitions and permissions on road construction/reconstruction, timber cutting, and discretionary mining activities across Idaho roadless areas, based on management area 'themes'. Use of prescribed fire is not prohibited or permitted by the Modified Idaho Roadless Rule. 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 is relevant to this analysis. Phosphate mining is not anticipated to occur within the range of the southern Idaho ground squirrel as a result of the Modified Idaho

Roadless Rule – all phosphate mining within Idaho roadless areas will be restricted to known phosphate lease areas on the Caribou-Targhee National Forest in southeastern Idaho under the MIRR (Abing 2008).

In general, potential effects of road construction, reconstruction, timber cutting, and discretionary mining to southern Idaho ground squirrel are similar to those described under NIDGS. These include habitat fragmentation, mortality due to collisions with vehicles or recreational shooting, and disturbance due to logging activity where it overlaps the species geographically and temporally.

Effects of the Modified Idaho Roadless Rule to Southern Idaho Ground Squirrel

As of 2008, there were no known population sites for SIGS on lands managed by the Forest Service, including IRAs. Consequently, management of IRAs proposed by the MIRR should have no effect on the SIGS.

Cumulative Effects

Under ESA, 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 southern Idaho ground squirrel resulting from state, Tribal, and local government actions for the following reasons:

- The action area for the Modified Idaho Roadless Rule consists of Idaho Roadless Areas (see definition in Section II), 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 Idaho Roadless Areas.
- The SIGS is not currently found on Forest Service lands, including IRAs (i.e., the action area).

Determination of Effects to Southern Idaho Ground Squirrel

The Modified Idaho Roadless Rule will have *no effect* on the southern Idaho ground squirrel. The MIRR is *not likely to jeopardize* the continued existence of the SIGS.

Rationale for Determination – Management of IRAs proposed by the Modified Idaho Roadless Rule will have no effect on SIGS as there are no known population sites on lands managed by the Forest Service, including IRAs, at this time. Future effects are not anticipated given the species tends to inhabit relatively low elevation habitats, that are not typically included in IRAs, which are characterized by higher elevation, less accessible areas.

VI. Effects of The Modified Idaho Roadless Rule on Federally Listed, Proposed, and Candidate Terrestrial Plant Species

Background

This section provides a description and assessment of the status, distribution, biology, habitat requirements, and threats to federally listed, proposed, and candidate plant species occurring on NFS lands in Idaho. Unlike most Forest Service project analyses of alternatives and environmental consequences, the analysis of the Modified Idaho Roadless Rule alternative does not include an analysis of project implementation and resulting direct effects; it is an analysis of potential project activities that could occur pursuant to the rule and the indirect and cumulative effects that could occur. 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 Idaho Roadless Rule would designate a system of lands (Idaho Roadless Areas) and establish five management themes as described in Section II of this BA. 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 Forest Service 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.

This effects analysis includes a description of the nature of potential effects that could occur given the prohibitions and permissions in the Modified Rule on threatened, endangered, proposed, and candidate plants that fall within IRAs and makes a determination of effects for each species.

This is a programmatic assessment. Site-specific projects proposals would be subject to Section 7 ESA consultation process. This would ensure that required analyses are conducted and mitigations are developed to protect any listed populations and their habitat in the project areas. If occurrences of other listed, proposed, or candidate species are found, consultation with the FWS will be re-initiated. Table VI-1 provides a list of plants that have Federal status as threatened, proposed, or candidate species on NFS lands. There are no plants listed as endangered under the ESA within NFS lands in Idaho.

Table VI-1. Federally listed, proposed and candidate species on NFS lands in Idaho: Federal and State status, occurrence within Idaho Roadless Areas, and national forest distribution

Species name	Common name	Global[1]	State[2]	Federal status[3]	Occurrence within Idaho Roadless Areas[4]	National forest distribution[5]
Castilleja christii	Christ's Indian paintbrush	G1	S1	Candidate	Mount Harrison	Sawtooth
Howellia aquatilis	Water howellia	G2	S1	Threatened	No	ph (Nez-Perce, Clearwater, Idaho-Panhandle)
Lepidium papilliferum	Slickspot peppergrass	G2	S2	Proposed Endangered	No	ph (Boise NF Mountain Home RD)

Mirabilis macfarlanei	MacFarlane's four-o-clock	G2	S1	Threatened	Big Canyon Idaho	Nez-Perce (administered by Wallowa-Whitman)
Silene spaldingii	Spalding's catchfly	G2	S1	Threatened	No	Nez-Perce (ph on Clearwater)
Spiranthes diluvialis	Ute ladies'-tresses	G2	S1	Threatened	Garns Mountain	Caribou-Targhee

[1] ***Global*** *= global ranking as assigned by Idaho Natural Heritage Program, G1 = globally critically imperiled, G2 = globally imperiled.*

[2] ***State*** *= Idaho State ranking, SH = State historical occurrence, S1 = State critically imperiled, S2 = State imperiled*

[3] ***Federal*** *= listing as per the ESA*

[4] *Occurrence based on GIS overlay with Idaho Roadless Areas.*

[5] ***ph*** *= potential habitat*

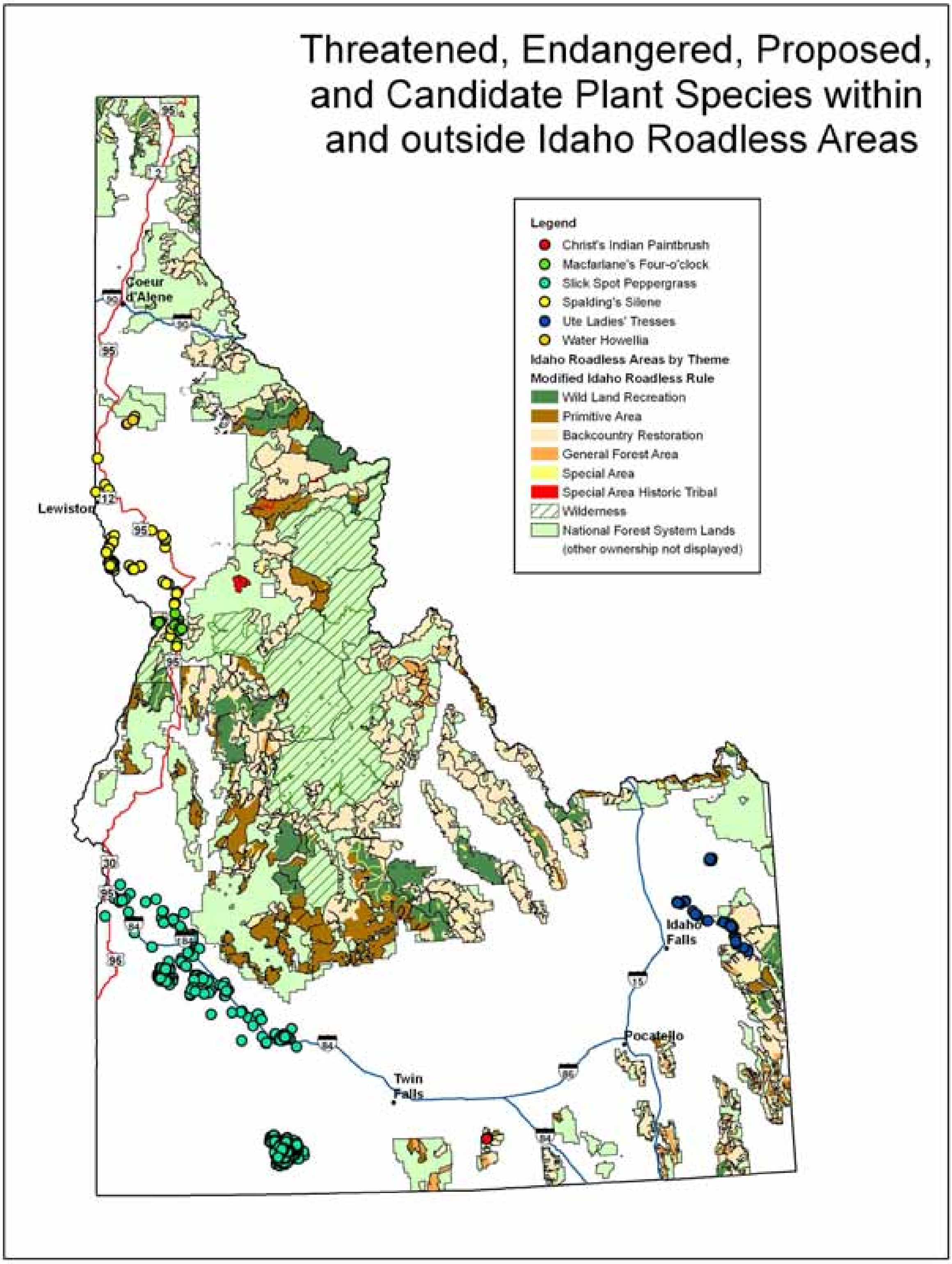

Figure VI-1. Distribution of element occurrences (EOs) of federally listed, proposed, and candidate plant species within and outside Idaho Roadless Areas

Water Howellia (*Howellia aquatilis*)

Water Howellia (*Howellia aquatilis*) — Water Howellia is a regional aquatic endemic that grows in ephemeral pools, glacial pothole ponds, and old river oxbows. It is extremely limited throughout its range: currently known from 13 small sites in western Montana, northwest California, northern Idaho, and eastern and western Washington. The life cycle of Howellia is intimately tied to the local hydrology of ephemeral pools and has very specific habitat requirements. A critical feature of Howellia habitat is that these ponds dry out by the end of the growing season. Most ponds are shallow with firm bottoms, have no outlet, and depend on groundwater, flooding, and precipitation as their source of moisture. Howellia has always been considered extremely rare within the botanical record. It was listed as a federally threatened species in 1994 (USDI, Fish and Wildlife Service, 1994a [59 FR 35860]). The sole occurrence known from the State of Idaho is found in Latah County on private lands along the flood plain of the Palouse River in Northern Idaho. There are no known individuals, populations, or habitat on NFS lands within the Idaho Roadless areas. Therefore, it is my determination that the Modified Idaho Roadless Rule will have "*no effect*" on Water Howellia.

Spalding's catchfly (*Silene spaldingii*)

Spalding's catchfly (*Silene spaldingii*) — Spalding's catchfly, sometimes referred to as Spalding's silene, is a Palouse prairie endemic restricted to mesic grasslands that make up the Palouse region in southeastern Washington, northwestern Montana, and adjacent portions of Oregon, Idaho, and British Columbia. In Idaho, Palouse prairie is confined to a narrow band along the western edge of central and north-central Idaho, centering on Latah County. More than 98 percent of the original Palouse prairie habitat has been lost or modified by agricultural conversion, grazing, invasion by non-native species, and urbanization (Noss et al. 1995). *Silene spaldingii* was listed as a federally threatened species under the ESA in 2001 (USDI, Fish and Wildlife Service 2001a [66 FR 51598]). Several populations of Spalding's catchfly occur in the west-central portion of the State, including two occurrences on the Nez-Perce National Forest, primarily on steep canyon grasslands. Because there are no known individuals, populations, or habitat on NFS lands within the Idaho Roadless areas, it is my determination that the Modified Idaho Roadless Rule will have "*no effect*" on Spalding's catchfly.

Slickspot peppergrass (*Lepidium papilliferum*)

Slickspot peppergrass is an herbaceous annual or biennial plant that occurs in Idaho's sagebrush-steppe communities. Its habitat is limited to seasonally wet slickspots within the sagebrush-steppe areas of southwestern Idaho along the Snake River Plain and Owyhee Plateau in Ada, Canyon, Gem, Elmore, Payette, and Owyhee Counties, Idaho. *Lepidium papilliferum* is threatened by a variety of activities including reduction in habitat quality, invasion by non-native species, livestock trampling, increased wildfire intervals, irrigated agriculture, and off-highway vehicle use and fragmentation. It was proposed for Federal listing as an endangered species in 2002 (USDI, Fish and Wildlife Service 2002a [67 FR 46441]). In 2003 the FWS announced an extension of the comment period because of substantial disagreement regarding sufficiency of available data to make a final determination (USDI, Fish and Wildlife Service 2003c [68 FR 42666]).

A Candidate Conservation Agreement was developed in 2003 between the affected cooperating parties in Idaho to implement conservation measures to protect the plant and its habitat, resulting in the withdrawal of the final listing rule (USDI, Fish and Wildlife Service 2003d and 2004). In August 2005, the District Court of Idaho reversed the withdrawal of the rule following a complaint by Western Watersheds with direction that the case be remanded to the Secretary of the Interior for reconsideration. After additional review the courts requested the FWS to make a final listing determination by January 2007. A determination to withdraw the listing rule was made on Jan 12, 2007 (USDI, Fish and Wildlife Service 2007b [72 FR 1672]). Following a new June 4, 2008, court decision, slickspot peppergrass has been reinstated as a "proposed endangered" species (USDI, Fish and Wildlife Service 2008c). There are no known individuals or populations on NFS lands. Potential habitat may be found on the Boise National Forest on the Mountain Home Ranger District. Because slickspot peppergrass habitat is restricted to low-elevation sagebrush-steppe communities, management prescriptions such as timber cutting, road construction for fuel reduction, and geothermal development proposed under various themes in the MIRR would not overlap or be applicable within this species range on NFS lands. It is therefore my determination that the Modified Idaho Roadless Rule will have "*no effect*" on *Lepidium papilliferum*.

Table VI-2. Distribution of federally listed and candidate plant species element occurrences by roadless area and Modified Idaho Roadless Rule theme

Scientific and Common Name	Roadless Area	Alternative	WLR	Prim	BCR	BCR CPZ	GFRG	FPSA	SAHTS
			------------------ Number of occurrences ----------						
Mirabilis macfarlanei Macfarlane's Four-o'clock	Big Canyon Idaho	Modified Rule	0	0	3	6	0	0	0
Spiranthes diluvials Ute Ladies-tresses	Garns Mountain	Modified Rule	0	0	0	0	0	5	0
Castilleja christii Christ's Indian paintbrush	Mt. Harrison	Modified Rule	0	0	2	0	0	0	0

MacFarlane's four-o'clock (*Mirabilis macfarlanei*)

Status of the Species

Listing History

MacFarlane's four-o'clock is currently listed as threatened under the ESA (61 FR 10692). Originally, MacFarlane's four-o'clock was listed as endangered in 1979 (44 FR 61912) with only three known populations. Since then, additional populations have been discovered resulting in the change to threatened status March 15, 1996. Critical habitat has not been designated for this species. The FWS published the Revised Recovery Plan for MacFarlane's four-o'clock (USDI, Fish and Wildlife Service 2000).

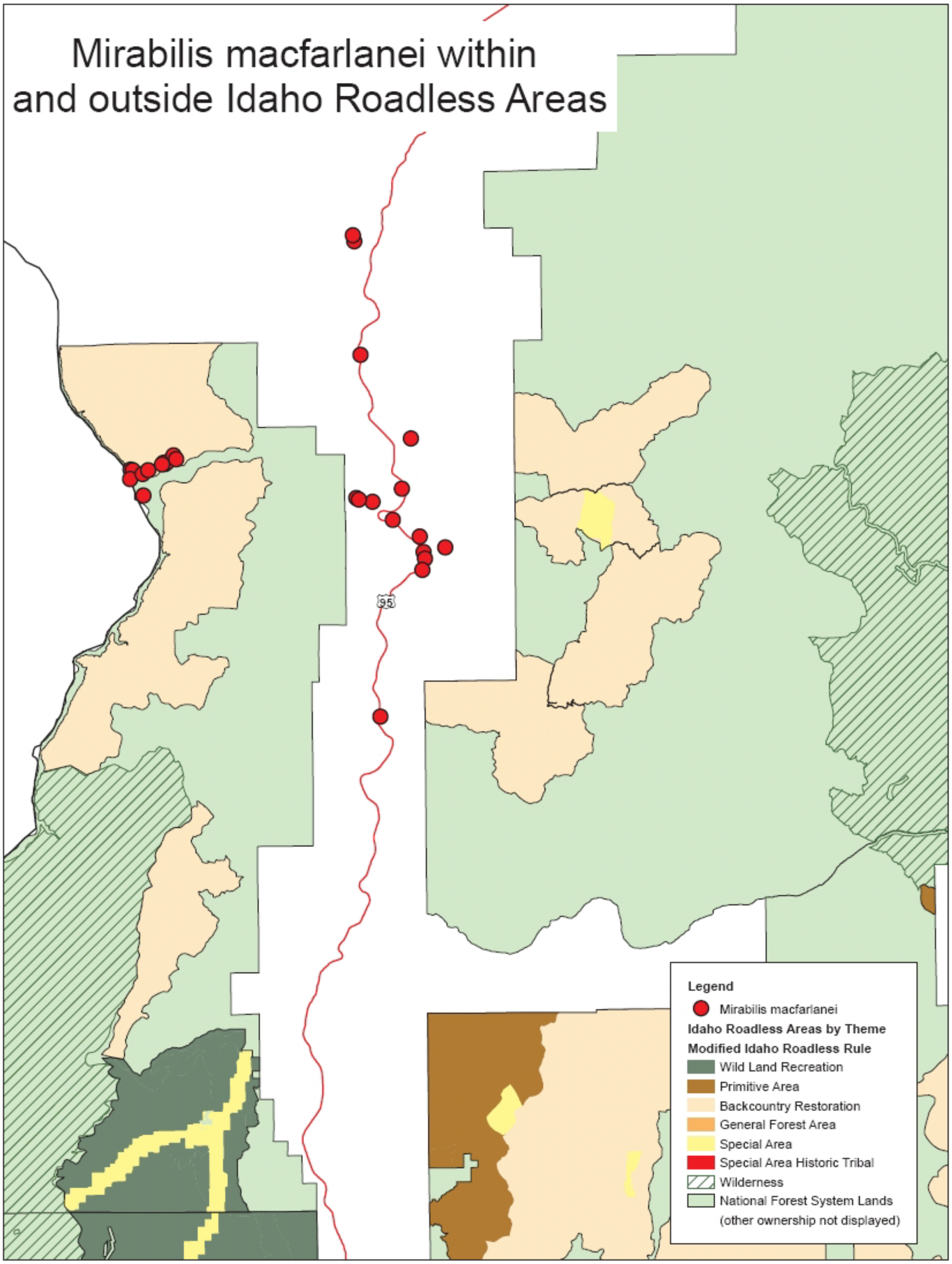

Figure VI-2. ***Mirabilis macfarlenei*** **within and outside Idaho Roadless Areas.**

Species Distribution

Idaho County, Idaho; Wallawa County, Oregon. MacFarlane's four-o'clock is narrowly endemic to portions of the Snake, Salmon, and Imnaha River canyons in northeastern Oregon and adjacent west-central Idaho. It grows in warm, dry, river canyon grassland habitats dominated by bluebunch wheatgrass. Many of the known populations occur within the Hell's Canyon National Recreation Area (HCNRA). Talus rock often underlies the soils, and several sites are unstable and prone to erosion. Plants are most commonly found on steep grassland slopes between 1,000 and 3,000 feet in elevation. In a recent Element Occurrence (EO) review by the Idaho Conservation Data Center (ICDC) report (Colket, et al. 2006), the total number of EOs for MacFarlane's four-o'clock was adjusted from 13 to 9 for the species rangewide using updated habitat-based guidance for delimiting plant Element Occurrences developed by NatureServe (NatureServe 2004). Under this new circumscription, all EOs occurring on Federal lands in Idaho are managed by the BLM, with the exception of EO #6, which is managed by the USFS.

Biology, Habitat Requirements, and Threats

MacFarlane's four-o'clock is a long-lived herbaceous perennial species. This plant usually 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).

MacFarlane's four-o'clock 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. Some native forb associates include pallid milkweed (*Asclepias cryptoceras*), buckwheat (*Eriogonum* spp.), and penstemon (*Penstemon* spp.); and native shrubs include gray rabbitbrush (*Chrysothamnu nauseosus*) and serviceberry (*Amelanchier alnifolia*). 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, Johnson 1995). Due to this life-cycle pattern, the time of year when activities are most likely to directly impact MacFarlane's four-o'clock is during the spring and early summer, when the plants are actively growing, flowering, or fruiting.

Grassland habitat in good ecological condition appears to be important for the long-term survival of MacFarlane's four-o'clock. Livestock grazing, invasion by non-native plant species and uncharacteristically large or frequent fires are likely the greatest threats to MacFarlane's four-o'clock (USDI, Fish and Wildlife Service 2000). 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 exotic species than nearby MacFarlane's four-o'clock locations (Kaye and Meinke 1992). All known populations of MacFarlane's four-o'clock in the HCNRA occur in grassland plant communities below 3,000 feet elevation.

Effects of the Action

The MacFarlane's four-o'clock site (EO#6) is found within the Big Canyon Roadless Area (Figure VI-2) and is managed by the Wallowa-Whitman National Forest. Under the Modified Rule, three subpopulations of this EO fall within the Backcountry theme and another six subpopulations fall within the Backcountry CPZ theme. Of the 14,000 acres in the Big Canyon Roadless Area under the Backcountry theme, 4600 acres are estimated to be within the CPZ zone of the Backcountry theme. This theme allows some temporary road construction and re-construction and timber cutting in areas of significant risk from wildfire and insect/disease epidemics. The Wallowa-Whitman National Forest has fenced many of the known plant sub-populations to protect them from livestock grazing and other impacts. Because MacFarlane's four-o'clock is associated with open, steep canyon grasslands, direct impacts to the known MacFarlane's four-o'clock sites and its habitat are highly unlikely to occur from timber cutting or road construction under this alternative.

The Modified Rule will not affect the one known EO on NFS lands, which will continue to be protected and monitored by the forest. The Hells Canyon National Recreation Area Comprehensive Management Plan (HCNRCAMP - Appendix C – pp. 88-94) provides protective management direction applicable to this species that would be incorporated into any project that may occur within the watershed or potential habitat of MacFarlane's four-o'clock. In addition, fuels projects and 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 we cannot predict exact locations of future projects allowable within this theme area, we cannot discount the potential for adverse effects to undiscovered populations or potential habitat for the Macfarlane's four-o'clock.

Cumulative Effects

The vast majority of occurrences of MacFarlane's four-o'clock are on BLM properties, lands within the Hells Canyon National Recreation Area, or on private lands. Only EO#6 is on NFS lands. The primary threats to the species include grazing, herbicide spraying, weed invasion and uncharacteristic wildfires. 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.

Determination

Based on the assessment of direct and indirect effect, it is my determination that activities that occur pursuant to the Modified Idaho Roadless Rule "*may affect and is likely to adversely affect*" Macfarlane's four-o'clock (*Mirabilis macfarlanei*).

Rationale for the Determination

This determination is based on the following:

The proposed Modified Idaho Roadless Rule has a low likelihood of impacting known *Mirabilis macfarlanei* sites. Protective fencing has been built by the Wallowa-Whitman National Forest around several sub-populations of MacFarlane's four-o'clock occurrences that fall within NFS lands under the Modified Idaho Roadless Rule. The EOs found within IRAs in Idaho fall either within the BCR or BCR/CPZ themes. The permissions under these themes would allow timber cutting, temporary road construction, and fuels reduction projects to occur under certain conditions. At the project level, all activities would be subject to site-specific evaluation and agency policies for avoidance, mitigation, and consultation with the USFWS. However, given that we cannot predict the exact location of future projects such as fuels reduction projects and wildland fire use permitted under the Modified Roadless Rule, including activities associated with control of escaped fires, we cannot discount the potential to adversely affect undiscovered populations and potential habitat of *Mirabilis macfarlanei*.

Ute ladies'-tresses orchid (*Spiranthes diluvialis*)

Status

Listing History

The FWS listed Ute ladies'-tresses as threatened in 1992 (57 FR 2048). Critical habitat has not been designated for this species.

Species Distribution

Ute ladies-tresses is a perennial, terrestrial orchid found in moist meadow habitats associated with floodplains, oxbows, and stream and river terraces; subirrigated or spring-fed abandoned stream channels and valleys; lakeshores; and human-modified riparian and lacustrine habitats (Fertig et al. 2005). The species is characterized by ¾-inch white flowers spirally arranged along 7–32-inch stems. *Spiranthes diluvialis* ranges in elevation from 720 to 1,830 feet in Washington to 7,000 feet in northern Utah. It typically occurs in stable wetland and seepy area associated with historical floodplains of major rivers as well as wetlands and seeps near freshwater springs. Occupied sites are almost always associated with a high water table, usually within 5–18 inches below the surface. Populations of Ute ladies'-tresses have been found in many western states such as: Colorado, Utah, Montana, Nebraska, Nevada, Washington, Wyoming, and Idaho. Although the range of the orchid is large, it most often occurs as localized small metapopulations that are composed of clusters of occurrences.

In Idaho, the species was first discovered along the Snake River floodplain in 1996 (Moseley 1998a). There are 22 known occurrences scattered along the Snake River over 49 river miles, from near its confluence with Henry's Fork to below the Palisades Dam (Figure VI-3). In 2002, a new occurrence was discovered at the Chester Wetlands segment of the Idaho Fish and Game Sand Creek Wildlife Management Area (Murphy 2002) and in 2003, another occurrence was found on private land along Texas Slough (Murphy 2004a). All occurrences along the South Fork of the Snake River are considered part of the same metapopulation (Murphy 2004a). Within the scope of the Idaho Roadless Area analysis, known *Spiranthes diluvialis* metapopulations are found only on the Targhee portion of the Caribou-Targhee National Forest in the Garns Mountain Roadless area.

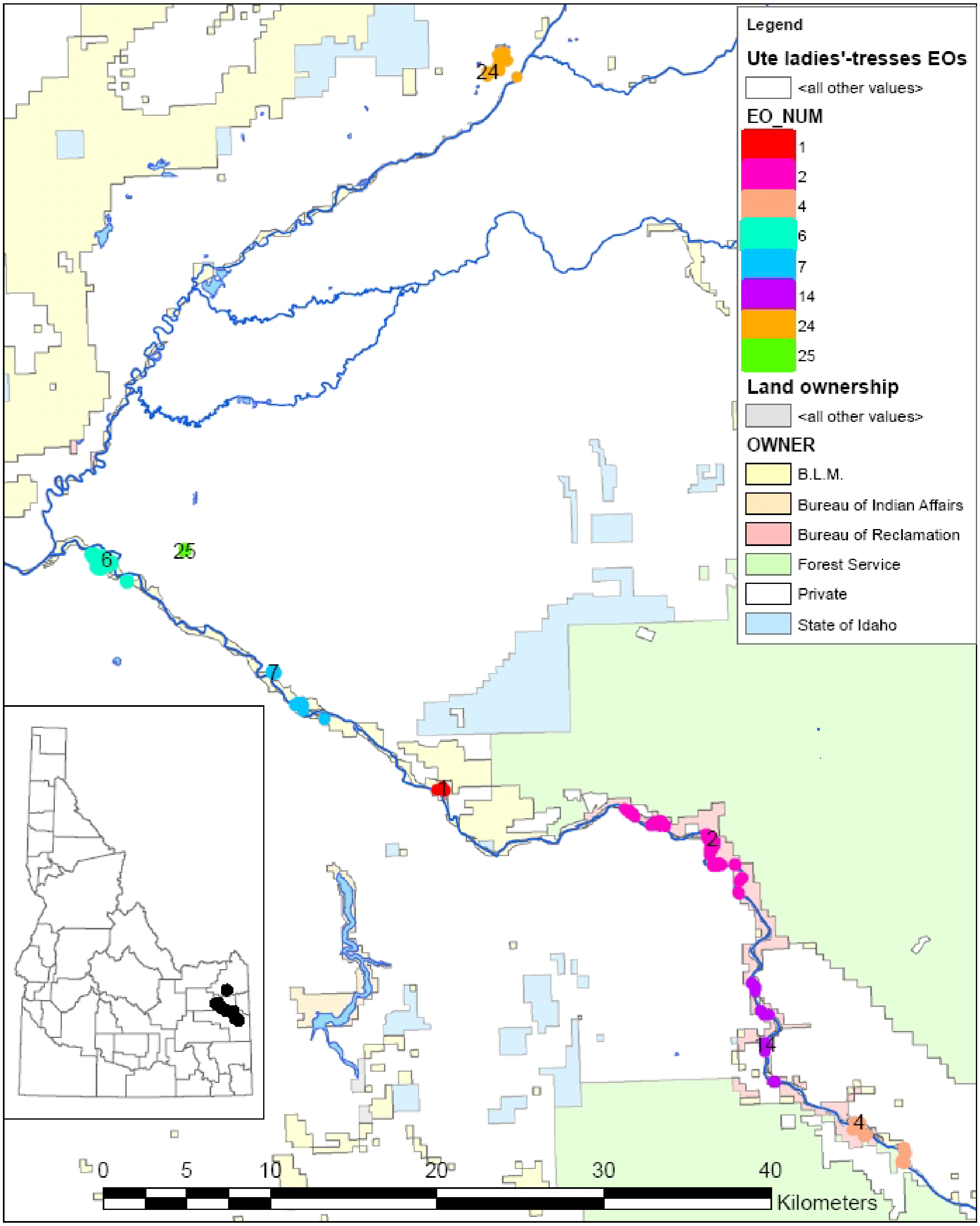

Figure VI-3. Distribution of Ute ladies'-tresses EOs in Idaho by land ownership.
Map: courtesy of Idaho Conservation Data Center.

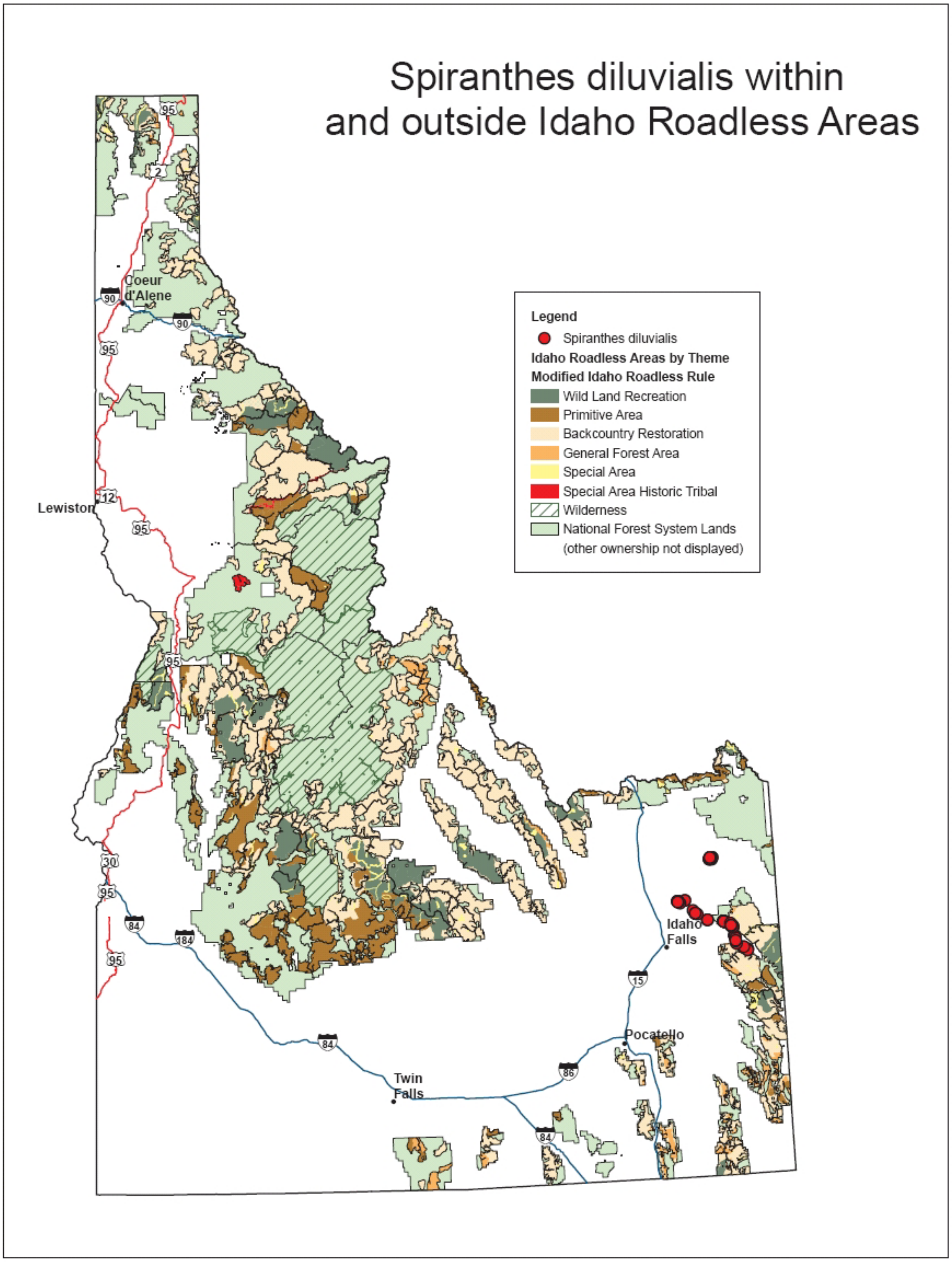

Figure VI-4. *Sprianthes diluvials* within and outside Idaho Roadless Areas

Biology, Habitat Requirements, and Threats

The ecology and life history of *Spiranthes diluvialis* is poorly known. This species is a perennial plant with stems 20–50 cm tall, arising from thickened tuberous roots. The small white flowers are spirally arranged on elongated stalks and bloom from late July through early September. Like other orchid species it is associated with mycorrhizae in a symbiotic relationship and may exhibit extended periods of dormancy during years of adverse conditions. Current populations are reported for stream terraces, islands in rivers, and along the edges of lakes and ponds. All reported populations are below 6,500 feet (Murphy 2004). Ute ladies'-tresses plants may not bloom, or even emerge, above ground every year. Many *Spiranthes* species are initially saprophytic, persisting underground for many years before emerging above ground. For these reasons, FWS survey guidelines recommend revisiting potential habitat for this species for several years in a row before determining that the habitat is not occupied. Depending on location, climatic conditions, and seasonal weather, Ute ladies'-tresses bloom from mid July through September. This species can be positively identified only when it flowers. Pollination by bumblebees is apparently required for successful sexual reproduction. While monitoring a Colorado population, it was observed that Ute ladies'-tresses produced an over-wintering rosette during late summer or fall (Arft 1995). Leaf growth commenced the following growing season and inflorescence buds were produced as early as June. The active growing season for this plant is several months-long. Furthermore, the over-wintering rosette is vulnerable to damage during its dormant period.

Effects of the Action

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 (Figure VI-4) 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 Modified Idaho Roadless Rule does not propose or recommend management direction for these lands, the known populations of *Spiranthes diluvialis* and potential habitat which falls within this IRA will not be affected by this action. However, because of 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.

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 ESA, no further consideration beyond the current scope is evaluated at this point in time. Several landscape-level threats to *Spiranthes diluvialis* were cited by Murphy (2004a) 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. Effects on undiscovered populations that may be present in Idaho roadless areas that have not been inventoried for the presence of Ute ladies'-tresses orchid cannot be determined at this time.

Determination for Ute ladies'-tresses orchid

All known occurrences of *Spiranthes diluvialis* in Idaho Roadless Areas are found within the Garns Mountain Roadless Area and fall under the Forest Plan Special Area theme. The management direction for this theme would be the same as the Primitive theme and the 2001 Roadless rule under the Modified Idaho Roadless Rule. As such, it is unlikely that this action will have any negative effect on Ute ladies'-tresses orchid or its habitat within the Garns Mountain Roadless Area. However, because the extent and amount of potential habitat for *Spiranthes diluvialis* within other Idaho Roadless Areas is largely unknown and/or remains mostly unsurveyed, it is my determination that the Modified Idaho Roadless Rule contains permissions that allow future activities to occur in IRAs that *"may affect, and is likely to adversely affect"* Ute Ladies'-tresses orchid.

Rationale for the Determination

This determination is based on the following:

Management of IRAs proposed by the Modified Idaho Roadless Rule has a low likelihood of impacting Ute Ladies'-tresses orchid. The only known occurrences on NFS lands, found within the Garns Mountain Roadless area, will not be affected by the Modified Idaho Roadless Rule because they fall within the Forest Plan Special Area theme. However, because potential habitat for *Spiranthes diluvialis* in Idaho is still relatively broadly characterized and road construction/reconstruction, mineral activities, timber cutting may be permitted within other IRAs under Modified Idaho Roadless Rule, adverse effects on undiscovered Ute ladies'-tresses orchid populations in un-surveyed potential habitat cannot be completely discounted.

Christ's Indian Paintbrush (*Castilleja christii*)

Status of the Species

Listing and Conservation Status

Castilleja christii is a rare yellow-flowering plant located only on Mount Harrison, south of Burley, Idaho. This species is confined to one 220-acre population at the summit of Mount Harrison, which is managed exclusively by the U.S. Forest Service, Sawtooth National Forest, Minidoka Ranger District. It is currently a candidate for listing under the ESA and is on the FWS 2007 Federal Register Candidate Notice of Review (Vol. 72, No. 234/Thursday, December 6, 2007). The Sawtooth National Forest and the FWS developed a Conservation Agreement for the species in the late 1990s, which expired in 2000. In 2005, a new 10-year Candidate Conservation Agreement was signed between the USFS (Sawtooth NF) and the USFWS.

Species Distribution

Castilleja christii is endemic to subalpine meadow and sagebrush habitats in the upper elevations of the Albion Mountains, Cassia County, Idaho. The single known population is restricted to the summit of Mount Harrison and covers approximately 220 acres of land managed by the Sawtooth National Forest.

Biology, Habitat Requirements, and Threats

Castilleja christii is a showy perennial herb and is about 6 to 15 inches tall. Stems are erect to ascending, usually unbranched, and several in a cluster. Leaves are 2 to 5 inches long and are narrow to broadly lance-shaped. The inflorescence is yellow to yellow-orange, with lanceolate to ovate bracts. Christ's Indian paintbrush is the only yellow to yellow-orange flowered paintbrush found on the summit of Mount Harrison (Moseley, 1993) whose habitat is confined to the moist snowbed and graminoid communities found on the summit.

There are several threats to the Christ's Indian paintbrush population and its habitat. Natural threats include invasive non-native plants (such as "smooth brome"), disease, and fire (Mancuso 2001). Other threats include unauthorized entry into protected areas by off-road vehicles and recreationists, harvesting and trampling of plants, road construction and maintenance, and trespass by cattle. Such activities may adversely impact the plant and disturb the associated habitat.

In 1996, the Forest Service designated a 381-acre research natural area (RNA) near the summit of Mount Harrison (Mancuso 1992) for the purpose of maintaining biological diversity, conducting research, monitoring, and fostering education. Only a portion of the Christ's Indian paintbrush population was included in the RNA. In July 2004, the forest established the Mount Harrison Interpretive Area on Mount Harrison to protect and manage the area's unique alpine and subalpine habitats and rare species such as Christ's Indian Paintbrush. This designation incorporated the portion of the Christ's Indian Paintbrush population not already included in the RNA. The agencies also installed a series of interpretive signs in 2004 that provide educational information about Christ's Indian Paintbrush and other plant, bird, and wildlife species, fire ecology, and ongoing conservation efforts on Mount Harrison.

Effects of the Modified Idaho Roadless Rule

All known occurrences of *Castilleja christii* fall within the Mount Harrison IRA under the MIRR Backcountry theme. This theme permits temporary road construction or reconstruction within the CPZ, or outside the CPZ if there is a significant risk to an at-risk community or municipal water supply system. Temporary road construction must be conducted in a manner that minimizes effects on surface resources and is consistent with land management plan components. The main Howell Canyon Road, which accesses the fire lookout on top of Mount Harrison and bisects the main *Castilleja christii* population, was paved in 1997. It is highly unlikely that any additional roads will be constructed in *Castilleja christii* habitat in the future as a result of the Modified Idaho Roadless Rule. Furthermore, because *Castilleja christii* habitat has been extensively surveyed and plants have been found only on the subalpine meadows of Mount Harrison, along with additional protections specified in Forest Plan direction and a Candidate Conservation Agreement with the FWS, any effects from activities authorized under this theme in the Modified Idaho Roadless Rule are expected to be discountable.

The 2003 Sawtooth Forest Plan lays out the objectives for management for TES species to ensure their continued viability throughout the plan area. The forest plan includes forest-wide direction and management area direction for candidate species including *Castilleja christii* [Appendix B – Tables B-7 and 8]. The establishment of the Mount Harrison Interpretive Area, which incorporates 77 percent of the entire known population, provides additional protection and management direction for this species. The remaining 23 percent of the population are conserved by virtue of lying within the boundary of the Mount Harrison Research Natural Area (RNA).

Cumulative Effects

The only known population of *Castilleja christii* is found on the Sawtooth National Forest on top of Mount Harrison, Minidoka Ranger District. The primary threats to the species include: weed invasion, grazing, off-road recreational activities, and road maintenance. These risk factors have been analyzed and previously undergone consultation in other projects and land use management plans and decisions. This decision will not make a difference in these factors.

Determination for Christ Indian Paintbrush

Based on the assessment of direct and indirect effect, it is my determination that implementation of the Modified Idaho Roadless Rule "*may affect, and is not likely to adversely affect*" Christ's Indian paintbrush (*Castilleja christii***).**

Rationale for the Determination

This determination is based on the following:

The single known population (consisting of two EOs)of *Castilleja christii* is found on NFS lands in subalpine meadows on top of Mount Harrison and is wholly managed by the Sawtooth National Forest under a Candidate Conservation Agreement with the USFWS. The standards and guidelines for *Castilleja christii* incorporated into the Sawtooth Forest Plan and Candidate Conservation Agreement will be effective in avoiding or minimizing effects to potential habitat and render them insignificant in most cases. Further, coordination and consultation with the FWS would occur if impacts were identified from proposed projects in the interpretive area and be modified or designed in such a way as to avoid or minimize the risk of adverse affects to this species.

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APPENDICES

Appendix A—Aquatic T&E Species

Table A-1. Idaho Roadless Areas with threatened and endangered aquatic species present

Forest	Idaho Roadless Area	Forest	Idaho Roadless Area
Boise	Bald Mountain	Boise	Ten Mile/Black Warrior
Boise	Bear Wallow	Boise	Tennessee
Boise	Bernard	Boise	Whiskey
Boise	Black Lake	Boise	Whiskey Jack
Boise	Breadwinner	Boise	Whitehawk Mountain
Boise	Burnt Log	Boise/Challis	Blue Bunch
Boise	Cathedral Rocks	Boise/Challis	Red Mountain 916
Boise	Cow Creek	Boise/Challis/Sawtooth	Hanson Lakes
Boise	Danskin	Boise/Payette	Caton Lake
Boise	Deadwood	Boise/Payette	Horse Heaven
Boise	Elk Creek	Boise/Payette	Meadow Creek
Boise	Grand Mountain	Boise/Payette	Needles
Boise	Grimes Pass	Boise/Payette	Poison Creek
Boise	Hawley Mountain	Boise/Payette	Snowbank
Boise	House Mountain	Boise/Sawtooth	Lime Creek
Boise	Lost Man Creek	Boise/Sawtooth	Smoky Mountains
Boise	Nameless Creek	Challis	Borah Peak
Boise	Peace Rock	Challis	Challis Creek
Boise	Poker Meadows	Challis	Greylock
Boise	Rainbow	Challis	Grouse Peak
Boise	Reeves Creek	Challis	Jumpoff Mountain
Boise	Sheep Creek	Challis	King Mountain
Boise	Steel Mountain	Challis	Pahsimeroi Mountain
Boise	Stony Meadows	Challis	Red Hill
Challis	Seafoam	Challis	Spring Basin
Challis	Squaw Creek	Idaho Panhandle	Salmo-Priest
Challis	Warm Creek	Idaho Panhandle	Schafer Peak
Challis	Wood Canyon	Idaho Panhandle	Scotchman Peaks
Challis/Sawtooth	Boulder-White Clouds	Idaho Panhandle	Selkirk
Challis/Sawtooth	Loon Creek	Idaho Panhandle	Sheep Mountain-State Line
Challis/Sawtooth	Railroad Ridge	Idaho Panhandle	Storm Creek
Challis/Targhee	Diamond Peak	Idaho Panhandle	Trestle Peak
Clearwater	Bighorn – Weitas	Idaho Panhandle	Upper Priest
Clearwater	Eldorado Creek	Idaho Panhandle	West Fork Elk
Clearwater	Hoodoo	Idaho Panhandle	White Mountain
Clearwater	Lochsa Face	Nez Perce	Clear Creek
Clearwater	Lolo Creek (LNF)	Nez Perce	Dixie Summit - Nut Hill
Clearwater	Moose Mountain	Nez Perce	East Meadow Creek
Clearwater	North Fork Spruce - White Sand	Nez Perce	Gospel Hump

Forest	Idaho Roadless Area	Forest	Idaho Roadless Area
Clearwater	North Lochsa Slope	Nez Perce	Gospel Hump adjacent to wilderness
Clearwater	Pot Mountain	Nez Perce	John Day
Clearwater	Rawhide	Nez Perce	Lick Point
Clearwater	Siwash	Nez Perce	Little Slate Creek
Clearwater	Sneakfoot Meadows	Nez Perce	Little Slate Creek North
Clearwater	Weir - Post Office Creek	Nez Perce	Mallard
Clearwater/Idaho Panhandle	Mallard-Larkins	Nez Perce	North Fork Slate Creek
Clearwater/Idaho Panhandle	Meadow Creek - Upper North Fork	Nez Perce	O'Hara - Falls Creek
Clearwater/Nez Perce	Rackliff - Gedney	Nez Perce	Salmon Face
Idaho Panhandle	Beetop	Nez Perce	Silver Creek - Pilot Knob
Idaho Panhandle	Big Creek	Nez Perce	West Fork Crooked River
Idaho Panhandle	Blacktail Mountain #122	Nez Perce	West Meadow Creek
Idaho Panhandle	Buckhorn Ridge	Nez Perce/Payette	Rapid River
Idaho Panhandle	Continental Mountain	Payette	Big Creek Fringe
Idaho Panhandle	East Cathedral Peak	Payette	Chimney Rock
Idaho Panhandle	Grandmother Mountain	Payette	Cottontail Point/Pilot Peak
Idaho Panhandle	Hammond Creek	Payette	Council Mountain
Idaho Panhandle	Kootenai Peak	Payette	Crystal Mountain
Idaho Panhandle	Little Grass Mountain	Payette	Cuddy Mountain
Idaho Panhandle	Magee	Payette	French Creek
Idaho Panhandle	Midget Peak	Payette	Hells Canyon/7 Devils Scenic
Idaho Panhandle	Mosquito-Fly	Payette	Indian Creek
Idaho Panhandle	Katka Peak	Payette	Patrick Butte
Idaho Panhandle	Mt. Willard-Lake Estelle	Payette	Secesh
Idaho Panhandle	North Fork	Payette	Smith Creek
Idaho Panhandle	Packsaddle	Payette	Sugar Mountain
Idaho Panhandle	Roberts	Payette	Placer Creek
Idaho Panhandle	Pinchot Butte	Salmon	Agency Creek
Idaho Panhandle	Saddle Mountain	Salmon	Allan Mountain
Salmon	Blue Joint Mountain	Salmon	Sal Mountain
Salmon	Deep Creek 509	Salmon	Sheepeater
Salmon	Duck Peak	Salmon	South Deep Creek
Salmon	Goat Mountain	Salmon	South Panther
Salmon	Goldbug Ridge	Salmon	West Big Hole
Salmon	Haystack Mountain	Salmon	West Panther Creek
Salmon	Jesse Creek	Salmon/Challis	Lemhi Range
Salmon	Jureano	Salmon/Challis	Taylor Mountain
Salmon	Little Horse	Salmon/Targhee	Italian Peak
Salmon	Long Tom	Sawtooth	Buttercup Mountain

Forest	Idaho Roadless Area	Forest	Idaho Roadless Area
Salmon	McEleny	Sawtooth	Elk Ridge
Salmon	Musgrove	Sawtooth	Huckleberry
Salmon	Napias	Sawtooth	Liberal Mountain
Salmon	Napoleon Ridge	Sawtooth	Pettit
Salmon	Oreana	Wallowa-Whitman	Big Canyon, Idaho
Salmon	Perreau Creek	Wallowa-Whitman	Klopton Creek - Corral Creek, Idaho
Salmon	Phelan		

Table A-2. Threatened and endangered aquatic species range by theme

Species (range acres in Idaho)	Alternative	WLR	Primitive	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Endangered								
Snake River Sockeye (1,655,700)	2001 Rule	0 (0.00)	0 (0.00)	346,800 (20.95)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	24,490 (1.48)	34,410 (2.02)	133,350 (8.05)	44,300 (2.68)	89,490 (5.40)	0 (0.00)	20,330 (1.23)
	Proposed Rule	18,790 (1.13)	19,290 (1.17)	194,590 (11.75)	52,930 (3.20)	40,530 (2.45)	0 (0.00)	20,330 (1.23)
	Modified Rule	18,790 (1.13)	19,290 (1.17)	193,130 (11.66)	57,000 (3.44)	37,950 (2.29)	0 (0.00)	20,330 (1.23)
White Sturgeon (167,800)	2001 Rule	0 (0.00)	0 (0.00)	16,000 (9.56)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	0 (0.00)	2,060 (1.23)	11,850 (7.06)	2,090 (1.25)	10 (0.01)	0 (0.00)	30 (0.02)
	Proposed Rule	770 (0.46)	0 (0.00)	8,450 (5.04)	100 (0.06)	6,690 (3.99)	0 (0.00)	30 (0.02)
	Modified Rule	770 (0.46)	0 (0.00)	9,600 (5.72)	135 (0.08)	5,510 (3.28)	0 (0.00)	30 (0.02)
Threatened								
Snake River Basin Steelhead (11,533,768)	2001 Rule	0 (0.00)	0 (0.00)	3,133,800 (27.17)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	371,930 (3.22)	322,400 (2.80)	1,649,130 (14.30)	200,185 (1.74)	432,180 (3.75)	0 (0.00)	140,410 (1.22)
	Proposed Rule	408,260 (3.54)	314,025 (2.88)	1,922,460 (16.67)	230,400 (2.00)	73,470 (0.64)	314,025 (2.72)	140,410 (1.22)
	Modified Rule	470,670 (4.08)	316,140 (2.74)	1,858,240 (16.11)	231,420 (2.01)	81,430 (0.71)	26,110 (0.23)	140,410 (1.22)
Snake River Spring/Summer Chinook (10,512,900)	2001 Rule	0 (0.00)	0 (0.00)	2,980,900 (28.36)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	371,890 (3.54)	301,470 (2.87)	1,566,970 (14.91)	190,770 (1.81)	394,770 (3.74)	0 (0.00)	137,500 (1.31)
	Proposed Rule	408,230 (3.88)	289,600 (2.75)	1,818,360 (17.30)	209,030 (1.99)	73470 (0.70)	26,100 (0.25)	137,500 (1.31)
	Modified Rule	470,630 (4.48)	291,630 (2.77)	1,752,800 (16.67)	211,990 (2.02)	80,900 (0.77)	26,100 (0.25)	137,500 (1.31)
Snake River Fall-run Chinook (790,400)	2001 Rule	0 (0.00)	0 (0.00)	40,300 (5.10)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	0 (0.00)	130 (0.02)	24,770 (3.13)	11,650 (1.47)	3,740 (0.47)	0 (0.00)	10 (0.00)
	Proposed Rule	0 (0.00)	130 (0.02)	28,510 (3.61)	11,650 (1.47)	0 (0.00)	0 (0.00)	10 (0.00)
	Modified Rule	0 (0.00)	130 (0.02)	28,510 (3.61)	11,650 (1.47)	0 (0.00)	0 (0.00)	10 (0.00)

Species (range acres in Idaho)	Alternative	WLR	Primitive	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Bull Trout (16,746,380)	2001 Rule	0 (0.00)	0 (0.00)	5,581,500 (33.33)	0 (0.00)	0 (0.00)	0 (0.00)	0 0.00)
	Existing Plan	825,200 (4.93)	1,024,750 (6.12)	2,576,240 (15.38)	250,610 (1.50)	618,450 (3.69)	0 0.00)	214,460 (1.29)
	Proposed Rule	864,220 (5.16)	871,650 (5.20)	3,110,440 (18.57)	291,510 (1.74)	97,870 (0.58)	69,440 (0.41)	214,460 (1.28)
	Modified Rule	963,520 (5.75)	952,790 (5.69)	2,912,010 (17.44)	289,910 (1.73)	139,800 (0.83)	47,310 (0.28)	214,460 (1.28)

- *WLR – Wild Land Recreation; BCR – Backcountry/Restoration; BCR CPZ - Backcountry/Restoration community protection zone*
- *GFRG – General Forest, Rangeland and Grassland; SAHTS – Special Areas of Historic and Tribal Significance*
- *FPSA – Forest plan special areas*

Appendix B. Description of Current[24] Management Direction Relevant to Federally Listed Species

Aquatic Species

Three primary documents 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) (USDA, Forest Service and USDI, Bureau of Land Management 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) (USDA, Forest Service 1995) and;
3. Southwest Idaho Eco-group (Boise, Payette, and Sawtooth National Forests) land management plans (USDA, Forest Service 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 Idaho Roadless Areas and would result in benefits to all aquatic species and their habitats.

The Forest Service and BLM developed the Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho and Portions of California, known as PACFISH. PACFISH is intended to be an ecosystem-based, aquatic habitat and riparian-area management strategy for Pacific salmon, steelhead, and sea-run cutthroat trout habitat on lands administered by the two agencies and outside the area subject to implementation of the Northwest Forest Plan (USDA Forest Service, USDI Bureau of Land Management 1995). PACFISH amended Regional Guides, forest plans and land use plans by applying management measures for all ongoing and proposed or new projects that pose an unacceptable risk to anadromous fish involving the management of timber, roads, grazing, and other land uses.

The Inland Native Fish Strategy (INFISH) was developed by the Forest Service to provide an interim strategy for inland native fish in eastern Oregon and Washington, Idaho, western Montana and portions of Nevada (USDA, Forest Service 1995).

In 1995 PACFISH and INFISH amended the Forest Plans for all National Forests in the Columbia and Klamath River Basins. Forests in Idaho covered by the 1995 PACFISH and INFISH amendment include: Idaho Panhandle, Clearwater, Nez Perce, Boise, Payette, Sawtooth, Salmon-Challis, and Wallowa-Whitman. PACFISH and INFISH provide programmatic direction for management of lands administered by the USFS and BLM. Both PACFISH and INFISH are interim strategies intended to provide protection against extinction or further endangerment of fish stocks and intended to maintain long-term management options.

[24] As of August 7, 2008.

PACFISH and INFISH share similar goals, objectives, standards, and guidelines, which are collectively considered an Aquatic Conservation Strategy (ACS). Management direction is applied to all proposed and ongoing management activities for the mitigation of environmental effects relative to the ACS. There are seven general components of the PACFISH/INFISH ACS:

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 and priority 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.

In 2003 the Southwest Idaho Ecogroup (SWIG) comprised of the Boise, Payette, and Sawtooth National Forests revised their Forest Plans. The revised Forest Plans replaced the PACFISH and INFISH interim strategies. Biological Opinions provided by USFWS (May 30, 2003) and NOAA-Fisheries (June 9, 2003) for the revised Forest Plans replaced the PACFISH and INFISH Biological Opinions (USDI, Fish and Wildlife Service 2003; USDC, NOAA 2003).

The SWIE Forest Plans have an ACS that is very similar to the PACFISH and INFISH ACS. The SWIE ACS provides direction to maintain and restore characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. The eight components of the SWIE ACS include:

1. Goals to maintain and restore soil, water, riparian, aquatic (SWRA) resources
2. Watershed Condition Indicators for SWRA resources
3. Delineation of Riparian Conservation Areas (RCAs)
4. Objectives, standards, and guidelines for management of SWRA resources, including RCAs
5. Determination of Priority subwatersheds within subbasins
6. Multi-Scale analyses of subbasins and subwatersheds
7. Determination of the appropriate type of subwatershed restoration and prioritization
8. Monitoring and adaptive management provisions

Each of these components is discussed in detail in the Boise, Payette and Sawtooth Forest Plans (see the Forest Plan BA, Chapter 3, Aquatic Conservation Strategy – Eight Components) including their role in addressing reduction of threats associated with the factors of decline and/or their role in a comprehensive recovery and restoration strategy for listed fish species and their habitats. Any of these components has the potential to influence any of the factors of decline or the recovery/restoration strategy.

Terrestrial Species

The following information includes examples of the most relevant conservation direction for listed terrestrial wildlife species where such direction was referenced, but not outlined in the Biological Assessment. This information (e.g., objectives, goals, standards and guidelines) is not necessarily comprehensive in that most but not necessarily all possible standards, guidelines, objectives, and goals from all Idaho Forest Plans that are relevant to listed terrestrial wildlife species are included.

Canada Lynx

Lynx Conservation Assessment and Strategy (2000)

Conservation measures outlined in the LCAS include direction on the following:

- mapping lynx habitat and delineating Lynx Analysis Units (LAUs);
- desired conditions for lynx habitat quality, quantity, and configuration across the landscape and within LAUs;
- minimizing effects of management activities (e.g., timber harvest, recreation, livestock grazing).

Table B-1 summarizes both general and specific direction most relevant to timber harvest, road construction/reconstruction, and discretionary mining outlined in the LCAS (see the LCAS for a comprehensive list of measures). The only National Forest that is following only the LCAS is the Wallowa-Whitman, which has yet to amend or revise its Forest Plan to include lynx-specific guidance.

Table B-1. Existing conservation and management direction for Canada lynx outlined in the LCAS

Scale	Level	Pg	Measure
Conservation measures applicable to all programs and activities			
Programmatic	Standard	7-3	▪ Conservation measures will generally apply only to lynx habitat on federal lands within LAUs. ▪ Lynx habitat will be mapped using criteria specific to each geographic area to identify appropriate vegetation and environmental conditions. Primary vegetation includes those types necessary to support lynx reproduction and survival. It is recognized that other vegetation types that are intermixed with the primary vegetation will be used by lynx, but are considered to contribute to lynx habitat only where associated with the primary vegetation. Refer to glossary and description for each geographic area. ▪ To facilitate project planning, delineate LAUs. To allow for assessment of the potential effects of the project on an individual lynx, LAUs should be at least the size of area used by a resident lynx and contain sufficient year-round habitat. ▪ To be effective for the intended purposes of planning and monitoring, LAU boundaries will not be adjusted for individual projects, but must remain constant. ▪ Prepare a broad-scale assessment of landscape patterns that compares historical and current ecological processes and vegetation patterns, such as age-class distributions and patch size characteristics. In the absence of guidance developed from such an assessment, limit disturbance within each LAU as follows: if more than 30 percent of lynx habitat within a LAU is currently in unsuitable condition, no further reduction of suitable conditions shall occur as a result of vegetation management activities by federal agencies.

Scale	Level	Pg	Measure
Programmatic	Guidelines	7-3,4	▪ The size of LAUs should generally be 6,500–10,000 ha (16,000–25,000 acres or 25–50 square miles) in contiguous habitat, and likely should be larger in less contiguous, poorer quality, or naturally fragmented habitat. Larger units should be identified in the southern portions of the Northern Rocky Mountains Geographic Area (in Idaho from the Salmon River south, Oregon, Wyoming, and Utah) and in the Southern Rocky Mountains Geographic Area. ▪ In the west, we recommend using watersheds (e.g., 6th code hydrologic unit codes (HUCs) in more northerly portions of geographic areas, and 5th code HUCs in more southerly portions). In the east, terrestrial ecological units that have been delineated at the land type association or subsection level (e.g., LTAs or whatever scale most closely approximates the size of a lynx home range) may be an appropriate context for analysis. Coordinate delineation of LAUs with adjacent administrative units and state wildlife management agencies, where appropriate. ▪ Areas with only insignificant amounts of lynx habitat may be discarded, or lynx habitat within the unit incorporated into neighboring LAUs. Based on studies at the southern part of lynx range in the western U.S., it appears that at least 10 mi2 of primary vegetation should be present within each LAU to support survival and reproduction. The distribution of habitat across the LAU should consider daily movement distances of resident females (typically up to 3–6 miles). ▪ After LAUs are identified, their spatial arrangement should be evaluated. Determine the number and arrangement of contiguous LAUs needed to maintain lynx habitat well distributed across the planning area.
Project	Standard	7-4	▪ Within each LAU, map lynx habitat. Identify potential denning habitat and foraging habitat (primarily snowshoe hare habitat, but also habitat for important alternate prey such as red squirrels), and topographic features that may be important for lynx movement (major ridge systems, prominent saddles, and riparian corridors). Also identify non-forest vegetation (meadows, shrub-grassland communities, etc.) adjacent to and intermixed with forested lynx habitat that may provide habitat for alternate lynx prey species. ▪ Within a LAU, maintain denning habitat in patches generally larger than 5 acres, comprising at least 10 percent of lynx habitat. Where less than 10 percent denning habitat is currently present within a LAU, defer any management actions that would delay development of denning habitat structure. ▪ Maintain habitat connectivity within and between LAUs.
Timber management			
Project	Standard	7-5	▪ Management actions (e.g., timber sales, salvage sales) shall not change more than 15 percent of lynx habitat within a LAU to an unsuitable condition within a 10-year period. ▪ Following a disturbance, such as blowdown, fire, insects/pathogens mortality that could contribute to lynx denning habitat, do not salvage harvest when the affected area is smaller than 5 acres. Exceptions to this include: 1) Areas such as developed campgrounds; 2) LAUs where denning habitat has been mapped and field validated (not simply modeled or estimated), and denning habitat comprises more than 10% of lynx habitat within a LAU; in these cases, salvage harvest may occur, provided that at least the minimum amount is maintained in a well-distributed pattern (see glossary). ▪ In lynx habitat, pre-commercial thinning will be allowed only when stands no longer provide snowshoe hare habitat (e.g., self-pruning processes have eliminated snowshoe hare cover and forage availability during winter conditions with average snowpack). ▪ In aspen stands within lynx habitat in the Cascade Mountains, Northern Rocky Mountains and Southern Rocky Mountains Geographic Areas, apply harvest prescriptions that favor regeneration of aspen.

Scale	Level	Pg	Measure
Project	Guidelines	7-6	▪ Plan regeneration harvests in lynx habitat where little or no habitat for snowshoe hares is currently available, to recruit a high density of conifers, hardwoods, and shrubs preferred by hares. Consider the following: ▪ Design regeneration prescriptions to mimic historical fire (or other natural disturbance) events, including retention of fire-killed dead trees and coarse woody debris; ▪ Design harvest units to mimic the pattern and scale of natural disturbances and retain natural connectivity across the landscape. Evaluate the potential of riparian zones, ridges, and saddles to provide connectivity; and ▪ Provide for continuing availability of foraging habitat in proximity to denning habitat. ▪ In areas where recruitment of additional denning habitat is desired, or to extend the production of snowshoe hare foraging habitat where forage quality and quantity is declining due to plant succession, consider improvement harvests (commercial thinning, selection, etc). Improvement harvests should be designed to: ▪ Retain and recruit the understory of small diameter conifers and shrubs preferred by hares; ▪ Retain and recruit coarse woody debris, consistent with the likely availability of such material under natural disturbance regimes; and ▪ Maintain or improve the juxtaposition of denning and foraging habitat. ▪ Provide habitat conditions through time that support dense horizontal understory cover, and high densities of snowshoe hares. This includes, for example, mature multi-storied conifer vegetation in the west and patches of aspen with dense conifer understory in the east. Focus vegetation management, including timber harvest and use of prescribed fire, in areas that have potential to improve snowshoe hare habitat (dense horizontal cover) but that presently have poorly developed understories that have little value to snowshoe hares.
Forest/ backcountry roads and trails			
Programmatic	Standard	7-10	On Federal lands in lynx habitat, allow no net increase in groomed or designated over-the-snow routes and snowmobile play areas by LAU. Winter logging activity is not subject to this restriction.
Programmatic	Guidelines	7-10	▪ Determine where high total road densities (>2 miles per square mile) coincide with lynx habitat, and prioritize roads for seasonal restrictions or reclamation in those areas. ▪ Minimize roadside brushing in order to provide snowshoe hare habitat. ▪ Locate trails and roads away from forested stringers. ▪ Limit public use on temporary roads constructed for timber sales. Design new roads, especially the entrance, for effective closure upon completion of sale activities. ▪ Minimize building of roads directly on ridgetops or areas identified as important for lynx habitat connectivity.
Other human developments: oil and gas leasing, mines, reservoirs, agriculture			
Programmatic	Guidelines	7-11	Map oil and gas production and transmission facilities, mining activities and facilities, dams, and agricultural lands on public lands and adjacent private lands, in order to assess cumulative effects.
Project	Standards	7-12	On projects where over-snow access is required, restrict use to designated routes.

Scale	Level	Pg	Measure
Project	Guidelines	7-12	▪ If activities are proposed in lynx habitat, develop stipulations for limitations on the timing of activities and surface use and occupancy at the leasing stage. ▪ Minimize snow compaction when authorizing and monitoring developments. Encourage remote monitoring of sites that are located in lynx habitat, so that they do not have to be visited daily. ▪ Develop a reclamation plan (e.g., road reclamation and vegetation rehabilitation) for abandoned well sites and closed mines to restore suitable habitat for lynx. ▪ Close newly constructed roads (built to access mines or leases) in lynx habitat to public access during project activities. Upon project completion, reclaim or obliterate these roads.

Northern Rockies Lynx Amendment (2007)

Table B-2 summarizes both general and specific direction most relevant to timber harvest, road construction/reconstruction, and discretionary mining outlined in the Northern Rockies Lynx Amendment relevant to the following national forests: Bitterroot, Clearwater, Kootenai, Idaho-Panhandle, Nez Perce, Salmon-Challis, and Targhee. This direction is based on the LCAS, although some changes were made to reflect new information.

Table B-2. Existing conservation and management direction for Canada lynx outlined in the Northern Rockies Lynx Amendment

Scale	Level	Pg	Measure
All management practices and activities			
Project	Standards	ROD Attachment 1 - 1	▪ New or expanded permanent development and vegetation management projects must maintain habitat connectivity in an LAU21 and/or linkage area. ▪ Changes in LAU21 boundaries shall be based on site-specific habitat information and after review by the Forest Service Regional Office.
Project	Guidelines	ROD Attachment 1 - 1	Methods to avoid or reduce effects on lynx should be used when constructing or reconstructing highways or forest highways across federal land. Methods could include fencing, underpasses, or overpasses.

Scale	Level	Pg	Measure
Vegetative management and practices			
Project	Standards	ROD Attachment 1 - 2-4	▪ Where and to what this applies: Standard VEG S6 applies to all vegetation management projects except for fuel treatment projects within the wildland urban interface (WUI) as defined by HFRA17, subject to the following limitation: Fuel treatment projects within the WUI50 that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 shall occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). ▪ If more than 30 percent of the lynx habitat in an LAU is currently in a stand initiation structural stage that does not yet provide winter snowshoe hare habitat, no additional habitat may be regenerated by vegetation management projects. ▪ Timber management projects shall not regenerate more than 15 percent of lynx habitat on NFS lands within an LAU in a ten-year period. ▪ Precommercial thinning projects that reduce snowshoe hare habitat may occur from the stand initiation structural stage until the stands no longer provide winter snowshoe hare habitat only: 1. Within 200 feet of administrative sites, dwellings, or outbuildings; or 2. For research studies or genetic tree tests evaluating genetically improved reforestation stock; or 3. Based on new information that is peer reviewed and accepted by the regional level of the Forest Service, and state level of FWS, where a written determination states: a. that a project is not likely to adversely affect lynx; or b. that a project is likely to have short term adverse effects on lynx or its habitat, but would result in long-term benefits to lynx and its habitat; or 4. For conifer removal in aspen, or daylight thinning around individual aspen trees, where aspen is in decline; or 5. For daylight thinning of planted rust-resistant white pine where 80 % of the winter snowshoe hare habitat is retained; or 6. To restore whitebark pine. ▪ Vegetation management projects that reduce snowshoe hare habitat in multi-story mature or late successional forests may occur only: 1. Within 200 feet of administrative sites, dwellings, outbuildings, recreation sites, and special use permit improvements, including infrastructure within permitted ski area boundaries; or 2. For research studies or genetic tree tests evaluating genetically improved reforestation stock; or 3. For incidental removal during salvage harvest (e.g. removal due to location of skid trails).
Project	Guidelines	ROD Attachment 1 – 4-5	▪ Vegetation management projects should be planned to recruit a high density of conifers, hardwoods, and shrubs where such habitat is scarce or not available. Priority for treatment should be given to stem-exclusion, closed-canopy structural stage stands to enhance habitat conditions for lynx or their prey (e.g. mesic, monotypic lodgepole stands). Winter snowshoe hare habitat should be near denning habitat. ▪ Prescribed fire activities should not create permanent travel routes that facilitate snow compaction. Constructing permanent firebreaks on ridges or saddles should be avoided. ▪ Habitat for alternate prey species, primarily red squirrel, should be provided in each LAU. ▪ Fuel treatment projects within the WUI50 as defined by HFRA17 should be designed considering Standards VEG S1, S2, S5, and S6 to promote lynx conservation. ▪ Denning habitat should be distributed in each LAU in the form of pockets of large amounts of large woody debris, either down logs or root wads, or large piles of small wind thrown trees ("jack-strawed" piles). If denning habitat appears to be lacking in the LAU, then projects should be designed to retain some coarse woody debris, piles, or residual trees to provide denning habitat in the future.
Human use projects			

Scale	Level	Pg	Measure
Project	Guidelines	ROD Attachment 1 – 6-8	▪ When developing or expanding ski areas, provisions should be made for adequately sized inter-trail islands that include coarse woody debris, so winter snowshoe hare habitat is maintained. ▪ When developing or expanding ski areas, lynx foraging habitat should be provided consistent with the ski area's operational needs, especially where lynx habitat occurs as narrow bands of coniferous forest across mountain slopes. ▪ Recreation developments and operations should be planned in ways that both provide for lynx movement and maintain the effectiveness of lynx habitat. ▪ For mineral and energy development sites and facilities, remote monitoring should be encouraged to reduce snow compaction. ▪ For mineral and energy development sites and facilities that are closed, a reclamation plan that restores lynx habitat should be developed. ▪ Methods to avoid or reduce effects on lynx should be used in lynx habitat when upgrading unpaved roads to maintenance levels 4 or 5, if the result would be increased traffic speeds and volumes, or a foreseeable contribution to increases in human activity or development. ▪ New permanent roads should not be built on ridge-tops and saddles, or in areas identified as important for lynx habitat connectivity. New permanent roads and trails should be situated away from forested stringers. ▪ Cutting brush along low-speed, low-traffic-volume roads should be done to the minimum level necessary to provide for public safety. ▪ On new roads built for projects, public motorized use should be restricted. Effective closures should be provided in road designs. When the project is over, these roads should be reclaimed or decommissioned, if not needed for other management objectives. ▪ When developing or expanding ski areas and trails, consider locating access roads and lift termini to maintain and provide lynx security habitat, if it has been identified as a need. ▪ Designated over-the-snow routes or designated play areas should not expand outside baseline areas of consistent snow compaction1, unless designation serves to consolidate use and improve lynx habitat. This may be calculated on an LAU basis, or on a combination of immediately adjacent LAUs. This does not apply inside permitted ski area boundaries, to winter logging, to rerouting trails for public safety, to accessing private inholdings, or to access regulated by Guideline HU G12. Use the same analysis boundaries for all actions subject to this guideline. ▪ Winter access for non-recreation special uses and mineral and energy exploration and development, should be limited to designated routes8 or designated over-the snow routes.

Southwest Idaho Forest Plans

Table B-3 summarizes both general and specific direction most relevant to timber harvest, road construction/reconstruction, and discretionary mining outlined in the revised LRMPs for the Southwest Idaho Ecogroup: Boise, Payette, and Sawtooth National Forests. Again, this direction is based on principles outlined in the LCAS.

Table B-3. Existing conservation and management direction for Canada lynx outlined in the revised LRMPs for the Boise, Payette, and Sawtooth National Forests

Scale	Level	Pg	Measure
Project	Standard	III-12	▪ Mitigate, through avoidance or minimization, management actions within known nest or denning sites of TEPC species if those actions would disrupt reproductive success during the nesting or denning period. During project planning, determine sites, periods, and appropriate mitigation measures to avoid or minimize effects. ▪ Mitigate, through avoidance or minimization, management actions within known winter roosting sites of TEPC species if those actions would adversely affect the survival of wintering or roosting populations. During project planning, determine sites, periods, and appropriate mitigation measures to avoid or minimize effects. ▪ Vegetative management activities within lynx foraging habitat in LAUs shall not degrade, nor retard attainment of desired habitat for the lynx and its prey except: a) Within 200 feet of Forest Service administrative sites, dwellings, and/or associated outbuildings as needed to reduce risk of loss from wildfire. b) Research studies and genetic tests (i.e., performance tests, long-term field tests and realized gain trials) necessary to evaluate genetically improved reforestation stock. c) Within the wildland urban interface in order to develop or maintain fuel profiles that are necessary to reduce the risk of wildfire. d) Where outweighed by demonstrable short- or long-term benefits to lynx and its prey habitat conditions. ▪ This standard does not apply to activities that are not vegetation management proposals that may affect vegetation, such as removal of vegetation for ski runs, mineral extraction, etc. ▪ Unless a broad-scale assessment has been completed that substantiates different historical levels of unsuitable habitat, limit disturbance within each LAU as follows: If more than 30 percent of lynx habitat within a LAU is currently in unsuitable condition, no additional habitat may be changed to unsuitable habitat as a result of vegetative management projects. Fire use, or fire hazard reduction and associated vegetation management activities within the wildland urban interface watersheds, that develop or maintain fuel profiles needed to reduce the risk of wildfire threats to the wildland urban interface areas, are NOT bound by this standard. ▪ Lynx LAU boundaries will not be adjusted except through consultation with US Fish and Wildlife Service.

Woodland Caribou

Idaho Panhandle Land and Resource Management Plan

Table B-4. Goals, objectives, standards and guidelines outlined in the IPNF LRMP (1987) that could minimize impacts to woodland caribou.

Scale	Level	Pg	Measure
Programmatic - Forestwide	Goal	II-1	▪ Provide for a diversity of plan and animal communities ▪ Manage vertebrate wildlife habitat to maintain viable populations of all species. ▪ Manage big game habitat toward a achieving the goals of the Idaho Department of Fish and Game. ▪ Manage the habitat of animal and plant species listed under the Endangered Species Act to provide for recovery as outlined in the species recovery or management plans. Manage habitat to maintain populations of identified sensitive species of animals and plants.
	Objective	II-5 to 6	▪ To help provide for a diversity of plant and animal communities, habitats, and species, standards for old growth maintenance will be established. Approximately 10% of the Forest will be maintained in old growth as needed to provide for viable populations of old-growth dependent and management indicator species. To obtain the desired distribution, the IPNF will be managed to maintain approximately 5% of each old-growth unit as old growth where it exists. ▪ The goal for threatened and endangered species is to contribute to the conservation and recovery of the listed species on the Forest (grizzly bear, woodland caribou, gray wolf, peregrine falcon, and bald eagle). Sensitive species will be managed to assure adequate populations to prevent the need for federal listing. Grizzly bear management will emphasize maintenance of adequate security in conjunction with providing the seasonal vegetative habitat components. Road management and scheduling of Forest activities will be the primary management scheme. Woodland caribou management will emphasize providing adequate seasonal habitat needs and protection from direct mortality. Primary management emphasis will be maintenance of closed canopy old-growth cedar-hemlock on early winter ranges, and providing arboreal lichen production on mid and late winter ranges. Gray wolf management will emphasize maintenance of travel corridors in the upper reaches of the Coeur d'Alene and St. Joe river drainages.
	Forest Standard	II-27 to 38	Threatened and Endangered Species ▪ .Management of habitat and security needs for threatened and endangered (T & E) species will be given priority in identified habitat. Results of research regarding habitat of T & E species will be incorporated into management direction as it becomes available. ▪ Biological evaluations will be done on any project likely to have an adverse effect on identified habitats of threatened or endangered animals. ▪ Current direction for management of T & E species will be amended or revised to ensure conformance with Species Recovery Plans. ▪ Actively initiate and participate in an information/education program to promote a better understanding of endangered species conservation and recovery both within and outside the Forest Service. Caribou ▪ Consider cumulative effects when evaluating activities within identified habitat (Appendix HH, available upon request). ▪ Cooperate in implementation of the Selkirk Mountain Caribou Management Plan/Recovery Plan (Appendix T, available upon request). Old-Growth Habitat Management ▪ A definition for old growth is being developed by a Regional Task Force and will be used by the Forest when completed. As an interim guideline, stands classified as old growth should meet the definition given by Thomas (1979). ▪ Maintain at least 10% of the forested portion of the IPNF as old growth. ▪ Select and maintain at least five percent of the forested portion of those old-growth units that have five percent or more existing old growth. Areas will be selected as old-growth management stands based on a combination of wildlife, cost efficiency, and other resource values (interdisciplinary process). Existing old growth classified as unsuitable for timber management will be given priority for selection. ▪ .Existing old-growth stands may be harvested when there is more than 5 percent in an

Scale	Level	Pg	Measure
			old-growth unit, and the Forest total is more than 10 percent. ▪ Old-growth stands should reflect approximately the same habitat type series distribution as found on the IPNF. ▪ One or more old-growth stands per old-growth unit should be 300 acres or larger. Preference should be given to a contiguous stand; however, the stand may be subdivided into stands of 100 acres or larger if the stands are within one mile. The remaining old-growth management stands should be at least 25 acres in size. Preferred size is 80 plus acres. ▪ Roads should be planned to avoid old-growth management stands to maintain unit size criteria. ▪ Existing grazing allotments will be honored; however, a long-term objective should be to minimize or exclude domestic grazing within old-growth stands. New allotments in old-growth stands will not be issued. ▪ Goals for lands to be managed as old-growth within those lands suitable for timber production are identified in the management area prescriptions. Fire ▪ The appropriate suppression response for designated old-growth stands in all management areas except in wilderness will result in preventing the loss of old growth. Fire policy in relation to old growth within wilderness will be provided in specific management direction developed for each wilderness area.
▪ Management Areas			
Management Area 1	Goals	III-2	▪ Includes several goals related to timber production, including to provide for wildlife habitat.
	Standards	III-3	Road Operations ▪ Road use will be based on needs identified in project level planning. Utilize road use restrictions to enhance wildlife habitat except as needed for timber management activities. Old-Growth ▪ Maintain approximately 25,000 acres to support viable populations of old-growth dependent species.
Management Area 2	Goals	III-7	▪ Manage identified grizzly bear habitat to support a recovered grizzly bear population while providing for the long-term growth and production of commercially valuable wood products.
	Standards	III-8 to 9	Road Management ▪ 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. Old-Growth ▪ Maintain approximately 6,000 acres to support viable populations of old-growth dependent species. Facilities ▪ Utilize the lowest standard road meeting transportation objectives compatible with resource protection requirements and area management goals.
Management Area 3	Goals	III-12	▪ Manage identified grizzly bear habitat to support the Idaho Panhandle National Forests' share of a recovered grizzly bear population (25 animals) while providing sufficient winter forage to support projected big game populations through scheduled timber harvest and: o Reduce the potential for wildlife/human conflict o Provide opportunities for dispersed recreation consistent with wildlife habitat needs.
	Standards	III-12 to 14	Recreation ▪ Manage trails to avoid areas critical to grizzly bear recovery. Trail use restrictions may be necessary to reduce bear/human conflicts. Road Management ▪ Road use will be based on needs identified in project level planning. Additional restrictions and seasonal closures as needed to assure grizzly bear security. Grizzly Bear ▪ Manage grizzly bear habitat in accordance with Interagency Grizzly Bear Guidelines and approved recovery plans. Evaluate cumulative effects of management practices within each bear unit.

Scale	Level	Pg	Measure
			▪ Silvicultural treatments will be used to improve grizzly habitat and aid in achieving bear recovery goal. Old-Growth ▪ Maintain approximately 400 acres to support viable populations of old-growth dependent species. ▪ Timber ▪ …Timber harvest scheduling will be used to maintain grizzly bear security within each bear unit and provide big game winter range requirements.
Management Area 4	Goals	III-17	▪ Manage big game winter range to provide sufficient forage to support projected big game habitat needs, through scheduled timber harvest and permanent forage areas and: o Provide for opportunities for dispersed recreation consistent with wildlife habitat needs.
	Standards	III-17 to 19	Recreation ▪ Motorized use is generally restricted to designated routes. Within critical habitat components, motorized recreation use may be restricted to provide needed wildlife security. Fish and Wildlife ▪ Road use will be based on needs identified in project level planning. Closures as needed to meet wildlife habitat needs. ▪ Maintain approximately 4,000 acres to support viable populations of old-growth dependent species. ▪ Timber harvest scheduling will be used to provide winter range requirements. Consistent with the visual quality objectives, use prescribed fire on existing forage areas and establish new forage areas (permanent openings) as needed to meet existing and projected big game populations. Through site-specific project analysis up to 20 percent of the management area may be developed and/or maintained as permanent forage areas. Maintain needed thermal cover areas. ▪ Within whitetail deer winter range management will emphasize the use of smaller cutting units. Winter cover will be emphasized within winter range in the Priest River drainage. ▪ Within identified moose winter range, management will emphasize habitat needs, including maintenance of pacific yew stands within the St. Joe River drainage where it is determined to be critical to maintenance of the habitat.
Management Area 7	Goals	III-33	▪ Manage caribou habitat to provide a proper mix of seasonal habitats needed to support the National Forests' share of a recovered Selkirk woodland caribou population, and: ▪ Reduce the potential for caribou and/or grizzly bear conflicts with human activities; ▪ Provide cost effective timber production consistent with caribou habitat management;
	Standards	III-33 to 36	Recreation ▪ Manage for roaded natural, and, where possible, toward semi-primitive motorized and non- motorized recreation. Restrict motorized use when needed to protect caribou. ▪ Seasonal closures of some or all uses may be needed to protect caribou or grizzly bears. Wildlife and Fish ▪ Provide seasonal habitat requirements in accordance with the Caribou Habitat Management Guidelines (Appendix N) and approved recovery plans. ▪ Retain and manage established caribou travel corridors that occur in mature timber. ▪ 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. Timber ▪ 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. ▪ Silvicultural treatments to achieve desired stand conditions for caribou habitat management are included in the Caribou Habitat Management Guidelines (Appendix N). Harvest scheduling will be used to provide security within grizzly habitat. ▪ Planting will be used as needed to meet silvicultural and caribou habitat management objectives as prescribed in the stand Silvicultural Prescription… Reforest with species compatible or beneficial to caribou habitat needs. ▪ Precommercial thinning will be used in conjunction with the level of management

Scale	Level	Pg	Measure
			intensity and caribou habitat. Facilities ▪ Road construction through old-growth cedar/hemlock stands should be limited to those instances in which no other reasonable access to stands to be harvested is available. Snow roads are encouraged where possible. Minerals ▪ Operating plans and permits will emphasize road closures and caribou habitat mitigation needs such as coordination and scheduling activities with other resource users. Protection ▪ Contain and control fires within the management area to prevent loss of coniferous species in all size classes. A Fire Management Action Plan will be developed to include protection measures for maintenance of desired caribou habitat prescriptions.
Management Area 9	Goals	III-39	▪ Manage National Forest lands to maintain and protect existing improvements and resource productive potential and meet visual quality objectives.
	Standards	III-39	Facilities ▪ Road Construction and Reconstruction - No local road construction is planned. Construction of arterials and collectors permitted as needed to access adjacent areas. ▪ Road Operations - Existing local roads will generally be closed to vehicles over 40 inches wide. Arterials and collector can be either intermittent or constant service as needed to meet other resource needs and management goals of adjacent areas.
Management Area 10	Goals	III-42	▪ Manage the individual areas to provide a semi-primitive recreation experience and: o Provide for grizzly bear and caribou habitat needs where identified habitat overlaps occur
	Standards	III-43 to 45	Recreation ▪ Within grizzly bear and caribou habitat, recreational use may be restricted to provide needed wildlife security during periods of use. Wildlife and Fisheries ▪ Habitat Improvement - Allow prescribed burning on existing forage areas and/or revegetate to preferred wildlife forage species. ▪ New forage area will meet objectives of the visual and recreational resources. ▪ Pursue fish habitat improvement projects. ▪ Within grizzly bear habitat, manage habitat in accordance with Interagency Grizzly Bear Guidelines and approved recovery plans. Implement grizzly bear information/education efforts with permittees, user groups, employees and local communities. Timber ▪ No regulated timber harvest, forest land is classed as unsuitable for timber production. Facilities ▪ Road Construction - No roads will be constructed within the management area except for those few cases where primitive roads may be built to improve the semi-primitive recreation experience. ▪ Roads at the boundaries of these areas will be managed, maintained, and modified to meet overall transportation objectives.
Management Area 11	Goals	III-48	Manage the classified Salmo-Priest Wilderness to protect wilderness characteristics pending completion of the specific management direction. Manage those lands proposed for wilderness to protect their wilderness characteristics pending a Congressional decision…
	Standards	III-48 to 50	Recreation ▪ Within grizzly bear and caribou habitat, recreation use and access may be restricted to provide needed wildlife security during use periods. Wildlife and Fish ▪ Habitat Improvement - Using prescribed fire with both planned and unplanned ignitions to maintain brushfields which may be beneficial to wilderness values in key wildlife winter range areas if other resource values are adequately protected. Timber ▪ Timber harvest will not be permitted; forest land is classed as unsuitable for timber production. ▪ Facilities ▪ Road Construction and Reconstruction - No new roads will be built. Roads at the

<table>
<tr><th>Scale</th><th>Level</th><th>Pg</th><th>Measure</th></tr>
<tr><td></td><td></td><td></td><td>boundaries of these areas will be managed, maintained, and modified as necessary to meet overall transportation objectives in an environmentally sound manner.</td></tr>
<tr><td rowspan="2">Management Area 12</td><td>Goals</td><td>III-52</td><td>Manage the rivers and their immediate environments to preserve their free flowing condition. The St. Joe River is to be managed in accordance with the Development and Management Plan (Appendix Z available upon request). The Upper Priest River portion will be managed to preserve its Wild River attributes pending Congressional decision…</td></tr>
<tr><td>Standards</td><td>III-52 to 54</td><td>Recreation
▪ Trail management – within the Upper Priest Wild River uses will be limited to non-motorized except on established roads.
Wildlife and Fisheries
▪ Management within the Upper Priest Wild River and the Wild River portion of the St. Joe, allow natural successional changes. Vegetative manipulations including prescribed fire will be used to maintain and enhance big game winter ranges within the recreation portion of the St. Joe.
Facilities
▪ No new roads will be allowed in the Wild River portion. Road construction within the recreation section shall conform to direction provided in the Development and Management Plan</td></tr>
<tr><td colspan="4">Appendix N - The following guidelines will be used to guide the preparation of silvicultural prescriptions necessary to provide the seasonal habitat with identified caribou habitat. Each seasonal habitat is described by the physical site, the target stand, and the treatments designed to achieve the target stand. These guidelines are currently considered outdated as new information on some seasonal habitats have not yet been included (Audet, personal communication, August 6, 2008).</td></tr>
<tr><td colspan="4">Guidelines- SEASONAL HABITATS</td></tr>
<tr><td colspan="4">SUMMER
Physical Site
▪ 20 percent plus slopes
▪ Lower 2/3 of slope, with valley bottoms and lower 1/3 of slopes preferred; does not include primary and secondary ridgetops
▪ All aspects
▪ Subalpine fir habitat type series, with most use in ABLA/CLUN, ABLA/MEFE, ABLA/RHAL, ABLA/STAM habitat types
Target Stand
▪ Overstory predominantly spruce/subalpine fir mixture
▪ Mature stand
▪ 40-70 percent crown closure
▪ 14 inches plus average d.b.h. of dominant and codominant trees
▪ Understory includes abundant Vaccinium, forbs, grasses, and sedges
Treatments - Even-aged Management:
▪ A minimum of 25 percent of these physical sites will be maintained in target stand condition at all times.
▪ Maintain stocking controls so that canopy closure remains between 40 and 70 percent when stand is in the sawtimber size classes. (precommercial thinning and at least 1 commercial thin will generally be necessary).
Regeneration harvest:
▪ prior to stand becoming overmature (if there is a problem in age class distribution that prevents meeting the 25 percent minimum in target stand condition at any given time, fill in with overmature stands before initiating regeneration harvest)
▪ will not generally occur prior to time that average diameter of dominants and codominants has exceeded 14 inches for at least 1/4 of the rotation
▪ rotation will generally be in 120-160 year range.
▪ site preparation - light broadcast burn generally preferred to encourage Vaccinium regeneration (spring burns desirable where feasible); avoid dozer piling; protect Vaccinium rhizomes.
▪ Regeneration will favor spruce/subalpine fir. Planting is an alternative. Consider likelihood of natural subalpine fir regeneration of these sites. Lodgepole is not desirable.</td></tr>
<tr><td colspan="4">LATE SUMMER
Physical Site
▪ 0-20 percent slopes - Valley bottoms, benches, and lower 1/4 slope
▪ North aspects favored, but all aspects will be used,
▪ Subalpine fir habitat type series, with most use in ABLA/STAM, ABLA/CACA, ABLA/MEFE, and ABLA/RHAL habitat types.
▪ Seeps, basins, and riparian areas are key,
Target Stand
▪ Overstory predominantly spruce/subalpine fir
▪ All aged stand</td></tr>
</table>

Scale	Level	Pg	Measure

- 40-100 percent crown closure in trees greater than 30 feet tall.
- Overstory dominants and codominants 21 inches plus d.b.h.
- Understory includes abundant Vaccinium forbs, sedges, and evergreen forbs and shrubs.

Treatments - Uneven-aged Management

- Maintain canopy closure between 40 and 100 percent in trees over 30 feet tall.
- Approximate 20-year re-entry cycle.
- Maintain a significant component of 21 inches plus trees.
- Both individual tree and group selections are suitable.
- Use precommercial thinning t o avoid developing dense thickets of regeneration (goal is to maximize diameter growth within canopy closure limits).
- Avoid fuels buildups that inhabit free movement of caribou
- Spot site preparation that protects thin-barked spruce/subalpine fir.
- Site preparation and other treatments will favor Vaccinium and development of forbs, sedges, and evergreen forbs and shrubs.
- In stands that are presently even-aged, very light cuts on initial entry may be necessary t o initiate this management scheme.

LATE WINTER

Physical Site

- 0-40 percent slopes on south and west aspects; 0-15 percent slopes on north and east aspects.
- Upper 1/3 of slopes and ridgetops.
- Subalpine fir and high elevation habitat type series, with most use in ABLA/XETE, ABLA/LUHI, PIAL-ABLA, LALY-ABLA habitat types.

Target Stand

- Subalpine fir, spruce, and whitebark pine dominate
- Immature to over – mature stands
- 10-50 percent crown closure
- 8 inches plus average d.b.h. on dominant and codominant trees
- Lichens necessary

Treatments

- These sites are calving habitat during June to mid-July; disturbance will be restricted during this time period.
- The majority of these sites are outside of commercial timber production areas, and timber management activities are not anticipated. Natural processes generally produce the target stands desired. A few of these stands may occur of lands that are tentatively suitable for timber management, and uneven-aged management will take place there.

Uneven-aged management:

- Maintain canopy closure between 30 and 50 percent in trees over 20 feet tall.
- 20 plus year re-entry cycle,
- Maintain a significant component of 8 inches plus d.b.h. trees.
- Both individual tree and group selection are suitable
- Use precommercial thinning t o avoid developing dense thickets of regeneration (goal is to develop open stand with maximum lichen growth on trees at levels that can be reached by caribou on winter snow pack).

SPRING

Physical Sites

- All slopes are used, although 0-35 percent slopes are key.
- Lower 1/3 of slope and valley bottoms used heavily, with minor use on upper slopes.
- South and west aspects are key.
- Hemlock and cedar habitat type series.

Target Stands

- Tree species composition not important.
- Early successional stages with and without scattered overstory (seedling/sapling stands prior to canopy closure) are key.
- Less than 45 percent crown closure
- Abundant spring forage available (Vaccinium, Valeriana, Streptopus, Luzula, Lonicera, Bromus vulgaris, etc).
- 0-25 years following major disturbance should provide good spring range.

Treatments

- 40 percent of the cedar/hemlock zone in caribou habitat will be managed as spring range, with priority given t o south and west aspects.

Even-aged management:

- Site preparation by prescribed burning t o maximize early forage response.
- Natural or artificial regeneration both suitable

Scale	Level	Pg	Measure

- Precomrnercial thin early to maintain good forage production for at least 25 years.
- 80 year rotations
- Area control so that within each caribou management unit approximately 25 percent of sites being managed a s spring range (emphasis on south and west aspects) meet spring target stand condition at any time.
- In the cedar/hemlock zone, where there is a conflict between meeting spring range and early winter range targets, early winter range needs will have priority.

EARLY WINTER

Physical Sites

- \- Slopes less than 80 percent used; 0-40 percent slopes preferred.
- \- Middle and lower 1/3 slopes are key; all are used.
- \- Hemlock and cedar habitat types, including ecotone with subalpine fir zone.
- \- North and east aspects key (south and west aspects in these habitat types will also be used with emphasis on those stands that are already approaching target stand condition).

Target Stands

- Overmature and old-growth stands - all-aged stands (climax forest) - - these are key - mature stands may be useable if other attributes are all present.
- More than one canopy layer is desirable.
- Hemlock and cedar overstory in major part of the cedar/hemlock zone; variable amounts of subalpine fir/spruce in overstory at the ecotone.
- Greater than 70 percent crown closure in trees greater than 30 feet tall.
- Dominant and codominant trees average greater than 21 inches d.b.h. minimum, and greater than 30 inches is desirable.
- Major goal is stand structure that minimizes early winter snow depths.
- Edge effect to provide forage may be beneficial where it does not significantly detract from other attributes.
- Lichen availability beneficial.

Treatments

- Existing old-growth all-aged stands that meet target stand conditions will not be entered for at least the first two decades. Target is 60 percent of cedar hemlock zone in old-growth cedar/hemlock cover types (with a subalpine fir/spruce component at the ecotone) Optimum level management for caribou would actively pursue converting seral species to cedar/hemlock cover types through even-aged or uneven-aged management. If cedar hemlock are not on the site, and it is the fastest way to attain target stand conditions, some type conversion may require even-aged harvest systems, and may include planting of desired species. Where uneven-aged management is the most efficient way to reach target stand conditions the following guidelines will be applied.

Uneven-aged Management:

- Over most of the area, maintain greater than 70 percent crown closure in trees taller than 30 feet.
- Approximately 20 to 30 year re-entry cycle.
- Both group and single tree selections are applicable, with groups less than 1 acre in size.
- Precommercial thinning in groups will generally be 10x10 feet or tighter to encourage understory canopy development and minimize early season snow depths.
- Site preparation generally not necessary.
- Slash disposal may be necessary t o reduce travel barriers; any burning must protect young cedar and hemlock components.
- Late fall/early winter logging desirable.
- Treatments should encourage stand dominated by hemlock and cedar.
- Target stand has a significant overstory component in 30 inches plus trees; set upper diameter cutting limit to meet this goal.

Grizzly Bear

Idaho Panhandle Land and Resource Management Plan

Table B-5. Goals, objectives, standards, and guidelines relevant to grizzly bear conservation outlined in the IPNF LRMP.

Scale	Level	Pg	Measure
Programmatic Forestwide	Goal	II-1	▪ Provide for a diversity of plan and animal communities. ▪ Manage vertebrate wildlife habitat to maintain viable populations of all species. ▪ Manage big game habitat toward a achieving the goals of the Idaho Department of Fish and Game. ▪ Manage the habitat of animal and plant species listed under the Endangered Species Act to provide for recovery as outlined in the species recovery or management plans. Manage habitat to maintain populations of identified sensitive species of animals and plants.
	Objective	II-6	▪ To help provide for a diversity of plant and animal communities, habitats, and species, standards for old growth maintenance will be established. Approximately 10% of the Forest will be maintained in old growth as needed to provide for viable populations of old-growth dependent and management indicator species. To obtain the desired distribution, the IPNF will be managed to maintain approximately 5% of each old-growth unit as old growth where it exists. ▪ The goal for threatened and endangered species is to contribute to the conservation and recovery of the listed species on the Forest (grizzly bear, woodland caribou, gray wolf, peregrine falcon, and bald eagle). Sensitive species will be managed to assure adequate populations to prevent the need for federal listing. Grizzly bear management will emphasize maintenance of adequate security in conjunction with providing the seasonal vegetative habitat components. Road management and scheduling of Forest activities will be the primary management scheme….
	Standard	II-27	Threatened and Endangered Species ▪ .Management of habitat and security needs for threatened and endangered (T & E) species will be given priority in identified habitat. Results of research regarding habitat of T & E species will be incorporated into management direction as it becomes available. ▪ Biological evaluations will be done on any project likely to have an adverse effect on identified habitats of threatened or endangered animals. ▪ Current direction for management of T & E species will be amended or revised to ensure conformance with Species Recovery Plans. ▪ Actively initiate and participate in an information/education program to promote a better understanding of endangered species conservation and recovery both within and outside the Forest Service. Grizzly Bear ▪ Manage grizzly bear habitat according to the Interagency Grizzly Bear Guidelines (Appendix U, available upon request). ▪ Implement the Cumulative Effects Model as the method for evaluating activities within identified habitat (Appendix V, available upon request). ▪ Strive for at least 70 square miles of security or established threshold level for each grizzly bear management unit in accordance with Identified Ecosystems, Appendix "North Idaho Grizzly Bear Ecosystems."
Management Area 2, 3	Goal	III-7 to	▪ Manage identified grizzly bear habitat to support a recovered grizzly bear population while providing for the long-term growth and production of commercially valuable wood products…(Management Area 2). ▪ Manage identified grizzly bear habitat to support the Idaho Panhandle National Forest's share of a recovered grizzly bear population (25 animals) while providing sufficient winter forage to support projected big game populations through scheduled timber harvest…(Management Area 3)

Scale	Level	Pg	Measure
	Standards		▪ Maintain a diversity of recreation opportunities. Restrictions may be necessary to reduce bear/human conflicts. ▪ Manage trails to avoid areas of critical grizzly bear habitat. Trail use restrictions may be necessary to reduce bear/human conflict. ▪ Facilities - Utilize the lowest standard road meeting transportation objectives compatible with resource protection requirements and area management goals. ▪ Road use will be based on needs identified in project level planning. Additional restrictions and seasonal closures as needed to assure grizzly bear security. ▪ Management grizzly bear habitat in accordance with Interagency Grizzly Bear Guidelines and approved recovery plans. Evaluate cumulative effects of management practices within each bear unit. ▪ Silvicultural treatments will be used to improve grizzly habitat and aid in achieving bear recovery goal. ▪ Implement grizzly bear information/education effort with permittees, user groups, contractors, employees and local communities. ▪ Maintain approximately 400 acres to support viable populations of old-growth dependent species. Use initial attack strategies (confine, contain and control) appropriate to achieve the best benefit: cost (least cost plus net value change) based on commercial timber, grizzly bear habitat needs and whitetail deer winter range values.
Management Area 4, 7, 9, 10-12			▪ See section on caribou above.

Northern Idaho Ground Squirrel

Southwest Idaho Forest Plans

Habitats for threatened and endangered species are managed consistent with established and approved recovery plans. Management actions either contribute to, or do not prevent recovery or de-listing of these species. Habitats for proposed and candidate species are managed to help preclude listing as threatened or endangered under the ESA. Degrading effects from forest programs are at levels that do not threaten the persistence of threatened, endangered, proposed, or candidate species populations.

Table B-6. Goals relevant to threatened and endangered species management outlined in the Southwest Idaho Ecogroup LRMPs

Scale	Level	Pg	Measure
Programmatic	Goal	III-8	▪ Provide habitat capable of contributing to the survival and recovery of species listed under the ESA (see Appendix E for current list of species). ▪ Provide habitat that will help keep Proposed or Candidate species from becoming listed (see ▪ Appendix E for current list of species). ▪ Balance the need for restorative actions to address the long-term threats to listed and proposed species with the short-term need to protect listed and proposed species and their habitats. ▪ Design and implement management actions to provide for ecological conditions, population viability, reproductive needs, and habitat components for Threatened, Endangered, Proposed, and Candidate (TEPC) species. ▪ Provide for well-distributed habitat capable of maintaining self-sustaining, complex interacting groups of TEPC species. ▪ Provide habitat capable of maintaining stable or increasing trends in abundance of TEPC species in all recovery units.

			▪ Continue to map and update locations of species occurrence and habitat for TEPC species during fine- or site/project-scale analyses. Incorporate information into a coordinated GIS database and coordinate with the Idaho Conservation Data Center. ▪ Cooperate with USFWS and NMFS to develop an Information and education program for special use authorizations within TEPC habitat. ▪ Identify and reduce road-related effects on TEPC species and their habitats using the Watershed and Aquatic Recovery Strategy and other appropriate methodologies. ▪ Follow emergency consultation procedures after an emergency event as defined in 50 CFR 402.05. ▪ Coordinate with research efforts for TEPC species to determine basic life history requirements and potential effects from management activities. Coordinate efforts and information with the Idaho Conservation Data Center, universities, Forest Service Research Stations, etc. ▪ Develop an agreed upon process with NOAA Fisheries and USFWS for project-level consultation that addresses multi-scale analyses and tracking environmental baselines. ▪ During fine-scale analyses, identify practices or facilities that are adversely affecting TEPC species or their habitats, and prioritize opportunities to mitigate, through avoidance or minimization, adverse effects to TEPC species.

Plant Species

Current management direction for threatened, endangered, proposed and candidate plant species can be found in:

- Forest Service Manual and Handbooks (FSM/H 2670)
- Individual Forest Land and Resource Management Plans (LRMPs), supplements and amendments for all Idaho Forests and the Hell's Canyon National Recreation Area Comprehensive Management Plan, including the Wallowa-Whitman NF.
- Species-specific Recovery Plans, Draft Recovery Plans, and Conservation Strategies and Agreements
- Regional Forester policy and management direction
- Existing projects with informal or formal consultation with the USFWS

The Forest Service direction for federally listed and proposed species is to manage National Forest habitats to achieve recovery objectives so that special protection measures provided under the ESA are no longer necessary (FSM 2670.13) Each Forest manages threatened or endangered species per the applicable Recovery plan or species management plan such as a Conservation Strategy or Agreement if one exists. Specific management direction - goals, objectives, standards and guidelines from existing Land and Resource Management plans regarding listed plant species are as follows:

All TEPC Plants

Southwest Idaho Forest Plans

Habitats for Threatened and Endangered Species are managed consistent with established and approved Recovery Plans. Management actions either contribute to, or do not prevent recovery or de-listing of these species. Habitats for Proposed and Candidate species are managed to help preclude listing as Threatened or Endangered under the ESA. Forest programs are at levels that do not threaten the persistence of Threatened, Endangered, Proposed, or Candidate species populations.

Table B-7 summarizes both general and specific direction applicable to TEPC plant species outlined in the FEIS (Section III-pp. 8-15) and revised LRMPs for the Southwest Idaho Ecogroup: Boise, Payette, and Sawtooth National Forests.

Table B-7. Management direction for threatened, endangered, proposed, and candidate species

Direction	Number	Management direction description
Goals	TEGO1	Provide habitat capable of contributing to the survival and recovery of species listed under the ESA.
	TEGO2	Provide habitat that will help keep Proposed or Candidate species from becoming listed.
	TEGO3	Balance the need for restorative actions to address the long-term threats to listed and proposed species with the short-term need to protect listed and proposed species and their habitats.
	TEGO4	Design and implement management actions to provide for ecological conditions, population viability, reproductive needs, and habitat components for Threatened, Endangered, Proposed, and Candidate (TEPC) species.
	TEGO5	Provide for well-distributed habitat capable of maintaining self-sustaining, complex interacting groups of TEPC species.
	TEGO6	Provide habitat capable of maintaining stable or increasing trends in abundance of TEPC species in all recovery units.
Objectives	TEOB3	Identify and reduce road-related effects on TEPC species and their habitats using the Watershed and Aquatic Recovery Strategy and other appropriate methodologies.
	TEOB6	During fine-scale analyses, identify practices or facilities that are adversely affecting TEPC species or their habitats, and prioritize opportunities to mitigate, through avoidance or minimization, adverse effects to TEPC species.
	TEOB18	During fine-scale analyses in areas where TEPC species occur, identify opportunities to maintain desired habitat conditions or restore degraded habitat for TEPC species.
Standards	TEST1	The Forest shall consult with the NMFS and Fish and Wildlife Service as needed, and appropriate, to comply with consultation requirements under the Endangered Species Act and Magnuson-Stevens Act.
	TEST2	For forest-wide, watershed, or project-level Biological Opinions (BOs) and Biological Assessments (BAs) with letters of concurrence, requirements shall continue to apply until their expiration date unless these documents are specifically updated during further review with related regulatory agencies.
	TEST3	Design and implement projects to meet the terms of Forest Service approved portions of recovery plans. If a recovery plan does not yet exist, use the best information available (for example, BAs, BOs, letters of concurrence, Forest Service-approved portions of Conservation Strategies) until a recovery plan is written and approved.
	TEST4	Management actions that have adverse effects on Proposed or Candidate species or their habitats, shall not be allowed if the effects of those actions would contribute to listing of the species as Threatened or Endangered under the ESA.
	TEST6	Management actions shall be designed to avoid or minimize adverse effects to listed species and their habitats.
Guidelines	TEGU2	For proposed actions that may affect potential habitat of TEPC species, identify potential habitat and determine species presence within or near the project area. Document the rationale for not identifying potential habitat and determining species presence for TEPC species in the project record.

Direction	Number	Management direction description
	TEGU3	Management actions in occupied Proposed or Candidate species habitat should be modified or relocated if the effects of the actions would contribute to a trend toward ESA listing for these species.
	TEGU7	During site/project-scale analysis and review, a Forest botanist should review insecticide or herbicide spray plans and prescribed burning plans to determine whether effects to TEPC plant species and their pollinators should be mitigated, through avoidance or minimization.

In addition to the General Management Direction for TEPC species provided in the above table, the following (table B-8) pertinent Management Direction Botanical Resources is provided from Southwest Idaho FEIS Chapter III pages 32-34:

Table B-8. Management direction for botanical resources

Direction	Number	Botanical resources management direction description
Goals	BTGO3	Maintain or restore globally rare plants identified as the Natural Heritage Program G1, G2, and G3 and/or S1 and S2 species, and provide for their continued compositional and functional integrity for those species for which we have habitat
Objectives	BTOB2	During fine-scale analyses in areas containing sensitive species habitat, identify and prioritize opportunities for restoring degraded Sensitive species habitat.
Standards	BTST1	Management actions that occur within occupied sensitive plant species habitat must incorporate measures to ensure habitat is maintained where it is within desired conditions, or restored where degraded.
	BTST3	Design and implement projects to meet the Forest Service approved portions of Conservation Strategies and Agreements for Sensitive species.
Guidelines	BTGU1	For site/project-scale analysis, suitable habitat should be determined for Sensitive species within or near the project area. Conduct surveys for those species with suitable habitat to determine presence. Document the rationale for not conducting surveys for other species in the project record.
	BTGU5	Coordinate with Forest botanists to consider sensitive species habitat needs when designing and implementing management activities that may affect these species or their habitats.

Targhee National Forest Plan

The applicable Goals, Objectives, Standards and Guidelines for Ute Ladies' tresses orchid (*Spiranthes diluvialis*) from the Targhee NF Plan (Chapter III-14) are as follows:

Goals – Plant Species Diversity

Goal 1. Preserve unique formations within a landscape (such as cliffs, bogs, seeps, talus slopes, warm or alkaline springs, pot holes, and rock outcroppings) that provide habitat to plant species not common to the overall landscape and contribute to the species diversity within the landscape.

Goal 2. Provide necessary protection and management to conserve listed threatened, endangered and sensitive plant species.

Standards and Guidelines – Plant Species Diversity

Standard 4. Information on the presence of listed threatened, endangered or sensitive plant species will be included in all assessments for vegetation and/or ground disturbing management activities Appropriate protection and mitigation measures will be applied to the management activities.

Objectives – Ute Ladies' Tresses (Spirantbes diluvialis)

Objective 1. Map suitable habitat (generally within wetland/riparian/floodplain areas below 7,000 feet elevation) on the Forest within three years of implementation of the ROD

Objective 2. Complete intensive surveys of suitable habitat to document presence of plants within five years of implementation of the ROD

Standards and Guidelines - Ute Ladies' Tresses (Spirantbes diluvialis)

Standard 1. For known populations within livestock grazing allotments, provide appropriate protection, particularly during the flowering and seed-set periods (generally August and September).

Standard 2. Allow no ground disturbing activities or changes in hydrology within occupied habitat without review by botanist and interdisciplinary team.

Hells Canyon National Recreation Area Management Plan

The following pertinent management direction (table B-9) for threatened and endangered species for Hells Canyon National Recreation Area can be found in the Hells Canyon National Recreation Comprehensive Management Plan FEIS (HCNRACMP) Appendix C – Goals, Objectives, Standards and Guidelines (Appendix C – pages 88-94).

Table B-9. Hells Canyon NRA comprehensive management plan direction

Direction	Number	Hells Canyon NRACMP management direction description
Goals		Maintain or restore habitat to provide viable populations of rare and endemic species in the HCNRA.
Objectives	TES-O1	Manage Habitat and populations of federally listed threatened, endangered, or proposed plant species to ensure their continued existence and recovery in the HCNRA. Ensure that ongoing and new management actions do not jeopardize federally listed threatened, endangered or proposed plant species. Implement restoration and recovery activities that would facilitate removal of species from the federal threatened and endangered species list. (Forest Plan, FSM 2670).
	TES-O3	Implement recovery plans for federally listed threatened, endangered or proposed plant species cooperatively with the USFWS. Contribute to revisions of recovery plans, and carry out recommended actions in recovery plans. (Forest Plan, FSM 2670).
Standards	TES-S1	When evaluating ongoing and new actions, survey probable habitat for rare plants. Mitigate potential conflicts or modify project to ensure the protection of rare plants and their associated habitat (Forest Plan, FSM 2670).
	BIO-S1	During project-level planning, to the extent feasible, survey and document the location of populations of rare and endemic plant species, rare combinations of outstanding and diverse ecosystems and parts associated therewith; and combinations of aquatic, terrestrial, and atmospheric habitats.
Guidelines	TES-G1	To achieve recovery plan goals consider reintroduction of federally listed species, in suitable, currently unoccupied habitat.
	TES-G2	Consider modifications to activities such as seasonal or permanent closures for roads, trails, and exclusions of domestic livestock grazing, and modifications of grazing plans where conflicts with protection of rare plant species are identified.

Appendix C—USFS letter from R. McNair (Forest Supervisor, Idaho Panhandle National Forests) to S. Martin (Field Supervisor, Spokane Fish and Wildlife Service) regarding projects that may affect grizzly bears in Idaho Roadless Areas.

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

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

Appendix D—Documented wolf records in Idaho by MIRR theme

Table D-1-. Overlap of wolf records with the Modified Idaho Roadless Rule themes by IDFG region*.

Wolf pack	Type	MIRR theme						
		WLR	Prim.	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Clearwater region								
Battle Ridge	Documented Pack	1	0	0	0	0	0	0
Big Hole	Documented Pack	0	0	1	0	0	0	0
Bimerick Mdw	Documented Pack	0	1	1	0	0	1	1
Bitterroot Range	Documented Pack	1	1	1	0	0	0	1
Cold Springs	Documented Pack	1	0	1	1	0	0	0
Coolwater Ridge	Documented Pack	0	0	1	0	0	0	1
Deception	Documented Pack	1	1	1	1	0	0	0
Eagle Mtn	Documented Pack	0	1	1	0	0	0	1
Eldorado Crk	Documented Pack	0	1	1	0	0	1	0
Fish Crk	Documented Pack	1	0	0	0	0	0	0
Florence	Documented Pack	0	0	1	0	0	0	1
Giant Cedar	Documented Pack	1	0	1	0	0	0	0
Gospel Hump	Documented Pack	0	0	1	1	0	0	0
Hemlock Ridge	Documented Pack	0	0	1	0	0	0	0
Indian Crk	Documented Pack	0	1	0	0	0	0	1
Kelly Crk	Documented Pack	0	1	1	0	0	1	1
Lake Como	Documented Pack	0	1	0	0	0	0	0
Lochsa	Documented Pack	0	1	1	0	0	1	1
O'Hara Pt	Documented Pack	0	0	1	1	0	1	1
Pilot Rock	Documented Pack	0	0	1	1	0	0	0
Pot Mtn	Documented Pack	0	1	1	0	0	0	1
Roaring Lion	Suspected Pack	1	1	0	0	0	0	0
Saturday	Documented Wolf Activity	1	1	1	1	0	1	1
Selway	Documented Pack	0	1	0	0	0	0	1
Spirit Ridge	Documented Pack	0	0	1	0	0	0	0
WC7	Documented Lone Wolf	1	0	1	0	0	0	0
White Bird Crk	Documented Pack	0	0	1	0	0	0	0
Panhandle region								
Calder Mtn**	Documented Pack	0	0	1	1	1	0	1
Solomon Mtn**	Documented Pack	0	0	1	0	0	0	0
Avery	Documented Pack	0	0	1	1	0	0	1
B212	Documented Lone Wolf	0	0	1	1	0	0	1
Bathtub Mtn	Suspected Pack	1	1	1	0	1	0	1
De Borgia	Documented Pack	0	0	1	0	0	0	0
Fishhook	Documented Pack	0	0	0	0	0	0	1

Wolf pack	Type	MIRR theme						
		WLR	Prim.	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Five Lakes Butte	Documented Pack	1	1	1	0	0	0	1
Marble Mtn	Documented Pack	1	0	1	0	1	0	1
Silver Lake	Documented Pack	0	0	1	1	0	0	0
Superior	Documented Pack	0	0	1	0	0	0	0
Tangle Crk	Documented Pack	0	1	1	0	0	0	1
Southwest region								
B315	Documented Lone Wolf	1	1	1	1	0	0	1
B327	Documented Lone Wolf	0	1	0	0	0	0	0
B349	Documented Wolf Activity	0	1	0	0	0	0	0
Bear Pete	Documented Pack	0	0	1	1	1	0	0
Blue Bunch	Documented Pack	0	1	0	0	0	0	1
Carey Dome	Documented Pack	1	1	1	1	1	0	1
Hard Butte	Documented Pack	1	1	1	1	0	0	1
Jungle Creek	Documented Pack	1	1	1	1	0	0	1
Lick Crk	Documented Pack	1	0	0	0	0	0	1
Orphan	Documented Pack	0	1	1	0	0	0	1
Stolle Mdws	Documented Pack	0	1	1	1	0	0	1
Thunder Mtn	Documented Pack	1	0	1	1	1	0	1
Wolf Fang	Documented Pack	0	1	1	1	0	0	1
Applejack	Documented Pack	0	1	0	1	0	0	0
Archie Mtn	Documented Pack	1	1	0	0	1	0	1
Bear Valley	Documented Pack	0	0	1	1	0	0	1
Big Buck	Documented Pack	1	1	0	0	0	0	1
Calderwood	Documented Pack	0	1	0	0	0	0	0
High Prairie	Documented Pack	0	1	0	0	0	0	0
No Man	Documented Pack	1	1	1	0	0	0	1
Packer John	Documented Pack	0	1	0	0	0	0	1
Scott Mtn	Documented Pack	0	1	1	1	0	0	1
Steel Mtn	Documented Pack	0	1	1	0	0	0	1
Thorn Crk	Documented Pack	0	0	1	0	0	0	0
Timberline	Documented Pack	1	1	1	1	1	0	1
Warm Springs	Documented Pack	1	1	1	0	1	0	1
Magic Valley region								
Hyndman	Documented Pack	1	1	1	1	0	0	1
Moores Flat	Documented Pack	0	1	0	0	0	0	0
Phantom Hill	Documented Pack	1	1	1	0	0	0	1
Soldier Mtn	Documented Pack	0	1	1	1	0	0	1
Upper Snake region								
Bechler	Documented Pack	0	1	1	0	0	0	1

Wolf pack	Type	MIRR theme						
		WLR	Prim.	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Copper Basin	Documented Pack	1	0	1	1	0	0	0
Falls Crk	Documented Pack	0	0	1	0	1	0	0
Salmon region								
Aparejo	Documented Pack	0	0	0	0	0	0	1
B283 Pair	Documented Wolf Activity	1	0	1	1	0	0	1
Basin Butte	Documented Pack	0	1	1	1	0	0	1
Battlefield	Documented Pack	0	0	1	1	1	0	0
Black Canyon	Documented Pack	0	1	1	0	1	0	0
Buffalo Ridge	Documented Pack	0	0	1	1	0	0	1
Doublespring	Documented Pack	1	0	1	0	0	0	1
Galena	Documented Pack	1	1	1	1	0	0	1
Hoodoo	Documented Pack	0	0	1	0	0	0	1
Hughes Crk	Documented Pack	0	0	1	1	0	0	1
Iron Crk	Suspected Pack	0	0	1	1	1	0	0
Jureano Mtn	Documented Pack	0	0	1	1	1	0	0
Landmark	Documented Pack	0	0	1	1	0	0	0
Leadore	Suspected Pack	0	0	1	1	0	0	0
Lemhi	Documented Pack	0	0	1	0	0	0	0
Miner Lakes	Documented Pack	0	1	1	1	1	0	1
Morgan Crk	Documented Pack	0	0	1	1	0	0	0
Moyer Basin	Documented Pack	0	0	1	1	1	0	0
Owl Crk	Documented Pack	0	1	1	1	1	0	1
Painted Rocks	Documented Pack	0	1	1	0	0	0	0
Pass Crk	Documented Pack	1	0	1	1	0	0	1
SW64	Documented Wolf Activity	0	0	1	1	1	0	0
Yankee Fk	Documented Pack	0	0	1	1	0	0	1
Totals		30	48	76	42	18	6	55

- ** A ‘1’ indicates that the pack or record of wolf activity overlaps that theme. 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*
- *** Occur north of I-90.*