United States
Department of
Agriculture

Forest Service

Idaho
National Forests

August 2008

Roadless Area Conservation

National Forest System Lands in Idaho

Specialist Report and Biological Evaluation for Aquatic and Terrestrial Habitats and Species

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I. Abstract

This specialist report and biological evaluation (BE) provides the background and analysis for the affected environment and effects of the alternatives analyzed in detail for the Idaho Roadless Final Environmental Impact Statement (FEIS) (USDA, Forest Service 2008). A biological assessment (BA) has been prepared for the FEIS (Carlson et al. 2008) and can be found in the project file and on the internet at http://roadless.fs.fed.us/idaho.shtml.

This specialist report describes the methodology, assumptions, and information used in the analysis of effects to terrestrial and aquatic habitats and species and overall biodiversity, which is summarized and disclosed in Chapter 3 of the Idaho Roadless FEIS.

Idaho Roadless Areas function as biological strongholds for populations of threatened (T) and endangered (E) species. They provide large, relatively undisturbed landscapes that are important to biological diversity and the long-term survival of many at risk species. Values that often characterize Idaho Roadless Areas 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 for those species dependent on large undisturbed areas of land, primitive, semi-primitive non-motorized, and semi-primitive motorized classes of dispersed recreation, reference landscapes (areas that are relatively undisturbed), natural appearing landscapes with high scenic quality, and traditional cultural properties and sacred areas, and other locally identified unique characteristics (e.g. geological formations) (USDA Forest Service 2001).

The analysis in this specialist report includes evaluation of the Idaho Roadless Areas (IRAs) and their relationship to selected terrestrial and aquatic species [including Threatened, Endangered, and Candidate, Forest Service sensitive (TECS), and management indicator species (MIS)] and their habitats.

Terrestrial habitat characteristics considered in this analysis included a) habitat availability, effectiveness and fragmentation, b) vegetation structure, c) human access, and d) disturbance. This analysis examined these characteristics within terrestrial species' ranges in Idaho and/or using the most appropriate scale relevant to conservation of the species (e.g., recovery zone, distinct population segment, etc.).

Aquatic habitat characteristics considered in this analysis included both characteristics important for species sustainability and ecosystem integrity. Aquatic species key characteristics include: 1) Range of the species in Idaho, 2) Threatened and endangered (T&E) designated critical habitat, 3) Essential Fish habitat (EFH), 4) Native fish strongholds, 5) Native fish priority watersheds, 6) Bull trout core areas, and 7) Bull trout key recovery habitat. In addition, overlap of species within an area indicating greater species richness and diversity, as well as, larger areas contributing to species habitat were considered. Characteristics of habitat integrity (e.g. water quality, channel processes, sediment regime, instream flows, riparian vegetation) were also considered in relation to the alternatives.

Potential indirect and cumulative effects to terrestrial and aquatic animal species and habitats from the prohibitions and permissions in the alternatives were determined by considering the kinds and numbers of species potentially affected, identifying the important and sometimes unique characteristics of roadless areas that foster biodiversity, and evaluating the potential adverse and beneficial effects of road construction, road reconstruction, timber cutting and

discretionary minerals activities on those characteristics. These effects are discussed for terrestrial and aquatic animal species and habitats. The cumulative effects of the alternatives were addressed by considering land use and land conversion trends; laws, regulations, and policies that affect species, habitat characteristics, and biodiversity.

The proposed action (Idaho Roadless Rule) 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.

II. Changes Between the Draft and Final

- Expanded discussion on aquatic T & E species and their habitats.
- Added discussion on individual aquatic sensitive species.
- Included the Southwest Idaho Eco-group (SWIEG) land management plan document as a guiding document for fisheries management in Idaho.
- Clarified the distribution of designated critical habitat for aquatic threatened and endangered species and re-ran the critical habitat analysis relating to overlap with Idaho Roadless Areas.
- Based on new information for T & E aquatic species distribution, T & E species richness for each roadless area was recalculated.
- A discussion of essential fish habitat, bull trout key recovery habitat, and bull trout core areas were added.
- Added a risk analysis of selected management activities for aquatic species that could occur under the proposed alternatives.
- Added analysis for the new alternative, Modified Idaho Roadless Rule
- Bald eagle was delisted and is now addressed as a Forest Service sensitive species.
- Discussions pertaining to predicted habitat for federally listed terrestrial species have been replaced with more site-specific information on habitat, known locations, and descriptions of existing conservation strategies and direction.
- Added information on two Federal candidate species for listing under the endangered species act (ESA)—the yellow-billed cuckoo and the southern Idaho ground squirrel—and proposed critical habitat for lynx.
- Revised risk analysis for effects of select management activities on terrestrial species (Appendix C).
- Expanded discussion on terrestrial game species in Idaho.
- Added information on specific land management components (e.g., standards and guidelines) relevant to listed species (Appendix D).
- Expanded the discussion on effects of selenium on terrestrial wildlife species.

- Additional information was provided on potential impacts to migratory birds.
- Revised the discussion of climate change in the cumulative effects section.

III. Description of the Action

Purpose and Need

The purpose of the Idaho Roadless Rule is to provide State-specific direction for the conservation and management of Idaho Roadless Areas. There are 250[1] roadless areas in Idaho totaling 9.3 million acres (Figure III-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;
- 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.

[1] The FEIS reports 281 IRAs; this calculation differs from the number reported here, it is counting IRAs that overlap two different Forests as two IRAs. If Forest boundaries are not considered, there are 250 IRAs.

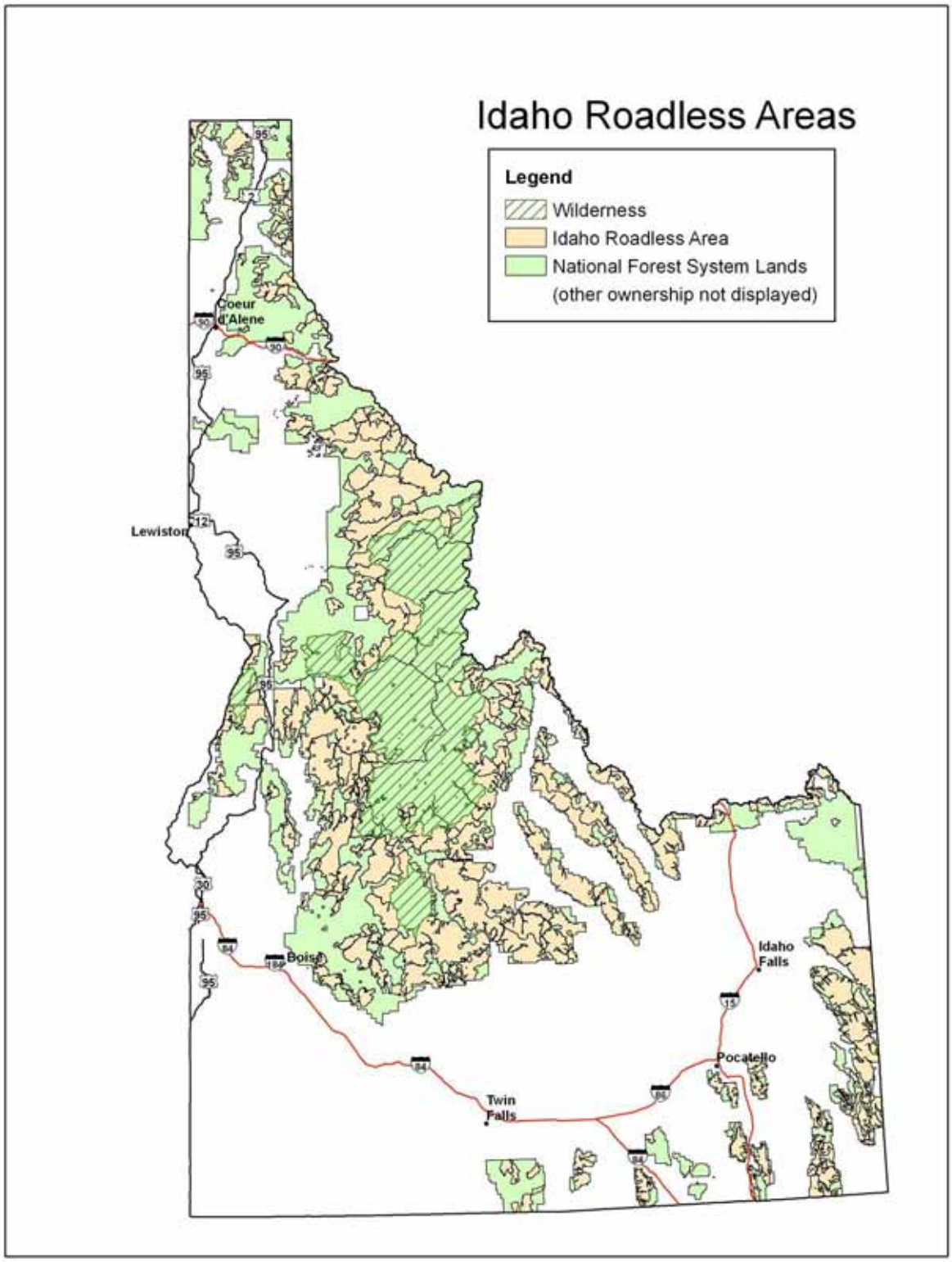

Figure III-1. Idaho Roadless Areas

Description of the Project Area

The alternatives being considered propose management direction for 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 (Figure III-1). 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 III-1.

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

Table III-1. Acres of Roadless Area by Forest

Forest	Acres of Roadless Area
Boise	1,108,900
Caribou	741,700
Challis	1,437,600
Clearwater	984,400
Idaho Panhandle	797,100
Kootenai	35,100
Nez Perce	497,000
Payette	908,200
Salmon-Challis	827,700
Sawtooth	1,194,900
Targhee	736,300
Wallowa-Whitman	35,400
Total	9,304,300

Alternatives

The FEIS for the Idaho Roadless Rule considers four alternatives: 1) 2001 Roadless Rule, 2) Existing Forest Plans, 3) Proposed Idaho Roadless Rule and 4) Modified Idaho Roadless Rule. This specialist report documents the potential effects of activities that could be undertaken pursuant to the alternatives. Chapter 2 of the Idaho Roadless FEIS contains a complete description of all the alternatives considered. The time frame for this Idaho Roadless Area effects analysis is 15 years. The following is a brief description of the four alternatives considered in this analysis.

2001 Roadless Rule Alternative[2]

The 2001 Roadless Rule (2001 Rule) presents a roadless area management regime across all roadless areas based on the approach set out in the 2001 Roadless Rule (see 36 CFR 294, subpart B [2004]; 66 *Fed. Reg*. 3244 [Jan. 12, 2001]) (USDA, Forest Service 2001). The purpose of the 2001 Roadless Rule was 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. Roadless Area values 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 for those species dependent on large undisturbed areas of land, primitive, semi-primitive non-motorized, and semi-primitive motorized classes of dispersed recreation, reference landscapes (areas that are relatively undisturbed), natural appearing landscapes with high scenic quality, and traditional cultural properties and sacred areas, and other locally identified unique characteristics (e.g. geological formations) (USDA, Forest Service 2001).

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; therefore, these activities were prohibited, with four exceptions: for the purposes of conservation of TES species and ecosystem maintenance and restoration, where incidental to other activities that are not prohibited (including personal and administrative uses), and where roadless characteristics already have been compromised due to roads or timber harvest.

The rule allows for road construction or reconstruction under the following seven exceptions. This would include roads associated with locatable mineral activities pursuant to the General Mining Law of 1872.

Where the Regional Forester determines:

1. 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;
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 CERCLA, section 311 of the Clean Water Act, or the Oil Pollution Act;
3. A road is needed pursuant to statute, treaty, reserved or outstanding rights, or other legal duty of the United States;
4. Road realignment is needed to prevent 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;

[2] As of the printing of the FEIS, the 2001 Roadless Rule is in operation by court order and represents the legal status quo and operating management direction for these lands. In the absence of the 2001 Roadless Rule, management would be governed by each forest's land management plan.

5. 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
6. 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.
7. A road is needed in conjunction with the continuation, extension, or renewal of a mineral lease on lands that are under lease by the Secretary of the interior as of January 12, 2001 of for a new lease issued immediately upon expiration of an existing lease.

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.

Existing Plans Alternative

Management direction in this alternative represents a roadless area management regime based on each forest's land and resource management plan (forest plan) as they would be implemented without the 2001 Roadless Rule. Each forest's plan is unique to its planning area; collectively the forest plans provide a broad range of management from wilderness to intensive management. Overall, as national forests have revised their forest plans, the trend has been to move more roadless areas into management prescriptions that conserve roadless characteristics. When developing or revising their forest plans, each forest or group of forests collaborates with the public and interested parties to develop management direction for their roadless areas. Generally, forest plans allow or limit an array of activities in roadless areas.

Proposed Idaho Roadless Rule (IRR) Alternative [3] (Proposed Action)

The Proposed Action represents a strategy for the conservation and management of Idaho Roadless Areas that takes into account State and local situations and unique resource management challenges, while it recognizes and integrates the national interest in maintaining roadless characteristics.

Building from each forest's existing or proposed forest plan[4], the Proposed Idaho Roadless Rule assigned individual roadless areas within five broad management themes: Wild Land Recreation; Special Areas of Historic or Tribal Significance (SAHTS); Primitive; Backcountry/Restoration (Backcountry); and General Forest, Rangeland, and Grassland (GFRG). These themes span a continuum that includes at one end, a restrictive approach emphasizing passive management and natural restoration approaches, and on the other end, active management designed to accomplish sustainable protection of roadless characteristics. The continuum accounts for stewardship of the uniqueness of each individual roadless area's landscape and the quality of roadless characteristics in that area.

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[3] The Idaho Roadless Rule includes clarifications made by Governor Risch at the November 29 and 30, 2006, RACNAC meeting.

[4] Existing plans referred to here include the Boise, Caribou, Challis, Payette, Salmon, Sawtooth, Targhee and Wallow-Whitman. Proposed plans referred to here are the Clearwater, Idaho Panhandle, Kootenai, and Nez Perce.

Under the Proposed Rule applicable current and future forest plan direction would apply to other special areas (referred to as "forest plan special areas" such as research natural areas; wild and scenic rivers (designated, eligible, and suitable); special interest areas; and visual corridors. These lands are included in the discussion for sake of completeness; however, the Proposed Action does not recommend specific management direction for these 334,500 acres.

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 related to timber cutting, sale, and removal; road construction/reconstruction; and discretionary mineral activities.

As in the 2001 Roadless Rule, timber cutting and road construction/reconstruction are identified as the management activities having the greatest potential for altering landscapes and causing immediate changes to roadless values and characteristics; therefore, a continuum of prohibitions and permissions was proposed for each roadless area.

The Proposed Rule also establishes prohibitions and permissions for discretionary mineral activities because of potential effects on roadless characteristics. Further, the Proposed Rule, like the 2001 Roadless Rule, allows for road construction/reconstruction in the case of reserved or outstanding rights, or as provided for by statute or treaty (see above discussion of the 2001 Roadless Rule, exceptions 1-6 would apply to the Proposed Rule). This would include roads associated with locatable mineral activities pursuant to the General Mining Law of 1872. Finally, the Proposed Rule provides additional direction regarding common variety minerals, which are the sole discretion of the Secretary of Agriculture (Secretary) to manage.

Again, like the 2001 Roadless Rule, the Proposed Rule does not seek to restrict retroactively any existing mineral authorizations[5]. However, the Proposed Rule would establish limitations on the future exercise of discretion available to Forest Service line officers. It does not seek to impose restrictions on decision-making that Congress has assigned to the Department of the Interior. The Proposed Rule also does not affect or seek a withdrawal of the mineral estate; such matters are subject to a separate statutory process established in the Federal Land Policy and Management Act (FLPMA). Instead, the Proposed Rule would be applied only where Forest Service line officers have discretionary authority to influence whether and how the activity may occur.

The Proposed Rule does not address grazing, travel management, or wildland fire use. Management direction related to those activities would be regulated by other existing regulatory and analytical processes (for example, travel planning).

Modified Idaho Roadless Rule (MIRR) Alternative (Preferred Alternative)

A fourth alternative was developed, the Modified Idaho Roadless Rule (Modified Rule), that changes portions of the Proposed Rule based on public comment, including but not limited to tribal government-to-government consultation, recommendations from the RACNAC, consultation with adjacent States, and input from the public at large.

[5] Mineral authorizations include those for salable, leasable, and locatable minerals.

Modifications from the Proposed Rule primarily related to four concerns:

1. The amount and type of roadless areas placed in the various themes;
2. The permissions for road construction and reconstruction to facilitate timber cutting, sale, and removal in the Backcountry theme;
3. The permission for road construction and reconstruction to access phosphate deposits in the Backcountry theme;
4. The public comment requirements to make changes in the future.

Other less substantive changes are also reflected in the Modified Rule based on public comment.

IV. Methodology

Numbers used in this report:

- Idaho contains 52,961,000 total acres (Curley et al. 2004)
- 7% or 4,005,653 acres is in wilderness (Curley et al. 2004)
- 9.3 million acres of Idaho Roadless Areas are National Forest System (NFS) lands (Petition of Governor James E. Risch 2006)
- 250 Roadless Areas in Idaho[6]

The purpose of the analysis in this terrestrial and aquatic habitat and species specialist report is to evaluate the differences between four proposed alternatives concerning management of Idaho Roadless Areas. The discussions under each alternative refer to the relative protections and prohibitions the themes offer to aquatic and wildlife resources.

To facilitate a comparison across alternatives, the various management prescriptions for IRAs under the existing Forest Plans and the 2001 Roadless Rule were cross-walked with the Idaho State Roadless Alternative management themes. However, we acknowledge that there may not always be an exact correspondence between the prescriptions of the three Alternatives. Table IV-1 displays IRA acres by theme by alternative.

[6]There are 281 IRAs if administrative boundaries are considered and 250 IRAs when considered across forest boundaries.

Table IV-1. 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	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.*

The specialist report analysis relied heavily on a review of current scientific literature on the direct and indirect effects of roads, road construction, timber harvest, and mineral activities on species and their habitats, with potential effects described in terms of relative risks. The analysis provided in this specialist report includes Forest Service Sensitive Species and MIS. Federally listed threatened and endangered species (T&E) and their critical habitat are analyzed a separate document *Final Biological Assessment: Effects of the Modified Idaho roadless Rule on Federally-Listed Threatened, Endangered, Candidate, and Proposed Species for Aquatics, Terrestrial Wildlife, and Plants* (BA) (Carlson et al. 2008). The BA analysis and conclusions are summarized in this specialist report. The complete BA can be found in the project file and on the internet at http://roadless.fs.fed.us/idaho.shtml.

Unlike most Forest Service project analyses of alternatives and environmental consequences, the analysis of the Idaho Roadless Area management alternatives does not include an analysis of project implementation and resulting direct effects; it is an analysis indirect and cumulative effects of the permissions and prohibitions addressed in the rule. In other words the proposal is programmatic in nature, consisting of direction for timber cutting, road construction/reconstruction, and discretionary mineral activities, which would be applied to future management activities.

Our discussions under each alternative refer to the relative protections the themes offer to aquatic and wildlife resources. None of the alternatives directly authorize any ground disturbing activities. Rather, the four alternatives represent different management strategies prescribing the conditions under which road construction/reconstruction, timber cutting, and discretionary mining could occur within Idaho roadless areas. All of the alternatives may permit these activities within IRAs, albeit they vary with respect to the circumstances, locations, and extent that these activities are permissible. It is this 'variation' across alternatives,

particularly with respect to scale, that we seek to evaluate. The Idaho Roadless Rule itself would have no direct environmental effects, and any subsequent activity would need to be individually analyzed before any authorization is made.

Species List(s)

Species listed as Endangered, Threatened, Proposed, or as Candidates for listing under the Endangered Species Act

- Species lists provided by Regions 1 and 4 were used to develop a combined list of threatened and endangered (T&E) species and candidate species that are known to occur or have suitable habitat on the National Forests within Idaho (Tables V-1 and Appendix A, Table A-7). There are no known proposed (P) species within Idaho. Species distribution maps developed by Idaho Fish and Game Conservation Data Center (ID CDC) were used to identify which species are likely to occur or have habitat within Idaho Roadless Area. This information was used to establish a species list for ESA Section 7(a)(2) consultation and to complete the biological assessment for the FEIS. For species that are not likely to occur or have habitat within Idaho Roadless Areas, consideration was given to potential effects from activities that could occur in the Idaho Roadless Areas (e.g. road construction or reconstruction) that could have effects outside of the Idaho Roadless Area (for example a fish species downstream outside of the Idaho Roadless Area).

Forest Service Sensitive Species

- Regional Forester-designated sensitive species lists provided by Regions 1 and 4 were used to develop a combined list of Forest Service Sensitive Species that are known to occur or have suitable habitat on the National Forests within Idaho. Species distribution maps developed by ID CDC were used to identify which species are likely to occur or have habitat within Idaho Roadless Areas (Tables V-1 and VII-7). For species that are not likely to occur or have habitat within Idaho Roadless Areas, consideration was given to potential effects from activities that could occur in the Idaho Roadless Areas that could have effects outside of the Idaho Roadless Area. The biological evaluation included in this specialist report addresses Forest Service sensitive species and utilizes a coarse-filter approach (analysis of ecological conditions), in combination with some supplemental species-specific information.

Forest Management Indicator Species

- Management Indicator Species (MIS) are identified by each Forest in their Forest Plan. A MIS list was compiled from the Forest Plan lists for this analysis (Tables V-11 and VII-10). Most of the MIS species are also on the Forest Service sensitive species list. Evaluation of MIS species is included in this specialist report.

Assumptions and Projections

Analysis assumptions are presented in the FEIS and are incorporated by reference here. Projections and foreseeable actions regarding timber cutting, road construction/reconstruction, and discretionary mineral activities are described below. This information was used to evaluate the Proposed Action and its alternatives throughout the FEIS.

Timber cutting - Projections and Foreseeable Actions

Table IV-2 projects the yearly average timber harvest that is reasonably foreseeable in Idaho Roadless Areas. This table is based on a combination of actual accomplishments and future projections. Timber harvest is used as an approximation for timber cutting.

In response to public comment, the ID team reviewed the projections and found there was an error in the projections for the 2001 Roadless Rule; therefore, this table has been updated to reflect the correct information. Because data from the 2001 Roadless Rule were used in the projections for the Idaho Roadless Rule, those data were also corrected.

Table IV-2. Projected timber harvest by alternative

Projected timber cutting	2001 Roadless Rule	Existing Plans	Proposed Rule	Modified Rule
Timber harvest yearly average (MMBF)	3.0	13.36	5.83	5.04
Timber harvest yearly average (acres)*	600	2,700	1,200	1,000
Timber harvest 15 year average (acres)	9,000	40,500	18,000	15,000

** Based on the assumption that an average of 5 MBF/acre would be harvested.*

Road construction/reconstruction - Projections and Foreseeable Actions

Table IV-3 projects the yearly average road construction/reconstruction that is reasonably foreseeable in Idaho Roadless Areas under the various alternatives. This table is based on a combination of actual accomplishments and future projections of activities, similar to what was described in the timber cutting section.

Road miles associated with "other" reflect roads constructed/reconstructed for access to rights-of way, access associated with ANILCA, locatable minerals, and existing phosphates leases, including exploration. They may also include an incidental amount for recreation or other needs. Road miles associated with "timber" reflect roads constructed/reconstructed to access timber sales and are most likely temporary.

Table IV-3. Projected road construction/reconstruction by alternative

	2001 Roadless Rule	Existing Plans	Proposed Rule	Modified Rule
Projected miles of road construction/ reconstruction activities, annual average				
Permanent–other	0.8	0.8	0.8	0.8
Temporary–other	0.2	0.2	0.2	0.2
Reconstruction–other	0.0	0.0	0.0	0.0
Total	1.0	1.0	1.0	1.0
Permanent–timber	0	4	0.0	0.0
Temporary–timber	0	2	1.5	1.2
Reconstruction–timber	0	5	1.5	1.1
Total	0	11	3	2.3
Grand total	1.0	12	4	3.3
Projected miles of road construction/ reconstruction activities, 15 years, all activities				
Permanent	12	72	12	12
Temporary	3	33	26*	21
Reconstruction	0	75	23*	17*
Total	15	180	61	50

**Rounded to nearest whole number*

Mineral Activities - Projections and Foreseeable Actions

Locatable

- Locatable mineral activities are projected to require less than 1 mile per year of road construction or reconstruction for the foreseeable future. This projection is included in the 1 mile of "other" road in Table IV-3. If the price of metals continues to rise, there could be a corresponding increase in exploration on mining claims resulting in an increase in road construction and reconstruction within Idaho Roadless Areas.

Leasables

- Exploration and prospecting of existing leases is projected to require less than 1 mile per year of road construction or reconstruction for the foreseeable future. This projection is included in the 1 mile of "other" road in Table IV-3.

Oil and gas

- It is anticipated there would be no oil and gas exploration conducted within Idaho Roadless Areas on the Targhee portion of the Caribou-Targhee National Forest. Therefore, no roads or surface disturbance associated with oil and gas would occur within the Targhee roadless areas.
- Four wells would be drilled on the Caribou portion of the Caribou-Targhee National Forest over the next 15 years (Robison 2007). Each well would require 6 miles of new access road to be constructed. It is unknown whether or not these wells would be located in an Idaho Roadless Area. It is predicted these wells would not be capable of economic commercial production because of the geology, historical level of drilling activity and success rate, the near lack of infrastructure to support oil or gas

development, and the lack of any historical or currently producing oil/gas wells/fields in southeast Idaho and surrounding area (Robison 2007).

Geothermal

- Although there is substantial acreage of Idaho Roadless Areas with geothermal potential, there are no projections about how much geothermal exploration and development would occur on Idaho Roadless Areas. There are no existing geothermal leases and no history of activity on NFS lands upon which to make an estimate. However, there could be some interest in leasing, exploration, and development of geothermal resources in the extended future.
- The only foreseeable geothermal activity is related to geothermal lease applications filed on the Boise and Salmon National Forests. Six geothermal lease applications have been submitted for 11,130 acres on the Boise National Forest, including 7,000 acres in the Peace Rock Roadless Area. Three geothermal lease applications have been submitted for 5,600 acres on the Salmon National Forest, including 33 of the West Panther Creek Roadless Area.

Phosphate

- There would be only one operating phosphate mine (Smoky Canyon Mine) affecting Idaho Roadless Areas for the foreseeable future (next 15 years) because it is the only mine that is in the process of expanding into roadless areas. Based on current production levels, other active mines in the forest will be operating on lands outside of Idaho Roadless Areas for the foreseeable future.
- Over a 16-year period (the length of the mine operation), the Smoky Canyon Mine would develop about 8 miles of haul road and disturb about 1,100 acres of the Sage Creek and Meade Peak Roadless Areas in the Caribou portion of the Caribou-Targhee National Forest. Because existing leases are involved, this development would occur under all of the alternatives.
- There would likely be some development of an additional 6,100 acres[7] of leased phosphate deposits found in the Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson Roadless Areas in the extended future (between 15 to 50 or more years from now). About 17 miles of new road construction/reconstruction would be needed to access these deposits. About 30 acres of leased phosphate deposits has already been mined in roadless areas.

Saleables

- Although no specific tonnage projection is made, the amount of mineral materials (sand, gravel, rock, fill dirt, etc.) that would be produced from Idaho Roadless Areas would be low and associated with other permitted activities.

[7] There is total of 7,230 acres of leased deposits in Idaho Roadless Areas, of which 30 acres have been mined and 1,100 acres are associated with the Smokey Canyon Mine.

Primary Information Used

- Region 1 TEP and Sensitive species list (USDA Forest Service 2004c, USDA Forest Service 2007a)
- Region 4 TEP and Sensitive species list (USDA Forest Service 2008a)
- Idaho Comprehensive Wildlife Conservation Strategy (Idaho Department of Fish and Game 2005)
- Forest Land and Resource Management Plans:
  - Idaho Panhandle National Forest (1987)
  - Clearwater National Forest (1987)
  - Nez Perce National Forest (1987)
  - Payette National Forest (2003)
  - Salmon-Challis National Forest (1987)
  - Sawtooth National Forest (2003)
  - Targhee National Forest (1997)
  - Boise National Forest (2003)
  - Caribou National Forest (2003)
  - Wallowa-Whitman (1990)
- Petition of Governor James E. Risch for Roadless Area Management in Idaho, October 5, 2006 (State of Idaho 2006)
- Forest Service Roadless Area Conservation Final Environmental Impact Statement (USDA, Forest Service 2000a)
- Specialist Report for Terrestrial and Aquatic Habitats and Species November 2000 (USDA, Forest Service 2000b)
- Federal Register Special Areas; Roadless Area Conservation: Final Rule and Record of Decision (USDA, Forest Service 2001)
- 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 1995a).
- 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 (BLM) 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).
- The Lynx Conservation Strategy and Assessment (Ruediger et al. 2000)
- The Northern Rockies Lynx Amendment (USDA, Forest Service 2007)
- Biological Opinion: The Northern Rockies Lynx Amendment on the Distinct Population Segment (DPS) of Canada lynx (Lynx Canadensis) in the contiguous United States (USDI, Fish and Wildlife Service 2007a).
- Current literature – see References cited section.

Consultation and Coordination

An integral part of the purpose and need identified for this project is the conservation of rare plant and animal species and communities. Both the NOAA -National Marine Fisheries Service (NMFS) and the U. S. Fish and Wildlife Service (FWS), the agencies with oversight responsibilities for implementation of the ESA, were involved in the evaluation of the Modified Idaho Roadless Rule alternative. The biological analysis for threatened, endangered, candidate, and proposed aquatic species, terrestrial wildlife species and plant species is available in a separate document prepared for the Idaho Roadless Rule FEIS (Carlson et al. 2008) and can be found in the project file and on the internet at http://roadless.fs.fed.us/idaho.shtml. The BA includes more detail on the consultation history.

The existing Forest Plans and the 2001 Roadless Rule have undergone consultation in some form (i.e., informal or formal) with the FWS 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.

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 USFWS (USDA, Forest Service; USDI, Bureau of Land Management; USDC, NOAA National Marine Fisheries Service; and USDI, Fish and Wildlife Service 2000). The following individuals from USFWS 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, Idaho State Habitat Director, Boise, Idaho

Paul Moroz, USFWS, Consultant

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

Johnna Roy, USFWS, Biologist, Boise, Idaho

Rich Torquemada, Acting Project Leader, Spokane, Washington

The consultation record provides a useful point of reference for determining the effects of implementing the proposed action on listed species. 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.

V. Aquatic Animal Habitat and Species: Affected Environment

Background

The State of Idaho contains numerous rivers, streams, and lakes. Most of Idaho is included in the Interior Columbia River Basin with the exception of the Bear River Basin, in southeast Idaho which is part of the Great Basin and flows into the Great Salt Lake. Idaho Roadless Areas support a diversity of aquatic habitats and communities, including habitat for 17 aquatic threatened, endangered, and Forest Service sensitive species (TES) (Table V-1) and numerous other native aquatic species including fish, amphibians, and invertebrates. Sublett Roadless Area on the Sawtooth NF is only roadless area that does not overlap any of the species listed in Table V-1.

Table V-1. Aquatic TES Species with ranges overlapping Idaho National Forests

Species	Status	Boise	Caribou	Challis	Clearwater	Idaho Panhandle	Nez Perce	Payette	Salmon	Sawtooth	Targhee
Fish											
Snake River 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					
Bonneville cutthroat trout (*Oncorhynchus clarkii utah)*	S (R4)		X								
Burbot *(Lota lota)*	S (R1)					X					
Inland redband trout (*Oncorhynchus mykiss gairdneri*)	S (R1)	K		K	X	X	X	K	K	K	
Pacific lamprey (*Lampetra tridentata)*	S (R1)	K		K	X		X	K	K	K	
Snake River Chinook salmon (*Oncorhynchus tshawytscha)* (naturalized pops)	S (R1)				X		X				
Yellowstone cutthroat trout (Fine-spotted Snake River cutthroat trout) *(Oncorhynchus clarkii boouvieri)*	S (R1) S (R4)		X								X
Westslope cutthroat trout (*Oncorhynchus clarkii lewisi)*	S (R1) S (R4)	X		X	X	X	X	X	X	X	

Species	Status	Boise	Caribou	Challis	Clearwater	Idaho Panhandle	Nez Perce	Payette	Salmon	Sawtooth	Targhee
Wood River sculpin (*Cottus leiopomus)*	S (R4)									X	
Amphibians											
Coeur d'Alene salamander *(Plethodon idahoensis)*	S (R1)				X	X	X				
Columbia spotted frog (*Rana luteiventris)*	S (R4)	X		X	K	K	K	X	X	X	X
Western toad (*Bufo boreas)*	S (R1)	K	K	K	X	X	X	K	K	K	K

E = Federal Endangered

T = Federal Threatened

S = Forest Service Sensitive, (R1) = Region 1, (R4) = Region 4

X = Known occurrences and/or Range overlaps Idaho Roadless Area

K = Known to occur and/or Range overlaps Idaho Roadless Area, (K = Amphibians not Forest Service Sensitive in the Region but known to occur)

The Columbia Basin fisheries in Idaho are world renowned for their salmon, steelhead, and native trout populations. The Bear River Basin, including Bear Lake and its tributaries support several endemic species, including Bonneville cisco, Bonneville whitefish, Bear Lake white fish, and Bear Lake sculpin. In addition, the fisheries resources of the state are very important for the Tribes in Idaho. Most of the native fish populations in Idaho have suffered declines. Similarly native amphibians such as the Coeur d'Alene salamander, western toad and Columbia spotted frog have also experienced population declines.

Human activities since the late 1800s have altered much of the landscape across Idaho. Clearing of streams for passage of boats and milling of logs downstream reduced habitat complexity and the connection between streams and their floodplains. Dams and diversions resulted in dramatic changes to stream conditions and the passage of aquatic species upstream and downstream. Ground disturbing activities such as mining, road building, and logging have resulted in higher sediment loading to streams and channel alterations that often times resulted in unfavorable conditions for aquatic species (Meehan 1991). In the Interior Columbia Basin (including most of Idaho) the ecological integrity of streams, lakes, and wetlands was significantly compromised by the late 1920s (Lee et al. 1997). Increasing human population, technological advances (for example, centrifugal pumps), and availability of heavy equipment after World War II greatly accelerated the development of new irrigation projects, timber harvest, dam construction, and road building (Lee et al. 1997). Individually and inn combination, these activities continued to fragment and compromise the remaining hydrologically connected and vegetated reaches of streams (Lee et al. 1997).

Features of altered ecosystems include changes (generally reductions) in species diversity, changes in species distributions, and losses of habitat types or ecosystem states (Reeves et al. 1995). Native salmonid assemblages are simplified in watersheds that have been impacted by various human activities (Reeves et al. 1995). Large blocks of unroaded areas, such as inventoried roadless areas, while having relatively more intact aquatic habitat, may still support isolated aquatic populations because of road-related effects and other causes of habitat alteration in adjacent areas (USDA Forest Service 2000b).

Idaho Roadless Areas are key to recovery of declining native fishes including salmon and steelhead. IRAs provide habitat to protect species until longer-term solutions can be developed for migration, passage, hatchery, and harvest problems associated with the decline of native fish (USDA Forest Service 2001). Aquatic resources in Idaho would benefit from systematic conservation planning (Margules and Pressey 2000). A systematic approach to conservation planning has many advantages including being strategic versus ad hoc therefore being more efficient, providing early identification of critical conservation elements through design, and the ability to focus on priority areas for conservation. The Idaho Roadless Areas could provide a foundation for systematic conservation planning in Idaho related to aquatic species. Through the maintenance of roadless area characteristics, a network of aquatic reserves could be designated which could provide for biodiversity. Roadless areas in Idaho function as biological strongholds for populations of threatened and endangered species. They provide large, relatively undisturbed landscapes that are important to biological diversity and the long-term survival of many at risk species. Currently Idaho Roadless Areas have a very low level of human disturbance which is reflected in the favorable conditions for aquatic species.

Analysis Process Used

Aquatic species characteristics considered in this analysis included both characteristics important for species sustainability and ecosystem integrity. Aquatic 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 alternatives.

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 TES aquatic species are present, and what is the overlap between the species range and Idaho Roadless Areas?
2. What are the themes within the areas of species overlap? Is there a fairly high percentage of overlap between the more permissive themes and the species?
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. For IRAs that provide habitat for multiple TES aquatic 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 TES aquatic species diversity?
5. What is the current population trend for the species?
6. What potential effects and pathways could projects have that will now be authorized under the proposed alternatives?

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.

Aquatic Ecosystems

Approximately 32% of Idaho is roadless including: congressionally mandated wilderness (7%), National Forest Inventoried Roadless (18%), and BLM roadless (7%). The 9.3 million acres identified as Idaho Roadless Areas can play an important role in the condition of aquatic ecosystems and aquatic species across the state. Idaho Roadless Areas can provide watershed areas that are relatively free of road construction and reconstruction, timber harvest and discretionary mineral activities. Roadless areas if managed for minimal ground disturbance can provide for the hydrologic function of rivers and streams and features that serve as important habitat for aquatic life. In Idaho areas free of these types of anthropogenic disturbances outside of wilderness areas are unique.

Key aquatic ecological characteristics that contribute to aquatic/riparian ecosystem integrity include (Furniss et al. 1991, USDA et al. 1993 (FEMAT)):

- Riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geographic region.
- Habitat to support diversity and productivity of native and non-native plant, vertebrate, and invertebrate populations that contribute to the viability of aquatic- and riparian-dependent communities.
- Habitats and conditions that discourage and prevent the establishment and spread of invasive species.
- Water quality, including temperature, to a degree that provides for stable and productive riparian and aquatic ecosystems.
- Stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which riparian and aquatic ecosystems developed.
- Instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges.
- Natural timing and variability of the water table elevation in meadows and wetlands.
- Riparian vegetation to:
    - Provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;
    - Provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and
    - Help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

These characteristics are becoming scarce in an increasingly developed landscape. Idaho Roadless Areas on NFS lands provide an opportunity to manage for ecological integrity and larger undisturbed landscapes. Idaho contains more wild and remote public land than any state outside of Alaska (Curley et al. 2004).

Waters in inventoried roadless areas have been shown to function as biological strongholds and refuges for many fish species (Lee et al. 1997). Smaller streams, such as many of those found in inventoried roadless areas, provide important habitat for resident and migratory aquatic species and also influence the quality of habitat in larger, downstream reaches (Chamberlin et al. 1991). Subwatersheds that support strong populations of native salmonids are likely to represent a fortuitous balance of habitat quality, climate, geologic constraint, and geographic location which effectively minimize cumulative threats to the species (Lee at al. 1997).

Strong fish populations that include the most productive, abundant and diverse populations are likely to be most resilient to environmental disturbance and most likely to survive and recover from catastrophic disturbance (Rieman et al. 1993). Idaho's Roadless Areas provide for aquatic species strongholds and opportunities to better understand aquatic and riparian ecosystems

that have experienced minimal disturbance. Strong populations of native fish are critical for short-term persistence and long-term recovery.

Biodiversity

In the ecological literature, diversity refers to both the number of species present and their relative abundance. Thus, an area with many abundant species is more "diverse" than an area with an equal number of species, few of which are abundant and most of which are rare. A relative measure of Idaho's aquatic biodiversity is shown in Table V-2.

Table V-2. Idaho's Biodiversity Rank Relative to the 50 U.S. States and the District of Columbia

Category	Rank	Number of Species/ Percent at Risk
Amphibian diversity	48	12 species
Amphibian risk	19	8.3% at risk
Freshwater fish diversity	47	42 species
Freshwater fish risk	10	19.0% at risk

(Source: Stein et al. 2000)

The number of native species present in a watershed is an important element of diversity, and reflects heterogeneity in the physical environment (Lee et al. 1997). A high degree of species overlap might reflect strong habitat diversity. Even with a fairly narrow group like salmonids, each species relies on different habitats and environments, with variable and wide-ranging life-history patterns. The co-occurrence of several salmonids suggests suitable habitats exist over relatively large landscapes, not just those tied to the local subwatershed. High richness may also indicate critical common areas that serve as corridors, wintering areas, or seasonal refuges for the varied life histories in the assemblage. The loss of such areas could portend a loss of richness on both local and regional scales.

The size of an area, kinds and intensity of management-induced and natural disturbances that have occurred, and the landscape context in which it is found, all affect the quality, distribution, and extent of these habitats. Some of these waters may now play a relatively much greater role in supporting aquatic species viability and biodiversity than in the past due to cumulative degradation and loss of other, potentially more biologically rich habitat within associated drainages.

Aquatic Species Status

Examples of native fish declines in Idaho include Snake River populations of Chinook salmon (threatened), sockeye salmon (endangered), and steelhead trout (threatened). These fish populations have declined so severely that they are federally listed under the ESA. Bull trout (threatened), once widely distributed in Idaho have lost 46% of their historic range (Curley et al. 2004). Genetically pure populations of Yellowstone cutthroat trout are limited to a fraction of their historical stream habitat in the upper Snake River drainage (Gresswell 1995, Varley and Gresswell 1988). Westslope cutthroat trout have lost 16% of their historic range in Idaho (Curley et al. 2004) and are listed as a State Species of Greatest Conservation Need and a Forest Service sensitive species in both Regions 1 and 4. In addition, only a small portion of the historic range of westslope cutthroat trout sustains genetically pure populations (Rieman and Apperson 1989, McIntyre and Rieman 1995).

Many factors have contributed to the decline of Idaho fishery resources. Dams and hydroelectric operations, introductions of hatchery and other non-native species, excessive harvest, and changes in aquatic and riparian habitat have been identified (Lee et al. 1997). However, reduction in freshwater habitat quality and quantity and alteration of riparian areas, are a consistent and pervasive problem facing aquatic resources (Williams et al. 1989, Meehan 1991, Nehlsen et al. 1991, Young 1995, Thurow et al. 1997).

Idaho native amphibians play an important ecological role in transferring energy up the food chain and shaping terrestrial and aquatic communities. In addition they may serve as valuable bioindicators of the health of certain environments. In recent years, over two hundred amphibian species around the world, including several in Idaho, are known or suspected to have undergone declines. Direct and indirect impacts from a variety of human activities may affect the viability of amphibian populations. Because they have complex life cycles with life history stages that require specific breeding, foraging, and over-wintering habitats that may be spatially separate, management actions designed to ensure population viability must consider a complex set of habitats and a complex set of human activities that may present a risk to one or more life history stage (Maxell 2000, Werner et al. 2004).

In Idaho, western toad, Coeur d'Alene salamander, and Columbia spotted frog have experienced declines in their populations to the extent that they are now identified as Forest Service Sensitive Species and/or Species of Greatest Conservation Need by the State of Idaho. Idaho Roadless Area may provide some refuge for these species from disturbances related to roads, timber cutting and mining.

Anthropogenic disturbances such as logging and road related activities have been shown to affect amphibian populations. In a study of four streamside amphibians in Oregon and Washington, Corn and Bury (1989) reported that only 1 of 20 streams in logged stands contained all four species as compared to 11 of 23 streams in uncut stands. Furthermore, only 2 of the streams in the uncut stands had fewer than three species, whereas 11 streams in the logged stands had only 1 or no species present. Coeur d'Alene salamanders are particularly sensitive to timber harvest because of their dependence on cool, moist microhabitats that are often altered by timber harvest (Maxell 2000). Finally, it should be noted that many of the negative impacts associated with timber harvest may be associated with the building and maintenance of roads and road traffic. For instance sedimentation of streams has major impacts on stream dwelling amphibians (Welsh and Lind 1998) and 90% of the sediment runoff from some harvest operations comes from roads (Anderson et al. 1976).

Idaho Species of Greatest Conservation Need

The Idaho Comprehensive Wildlife Conservation Strategy (Idaho Department of Fish and Game 2005) identified species of greatest conservation need. Many of the aquatic species already selected for this analysis because of their federal or Forest Service status are also identified as State species of greatest conservation need. Aquatic species used in this analysis of Idaho Roadless Area alternatives are listed in Table V-3 and are worth special note because of their status in the State of Idaho.

Table V-3. State of Idaho Status for Species Used in this Analysis of Idaho Roadless Area Alternatives

Species	Status
Fish	
Snake River Steelhead *(Oncorhynchus mykiss)*	S3
Snake River Sockeye salmon *(Oncorhynchus nerka)*	S1
Snake River Fall-run Chinook salmon *(Oncorhynchus tshawytscha)*	S1
Snake River Spring/Summer Chinook salmon *(Oncorhynchus tshawytscha)*	S1
Bull trout *(Salvelinus confluentus)*	S3
Kootenai River White sturgeon (*Acipenser transmontanus)*	S1
Bonneville cutthroat trout (*Oncorhynchus clarkii utah)*	S3
Burbot *(Lota lota)*	S1
Inland redband trout (*Oncorhynchus mykiss gairdneri*)	S4
Pacific lamprey (*Lampetra tridentata)*	S1
Snake River Chinook salmon (*Oncorhynchus tshawytscha)* (naturalized pops)	S1
Yellowstone cutthroat trout (Fine-spotted Snake River cutthroat trout)*(Oncorhynchus clarkii bouvieri)*	S2
Westslope cutthroat trout (*Oncorhynchus clarkii lewisi)*	S3
Wood River sculpin (*Cottus leiopomus)*	S2
Amphibians	
Coeur d'Alene salamander *(Plethodon idahoensis)*	S2
Columbia spotted frog (*Rana luteiventris)*	S2
Western toad (*Bufo boreas)*	S3

***S1 = State Critically Imperiled**: at high risk because of extreme rarity, rapidly declining numbers, or other factors that make it particularly vulnerable extirpation in the state.*

***S2 = State Imperiled**: at risk because of restricted range, few populations, rapidly declining numbers or other factors that make it vulnerable to rangewide extinction or extirpation.*

***S3 = State Vulnerable**: at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation.*

***S4 = State Apparently Secure:** uncommon but not rare (although it may be rare in parts of its range), and usually widespread. apparently not vulnerable in most of its range, but possibly cause for long-term concern.*

Other Idaho aquatic species of greatest conservation need not specifically included in this analysis include a variety of organisms including mollusks, insects, amphibians and fish. The species included in this analysis (Table V-3) serve as a surrogate for this larger group of cold water species. The cold water group requires stream environments that have clean, cold water. Salmonid species are considered useful surrogates for aquatic invertebrates. Lee et al. (1997) in the Interior Columbia Basin assessment provided several reasons for focusing on salmonid species as cold water biota indicators. These include:

a. More is known about them, and therefore are more likely to discern important environmental relationships.

b. They are widely distributed, which allows for broad-scale comparisons.

c. They act as predators, competitors, and prey for a variety of other aquatic and terrestrial animals. Thus they are likely to influence the structure and function of aquatic ecosystems.

d. They are potentially more sensitive to disturbance than other species groups.

ESA Threatened and Endangered Aquatic Species

Threatened and endangered aquatic species that occur in Idaho include Snake River steelhead, Snake River spring/summer Chinook salmon, Snake River fall-run Chinook salmon, Snake River sockeye salmon, bull trout, and Kootenai River white sturgeon. The biological assessment for these species is provided in a separate document as part of the FEIS (Carlson et al. 2008) and can be found in the project file and on the internet at http://roadless.fs.fed.us/idaho.shtml. A summary of the biological assessment is provided in this specialist report. Table V-4 displays acres of threatened and endangered fish species range in Idaho and the percent overlap of the range with the Idaho Roadless Areas.

Table V-4. Acres of threatened & 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 Sockeye	1,655,700	346,800	21
Snake River fall-run Chinook	790,400	40,300	5
Snake River spring/summer Chinook	10,512,900	2,980,900	28
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. Aquatic species range by theme is provided in Appendix A, Table A-6.

Snake River Steelhead (*Oncorhynchus mykiss*)

Species Listing

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.

Critical Habitat

A final designation of Snake River Basin steelhead critical habitat was published on September 2, 2005 (USDC, NOAA-NMFS 2005a), with an effective date of January 2, 2006. There are 980 miles (12%) of Snake River Basin steelhead designated critical habitat within the Idaho Roadless Areas.

Background

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. Currently, wild and hatchery steelhead are found in the Snake River below Hells Canyon Dam, Clearwater, and Salmon River drainages.

Snake River 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 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.

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.

The range of steelhead in Idaho and Idaho Roadless Areas are displayed in Figure V-1. About 100 roadless areas, approximately 3,133,800 acres (27%) of the range of steelhead overlaps Idaho Roadless Areas.

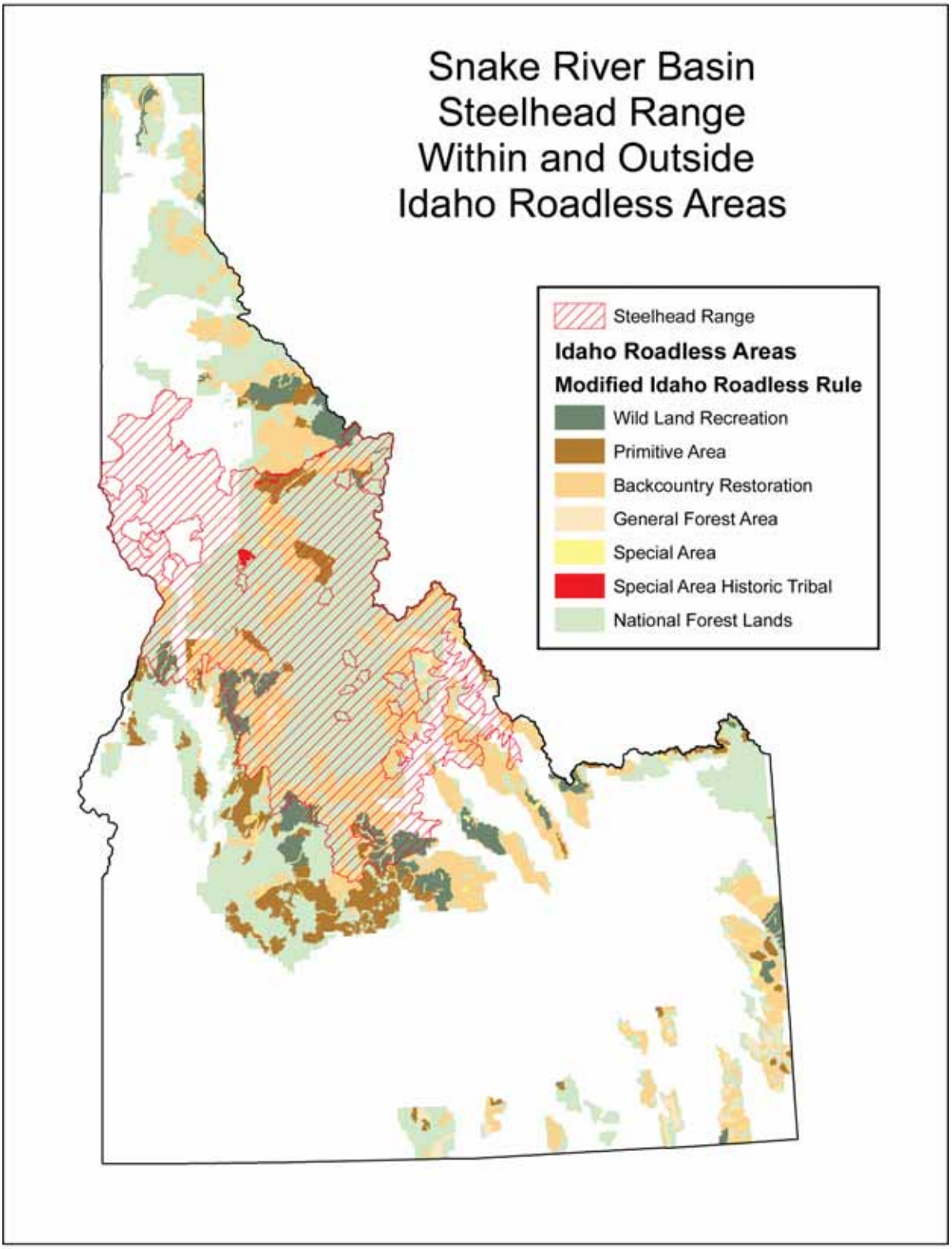

Figure V-1. Snake River Basin steelhead range within and outside of Idaho Roadless Areas

Sockeye Salmon (*Oncorhynchus nerka*)

Species Listing

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 2005b). 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.

Critical Habitat

Critical habitat for Snake River sockeye salmon was designated on December 28, 1993 (USDC, NOAA-NMFS 1993). There are 216 miles (14%) of Snake River sockeye salmon designated critical habitat within the Idaho Roadless Areas. None of the lake acres that are designated critical habitat for this species occur in the Idaho Roadless Areas.

Background

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.

Snake River sockeye salmon spawn at a higher elevation (6,500 ft) than any other sockeye salmon population in the world (Waples et al. 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 (Bell 1986, p. 27). Juvenile residence of sockeye salmon in Redfish Lake rarely exceeds 2 years (Bowles and Cochnauer 1984).

Migrants leave Redfish Lake when temperatures are between 38° to 50° 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. Snake River sockeye salmon migrate to and from the ocean through the Salmon, Snake, and Columbia Rivers.

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.

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 2005b).

Figure V-2 displays the range of sockeye salmon in Idaho and the Idaho Roadless Areas. Approximately 346,800 acres (21%) 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.

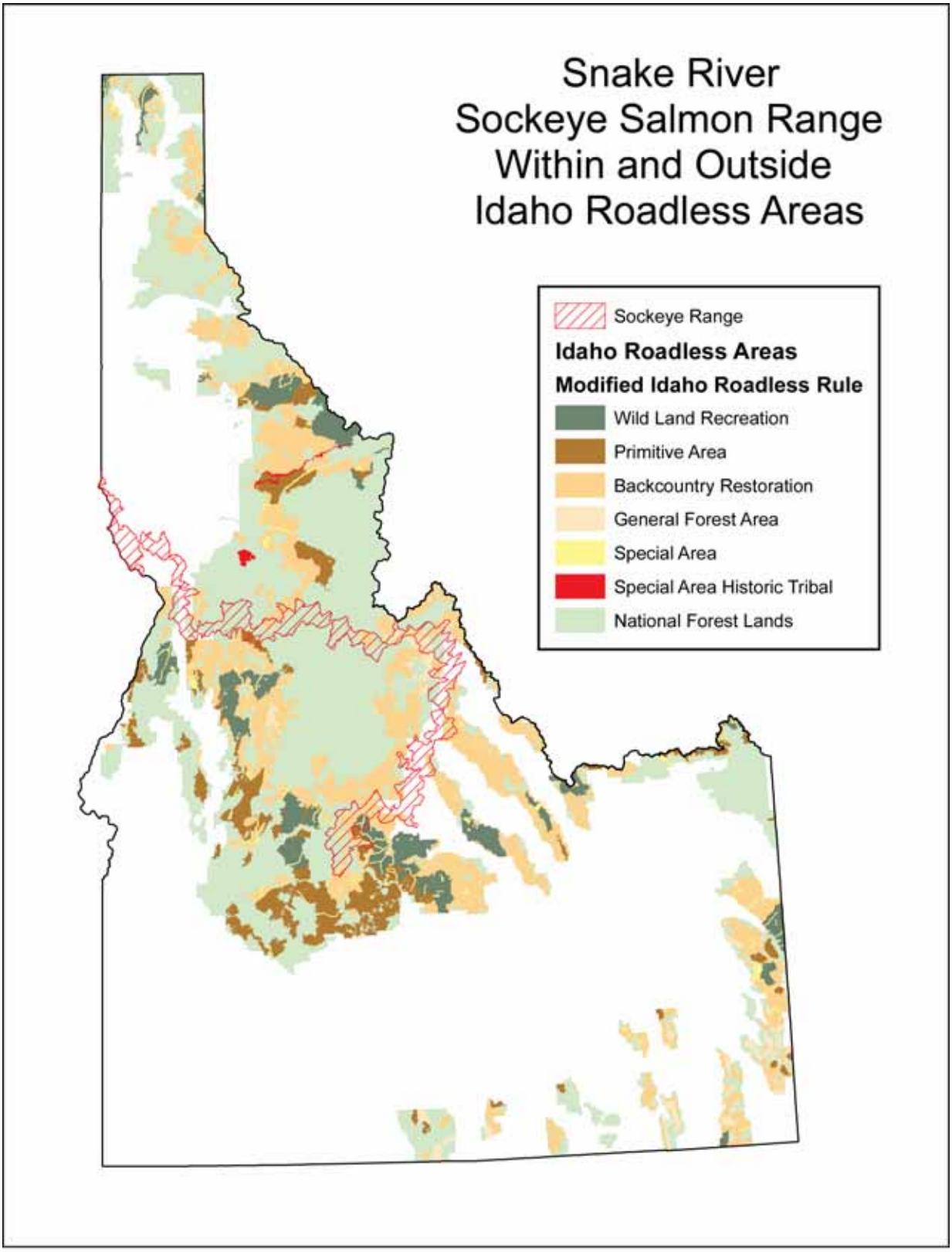

Figure V-2. Snake River sockeye salmon range within and outside of Idaho Roadless Areas

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

Species Listing

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 2005b).

Critical Habitat

Critical habitat for Snake River fall-run Chinook salmon was designated on December 28, 1993 (USDC, NOAA-NMFS 1993). There is no overlap between the Snake River spring/summer Chinook salmon designated critical habitat and the Idaho Roadless Areas.

Background

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.

Fall-run Chinook salmon use the mainstem of larger rivers to spawn compared to spring/summer-run 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-run 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.

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 2005b, 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 2005b, 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.

Figure V-3 displays the range of fall-run Chinook salmon in Idaho and the Roadless Areas. About 40,300 acres (5%) of the Snake River fall-run Chinook salmon range overlaps Idaho Roadless Areas.

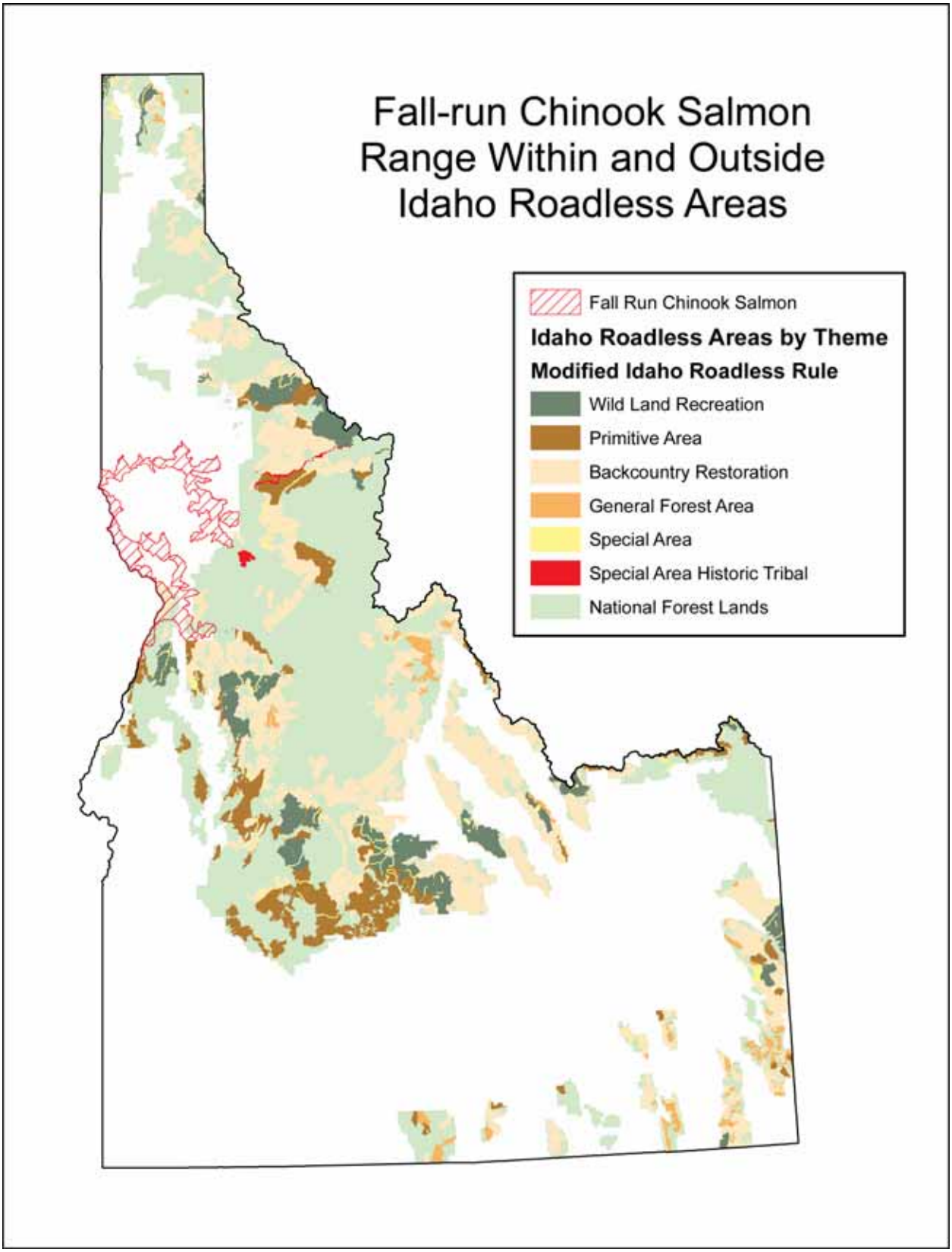

Figure V-3. Snake River fall-run Chinook salmon range within and outside of Idaho Roadless Areas

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

Species Listing

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 2005b).

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. There are 643 miles (10%) of Snake River spring/summer Chinook salmon designated critical habitat within the Idaho Roadless Areas.

Background

Snake River spring/summer-run Chinook salmon historically spawned in the Snake River tributaries of the Clearwater, Salmon, Weiser, Payette and Boise Rivers. 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. Populations in the Clearwater drainage were eliminated or severely depressed by the Lewiston dam in the 1950s. The Idaho portion of the Snake River spring/summer-run Chinook salmon Evolutionary Significant Unit (ESU) consists of all the Salmon River drainage and the Snake River drainage upstream to Hells Canyon Dam. 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.

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-run 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.

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.

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.

About 100 Idaho Roadless Areas (2,980,900 acres, 28%) overlap the range of spring/summer Chinook salmon. Figure V-4 displays the range of spring/summer-run Chinook salmon in Idaho and the Idaho Roadless Areas.

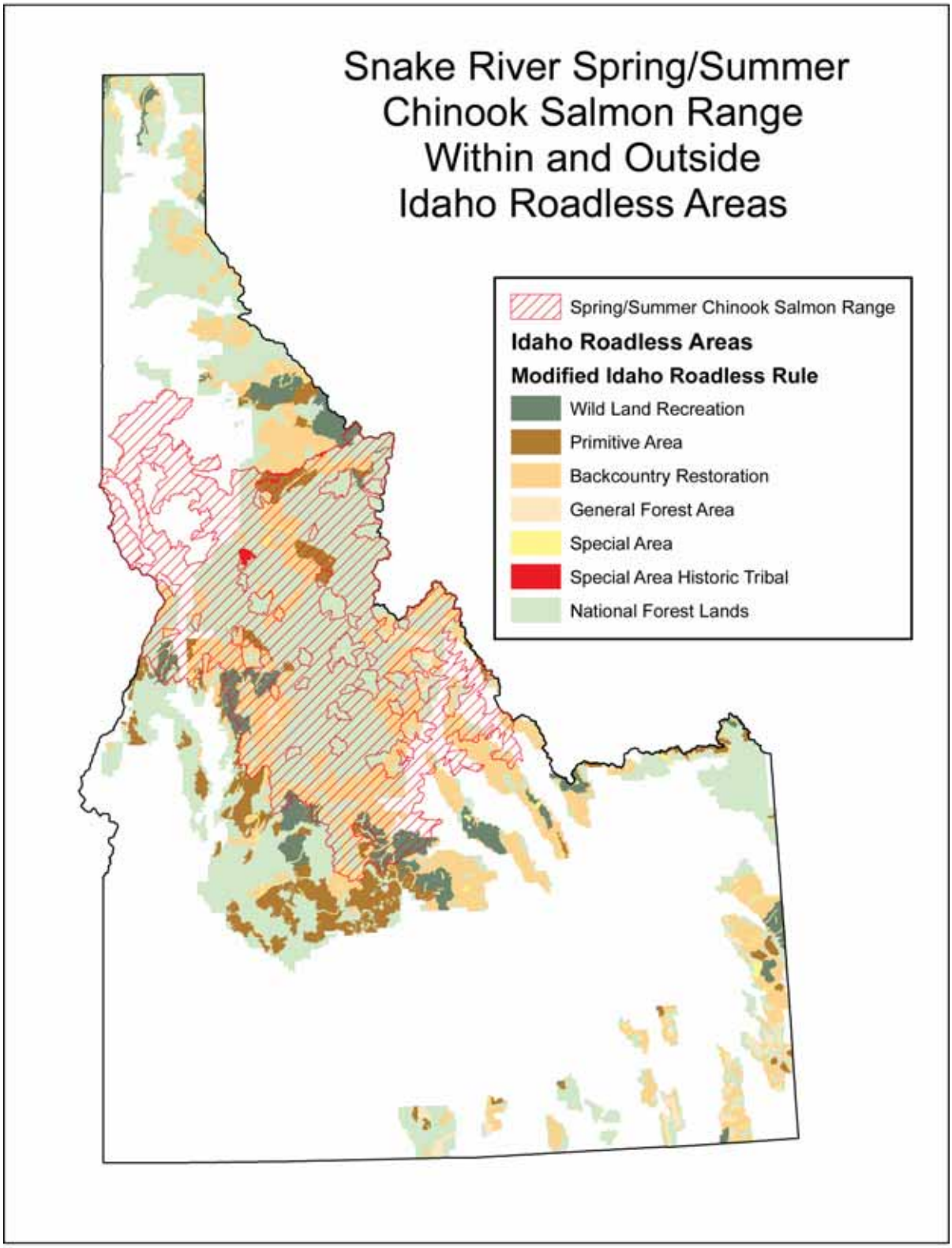

Figure V-4. Snake River spring/summer Chinook salmon range within and outside of Idaho Roadless Areas

Bull Trout (*Salvelinus confluentus*)

Species Listing

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 2008a). The Columbia River DPS is significant because the overall range of the species would be substantially reduced if this discrete population were lost.

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.

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.

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 2008a). 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.

Background

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.

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).

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 (USDA Forest Service 1996, USDI, Fish and Wildlife Service 2008a). 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. Negative effects of interactions with introduced non-native species may be the most pervasive threat to bull trout throughout the Columbia River Basin.

Idaho contains approximately 48% of the stream miles and 39% 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%) within their historic range in the state. About 170 Idaho Roadless Areas (5,581,489 acres, 33%) overlap with the range of bull trout. Figure V-5 displays the range of bull trout in Idaho and the Roadless Areas.

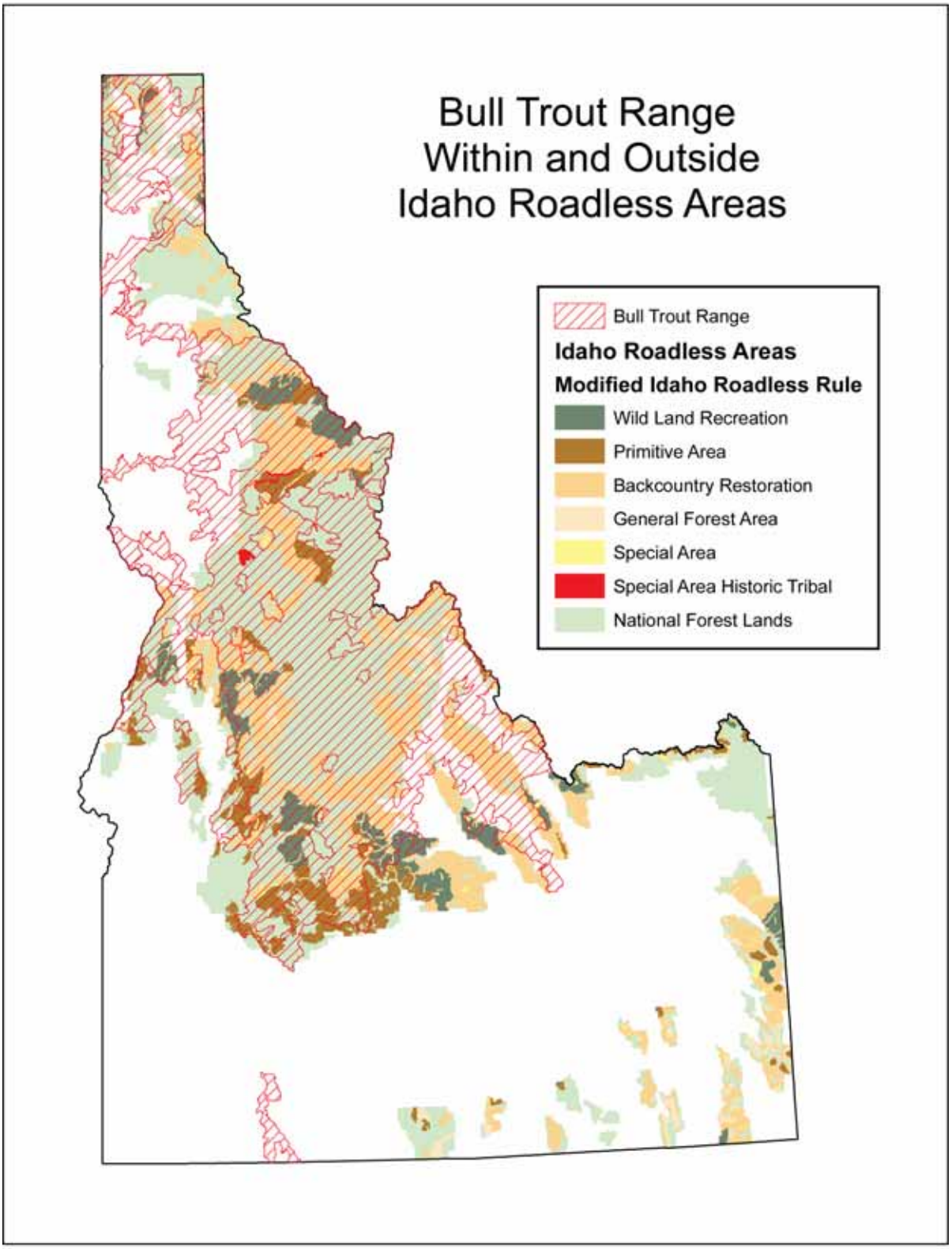

Figure V-5. Bull trout range within and outside of Idaho Roadless Areas

Kootenai River White Sturgeon (*Acipenser transmontanus*)

Species Listing

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

Critical Habitat

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 2006a). 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.

There is no overlap of Kootenai River white sturgeon designated critical habitat and the Idaho Roadless Areas.

Background

The white sturgeon (*Acipenser transmontanus)* 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).

The Kootenai River white sturgeon requires 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).

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 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). 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.

Figure V-6 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, August 10, 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.

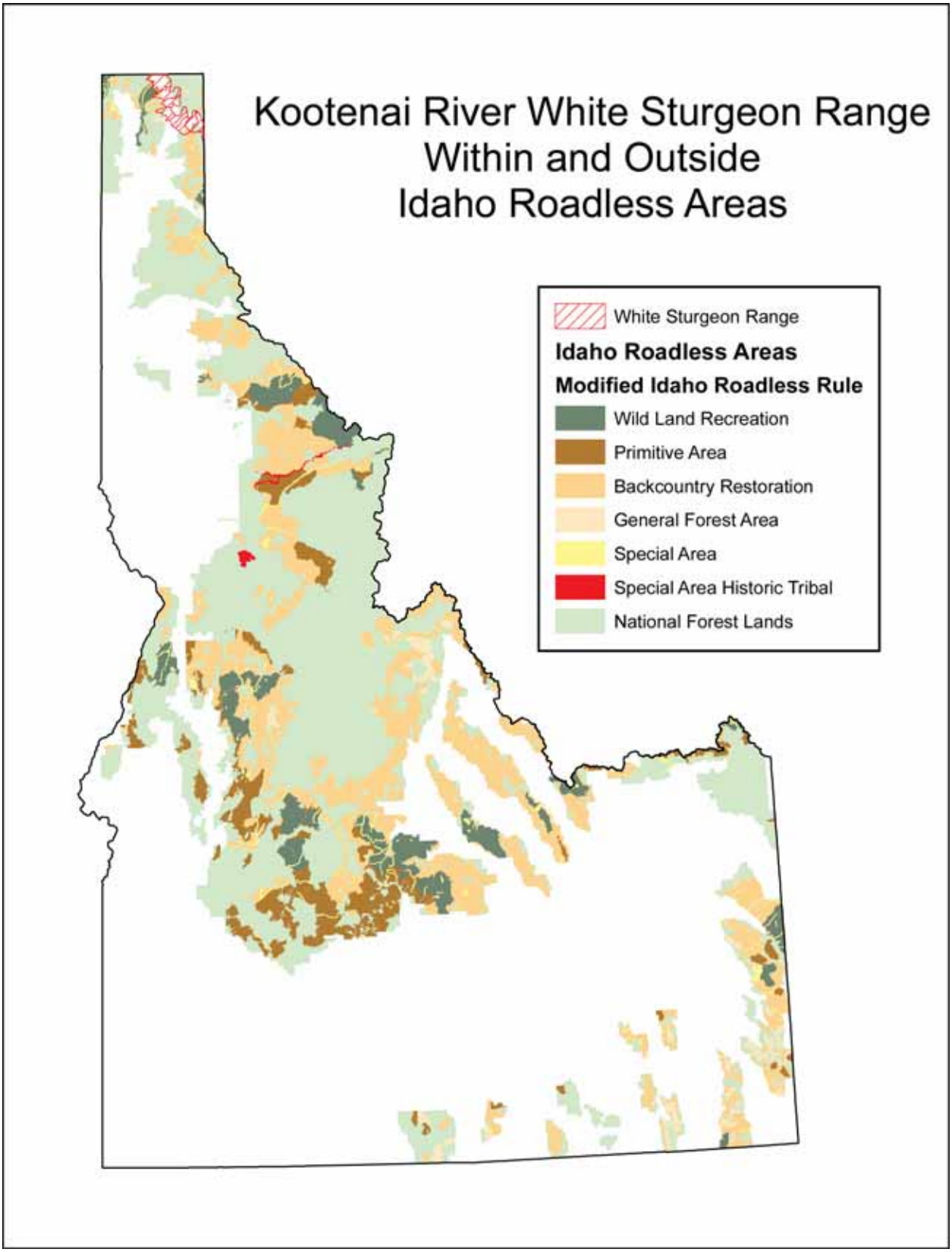

Figure V-6. Kootenai River white sturgeon range within and outside of Idaho Roadless Areas

Evolutionarily Significant Units and Distinct Population Segments within the Action Area

The NMFS and the USFWS 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.

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[8] 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.

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:

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[8] Watershed number 17060306.

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), NMFS (NW Region), BLM (Oregon/Washington and Idaho), FWS (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 et al. 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 V-5.

Table V-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 V-7), with 33 roadless areas providing larger stronghold areas (>100,000 acres) and/or strongholds for multiple (2 or more) fish species (Table V-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 V-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			

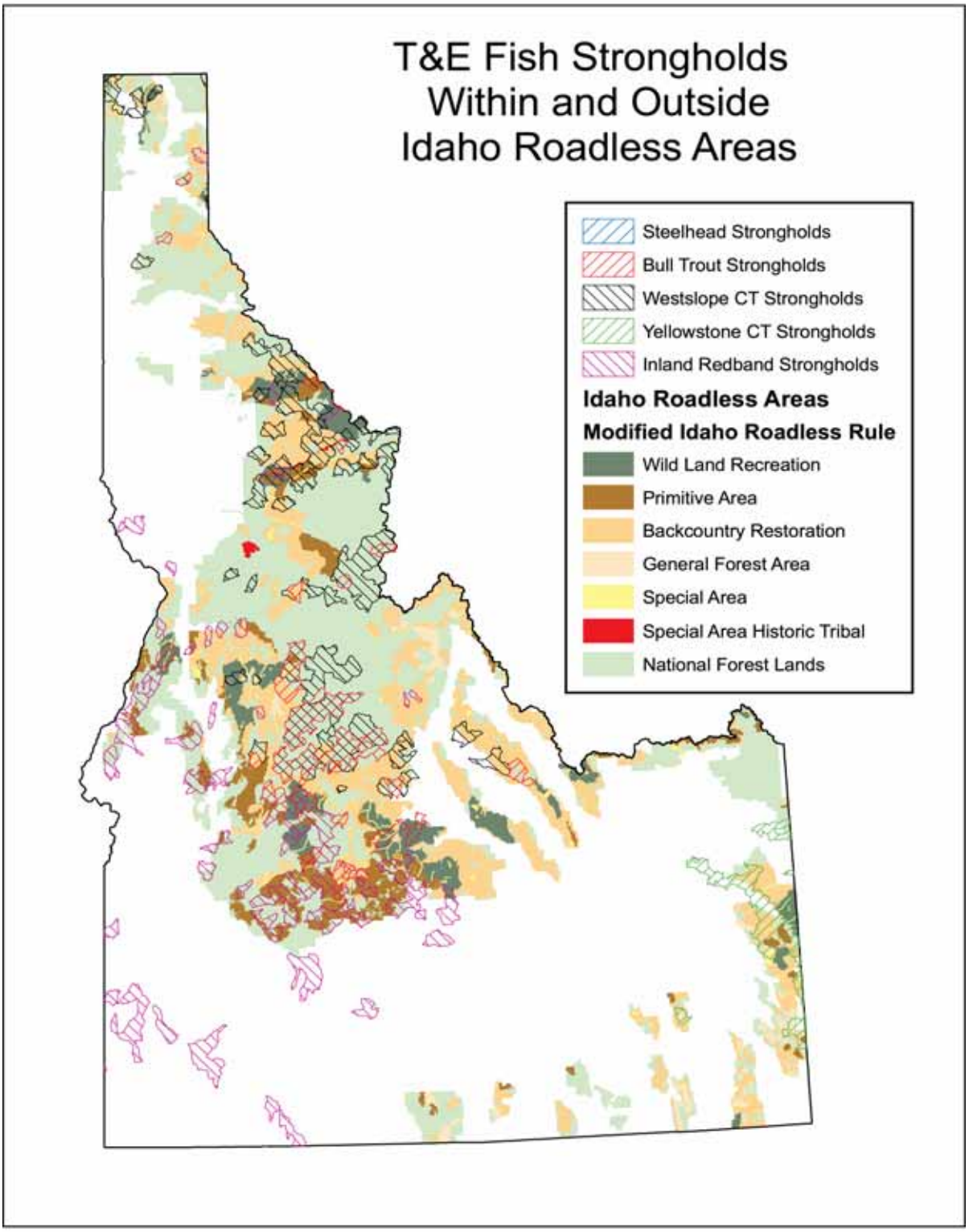

Figure V-7. Fish strongholds within and outside Idaho Roadless Areas

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 V-7 displays percent of priority watersheds in Idaho Roadless Areas by species.

Table V-7. 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, spring/summer Chinook salmon, and bull trout) (Table V-8). 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 V-8. Idaho Roadless Areas that provide threatened & endangered fish priority watershed areas for steelhead, spring/summer 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

Idaho Roadless Area	National forest
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.*

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 V-9); 30 roadless areas overlap with four threatened and endangered species (Table V-9); 66 roadless areas overlap with three aquatic species; 3 roadless areas overlap with two species; 70 roadless areas overlap with one species and 77 roadless areas overlap with no species. Figure V-8 shows Idaho Roadless Areas that provide habitat for multiple (1–5) threatened and endangered aquatic species.

Table V-9. 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

Forest	Idaho Roadless Area	Species
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).

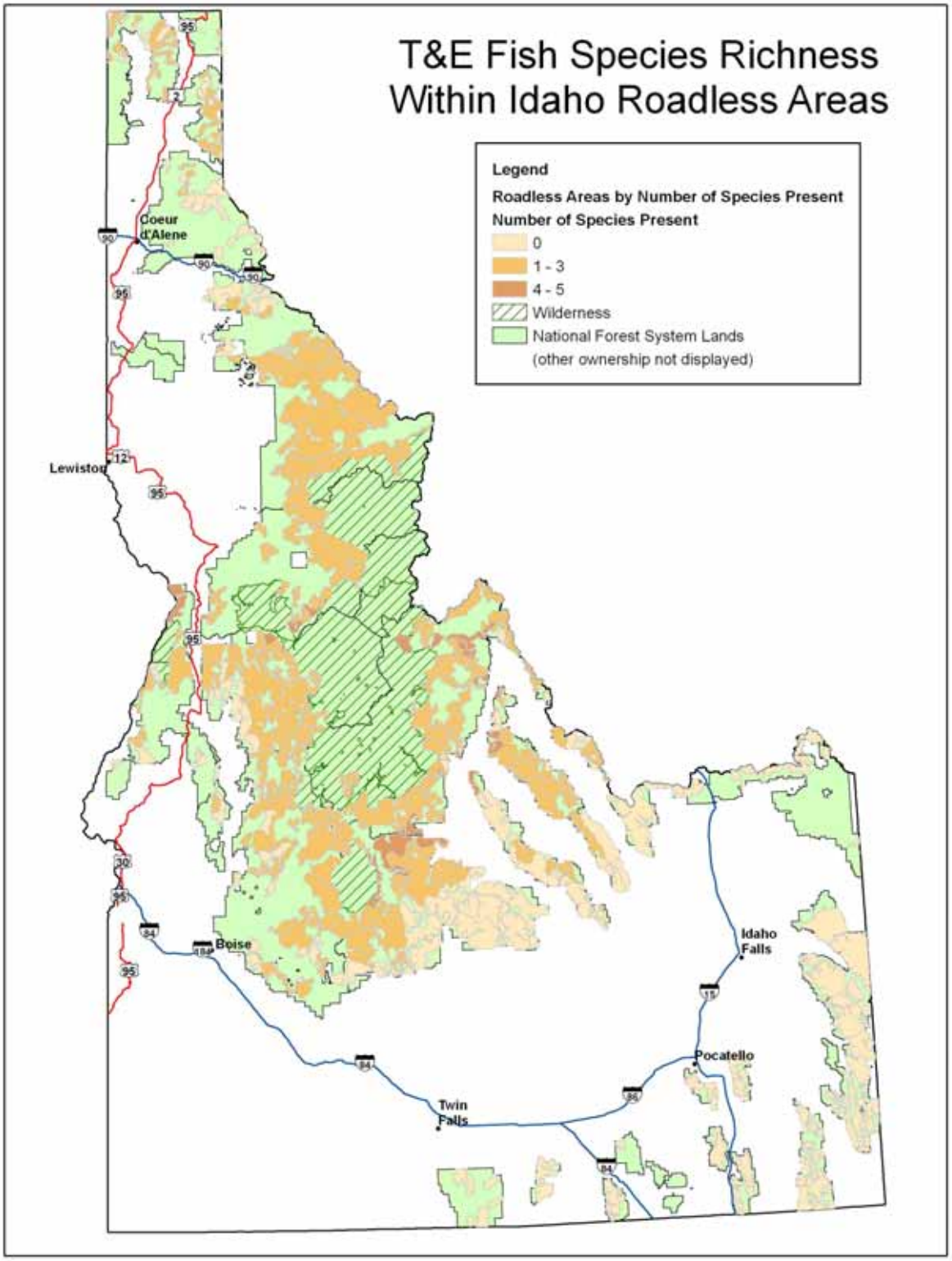

Figure V-8. Threatened and endangered fish species richness within Idaho Roadless Areas

Forest Service Aquatic Sensitive Species

Forest Service sensitive species are designated by the Regional Forester each Region (USDA Forest Service 2004c, USDA Forest Service 2007a, USDA Forest Service 2008a). The National Forest Management Act of 1976 requires the Forest Service to "provide for a diversity of plant and animal communities" [16 U.S.C. 1604(g)(3)(B0)] as part of our multiple use mandate. The sensitive species program is intended to conserve species to prevent a trend toward listing under the ESA. Forest Service sensitive species are given special management consideration to ensure their continued contribution to diversity and ecological sustainability on the National Forests. Species on the sensitive species list for a Region are considered sensitive for every forest where they occur in that Region. Regional aquatic sensitive species including fish and amphibians were used in this assessment of the Idaho Roadless Areas and Roadless Area management alternatives.

Forest Service aquatic sensitive species within the analysis area includes both fish and amphibians. All of the Forest Service aquatic sensitive species have some overlap with Idaho Roadless Areas (Table V-10). Some of these species have very limited distributions (e.g. Wood River sculpin, Coeur d'Alene salamander), and because of their limited distribution smaller areas can be significant to the continued support of the population size and distribution. Aquatic species range by theme is provided in Appendix A, Table A-6.

Table V-10. Percentage of sensitive species range in Idaho that overlaps with Idaho Roadless Areas

Sensitive species (Forest Service region)	Acres of species range	Acres of species range that overlaps Idaho Roadless Areas	Percent of species range in Idaho that overlaps Idaho Roadless Areas
Fish			
Bonneville cutthroat trout (R4)	1,162,800	269,400	23
Burbot (R1)	262,700	32,500	12
Inland redband trout (R1)	9,306,100	3,976,300	43
Pacific lamprey (R1)	1,875,000	304,500	16
Chinook salmon (naturalized populations) (R1)	3,589,700	656,800	18
Yellowstone cutthroat trout [fine-spotted Snake River cutthroat trout] (R1 & R4)	4,089,800	929,500	23
Westslope cutthroat trout (R1 & R4)	17,742,300	4,951,700	28
Wood River sculpin (R4)	1,083,400	359,900	33
Amphibians			
Coeur d'Alene salamander (R1)	8,479,500	1,953,500	23
Columbia spotted frog (R4)	36,864,500	8,209,700	22
Western toad (R1)	46,734,500	8,867,800	19

R1=Northern Region; R4=Intermountain Region.
Acres and percent based on predicted habitat.
**R1=Northern Region, R4=Intermountain Region*

Bonneville Cutthroat Trout (*Oncorhynchus clarkii utah*)

The Bonneville cutthroat trout is a Region 4 sensitive species. Bonneville cutthroat trout are considered critically imperiled in the state of Idaho. The native distribution of Bonneville cutthroat trout includes the Bonneville Basin of Utah, Idaho, Wyoming and Nevada. The Idaho distribution primarily includes the Bear River drainage and headwater tributaries of small streams entering the Great Salt Lake from the north (Behnke 2002). Additionally a lake form is found in Bear Lake. Current population estimates in Idaho are not available, but a recent status review found that about 65% of available habitat is occupied.

The Bonneville cutthroat trout occupies most of the available tributary habitat in the Bear River Drainage. The most abundant and well distributed populations occur in the Logan, Cub, and Thomas Fork River tributaries, and many of the remaining tributaries support relatively low-density populations and most populations are isolated. Localized extirpations appear to have occurred in five tributaries of the Bear River.

Little information is available on specific habitat requirements of Bonneville cutthroat trout. Salmonid habitat needs in general appear to generally represent those of Bonneville cutthroat trout. They normally require well-oxygenated water; clean, well-sorted gravels with minimal fine sediments for successful spawning; temperatures less than 70F, and a complexity of instream habitat structure such as large woody debris and overhanging banks for cover.

Bonneville cutthroat trout populations are found at high, moderate and low elevations in small headwater streams, larger mainstem rivers, and lake systems. Bonneville cutthroat trout have also been found to survive in what is considered marginal salmonid habitat conditions (e.g. turbid water, fine sediments, warmer temperatures up to 80F for short periods of time). Bonneville cutthroat trout in Bear Lake can attain sizes of 18 pounds and live 10-11 years. Maturity is attained at 22-24 inches. In stream populations, maturity can range from 7 to 18 inches depending on stream size and growth rates. Bonneville cutthroat trout feed primarily on aquatic insects and invertebrates until reaching 16 inches or so when they begin eating fish.

Bonneville cutthroat trout occupy most of the available tributary habitat in the Bear River drainage in Idaho, however, populations are at low densities and some local extirpations have occurred. Populations of fluvial Bonneville cutthroat trout in the larger streams of the Bear River drainage are depressed. Bonneville cutthroat trout in Bear Lake are supported by hatchery production as a result of limited natural reproduction. Threats to persistence were identified as water management, livestock grazing, non-native fish interactions including hybridization, and angler harvest.

Approximately 269,400 acres of IRAs overlap with the range of Bonneville cutthroat trout (23% of the range of the species). Appendix B, Figure B-1 displays the range of Bonneville cutthroat trout in Idaho and Idaho Roadless Areas.

Burbot (*Lota lota*)

The burbot is a Region 1 sensitive species. In Idaho, burbot are only found in the Kootenai River drainage. This species is considered imperiled in the state of Idaho and is State-listed as endangered.

Adult burbot primarily inhabit deep lakes or cool rivers or reservoirs in the southern edges of their range (McPhail and Paragamian 2000). In lakes, burbot are strongly associated with the bottom and prefer temperature range of 50-54 F and normally remain below the thermocline.

Burbot can attain lengths of 39 inches and weigh 17 pounds but most are smaller in the 2-7 pound range. Southern populations of burbot mature at 3-4 years of age and females may not spawn each year.

Although burbot can spawn both in lakes and rivers, the population entering Idaho is primarily a spawning population from Kootenay Lake in British Columbia, which leaves the lake in the late fall and early winter to spawn in the Kootenai River or tributary streams in Idaho. In rivers, burbot spawn in low velocity areas in main channels or in side channels behind deposition bars. The preferred substrate is fine gravel, sand or silt. Eggs are broadcast above the substrate. The semi-buoyant eggs may drift but eventually settle into the substrate. Spawning is generally high synchronized over a short 2- 3 week time period when water temperatures are low (34-39 F).

Burbot primarily feed at night, with fry feeding on zooplankton and small aquatic invertebrates. As they grow, their diet changes to include fish. As adults more than 80% of their diet is likely to be fish.

The altered hydrograph on the Kootenai River below Libby Dam for hydropower and flood control has resulted in higher winter time velocities, which may restrict upstream migration of the weak swimming burbot (Paragamian et al. 2000). Daily flow fluctuations for peak power generation may also flush eggs from spawning areas. Nutrient settling above Libby Dam has reduced productivity of the river. The development of agricultural lands has resulted in a loss of habitat for juvenile fish with the elimination of slough backwaters by the diking of the river channel to prevent flooding.

Approximately 32,500 acres of IRAs overlap with the range of burbot (12% of the range of the species). Appendix B, Figure B-2 displays the range of burbot in Idaho and Idaho Roadless Areas.

Inland Redband Trout (*Oncorhynchus mykiss gairdneri*)

Inland redband trout is a Region 1 sensitive species. This species is considered imperiled in the state of Idaho. Inland redband trout, also called redband trout of the Columbia River basin by Behnke (2002), are a subspecies of rainbow trout. As described by Behnke (2002), this subspecies also includes the steelhead (anadromous) life form from the interior rainbow trout complex and the large lake Kamloops trout. The rainbow trout *Oncorhynchus mykiss* complex includes five additional subspecies.

Inland redband trout are found in the interior Columbia River basin from east of the Cascades upstream to geologic barriers such as Shoshone Falls on the Snake River and Kootenai Falls on the Kootenai River and in the upper Fraser River (Behnke 2002). However they were not in the Clark Fork and Coeur d'Alene drainages. Inland redband trout are present in the Salmon and Clearwater drainage along with steelhead. However due to difficulties of identifying juveniles of these two life forms, redband trout in these drainages will be included under the steelhead distribution. Current range wide abundance in Idaho is unknown, however resident of redband trout above Hells Canyon and Dworshak dams are locally abundant.

Resident populations of redband trout persist at some level in all major areas of historical distribution in Idaho. Population estimates for redband trout inhabiting desert habitats in southern Idaho are currently being developed but are not complete at this time.

Inland redband resident trout are found in a range of stream habitats from desert areas in southwestern Idaho to forested mountain streams in central and northern Idaho. In all cases

they prefer cool streams with temperatures less than 70° F, however they can survive daily cyclic temperatures up to 80° F for a short period of time (Wydoski and Whitney 2003). Resident stream redband trout may attain a maximum size ranging from 6-18 inches depending on location. Spawning occurs in the spring between February and June, depending on temperature and location. Diets are primarily drifting invertebrates, both terrestrial and aquatic. Larger fish will occasionally consume other fish.

Habitat loss, fragmentation of current habitat, isolation of existing populations, and hybridization with coastal rainbow trout and cutthroat trout are the principal issues facing inland redband trout.

Approximately 3,976,300 acres of IRAs overlap with the range of inland redband trout (43% of the range of the species). Appendix B, Figure B-3 displays the range of inland redband trout in Idaho and Idaho Roadless Areas.

Pacific Lamprey (*Lamptera tridentata)*

Pacific lamprey is a Region 1 sensitive species. This species is considered imperiled in the state of Idaho. In Idaho, the Pacific lamprey was originally distributed in all drainages of the Snake River below Shoshone Falls, except the Palouse River. It is now restricted to the Clearwater and Salmon River drainages and tributaries to the Snake River below Hells Canyon Dam. The Pacific lamprey was once abundant in Idaho waters and used by native peoples for food. Juveniles were commonly seen in Idaho streams in the 1960s. The species is currently irregularly distributed in the Clearwater drainage (Cochnauer and Claire 2003). The size structure of juveniles (ammocoetes) indicates declining recruitment.

Spawning and larval development occurs in streams having high water quality, woody riparian vegetation and overhanging banks (Cochnauer and Claire 2003). Adults spawn in small freshwater streams in spring and die after spawning. The ammocoetes hatch, drift downstream and burrow into silt or sand in areas having low-velocity current where they live 5 years or more as filter feeders. During spring freshets, ammocoetes transform into macrothalmia at 150-250 mm (6-10 in) and begin their migration downstream to the ocean. This species spends at least 1.5 years in the ocean as a fish parasite before beginning upstream migration into freshwater in late summer. Individuals spawn the following spring. The species is prey for a variety of fish, birds, and mammals (Close et al. 1995) and may have been the major food source for the white sturgeon in Idaho.

The Hell's Canyon dam complex on the Snake River and Dworshak Dam on the North Fork Clearwater River has eliminated access to nearly half of the historic habitat in Idaho. Eight dams and reservoirs are migration barriers in the Snake and Columbia rivers. Systems designed to improve survival of salmonid smolts migrating downstream can be lethal to Pacific lampreys. Ammocoetes can be entrapped in screens, and transportation of juveniles using barge tanks is particularly stressful because tanks do not have substrates for hiding and resting. Returning adults may not negotiate the fish ladders as well as other anadromous species.

Degradation of habitat conditions associated with mining, livestock grazing, stream channelization, logging, road construction, and urbanization have been identified as the most important issues affecting distribution in accessible habitat Loss of riparian cover can increase water temperatures and reduce stream productivity. Culverts with a water drop can prevent adults from returning to spawning and rearing streams.

Approximately 304,500 acres of IRAs overlap with the range of Pacific lamprey (16% of the range of the species). Appendix B, Figure B-4 displays the range of Pacific lamprey in Idaho and Idaho Roadless Areas.

Chinook Salmon (Naturalized Populations) (*Oncorhynchus tshawytscha*)

Naturalized Chinook salmon is a Region 1 sensitive species. This species is a species of conservation need in the state of Idaho. Snake River spring/summer and fall-run Chinook salmon (federally listed as threatened in 1992, USDC, NOAA-NMFS 1992a) historically were found spawning in the Clearwater River. The Clearwater River is a tributary to the Snake River, which flows into the Columbia River. Chinook salmon in the Clearwater River were not included in the federal listing as threatened due to loss of these populations in the 1950s. Although not listed in the ESU, the reestablished Clearwater River populations, which are considered 'naturalized', need conservation consideration as part of the historical range and interactions with other populations.

Like several other species of salmonids in the region, populations of Chinook salmon have steadily declined during the past few decades. The Snake River spring/summer and fall-run Chinook salmon population declines are attributed to a multitude of natural and human-induced factors, including habitat degradation and the development of hydroelectric dams in the basin.

The decline of returning Chinook salmon adults has not only affected individual populations but also the aquatic ecosystem as a whole, due to the complex ecological interactions that depend on the existence of all salmonid species. In addition to environmental impacts, fish population declines also have impacted local native tribes who depend on salmon for subsistence and cultural needs. The Nez Perce Tribe is one of only a few in the Columbia Basin to have reserved rights to harvest anadromous fish. The Treaty of 1855 reserved the right for members of the Nez Perce Tribe to fish in all "usual and accustomed places," both on and off of their reservation along the Clearwater River in Idaho.

The Nez Perce Tribe established a hatchery with the goal to recovery Chinook salmon in the Clearwater River drainage. The Nez Perce Tribal Hatchery project represents one of the first full-scale implementations of a fish hatchery program using the naturalized rearing enhancement approach (NATURES). The goal of NATURES is to produce fish with growth, behavior, coloring and other developmental traits exhibited by wild fish.

The Nez Perce Tribe subscribes to a different philosophy of hatchery management, wherein juveniles are released in targeted habitat, with the goal of allowing adults to return and spawn in those locations. While some adults are retained as broodstock for hatchery production, all adults in excess of broodstock needs are allowed to spawn naturally. The Nez Perce Tribal Hatchery represents one of the first full-scale implementations of "supplementation," wherein the hatchery directly contributes to natural production and thereby should help restore naturally reproducing populations of spring and fall Chinook salmon in the Clearwater River sub-basin.

The Nez Perce Tribe believes that designing the hatchery to mimic the fish's natural environment will result in a stock of juveniles that experience higher survival rates and retain behavioral traits of the population from which they were derived – thus increasing the ability of this valuable resource to reproduce in the wild.

Approximately 656,800 acres of IRAs overlap with the range of naturalized Chinook salmon (18% of the range of the species). Appendix B, Figure B-5 displays the range of naturalized Chinook salmon in Idaho and Idaho Roadless Areas.

Yellowstone Cutthroat Trout (Snake River Fine Spotted Cutthroat Trout) (*Oncorhynchus clarkii bouvieri*)

The Yellowstone cutthroat trout is a sensitive species in both Regions 1 and 4. In Region 4 this species is listed on the Regional Sensitive species list as the 'Snake River fine spotted cutthroat trout'. Biochemical-genetic studies have revealed very little genetic difference between the large-spotted form of Yellowstone cutthroat trout and the fine-spotted cutthroat trout of the Snake River basin (USDI, Fish and Wildlife Service 2006b). The large-spotted and fine-spotted Yellowstone cutthroat trout are considered a single entity by the FWS (USDI, Fish and Wildlife Service 2006b). Yellowstone cutthroat trout are considered imperiled in the state of Idaho.

Native distribution of Yellowstone cutthroat trout includes the Yellowstone River drainage in Montana, Wyoming and the upper Snake River drainage in Idaho, Wyoming, Utah and Nevada (Behnke 2002). May et al. (2003) estimated that Yellowstone cutthroat trout inhabit about 63% of the historical range in Idaho.

There are both adfluvial (migrate from lakes to spawn in tributaries) and fluvial (migrate from rivers to spawn in tributaries) populations of Yellowstone cutthroat trout (Behnke 2002). Fish in stream populations in small headwater systems may live 3-5 years and attain a length of 9-10 inches. In lakes, fish can live 9-10 years and grow to 24 inches and 6 pounds.

Yellowstone cutthroat trout are spring/early summer spawners. Spawning can range from April to July depending on water temperatures. Spawning streams generally are perennial with groundwater and snow-fed water sources and a gradient usually less than 3%; some spawning in intermittent streams does occur (Gresswell 1995). Yellowstone cutthroat trout normally require well-oxygenated water; clean, well sorted gravels with minimal fine sediments for successful spawning; temperatures less than 70°F, and a complexity of instream habitat structure such as large woody debris and overhanging banks for cover. Resident populations generally spawn within their home range in lotic systems; may migrate but do not enter tributary streams; after emergence, fry may move upstream or downstream or remain near the redd (Gresswell 1995). Fluvial populations migrate from larger streams into tributaries to spawn; juveniles may emigrate as fry or spend 1-3 years in natal tributaries before returning to the mainstem (Gresswell 1995). Adfluvial populations live in lakes and ascend inlets or descend outlets to spawn; young may move into the lake shortly after emergence, or they may remain in their natal stream for one or more years if the habitat is suitable; spawners may remain in breeding habitat about 1-3 weeks or up to many months (Gresswell 1995). Fry generally use areas of low water velocity.

Yellowstone cutthroat trout can be highly piscivorous in some lacustrine habitats but feeds opportunistically on zooplankton, larger crustaceans, and aquatic insects in other situations, including some lakes (Gresswell 1995).

Reduction in historically occupied range, habitat loss, fragmentation of current habitat, predation by non-native fish, isolation of existing populations, and hybridization with rainbow trout and other subspecies of cutthroat trout are the principal risk factors facing Yellowstone cutthroat trout (May et al. 2003).

Approximately 929,500 acres of IRAs overlap with the range of Yellowstone cutthroat trout (23% of the range of the species). Appendix B, Figure B-6 displays the range of Yellowstone cutthroat trout in Idaho and Idaho Roadless Areas.

Westslope Cutthroat Trout (*Oncorhynchus clarkii lewisi*)

Westslope cutthroat trout is a sensitive species in both Regions 1 and 4. This species is considered imperiled in the state of Idaho. In Idaho, westslope cutthroat trout inhabit the Salmon, Clearwater, Coeur d'Alene, Clark Fork and Kootenai drainages. Westslope cutthroat trout live in Small mountain streams, main rivers, and large natural lakes. They require well-oxygenated water; clean, well-sorted gravels with minimal fine sediments for successful spawning; temperatures less than 70F, and a complexity of instream habitat structure such as large woody debris and overhanging banks for cover.

Westslope cutthroat trout spawn in small tributary streams on clean gravel substrate; mean water depth is 17-20 cm and mean water velocity is 0.3-0.4 m/sec; tends to spawn in natal stream (McIntyre and Rieman 1995). Adfluvial populations live in large lakes in the upper Columbia drainage and spawn in lake tributaries. Fluvial populations live and grow in rivers and spawn in tributaries. Resident populations complete the entire life history in tributaries. All three life-history forms may occur in a single basin (McIntyre and Rieman 1995). Migrants may spawn in the lower reaches of the same streams used by resident fishes. Maturing adfluvial fishes move into the vicinity of tributaries in fall and winter and remain there until they begin to migrate upstream in spring. Of migratory spawners, some remain in tributaries during summer months but most return to the main river or lake soon after spawning (Behnke 1992).

Adults prefer large pools and slow velocity areas (stream reaches with numerous pools and some form of cover generally have the highest fish densities). Juveniles of migratory populations may spend 1-4 years in their natal streams, and then move (usually in spring or early summer, and/or in fall in some systems) to a main river or lake where they remain until they spawn (Spahr et al. 1991, McIntyre and Rieman 1995). Many fry disperse downstream after emergence (McIntyre and Rieman 1995). Juveniles tend to overwinter in interstitial spaces in the substrate. Larger individuals congregate in pools in winter.

In cold higher elevation streams, growth rates are slower than warmer streams with some fish living up to 12 years but only attaining lengths of 7-8 inches. Adfluvial and stocks in warmer waters reach lengths of 12 to 15 inches. Westslope cutthroat trout spawn between March and July when water temperatures are about 50F. Maturity also depends on location ranging from 4-6 years and sizes of 4-14 inches. Diets are primarily aquatic invertebrates with larger fish rarely eating fish.

Reduction in historically occupied range, habitat loss, fragmentation of current habitat, and isolation of existing populations, and hybridization with rainbow trout and other subspecies of cutthroat trout are the principal issues facing westslope cutthroat trout (Shepard et al. 2003). Extensive introductions of Yellowstone cutthroat trout have been made in the range of westslope cutthroat trout, and "hybridization" has resulted.

Approximately 4,951,700 acres of IRAs overlap with the range of westslope cutthroat trout (28% of the range of the species). Appendix B, Figure B-7 displays the range of westslope cutthroat trout in Idaho and Idaho Roadless Areas.

Wood River Sculpin (*Cottus leiopomus*)

Wood River sculpin is a sensitive species in Region 4. This species is considered imperiled in the state of Idaho. The Wood River sculpin occurs only in the Wood River drainage in south central Idaho. The current distribution is limited primarily to drainages in the higher elevations above Magic and Little Wood River dams, including parts of Camas Creek, Big Wood, and Little Wood Rivers.

The Wood River sculpin occurs mainly in small to medium- sized streams having cool, clear waters and a swift current. Individuals are most commonly found in riffles and runs having a gravel or cobble substrate. Little is known about reproductive patterns or habitat requirement for spawning. These traits are assumed to be similar to those of shorthead sculpin (Merkley and Griffith 1993).The shorthead sculpin spawns during the early spring and lays eggs on the undersides of cobbles or boulders. The species feeds primarily on benthic insect larvae and exhibits seasonal variation in diet and feeding intensity.

The development of irrigation projects, floodplain encroachment, and stream channelization from residential development, as well as migration barriers at road crossings have resulted in a loss of habitat and connectivity among populations. Loss of riparian habitat and reduced flows in streams can increase water temperature, reducing habitat suitability. Water quality degradation from pesticides and herbicides affects this sculpin and aquatic insects prey. Dams, diversion structures, culverts, and dewatered stream channels can fragment populations resulting in loss of gene flow. Introduced fish species can increase predation or competition. Hybridization with introduced sculpins is also a potential threat.

Approximately 359,900 acres of IRAs overlap with the range of Wood River sculpin (33% of the range of the species). Appendix B, Figure B-8 displays the range of Wood River sculpin in Idaho and Idaho Roadless Areas.

Coeur d'Alene Salamander (*Plethodon idahoensis*)

Coeur d'Alene salamander is a sensitive species in Region 1. This species is considered imperiled in the state of Idaho. The Coeur d'Alene salamander is irregularly distributed across northern Idaho, western Montana, and southeastern British Columbia. Populations in Idaho comprise the core of the range. The majority of records are from the St. Joe and North Fork Clearwater River basins (Wilson et al. 1997), but the species also occurs in the Selway, Kootenai, and Moyie drainages.

The Coeur d'Alene salamander occurs in the riparian corridors along streams, among talus in the spray zone of waterfalls, and in seeps or springs (Cassirer et al. 1994). Eggs are laid in water, and larvae are aquatic. Females reach sexual maturity in 4.5 years and breed biannually. Males reach sexual maturity in 3.5 years and mate annually (Lynch 1984). Adults spend up to 7 months of the year underground in talus or deep fissures associated with exposed, fractured bedrock (Groves et al. 1996). Suitable habitat is discontinuously distributed within stream systems. Because populations occur in small patches of suitable habitat, metapopulation dynamics may be important for maintaining population viability. However, population dynamics and dispersal patterns are poorly understood.

Habitat loss and fragmentation are the greatest threats to populations of Coeur d'Alene salamander. Potential sources of decreased water quality and aquatic habitat degradation include: (1) chemical pollution arising from mining, pesticide application, or road maintenance

(e.g. application of substances used for dust control or road surfacing); (2) flow alteration caused by water diversion or impoundment; (3) sedimentation arising from timber harvest, mining, road maintenance and improvements, trail construction, and recreational activities.

The loss of riparian habitat, including habitat at occupied sites and corridors between occupied habitat patches, is a potential threat to Coeur d'Alene salamander. Causes of riparian habitat degradation include road construction and improvement, timber harvest, and water diversion. The loss of connectivity among occupied sites is of importance because dispersal events may maintain the viability of small populations. Other potential threats include introduction of non-native predators or competitors, such as game fish or bullfrogs.

Approximately 1,953,500 acres of IRAs overlap with the range of Coeur D'Alene salamander (23% of the range of the species). Appendix B, Figure B-9 displays the range of Coeur D'Alene salamander in Idaho and Idaho Roadless Areas.

Columbia Spotted Frog (*Rana luteiventris*)

The Columbia spotted frog is a Region 4 sensitive species. This species is considered imperiled in the state of Idaho. In Idaho the distribution of the Columbia spotted frog extends to the south of the Snake River as a series of small populations centered on the east slopes of the Owyhee Mountains in Owyhee County, with isolated populations in the Bruneau River drainage in Owyhee County and the headwaters of Salmon Falls Creek in Twin Falls County. These populations are included in the Great Basin Distinct Population Segment as recognized by USFWS.

The Columbia spotted frog is highly aquatic, seldom being found far from water (Maxell 2000). In southwestern Idaho, wetland habitat occupied by Columbia spotted frog populations is generally associated with springs or small lowland and foothill streams. The largest populations occur in structurally complex wetlands with diverse pool and meadow components; suitable sites contain shallow breeding pools and deeper-water overwintering sites.

Wet meadows, riparian wetlands, and stream courses are important as dispersal corridors for Columbia spotted frog. Considered as independent units, small populations of Columbia spotted frogs are susceptible to breeding failure and other catastrophic events. Small populations can persist when dispersers from neighboring populations counteract the effects of inbreeding or recolonize extirpated sites.

There are many threats to the Columbia spotted frog in Idaho. The loss of wetland and riparian habitats is a pervasive threat. Desert wetland systems are particularly vulnerable to disturbance because anthropogenic uses, such as grazing, tend to be focused in aquatic/riparian habitats. Loss of beaver-created habitats, including beaver ponds/wetland, may also be a threat to Columbia spotted frogs (Maxell 2000). Agricultural activities, such as water withdrawal, diversion, and livestock use, can contribute to habitat loss and degradation of this species. Disease is a potentially important, yet little understood, threat to population viability. Chytridiomycosis (often abbreviated "chytrid") is an amphibian disease caused by the fungus *Batrachochytrium dendrobatidis*. This disease has been implicated in the loss of amphibian populations worldwide and may occur within spotted frog populations of Idaho. Fish stocking may also pose a threat to Columbia spotted frogs since they are rarely observed in water bodies that contain fish (Maxell 2000).

Approximately 8,209,700 acres of IRAs overlap with the range of Columbia spotted frog (22% of the range of the species in Idaho). Appendix B, Figure B-10 displays the range of Columbia spotted frog in Idaho and Idaho Roadless Areas.

Western Toad (*Bufo boreas*)

The western toad is a Region 1 sensitive species. This species has no special status in Idaho. The western toad is found in a wide variety of habitats including wetlands, forests, woodlands, sagebrush, meadows, and floodplains in the mountains and mountain valleys (Brunson 1952, Carpenter 1953, Black 1970, Campbell 1970, Cavallo 1997, Hart et al. 1998).

Adult and juvenile toads are freeze intolerant and overwinter and shelter in underground caverns, or more commonly in rodent burrows (Smits 1984, Black 1970). While smaller juveniles are active almost exclusively diurnally, adults are usually active at night except during the spring and at high elevation. Adults feed on a variety of invertebrates, but rely most heavily on ground dwelling coleopterans and hymenopterans and are known to eat smaller vertebrates including smaller individuals of their own species (Miller 1978).

Timing of breeding is dependent on temperature, snowmelt, and/or the presence of surface water from flooding and takes place from May to July in shallow areas of large and small lakes, beaver ponds, temporary ponds, slow-moving streams, and backwater channels of rivers. Females wrap egg strings around emergent vegetation or loose in clumps in shallow (usually less than 15 cm) waters (Black 1970). Eggs hatch in approximately 5 days and tadpoles commonly form dense aggregations in shallow warmer waters as they feed on algae, detritus, and other dead tadpoles or adults.

Adults may move more than 800 meters in night, may move more than 4 kilometers away from water after breeding and can remain away from surface water for relatively long periods of time (Tracy and Dole 1969, Campbell 1970).

Until the late 1990's, many biologists believed that populations in the northern Rocky Mountains had not undergone similar declines. However, surveys in the late 1990's revealed that toads were absent from a large number of their historic localities and that although they were still widespread across the landscape they occupied an extremely small proportion of suitable habitat (less than 10% in most cases, but usually less than 5%) (Maxell 2000).

Similar to other amphibian species in Idaho the western toad has experienced loss of habitat from land management activities such as water withdrawl and diversion, agriculture (including use of herbicides and pesticides), livestock use, and wetland modification. Western toads often use roads for dispersal and there are numerous documented reports of this species being crushed by vehicles (Maxell 2000). Disease is perhaps the leading cause of decline for this species (Maxell 2000). Carey (1993) observed the disappearance of several populations of western toads in the West Elk Mountains of Colorado between 1974 and 1982 and during this period found many toads with symptoms of red-leg disease, a common bacterial infection in amphibians and fish.

Approximately 8,867,800 acres of IRAs overlap with the range of western toad (19% of the range of the species). Appendix B, Figure B-11 displays the range of western toad in Idaho and Idaho Roadless Areas.

Forest Service Sensitive Species Richness

To characterize sensitive species richness we used the total number of aquatic sensitive species known to occur in each Idaho Roadless Area. Idaho Roadless Areas that overlap aquatic sensitive species ranges are displayed in Appendix A, Table A-2. The 50 IRAs having high aquatic sensitive species richness because they overlap five or more sensitive aquatic species ranges are displayed in Table V-11. Areas of multiple species overlap are important for species conservation and biodiversity.

Table V-11. Idaho Roadless Areas with multiple (5+) sensitive aquatic species (fish and amphibians)

Forest	Idaho Roadless Area	Forest	Idaho Roadless Area
Boise/Sawtooth	Smoky Mountains	Idaho Panhandle	Selkirk
Challis/Sawtooth	Boulder-White Clouds	Idaho Panhandle	White Mountain
Clearwater	Bighorn – Weitas*	Nez Perce	Gospel Hump
Clearwater	Eldorado Creek	Nez Perce	Gospel Hump adjacent to wilderness
Clearwater	Hoodoo	Nez Perce	John Day
Clearwater	Lochsa Face*	Nez Perce	Clear Creek
Clearwater	Lolo Creek	Nez Perce	Dixie Summit - Nut Hill
Clearwater	North Fork Spruce - White Sand	Nez Perce	East Meadow Creek
Clearwater	North Lochsa Slope*	Nez Perce	Lick Point
Clearwater	Sneakfoot Meadows	Nez Perce	Mallard
Clearwater	Weir - Post Office Creek*	Nez Perce	North Fork Slate Creek
Clearwater	Moose Mountain	Nez Perce	O'Hara - Falls Creek*
Clearwater	Pot Mountain	Nez Perce	Silver Creek - Pilot Knob*
Clearwater	Rawhide	Nez Perce	West Fork Crooked River
Clearwater	Siwash	Nez Perce	West Meadow Creek*
Clearwater/Idaho Panhandle	Mallard-Larkins	Payette	Cottontail Point/Pilot Peak
Clearwater/Idaho Panhandle	Meadow Creek - Upper North Fork	Payette	Patrick Butte
Clearwater/Nez Perce	Rackliff – Gedney*	Salmon	Duck Peak
Idaho Panhandle	Blacktail Mountain #161	Salmon	Haystack Mountain
Idaho Panhandle	Grandmother Mountain	Salmon	Long Tom
Idaho Panhandle	Katka Peak	Salmon	Napias
Idaho Panhandle	Kootenai Peak	Salmon	Napoleon Ridge
Idaho Panhandle	Mt. Willard-Lake Estelle	Salmon	Sheepeater
Idaho Panhandle	Saddle Mountain	Wallowa-Whitman	Klopton Creek - Corral Creek, Idaho
Idaho Panhandle	Schafer Peak		

** Idaho Roadless Areas with the highest sensitive species richness (seven species)*

Management Indicator Species

Management Indicator Species are identified by the individual Forests during the development of the Forest Plan under the 1982 Planning Rule. All of the Idaho Forest aquatic MIS species, except one, are already included in the list of TES species for this assessment (Table V-12). The only species not included is rainbow trout which was identified by the Idaho Panhandle National Forest as a MIS (Idaho Panhandle Forest Plan 1987). This Idaho Roadless Area assessment includes rainbow trout for the Idaho Panhandle National Forest.

Table V-12. Aquatic Management Indicator Species with ranges overlapping Idaho National Forests

Aquatic MIS Species	Boise	Caribou	Challis	Clearwater	Idaho Panhandle	Nez Perce	Payette	Salmon	Sawtooth	Targhee
Bonneville cutthroat trout										
Bull trout	X		X				X	X	X	
Chinook salmon				X		X				
Cutthroat trout					X	X				
Rainbow trout					**X**					
Snake River cutthroat trout										X
Steelhead				X		X				
Westslope cutthroat trout				X						
Yellowstone cutthroat trout										
Spotted frog										X

Bolded Species *= Management indicator species that are NOT threatened, endangered or sensitive species*
Italics =Management Indicator Species that are threatened, endangered or sensitive species

Figure V-9 displays rainbow trout distribution on the Idaho Panhandle National Forest. Note that this species is an MIS on the Idaho Panhandle National Forest only. The range of rainbow trout overlaps with 600,881 acres of Idaho Roadless Areas on the Idaho Panhandle National Forest. This overlap equals about twenty eight percent of the total range for rainbow trout on the Idaho Panhandle National Forest.

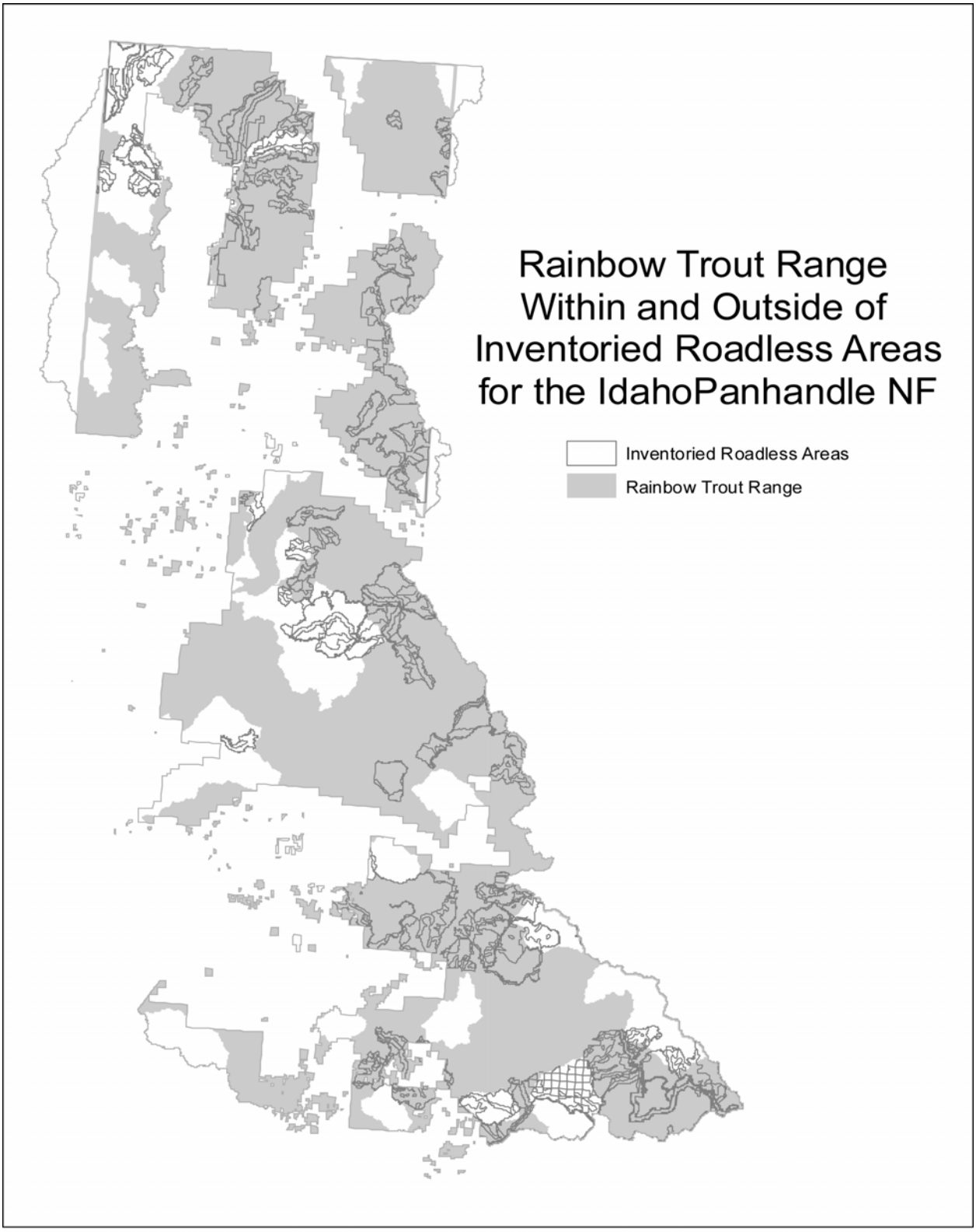

Figure V-9. Rainbow trout range within and outside of IRAs for the Idaho Panhandle National Forest

VI. Aquatic Animal Habitat and Species: Effects

The four alternatives under evaluation represent different management strategies prescribing the conditions under which road construction/reconstruction, timber cutting, and discretionary mining could occur within Idaho Roadless Areas. All of the alternatives may permit these activities within IRAs, albeit they vary with respect to the circumstances, locations, and extent that these activities are permissible. It is this 'variation' that we seek to evaluate in this document. To minimize the need to reiterate effects of these activities under all alternatives, we provide a general discussion on the impacts of road construction/reconstruction, timber cutting, and discretionary mining on aquatic species and their habitats in Idaho, followed by a more specific evaluation of the implications of each alternative to these resources, including TES species and MIS.

In this section, we do not discuss the potential impacts of activities that would not differ across alternatives or that are addressed through other planning efforts (e.g., grazing, recreation, etc). However, the impacts of other activities may be disclosed as part of our analysis of cumulative effects should they be determined relevant.

General Effects of Selected Management Activities

Road Construction, Reconstruction and Maintenance

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 2000c):

- 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 2000c).

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 NMFS for PACFISH (USDC, NOAA-NMFS 1998) 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). 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) 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.

Discretionary 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 Idaho Roadless Rule does not seek to impose limits regarding activities undertaken regarding locatable minerals and therefore will not be discussed further in this document[9]. 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-

[9] The 2001 Roadless Rule also did not address non-discretionary mineral activities.

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 effect of mining phosphate to aquatic threatened and endangered species is not further discussed 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. However, the effect of mining phosphate to aquatic sensitive species is discussed because there is overlap with of areas where road construction or reconstruction, and surface use and occupancy could occur and sensitive 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 re-growth. 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.

Direction Common to All Alternatives to Avoid or Minimize Effects to Aquatic T&E Fish Species and Their Habitat

Three primary documents guide the management of federally listed aquatic 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 (SWIEG) (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 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 Forest Service 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 SWIEG 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 FWS (May 30, 2003) (USDI, Fish and Wildlife Service 2003a)

and NMFS-NOAA (June 9, 2003) (USDC, NOAA-NMFS 2003) for the revised Forest Plans replaced the PACFISH and INFISH Biological Opinions.

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

Consideration of Non-Federal Activities Outside the Idaho Roadless Areas

Many of the T&E fish species being evaluated in this specialist report 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 FWS, 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 Bonneville Power Administration and Bureau of Reclamation.
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 BLM 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 watershed integrity and improve aquatic habitats for these 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.

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

In this section, the risk of the selected management activities—road construction/reconstruction, timber cutting, and discretionary mining—on TES and MIS aquatic species in Idaho is presented. 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 on species-specific information provided by the FWS, NMFS, management plans, and recovery plans. Table VI-1 summarizes the risk levels for aquatic species.

Table VI-1. Estimate of the risk that roads, timber cutting, and discretionary mining could pose to threatened, endangered, and Forest Service sensitive species.

Species	Low risk	Moderate risk	High risk
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		
Forest Service sensitive species			
Bonneville cutthroat trout			X
Burbot	X		
Inland redband trout		X	
Pacific lamprey		X	
Snake River Chinook salmon (naturalized)		X	
Yellowstone cutthroat trout			X
Westslope cutthroat trout		X	
Wood River sculpin		X	
Coeur d'Alene salamander		X	
Columbia spotted frog		X	
Western toad			X
Management indicator species not addressed above			
Rainbow trout	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. The only exception to this 'rule' for stream-dependent species is the rainbow trout. Because of the wide-distribution of this species on the Idaho Panhandle National Forest, this species is likely to experience direct and indirect effects from the selected management activities; however, it is unlikely to be at a moderate risk of decreased population sizes or experience population fragmentation because of these activities. The three species listed in Table VI-1 as being in the high risk category are in this category because their ranges overlap with the known phosphate leasing areas on the Caribou-Targhee National Forest. Therefore these species are at a high risk from potential activities associated with discretionary mining.

Evaluation of the Alternatives

In this section, we examined the implications of each alternative to aquatic species and their habitats within Idaho.

Effects Common to All Alternatives

There are about 20,450 acres of known phosphate leasing areas (KPLAs) and existing lease areas inside Idaho Roadless Areas, of which about 70 percent are unleased.

None of the alternatives would prohibit road construction or reconstruction associated with developing existing mineral leases. About 1,100 acres of phosphate within existing lease areas (Smoky Canyon Mine) are reasonably foreseeable for development. Mine expansion is expected to occur within Sage Creek and Meade Peak Roadless Areas under each alternative. No threatened or endangered species occur within the Sage Creek or Meade Peak Roadless Areas; however, both these roadless areas are within the range of the sensitive Yellowstone cutthroat trout. Sage Creek and a small portion of Meade Peak Roadless Areas are considered strongholds for Yellowstone cutthroat trout.

An additional 6,100 acres under existing lease, within the Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson Roadless Areas could be developed sometime in the future (50 or more years). These roadless areas provide habitat for both Yellowstone cutthroat trout and Bonneville cutthroat trout, which are Forest Service sensitive species.

Any future phosphate development could affect aquatic ecosystems in a number of ways: through the addition of sediment; the addition of solutions contaminated with metals, acids, and/or selenium; the acceleration of erosion; increased bank and streambed instability; changes in channel formation and stability; and removal of riparian vegetation (Lee et al. 1997). Any future development would undergo environmental analysis, and environmental mitigations would be required to lessen effects.

2001 Roadless Rule

The 2001 Roadless Rule prohibits road construction/ reconstruction except when done under seven exceptions (see Section III –Alternatives Analyzed). Under the 2001 Roadless Rule, 12 miles of permanent roads are projected to be constructed and 3 miles of temporary roads in Idaho Roadless Areas over the next 15 years. The 2001 Roadless Rule allows some timber cutting for threatened and endangered species habitat improvement, ecosystem restoration, and hazardous fuel reduction purposes. No road construction is permitted to support timber cutting for these purposes. Timber cutting is projected to occur on about 9,000 acres over the next 15 years. Aquatic species and their habitat would be benefited by the low amount of road construction/reconstruction under this alternative.

By restricting timber harvest to activities necessary for resource stewardship and prohibiting new road construction (in most cases), many of the adverse effects of timber harvest would be minimized, while maintaining a management tool potentially needed for ecological restoration. Fuels-reduction stewardship activities within a watershed may be indirectly beneficial to some aquatic populations. For example, careful thinning to reduce fuel loading in some areas where there is an abnormally high risk of high-intensity, large-scale fires may lower the risk of extirpation of an isolated fish population from a wildfire, particularly where habitat complexity

and spatial diversity have already been diminished and where fish would have difficulty in repopulating because of lack of habitat connectivity.

Based on foreseeable projections, most timber-cutting activities are not likely to affect the overall amount or severity of wildfires. As a result, the effects of wildfires on aquatic species are likely to be similar with or without the prohibitions. Whereas the benefits of less ground disturbance from road construction and timber cutting are well-documented in the literature, it is less clear whether failure to reduce fuel loading would constitute a substantially increased level of risk for aquatic communities.

Aquatic habitat management activities that are not dependent on new or reconstructed road access could be implemented under the 2001 Roadless Rule. Overall, the need for additional road access to manage aquatic habitat within Idaho Roadless Area appears to be minimal. This alternative would not measurably affect the current ability to manage aquatic habitat. In general aquatic habitats and species would benefit from the prohibitive nature of this alternative. All Idaho Roadless Areas would be managed under a similar set of guidelines that are fairly restrictive in relation to road construction/reconstruction, timber cutting, and discretionary minerals activities.

Under the 2001 Roadless Rule, there would be no new road construction or reconstruction within Idaho Roadless Areas to access the 14,460 acres of unleased KPLA on the Caribou-Targhee National Forest. Surface use and occupancy would be permitted on new leases as long as no new roads are constructed to access these deposits. However, it is likely phosphate deposits on this acreage would not be mined because roads could not be built to support advance drilling needed to specifically to define the mineral deposits.

Summary of Effects, 2001 Rule

The 2001 Roadless Rule is the most prohibitive of the four alternatives in relation to road construction/reconstruction; timber cutting, sale and removal; and discretionary mineral activities. The aquatic species considered include species that require a variety of aquatic habitats and habitat components. Given the permissions and prohibitions under the 2001 Roadless Rule, there should generally be little to no impact on key aquatic habitats and habitat components should be provided for including: (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.

However, the exact locations of future projects cannot be predicted nor are there restrictions on the distribution of effects spatially or temporally; therefore, the potential for adverse effects to occur cannot be totally discounted. Adverse effects could occur because of short-term habitat modification or increased chance for mortality from activities permitted under the 2001 Roadless Rule. As mentioned previously, road-related activities have the potential to increase sediment delivery to streams, alter flow patterns and stream morphology, increase habitat fragmentation and reduce water quality. Roads also carry a risk of future failure and require

maintenance to help ensure they do not fail or contribute to habitat loss. Timber cutting, sale, and removal can result in ground disturbance and increased erosion. It can also reduce vegetation near aquatic habitats, resulting in less shade, potentially warmer water temperatures, and less woody debris recruitment into the habitat. Implementation of road and timber harvest best management practices designed to maintain good water quality help to minimize the risk of adverse effects on aquatic species and their habitats from these land management activities.

One of the largest benefits to aquatic species and their habitats under the 2001 Roadless Rule alternative is that there are no lands under this alternative managed similar to the General Forest, Rangeland, or Grassland theme. Under this alternative discretionary mining is prohibited in known phosphate areas that are currently unleased. Because of this prohibition on discretionary mining, there is a low risk to aquatic species on the Caribou-Targhee National Forest due to selenium contamination.

Effects on Threatened and Endangered Species and Their Habitats, 2001 Rule

Actions that could occur pursuant to the 2001 Roadless Rule may affect individual Snake River Basin steelhead, Snake River sockeye salmon, Snake River fall-run Chinook salmon, Snake River spring/summer Chinook salmon, bull trout, Kootenai River white sturgeon, and habitats for these species.

At the project level, all activities would be subject to existing INFISH, PACFISH, and/or SWIEG requirements that are designed to avoid or minimize adverse effects on threatened and endangered fish and their habitats. Project-level NEPA is required for all timber cutting, sale, and removal; road construction/reconstruction; and mineral activities in Idaho Roadless Areas. Given these factors, the 2001 Roadless Rule poses a low risk to individuals, metapopulations, and habitats for the threatened and endangered species.

Because the Kootenai River white sturgeon resides only in the mainstem of the Kootenai River the risk effects on this species from actions that could occur pursuant to this alternative is so low the effects are discountable and insignificant.

Furthermore, by providing prohibitions beyond the existing forest plans, the 2001 Roadless Rule may beneficially affect threatened and endangered aquatic species and their habitats by promoting large continuous lands that have unroaded character.

Effects on Sensitive Species and Their Habitats, 2001 Rule

Actions that could occur pursuant to the 2001 Roadless Rule could affect individual Bonneville cutthroat trout, burbot, inland redband trout, Pacific lamprey, Chinook salmon (naturalized populations), Yellowstone cutthroat trout, westslope cutthroat trout, Wood River sculpin, Coeur d'Alene salamander, Columbia spotted frog, and western toad, and habitats for these species, but are not likely to cause a trend toward Federal listing or a loss of viability for any of the aquatic sensitive species considered.

At the project level, all activities will be subject to existing forest plan standards and guidelines and where appropriate the INFISH, PACFISH, and/or SWIEG requirements. Because of the scientifically based Aquatic Conservation Strategies and the aquatic/riparian standards and guidelines provided in INFISH, PACFISH, and the SWIEG forest plans, activities that occur

pursuant to these three documents would provide protective measures for aquatic sensitive species in addition to the threatened and endangered species for which they were developed.

Project-level NEPA is required for all timber cutting, sale, and removal; road construction/ reconstruction, and mineral activities in Idaho Roadless Areas; therefore, all aquatic sensitive species would have biological evaluations completed and mitigation measures implemented at the project level. Given these factors, the 2001 Roadless Rule poses a low risk to individuals, metapopulations, and habitats for aquatic sensitive species in Idaho Roadless Areas.

The 2001 Roadless Rule may beneficially affect sensitive aquatic species and their habitats by promoting large continuous lands that have unroaded character.

Effects on MIS Species and Their Habitat, 2001 Rule

Actions that could occur pursuant to the 2001 Roadless Rule may affect rainbow trout and/or their habitat on the Idaho Panhandle National Forest. Because of the wide distribution of rainbow trout on the Idaho Panhandle National Forest, potential effects of land management activities under this alternative should not result in adverse effects on this species, including decreased populations, population fragmentation, or changes to the species distribution.

Existing Plans

The Existing Plans alternative would have the greatest potential for aquatic habitat loss and disturbance associated with roads, timber cutting, discretionary mining, and other activities. Approximately 62% of the 9.3 million acres of Idaho Roadless Areas are included in land-management plan prescriptions that would generally allow for road construction, road reconstruction, and timber harvest (includes acres listed under the Backcountry and GFRG themes) (Table IV-1). This alternative has the greatest acres designated to GFRG approximately 1.26 million acres (Table IV-1) which is the most permissive of the themes.

About 105 miles of road construction and 75 miles of reconstruction are projected in Idaho Roadless Areas under the Existing Plans over the next 15 years (Table IV-3). This estimate includes both permanent and temporary roads for timber cutting and non-timber related activities. Timber cutting is projected to occur on about 40,500 acres over the next 15 years (Table IV-2). These activities could reduce the quality and quantity of fish habitat in some roadless areas, with increased potential for adverse effects on some TES species. However, all activities would be done under the management direction of Existing Plans, most of which provide specific guidance (such as PACFISH, INFISH, and SWIEG) to reduce adverse effects to TES species.

To help assess the scope of this alternative in relation to aquatic TES species, the overlap of the assigned themes was compared against acres contributing to species richness (areas supporting several species) and strongholds (Table VI-2). Appendix A, Table A-3, displays the Idaho Roadless Areas under the Existing Plans alternative that provide important aquatic TES habitat and distribution by theme. Under the Existing Plans alternative the greatest overlap occurs with the management prescription similar to the Backcountry theme (Table IV-1). Of particular interest to aquatic species are areas of overlap with the permissive GFRG theme because the most ground-disturbing activities could occur under this theme.

Table VI-2. Acres by theme overlapping important aquatic threatened, endangered, or species (TES) habitats, Existing Plans

Wild Land Recreation	Primitive	Backcountry	GFRG	FPSA[1]	SAHTS
Acres in Idaho Roadless Areas overlapping the range of 4 or 5 threatened and endangered species					
222,800	496,100	1,162,700	285,700	86,100	0
Acres in Idaho Roadless Areas overlapping priority watersheds for 3 species[2]					
0	125,300	770,600	154,500	15,400	0
Acres in Idaho Roadless Areas overlapping large strongholds or strongholds for multiple fish species					
813,200	1,078,500	1,942,200	131,700	147,700	0

[1] Management direction under the Idaho Roadless 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

Under the Existing Plans road construction and reconstruction may be allowed to access 14,460 acres of unleased KPLA on the Caribou-Targhee National Forest. However, only 13,620 acres may be considered for leasing because a previous decision recommends no leasing on 840 acres within the Deer Creek watershed in the Sage Creek Roadless Area. The Caribou Forest Plan permits leasing of the estimated 6,750 acres of known unleased phosphate deposits and/or other possible roadless areas that contain undiscovered phosphate resources[10]. The known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely be developed over an extended period of time (50 or more years). In addition, there are 6,870 acres of unleased phosphate deposits on the Targhee portion of the forest within the Bald Mountain, Bear Creek, and Poker Creek Roadless Areas. An environmental analysis would have to be completed to determine how much of the 6,870 acres could actually be leased. No threatened or endangered aquatic species occur in the unleased phosphate roadless areas. However, several Forest Service sensitive species have ranges that overlap these roadless areas, including Bonneville cutthroat trout, Yellowstone cutthroat trout, western toad, and Columbia spotted frog. There is a potential risk to sensitive aquatic species and their habitats on these 14,460 acres when and if this development should occur. Site-specific analysis would occur prior to any future leasing and mitigations applied.

Due to the potential acres available for ground disturbing activities, this alternative is not likely to provide a high level of protection for aquatic biodiversity and native aquatic species including species strongholds, priority watersheds, bull trout core areas and key recovery habitat, essential fish habitat, and T&E critical habitat in areas currently designated as Idaho Roadless Areas. Each Forest Land and Resource Management Plan is unique and would provide a unique set of guidance for Idaho Roadless Areas. In general, Forests have been moving more roadless areas into management prescriptions that conserve roadless characteristics. Five of the National Forests in Idaho have revised their plans since 1999, the remaining seven Forest Plans are older. The newer plans generally place more value on providing for roadless characteristics.

[10] About 840 acres of unleased KPLA in the Sage Creek Roadless Area have been recommended as unavailable by the Forest Service, per a 1998 leasing analysis. About 1,910 acres of undiscovered phosphate deposits are projected based on past history (Abing 2008).

Summary of Effects, Existing Plans

Existing Plans permit road construction/reconstruction, timber cutting, and discretionary mineral activities to some degree. Based on projections for timber cutting, less than 0.5 percent of Idaho Roadless Areas likely would be affected under Existing Plans; with the potential for phosphate mining, less than 0.7 percent would be affected. Where these activities occur, especially if roads are constructed, or if the activities are concentrated, there could be adverse effects on aquatic species and their habitats, including potential effects on species richness, critical habitat, EFH, priority watersheds, fish strongholds, bull trout core areas, and key bull trout spawning and rearing habitats. Fish and amphibians could be directly and/or indirectly affected by land management activities permitted under this alternative.

The Existing Plans have the most acres of land included in management prescriptions similar to the GFRG theme. This theme is the most permissive of the themes. It also has the fewest acres equivalent to the Wild Land Recreation theme, which is the most restrictive theme. Of particular concern with this alternative are maintenance and restoration of key aquatic habitat elements including: (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.

Effects on Threatened and Endangered Species and Their Habitats, Existing Plans

Actions that could occur under the Existing Plans alternative could affect individual Snake River Basin steelhead, Snake River sockeye salmon, Snake River fall-run Chinook salmon, Snake River spring/summer Chinook salmon, bull trout, Kootenai River white sturgeon, and habitats for these species. Unlike the other three alternatives, the Existing Plans alternative does not place any special recognition on larger areas with unroaded character and the contribution these areas make to fish strongholds and fish threatened and endangered recovery efforts.

At the project level, all activities would be subject to existing INFISH, PACFISH, and/or SWIEG requirements that are designed to avoid or minimize adverse effects threatened and endangered fish and their habitats. Project-level NEPA is required for all timber cutting, sale, and removal; road construction/reconstruction; and mineral activities in Idaho Roadless Areas. Given these factors, the Existing Plans poses a low risk to individuals, metapopulations, and habitats for the threatened and endangered species.

Effects on Sensitive Species and Their Habitats, Existing Plans

Actions under the Existing Plans could affect individual Bonneville cutthroat trout, burbot, inland redband trout, Pacific lamprey, Chinook salmon (naturalized populations), Yellowstone cutthroat trout, westslope cutthroat trout, Wood River sculpin, Coeur d'Alene salamander, Columbia spotted frog, and western toad and their habitats, but are not likely to cause a trend toward Federal listing or a loss of viability for any of the aquatic sensitive species considered.

Of particular concern are populations of Bonneville cutthroat trout and Yellowstone cutthroat trout in southeast Idaho. Both these species have declined considerably in Idaho following human development (Varly and Gresswell 1988, Duff 1988). Of the selected land management activities considered in this specialist report, phosphate mining and the resulting potential for selenium contamination in southeast Idaho streams could have an adverse affect on these two species. It is expected that project-level NEPA would thoroughly evaluate potential effects on these species and their habitats, and that needed mitigation measures would be implemented at the project level.

In addition, at the project level all activities will be subject to existing forest plan standards and guidelines and where appropriate the INFISH, PACFISH, and/or SWIEG requirements. Because of the scientifically based aquatic conservation strategies and the aquatic/riparian standards and guidelines provided in INFISH, PACFISH, and the SWIEG forest plans, implementation of these three documents would provide protective measures for aquatic sensitive species in addition to the threatened and endangered species for which they were developed.

Effects on MIS Species and Their Habitats, Existing Plans

Actions that could occur under the Existing Forest Plans may affect rainbow trout and/or their habitat on the Idaho Panhandle National Forest. Because of the wide distribution of rainbow trout on the Idaho Panhandle National Forest, potential effects of land management activities under this alternative should not result in adverse effects on this species, including decreased populations, population fragmentation, or changes to the species distribution.

Proposed Idaho Roadless Rule (Proposed Action)

Under the Proposed Idaho Roadless Rule, road construction/reconstruction, timber cutting (with limited exception), and discretionary mineral activities are prohibited on about 3.1 million acres of land within the Wild Land Recreation, Primitive, and SAHTS themes (33 percent of the Idaho Roadless Areas). Aquatic ecological values would be maintained under these themes because these themes protect aquatic resources including TES and MIS species, threatened and endangered critical habitat, EFH, native fish strongholds, priority watersheds, bull trout core areas, and bull trout key recovery habitat, by limiting human-induced activities.

About 5.25 million acres are in Backcountry. Road construction/reconstruction would be permissible under several exceptions, including support of timber cutting for forest health and fuel-reduction purposes. Most new roads would be temporary, unless the responsible official determines that a permanent road meets the road exceptions and it would not substantially alter any of the roadless characteristics. The Backcountry theme permits both surface occupancy and road construction/reconstruction to access unleased phosphate deposits.

To help assess the scope of this alternative in relation to aquatic TES species, the overlap of the themes was compared against acres contributing to species richness (areas supporting several species) and strongholds (Table VI-3). Appendix A, Table A-4, displays the Idaho Roadless Areas under the Idaho Roadless Rule alternative that provide important aquatic TES habitat and distribution by theme. About 609,600 acres are in the GFRG theme. Road construction/reconstruction, timber cutting, and discretionary mineral activities are permissible in this theme. About 5,400 acres of Idaho Roadless Areas within the GFRG theme are located in strongholds for multiple species and about 57,200 acres are located in areas of high biodiversity

(four or five threatened or endangered species) and the GFRG theme (Table VI-3). There is no GFRG in roadless areas that provide priority watershed areas for steelhead trout, Chinook salmon, and bull trout. Portions of the Cuddy Mountain, Boulder-White Clouds, French Creek, Mallard Larkins, Needles, Red Mountain, and Ten Mile/Black Warrior Roadless Areas are in the GFRG theme and overlap with one of the fish strongholds (Appendix A, Table A-4).

Table VI-3. Acres by theme overlapping important aquatic TES habitats, Idaho Roadless Rule

Wild Land Recreation	Primitive	Backcountry	GFRG	FPSA[1]	SAHTS
Acres in Idaho Roadless Areas overlapping the range of 4 or 5 threatened and endangered species					
260,000	434,500	1,415,600	57,200	86,000	0
Acres in Idaho Roadless Areas overlapping priority watersheds for 3 species[2]					
0	164,700	815,700	0	15,400	0
Acres in Idaho Roadless Areas overlapping large strongholds or strongholds for multiple fish species					
858,000	1,040,800	2,013,000	5,400	147,700	48,400

[1] Management direction under the Idaho Roadless 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

About 38 miles of road construction and 23 miles of road reconstruction are projected to occur over the next 15 years under this alternative. This estimate includes both permanent and temporary roads for timber-cutting and non-timber-related activities. Timber cutting is projected to occur on about 18,000 acres over the next 15 years (about 0.1 percent of all the Idaho Roadless Areas). Activities would incorporate mitigation measures to reduce effects, especially if the activity may affect TES species. This level of road construction/reconstruction and timber cutting may reduce aquatic habitat quantity and quality in a limited portion of some roadless areas.

Timber cutting, road construction/reconstruction, and discretionary mineral activities would be permissible within the GFRG theme. However, these activities would have to comply with ESA and management direction for threatened and endangered species included in existing plans (such as direction provided through the PACFISH and INFISH amendments or through subsequent forest plan revision).

All the national forests in Idaho—except for the Challis, Clearwater, Nez Perce, and Wallowa-Whitman—have roadless areas in the GFRG theme. The Caribou portion of the Caribou-Targhee National Forest has the most acreage of any of the forests in the GFRG theme (251,900 acres). Most of the Caribou's roadless areas in the GFRG theme support Bonneville cutthroat trout and Yellowstone cutthroat trout, which are R4 sensitive species.

There are 14,460 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 13,190 acres (91 percent) are located within the Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop these phosphate deposits. These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the forest; and Bald Mountain, Bear Creek, and Poker Creek Roadless Areas on the Targhee portion of the forest) and could eventually be mined over an extended period of time (50 or more years). There is a potential risk to habitats for sensitive aquatic species (Bonneville cutthroat trout, Yellowstone cutthroat trout, western toad, and Columbia spotted frog) on these

13,190 acres when and if this development should occur. Site-specific analysis would occur prior to any future leasing and mitigations applied. No threatened or endangered aquatic species are found in these roadless areas.

About 1,280 acres of unleased phosphate deposits are in the Primitive theme. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore, this area would likely not be developed (Abing 2008) and there would be no effect on sensitive aquatic species found in this area.

Summary of Effects, Proposed Idaho Roadless Rule

Under the Proposed Idaho Roadless Rule, limited ground-disturbing activities are likely to occur in Wild Land Recreation, Primitive, and SAHTS themes because of the prohibitions on activities related to road construction/reconstruction and discretionary minerals, and the prohibitions, with exceptions, for timber cutting. These three themes in general should result in minimal impacts on natural processes, habitat integrity, and species diversity. All key aquatic habitat elements should be maintained, including: (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.

Areas in the Backcountry theme have a higher potential for ground-disturbing activities (including road construction/reconstruction, timber cutting, and discretionary minerals activities) occurring depending on future land uses and the risk of wildland fire. Areas in the GFRG theme have the greatest potential for risk of adverse effects on aquatic species and habitats. The level of road construction/reconstruction and timber cutting projected may reduce aquatic habitat quantity and quality in a limited portion of some roadless areas, but it is unlikely to reduce the overall biodiversity, or quantity and/or quality of critical habitat, EFH, strongholds, priority watersheds, bull trout core areas, and bull trout key recovery habitat found in Idaho Roadless Areas.

Effects on Threatened and Endangered Species and Their Habitats, Proposed Idaho Roadless Rule

Land management activities that could occur pursuant to the Proposed Idaho Roadless Rule may result in adverse effects on individual Snake River Basin steelhead, Snake River sockeye salmon, Snake River fall-run Chinook salmon, Snake River spring/summer Chinook salmon, bull trout, Kootenai River white sturgeon, and habitats for these species.

Requirements at the project level would help to avoid or minimize adverse effects on aquatic species and their habitats. All activities would be subject to existing INFISH, PACFISH, and/or SWIEG requirements. Also, project-level NEPA is required for all timber cutting, sale, and removal; road construction/reconstruction; and mineral activities in Idaho Roadless Areas. Given these factors, the Propose Rule poses a low risk to individuals, metapopulations, and habitats for the threatened and endangered species. Because the Kootenai River white sturgeon

resides only in the mainstem of the Kootenai River, the risk of effects on this species from actions that could occur pursuant to this alternative is so low the effects are discountable and insignificant.

By providing prohibitions beyond the existing forest plans, the Proposed Idaho Roadless Rule may beneficially affect threatened and endangered aquatic species and their habitats by promoting large continuous lands that have unroaded character.

Effects on Sensitive Species and Their Habitat, Proposed Idaho Roadless Rule

Actions that could occur pursuant to the Proposed Rule could affect individual Bonneville cutthroat trout, burbot, inland redband trout, Pacific lamprey, Chinook salmon (naturalized populations), Yellowstone cutthroat trout, westslope cutthroat trout, Wood River sculpin, Coeur d'Alene salamander, Columbia spotted frog, and western toad and their habitats but are not likely to cause a trend toward Federal listing or a loss of viability for any of the aquatic sensitive species considered.

At the project level, all activities would be subject to existing forest plan standards and guidelines and where appropriate the INFISH, PACFISH, and/or SWIEG requirements. Because of the scientifically based aquatic conservation strategies and the aquatic/riparian standards and guidelines provided in INFISH, PACFISH, and the SWIEG forest plans, implementation of projects in accordance with these three documents would provide protective measures for aquatic sensitive species in addition to the threatened and endangered species they were developed for.

Project level NEPA is required for all timber cutting, sale, and removal; road construction/ reconstruction; and mineral activities in Idaho Roadless Areas; therefore, all aquatic sensitive species would have biological evaluations completed and mitigation measures implemented at the project level. Given these factors, the Proposed Rule poses a low risk to individuals, metapopulations, and habitats for aquatic sensitive species in Idaho Roadless Areas.

The Proposed Rule may beneficially affect sensitive aquatic species and their habitats by promoting large continuous lands that have unroaded character.

Effects on MIS Species and Their Habitats, Proposed Idaho Roadless Rule

Actions that could occur pursuant to the Proposed Rule may affect rainbow trout and/or their habitat on the Idaho Panhandle National Forest. Because of the wide distribution of rainbow trout on the Idaho Panhandle National Forest, potential effects of land management activities under this alternative should not result in adverse effects to this species, including decreased populations, population fragmentation, or changes to the species distribution.

Modified Idaho Roadless Rule (Preferred Alternative)

The Modified Idaho Roadless Rule alternative was developed in response to public comments and input on the Proposed Rule. Under the Modified Rule, road construction/reconstruction, timber cutting (with limited exception), and discretionary mineral activities are prohibited on about 3.25 million acres of land within the Wild Land Recreation, Primitive, and SAHTS themes (33 percent of the Idaho Roadless Areas). Aquatic ecological values would be maintained under these themes because these themes protect aquatic resources including TES and MIS species,

threatened and endangered critical habitat, native fish strongholds, and priority watersheds, by limiting human-induced activities.

About 5.3 million acres are in the Backcountry theme. The permissions to construct road construction were modified from the Proposed Rule for this alternative. Temporary road construction and road reconstruction could occur within the community protection zone (CPZ) if the community protection objective cannot be reasonably accomplished without a temporary road. About 442,000 acres are estimated to be within the CPZ in the Backcountry theme. Temporary road construction would be conducted in a manner that minimizes surface disturbances, could only be used for the specified purpose and would be decommissioned once the activity is completed or the contract is done. Outside the CPZ, temporary roads could be constructed to facilitate timber cutting to reduce the significant risk of wildland fire effects on communities or municipal water supply systems, only if the activity cannot be reasonably accomplished without a temporary road and the activity maintains or improves one or more roadless area characteristics over the long-term. Use of this exception would be infrequent. Most areas in the Backcountry theme, outside the CPZ would be managed similar to the 2001 Roadless Rule.

To help assess the scope of this alternative in relation to aquatic TES species, the overlap of the themes was compared against acres contributing to species richness (areas supporting several species) and strongholds (Table VI-4). Appendix A, Table A-5, displays the Idaho Roadless Areas under the Idaho Roadless Rule alternative that provide important aquatic TES habitat and distribution by theme. Most of the acres shown in table 3-48 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 3-48) 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 VI-4, Appendix A, Table A-5).

About 405,900 acres are in the GFRG theme. Road construction/reconstruction, timber cutting, and discretionary mineral activities are permissible in these areas. 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 VI-4). 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 (Appendix A, Table A-5).

Table VI-4. Acres by theme overlapping important TES habitats, Modified Idaho Roadless Rule

Wild Land Recreation	Primitive	Backcountry	Backcountry CPZ	GFRG	FPSA[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[2]						
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

Under the Modified Rule, about 38 miles of road construction and 23 miles of road reconstruction are projected to occur over the next 15 years (Table IV-3). This estimate includes both permanent (for non-timber related activities) and temporary roads for timber cutting. Timber cutting is projected to occur on about 18,000 acres over the next 15 years (about 0.1 percent of all the Idaho Roadless Areas) (Table IV-2). Activities would incorporate mitigation measures to reduce effects, especially if the activity may affect TES species. This level of road construction/reconstruction and timber cutting may reduce aquatic habitat quantity and quality in a limited portion of some roadless areas.

Timber cutting and road construction/reconstruction to facilitate timber cutting would be permissible within the GFRG theme. However, these activities would have to comply with ESA and management direction for threatened and endangered species included in existing plans (such as direction provided through the PACFISH and INFISH amendments or through subsequent forest plan revision). The Modified Rule states that land management plan components that are not inconsistent with this rule would continue to provide guidance for projects and activities within Idaho Roadless Areas.

All the national forests in Idaho—except for the Challis, Clearwater, Kootenai, Nez Perce, and Wallowa-Whitman—have roadless areas in the GFRG theme. The Caribou portion of the Caribou-Targhee National Forest has the most acreage of any of the forests in this theme (167,400 acres). Most of the Caribou's roadless areas in the GFRG theme support Bonneville cutthroat trout and Yellowstone cutthroat trout, which are R4 sensitive species. About 101,400 acres of GFRG are on the Salmon portion of the Salmon-Challis National Forest. Most of these areas have been previously roaded and harvested.

There are 14,460 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. Under the Modified Rule, road construction/reconstruction to access unleased phosphate deposits is prohibited in all themes except GFRG. There are about 5,770 acres of unleased phosphate deposits in the GFRG theme[11]. These deposits are located within six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the forest and could eventually be mined over an

[11] Another 910 acres of unleased phosphate deposits are in the Bear Creek Roadless Area in the GFRG theme. However, no road construction or reconstruction is permitted to access these deposits (Abing 2008).

extended period of time (50 or more years). About 810 acres adjacent to these areas are also projected to be mined if additional phosphate is found (Abing 2008).

There is a potential risk to habitats for sensitive aquatic species (Bonneville cutthroat trout, Yellowstone cutthroat trout, western toad, and Columbia spotted frog) on these 6,380 acres when and if this development should occur. Site-specific analysis would occur prior to any future leasing and mitigations applied. No threatened or endangered aquatic species are found in these roadless areas.

About 1,280 acres of unleased phosphate deposits are in the Primitive theme and 6,500 acres in the Backcountry theme in the Bald Mountain, Bear Mountain, and Poker Peak Roadless Areas on the Targhee portion of the Caribou-Targhee National Forest. The Primitive theme prohibits road construction/reconstruction or surface occupancy for phosphates; therefore, this area would likely not be developed (Abing 2008). The Backcountry theme prohibits road construction and reconstruction to access unleased phosphate deposits, but permits surface use and occupancy. However, without access it is unlikely these deposits would be developed. If no mineral development occurs in these areas then there would be no effect on aquatic resources from mineral-related activities.

Similar to the 2001 Roadless Rule the Modified Rule prohibits road construction/reconstruction for new mineral leases, other than phosphate in all themes. In addition, the Modified Rule prohibits surface use and occupancy of new mineral leases in the Wild Land Recreation, Primitive and SAHTS themes. Surface use and occupancy would be permitted in the Backcountry and GFRG themes if allowed in the forest plans. It is unlikely new mineral development would occur in any of the themes without road access; therefore, no aquatic resources would be affected in these areas.

Summary of Effects, Modified Idaho Roadless Rule

Overall the Modified Rule alternative is unlikely to reduce aquatic biodiversity in Idaho Roadless Areas or result in a reduction of the quantity and/or quality of critical habitat, EFH, fish strongholds, priority watersheds, bull trout core areas, or bull trout key recovery habitat.

Key aquatic habitat elements should be maintained within all themes. Areas in the GFRG theme have the greatest potential for risk of adverse effects on aquatic species and habitat and key aquatic elements could be affected in these areas. As mentioned previously 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.

Limited ground-disturbing activities are likely to occur in Wild Land Recreation, Primitive, and SAHTS themes because of the restricted permissions on activities related to road construction/reconstruction, timber cutting and discretionary minerals. These three themes

should provide for 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, timber cutting and discretionary minerals activities may reduce aquatic habitat quantity and quality in a limited portion of some roadless areas.

Effects on Threatened and Endangered Species and Their Habitat, Modified Idaho Roadless Rule

Actions that could occur pursuant to the Modified Rule may affect individual Snake River Basin steelhead, Snake River sockeye salmon, Snake River fall-run Chinook salmon, Snake River spring/summer Chinook salmon, bull trout, Kootenai River white sturgeon, and habitats for these species. Table VI-5 displays a list of the T&E fish species and designated critical habitat considered in the Final Biological Assessment (Carlson et al. 2008) which can be found in the project file and on the internet at http://roadless.fs.fed.us/idaho.shtml. The Final Biological Assessment considered only the effects from the Modified Idaho Roadless Rule. Please refer to the Final Biological Assessment (Carlson et al. 2008) for a more complete discussion.

Table VI-5. Final EIS Biological Assessment threatened and endangered Fish Species, designated critical habitat, and determinations, based on the Modified Rule.

Scientific Name	Common Name	Status	Determination*	Designated Critical Habitat and Determination
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

** LAA: Likely to adversely affect; NLAA: Not likely to adversely affect*

At the project level, all activities would be subject to existing INFISH, PACFISH, and/or SWIEG requirements that are designed to avoid or minimize adverse effects on threatened and endangered fish and their habitats. Project-level NEPA is required for all timber cutting, sale, and removal; road construction/reconstruction; and mineral activities in Idaho Roadless Areas. Given these factors, the Modified Rule poses a low risk to individuals, metapopulations, and habitats for threatened and endangered species.

Because the Kootenai River white sturgeon resides only in the mainstem of the Kootenai River, the risk of effects on this species from actions that could occur pursuant to this alternative is so low the effects are discountable and insignificant.

In addition, by providing prohibitions beyond the existing forest plans, the Modified Rule may beneficially affect threatened and endangered aquatic species and their habitats by promoting large continuous lands that have unroaded character.

Effects on Sensitive Species and Their Habitats, Modified Idaho Roadless Rule

Actions that could occur pursuant to the Modified Rule may affect individual Bonneville cutthroat trout, burbot, inland redband trout, Pacific lamprey, Chinook salmon (naturalized populations), Yellowstone cutthroat trout, westslope cutthroat trout, Wood River sculpin, Coeur d'Alene salamander, Columbia spotted frog, and western toad, and habitats for these species, but are not likely to cause a trend toward Federal listing or a loss of viability for any of the aquatic sensitive species considered.

At the project level, all activities will be subject to existing forest plan standards and guidelines and where appropriate the INFISH, PACFISH, and/or SWIEG requirements. Because of the scientifically based aquatic conservation strategies and the aquatic/riparian standards and guidelines provided in INFISH, PACFISH, and the SWIEG forest plans, implementation of projects in accordance with these three documents would provide protective measures for aquatic sensitive species in addition to the threatened and endangered species for which they were developed.

Project -level NEPA is required for all timber cutting, sale, and removal; road construction/ reconstruction; and mineral activities in Idaho Roadless Areas; therefore, all aquatic sensitive species would have biological evaluations completed and mitigation measures implemented at the project level. Given these factors, the Modified Rule poses a low risk to individuals, metapopulations, and habitats for aquatic sensitive species in Idaho Roadless Areas.

The Modified Rule may beneficially affect sensitive aquatic species and their habitats by promoting large continuous lands that have unroaded character.

Effects on MIS Species and Their Habitat, Modified Idaho Roadless Rule

Actions that could occur pursuant to the Modified Rule may affect rainbow trout and/or their habitat on the Idaho Panhandle National Forest. Because of the wide distribution of rainbow trout on the Idaho Panhandle National Forest, potential effects of land management activities under this alternative should not result in adverse effects on this species, including decreased populations, population fragmentation, or changes to the species distribution.

VII. Terrestrial Wildlife Species and Habitats: Affected Environment

Background

Idaho has a diverse assemblage of wildlife that occurs on an equally diverse landscape. There are approximately 1,191 native and non-native species of wildlife – including, but not limited to Federally-listed, Forest Service sensitive, and management indicator species (see Appendix A, Table A-7) – that occur within five ecoregions in Idaho (Idaho Department of Fish and Game 2005). Ecoregions denote geographic areas characterized by similar ecosystems and environmental resources. In Idaho these five ecoregions are further subdivided into 14 ecological sections which are expected to have similar species, habitats, and conservation needs (Idaho Department of Fish and Game 2005). See Appendix B, Figure B-12 for a map of the Ecoregions and Ecosections across the state of Idaho. Table VII-1 displays the amount of NFS lands that falls within Idaho Roadless Areas by Ecoregion and Ecosection in Idaho.

Table VII-1. Acres and Percentage of National Forest System Lands and Idaho Roadless in Each Ecosection and Ecoregion of Idaho

Ecoregion	Ecosection	Acres (%) National Forest System Lands in Ecosection	Acres (%) of Ecosection in IRAs
Canadian Rocky Mountains			
	Okanogan Highlands	508,383 (31%)	173,870 (10%)
	Flathead Valley	405,076 (80%)	124,866 (25%)
	Bitterroot Mountains	2,727,812 (58%)	1,278,489 (27%)
Middle Rockies-Blue Mountains			
	Blue Mountains	866,747 (32%)	240,935 (9%)
	Idaho Batholith	8,807,965 (88%)	3,375,988 (34%)
	Challis Volcanics	2,567,941 (72%)	1,430,481 (40%)
	Beaverhead Mountains	1,928,178 (47%)	1,371,465 (34%)
Columbia Plateau			
	Palouse Prairie	24,963 (1%)	149 (0.01%)
	Owyhee Uplands	5,029 (<1%)	901 (0.01%)
	Snake River Basalts	81,272 (1%)	9,497 (0.12%)
	Northwestern Basin and Range	561,346 (15%)	182,564 (5%)
Utah-Wyoming Rocky Mountains			
	Yellowstone Highlands	441,946 (66%)	14,699 (2.2%)
	Overthrust Mountains	1,475,866 (45%)	1,100,447 (34%)
Wyoming Basins			
	Bear Lake	0	0

Terrestrial Habitats within Idaho Roadless Areas

There are 250[12] IRAs distributed across twelve national forests in Idaho, with the Sawtooth National Forest having the largest total acreage within IRA – 1,194,652 acres in 23 Idaho Roadless Areas. Idaho Roadless Areas vary in size with the Sawtooth National Forest hosting the largest roadless area in Idaho, the White Cloud-Boulder IRA, which is 322,652 acres, and the Idaho Panhandle National Forest hosting the smallest roadless area, the 2000-acre Hellroaring Roadless Area.

Idaho Roadless Areas support a range of habitat types such as grass and shrublands, young forested stands, and old-growth forests. Forests cover about 33 percent, or approximately 21.4 million acres of Idaho of which 76 percent is administered by USDA Forest Service (USFS). These forests vary from very dry pinyon-juniper woodlands at lower elevations to cold alpine forest types at high elevations. Within Idaho Roadless Areas, forest cover is dominated by three primary types: 40 percent Douglas-fir, 20 percent spruce-fir, and 8 percent lodgepole pine (Martin 2008). All other forest cover types make up less than 5 percent each of total forest cover within IRAs. Non-forest habitat types within the Idaho Roadless Areas are estimated to be 18 percent of the landbase and include other vegetation types (grasslands, shrublands, meadows, etc.), and barren areas (rock, ice, etc.) (Martin 2008). Table VII-2 displays the approximate acreages by forest type in the state and within national forests of Idaho. In general, the predominant forest cover types within IRAs are the same three cover types found to be most common statewide (i.e., Douglas-fir, spruce-fir, and lodgepole pine).

Table VII-2. Forest cover types for State of Idaho and national forests (acres)[1]

Forest type	State	National forest
Pinyon/juniper	739,000	143,000
Douglas-fir	6,543,000	5,296,000
Ponderosa pine	1,539,000	1,076,000
Spruce/fir	3,826,000	3,426,000
Lodgepole pine	2,273,000	2,095,000
Grand fir/cedar/hemlock	3,182,000	1,792,000
Western larch	167,000	100,000
Other softwoods	470,000	458,000
Aspen/birch/cottonwood	862,000	541,000
Other hardwoods	207,000	106,000
Non-stocked	1,621,000	1,348,000

[1] *Forest Inventory and Analysis database (Miles 2007)*

The character, distribution, and extent of habitats in Idaho Roadless Areas are affected by patch size, the nature, intensity and timing of management-induced and natural disturbances that have occurred, and the landscape context within which they occur. In general, roadless areas provide large, relatively undisturbed blocks of important habitat for terrestrial animal species and communities. A majority of Idaho Roadless Areas provide high quality habitat for cavity and snag dependent species, summer and winter range for big game species, and habitats free of human disturbance, an important characteristic for many wide-ranging carnivores. Other

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

important habitat values and functions that Idaho Roadless Areas provide include the following:

- Dispersal corridors;
- Connectivity between large blocks of habitat;
- Travel corridors;
- "Islands" of refugia;
- Habitat diversity and complexity;
- Old growth forests;
- "Natural" levels of snag and down woody debris components within forested habitats across large areas;
- "Source" habitats and "strongholds" for sensitive species;
- Security and seclusion during incubation, hatching or birthing and rearing of young ;
- Reduced big game and furbearer vulnerability during hunting and trapping seasons as a result of limited access.

Existing Condition of Idaho Roadless Areas

Fire

In general, fire regimes within forested ecosystems in Idaho have been altered significantly from historic times. Following Euro-American settlement, there has been an increase in the number and extent of lethal, stand-replacing fires, and a decrease in non-lethal and mixed severity fires in both forested and rangeland ecosystems across the State (Quigley and Bigler-Cole 1997).

Noxious weeds

Approximately 1 percent of all NFS lands in Idaho is infested with noxious weeds, including over 42,250 acres or 0.5 percent of lands encompassed within Idaho Roadless Areas. Cheatgrass and spotted knapweed are two particularly aggressive invasive weeds that have altered habitats and forage availability for terrestrial wildlife species in Idaho (Quigley and Bigler-Cole 1997). To date, not all Idaho Roadless Areas, National Forests or other ownerships have been surveyed for noxious weeds (Martin 2008).

Roads

Approximately 2,050 miles of roads currently exist on less than 5 percent of the land area in Idaho Roadless Areas (Bower 2008). Some of these roads pre-date the roadless inventories, some are unauthorized user created roads, while others have been constructed where land management plans have allowed development in Idaho Roadless Areas.

Mining

Valuable deposits of locatable mineral resources potentially exist in Idaho Roadless Areas. Leasable minerals in Idaho include energy mineral resources such as oil, gas, and geothermal and non-energy minerals such as phosphate.

The 1970's and 1980's saw extensive interest in ten of Idaho's twelve national forests with nearly 7.8 million acres of NFS lands reportedly leased for oil and gas (Abing 2008). Only the Boise and the Wallowa-Whitman National Forests avoided this period of leasing interest. With no

commercial discovery of hydrocarbons, all of the oil and gas leases on NFS lands have expired and there are presently no active leases on any national forest in Idaho (Abing 2008).

Although some NFS land in Idaho was leased for geothermal, it was never developed and these leases eventually expired. Presently, there are no geothermal leases on NFS lands in Idaho.

"Eastern Idaho is a part of the Western Phosphate Field, a broad area in the northern Rocky Mountains that contains phosphate-bearing layers of rock called the Phosphoria Formation. Although the Phosphoria Formation exists throughout all of eastern Idaho, a much smaller subset of this area has been classified as either prospectively valuable for phosphate or a known phosphate leasing area" (Abing 2008, pgs. 13-14).

The Caribou National Forest contains significant deposits of economically recoverable phosphate, a mineral used primarily in the production of fertilizers. Currently, the Caribou portion of the Caribou-Targhee National Forest has 49 active phosphate leases affecting 22,000 acres of NFS lands (Abing 2008). Of these active leases, approximately 6,140 acres are within six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek). Almost all of the leased lands in roadless (6,100 acres) have yet to be mined. There are 14,460 acres of roadless areas that are unleased and located within Known Phosphate Lease Areas (KPLA). Table VII-3 summarizes the acreage of KPLA's within roadless areas on the Caribou-Targhee NF. KPLA's in the Caribou-Targhee National Forest generally exist on the edges of specific roadless areas, which would leave the core of the roadless areas intact should mining occur.

Table VII-3. Idaho Roadless Areas potentially affected by phosphate mining *(from Abing 2008)*

Forest	Idaho Roadless Area	Acres under existing lease (leased acres w/in a KPLA)[1]	Percentage affected by existing leases	Unleased KPLA acres [2]	Percentage affected by potential KPLA future leases	KPLA location
Caribou	Dry Ridge	1,400 (1,350)	7	780	4	Eastern edge
Caribou	Huckleberry Basin	2,090 (2,080)	13	2,120	13	Northwest edge
Caribou	Meade Peak	550 (550)	1	2,470	6	Northeast edge
Caribou	Sage Creek	1,900 (1,850)	22	2,080[3]	24	Southern portion
Caribou	Schmid Peak	40 (40)	<1	20	<1	Eastern edge
Caribou	Stump Creek	160 (120)	<1	120	<1	Southern edge
Caribou Totals		6,140 (5,990)		7,590		
Targhee	Bald Mountain	0 (0)	0	1,430	9	Northeast edge
Targhee	Bear Creek	0 (0)	0	5,060	5	Northeast edge
Targhee	Poker Peak	0 (0)	0	380	2	Northeast edge
Targhee	Mount Jefferson	1,090 (0)	2	0	0	
Targhee Totals		1,090 (0)		6,870		
Forest Totals		7,230 (5,990)		14,460		

[1] *Not all existing lease acres are within a KPLA (known phosphate lease area).*

[2] *Estimated acres do not include ½-mile buffer added to the Caribou's KPLAs to allow for additional facilities needed for exploration and/or mine operations if lease is approved.*

[3] *840 acres in Sage Creek roadless area are recommended to be unavailable for lease per 1998 FS recommendation. An additional 200 acres may also be withheld from leasing unless industry can demonstrate that selenium concerns can be addressed. .*

Mining operations associated with phosphate extraction can have environmental effects associated with increased uptake by wildlife of contaminants (e.g., selenium) in mining disturbance areas and areas that are reclaimed (USDI Bureau of Land Management and USDA Forest Service 2006). Selenium is an essential nutrient for animals. Although the effects of selenium deficiency and toxicity on domestic animals are understood relatively well, the background selenium levels and toxicity thresholds for terrestrial wildlife are largely unknown. A number of recent studies conducted in Southeastern Idaho on the effects of selenium on terrestrial wildlife documented elevated levels of selenium in every environmental media and species of wildlife tested in areas proximal to phosphate mine sites and selenium release areas (IDEQ 2004a, as cited in USDI Bureau of Land Management and USDA Forest Service 2006).[13] Various ungulates, including elk and mule deer, have been observed in areas where phosphate mine overburden fills have been reclaimed, and where they may consume seleniferous forage (USDA Forest Service 2006a, as cited in USDI Bureau of Land Management and USDA Forest Service 2006). Some elk sampled within close proximity to the Smoky Canyon Mine exhibited elevated levels of selenium, albeit these levels did not exceed thresholds for mammalian livestock toxicity (Wright et al. 2002, as cited in USDI Bureau of Land Management and USDA Forest Service 2006. Small mammals such as voles and deer mice may be more susceptible to selenium toxicity given their limited ranges (NewFields 2005, as cited in USDI Bureau of Land Management and USDA Forest Service 2006, pgs. 3-136). Various avian species such as waterfowl, shorebirds, raptors, woodpeckers, and passerines also exhibit elevated selenium levels within close proximity of phosphate mine reclamation sites (Ratti et al. 2002, as cited in USDI Bureau of Land Management and USDA Forest Service 2006). Deleterious effects, such as embryonic deformations, may be more likely in avian species associated with aquatic habitats impacted by selenium (http://wwwrcamnl.wr.usgs.gov/Selenium/Mining.htm)

Best management practices (BMPs) for selenium controls have been employed at active phosphate mines in Southeastern Idaho since 2000 and are undergoing continual improvements. Such BMPs are designed to reduce the potential for selenium mobilization and migration from the mine site (see Abing 2008 for more discussion). Although new mines may be minimizing impacts of selenium on terrestrial wildlife species, the consequences of past practices in extraction of phosphates to terrestrial habitats may still be present, and therefore part of the existing environment.

Terrestrial Wildlife Species in Idaho Roadless Areas

We examined two primary types of data for most terrestrial wildlife species in this section: *predicted distribution* and *occurrences*. Predicted distributions of species throughout Idaho and within IRAs are based on Wildlife Habitat Relationships Models (WHR), A Gap Analysis of Idaho: Final Report. Idaho Cooperative Fish and Wildlife Research Unit, Moscow, ID (Scott et al. 2002 as referenced in IDFG 2005). These data provide 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 of a species is pertinent to statewide and regional scale assessments of natural resources, but is not intended for site-specific analyses (gapmap.nbii metadata).

[13] Excerpted from the Smokey Canyon EIS.

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 (e.g., casual observer, experienced biologist, etc.) and methods of collection. Further, individual points may represent more than one observation of a species. Consequently, they may provide an indication of where species occur or have occurred in the past, but their absence from other locations does not necessarily represent where species do not occur. We do not assume, therefore, that a lack of occurrence records in an area is evidence that the species is not present, or that the presence of points, particularly outside the predicted distribution, validates presence. Rather, the combination of predicted distribution and occurrence data provide a measure of the likelihood that particular species will be found in Idaho Roadless Areas. For species listed under the ESA, we did consider more detailed, site-specific information on species presence, distribution and habitat associations where it was available.

Federally Endangered, Threatened, Proposed and Candidate Species

Idaho Roadless Areas provide habitat for two endangered terrestrial wildlife species – woodland caribou and gray wolf north of I-90 – and three threatened terrestrial wildlife species – Canada lynx, grizzly bear [excluding the Yellowstone distinct population segment (DPS)], and northern Idaho ground squirrel.

On February 27, 2008, the FWS designated and delisted the Northern Rocky Mountain gray wolf DPS (USDI, Fish and Wildlife Service 2008d). 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 non-essential experimental population under 10j of ESA. Consequently, we address effects to gray wolf based on its reinstated status.

In addition, two terrestrial wildlife species within Idaho are classified as candidates for Federal listing: the western U.S. DPS of yellow-billed cuckoo and the southern Idaho ground squirrel.

Two wildlife species were recently delisted by the FWS: the Yellowstone DPS of the grizzly bear on March 29, 2007, and the bald eagle on July 9, 2007. These species are now classified as Forest Service sensitive and are addressed in this document as such.

As described previously, GAP analysis information was used to determine the predicted distribution of threatened, endangered, and candidate species within their general ranges in Idaho and in Idaho Roadless Areas. Based on predicted distributions and occurrences, there is the potential for all five listed terrestrial species and one candidate species (western yellow-billed cuckoo) to be found in Idaho Roadless Areas (Appendix A, Table A-8). The southern Idaho ground squirrel currently is not known to occur on NFS lands (Wolmack, personal communication, August 8, 2008), including IRAs.

Of the species that have the potential to occur in IRAs, three – woodland caribou, grizzly bear, and northern Idaho ground squirrel – are geographically restricted in range to only one or two national forests in Idaho. The Canada lynx and gray wolf are broadly distributed across Idaho from north to south, where available habitats exist. The western yellow-billed cuckoo is broadly distributed throughout southern Idaho, but narrowly restricted to riparian corridors. We provide more detailed discussions on these listed species below.

Gray Wolf (*Canis lupus*)

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 VII-1).

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 – as part of the Northern Rocky Mountain (NRM) population of gray wolves – and along the Wyoming-Idaho border. 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).

Thirty-four percent (5,669,000 acres) of the gray wolf predicted distribution in Idaho overlaps IRAs: 13,350 acres north of I-90 and 5,655,700 acres south of I-90 (Appendix A, Table A-8). The home ranges of 82 documented packs, four suspected packs and nine additional documented groups or records of wolf activity overlap Idaho Roadless Areas (Appendix A, Table A-9). 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 VII-2). 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 with abundant ungulate populations. 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.

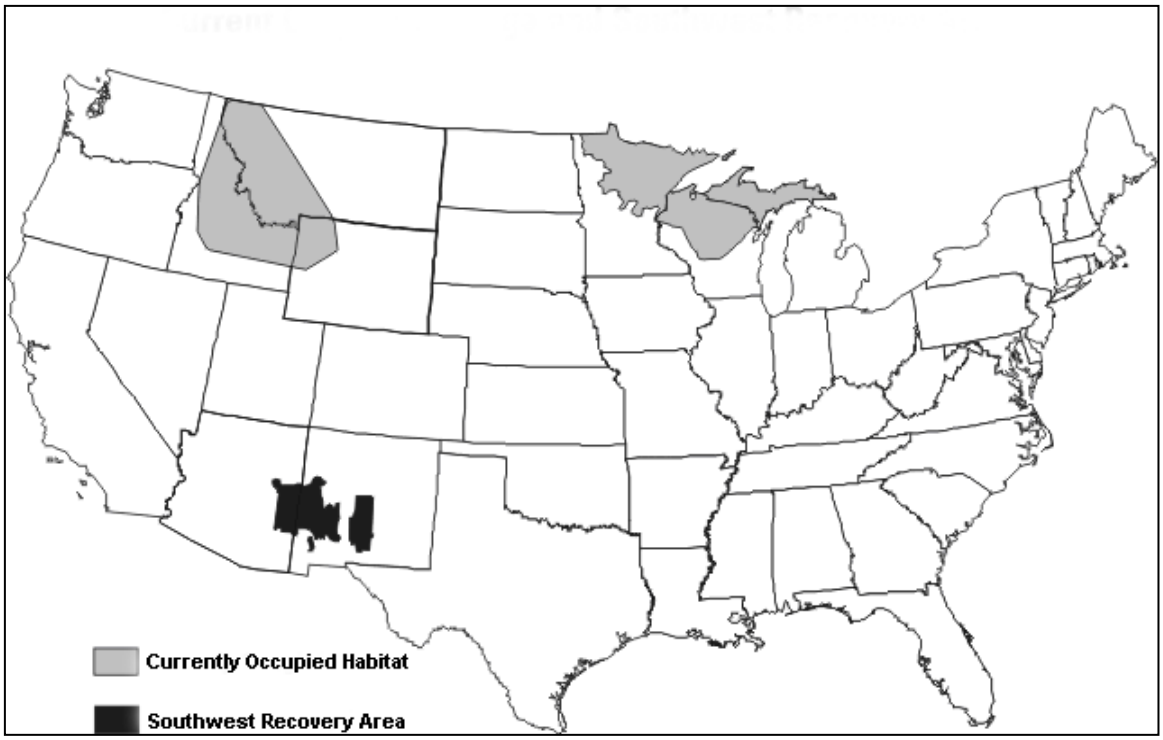

Figure VII-1. Gray wolf populations in the United States as of 2006
(from http://www.fws.gov/home/feature/2007/gray_wolf_factsheet_populations.pdf

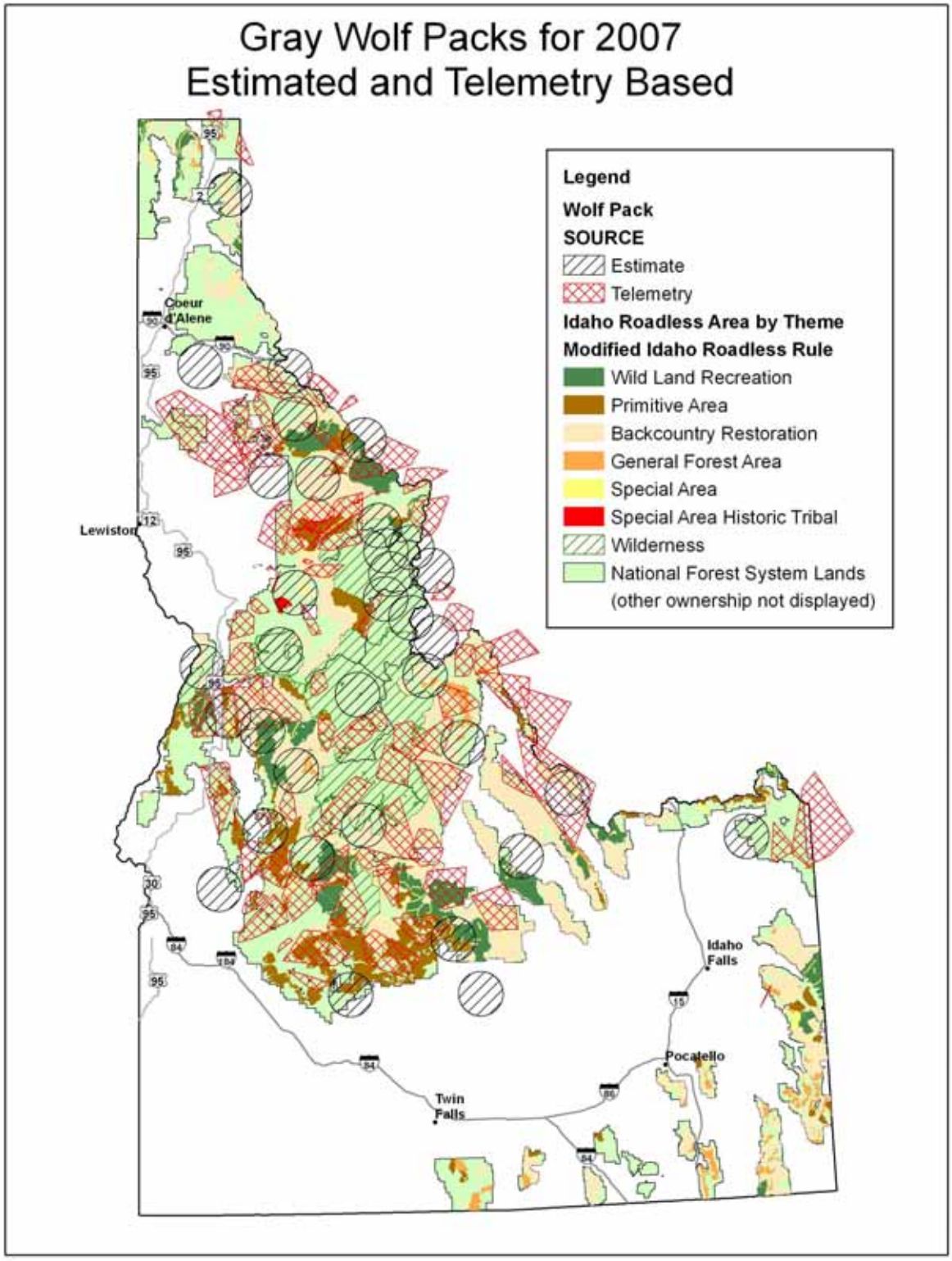

Figure VII-2. Gray wolf packs and MIRR themes in Idaho, north and south of Interstate-90

Woodland Caribou (*Rangifer tarandus*)

Currently, woodland caribou in the continental United States (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 (B.C.). The most recent surveys completed of the South Selkirk subpopulation estimated 46 individuals in 2008 (Wakkinnen et al. 2008), three of which were detected within the U.S.

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 VII-3): 320,528 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 1993a). 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 South Selkirk Ecosystem caribou recovery area (27%) fall on the IPNF, 131,813 acres (~14%) of which are included in Idaho Roadless Areas. Seven IRAs fall within or overlap the caribou recovery area: Continental Mountain, Kootenai Peak, Little Grass Mountain, Saddle Mountain, Salmo-Priest, Selkirk, and Upper Priest (Table VII-4).

Table VII-4. Idaho Roadless Areas that overlap the South Selkirk Ecosystem caribou recovery area

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

Efforts to map the distribution and condition of caribou habitat within the 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' (Layser, personal communication, May 13, 2008). An estimated 14 percent of caribou habitat (all seasons) in the South Selkirk Ecosystem recovery area overlaps IRA (Appendix A, Table A-10). In general,

[14] Based on the GIS analysis conducted for the purposes of this document. Differs only slightly from acreage reported in

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

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 to generally represent the distribution of caribou and its habitat.

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 2004b, 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 (Appendix B, Figure B-13).

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 B.C. and U.S. biologists, at least 2,500 caribou locations were identified within numerous Idaho Roadless Areas (Appendix B, Figure B-14): 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 (e.g., year, season, individual) for each point, we cannot 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 percent (2,235 points) was detected within the Selkirk IRA and 8 percent (202 points) was detected within the Salmo-Priest IRA. The remaining IRAs contained less than 1 percent of points, suggesting limited use of these areas by these monitored caribou.

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).

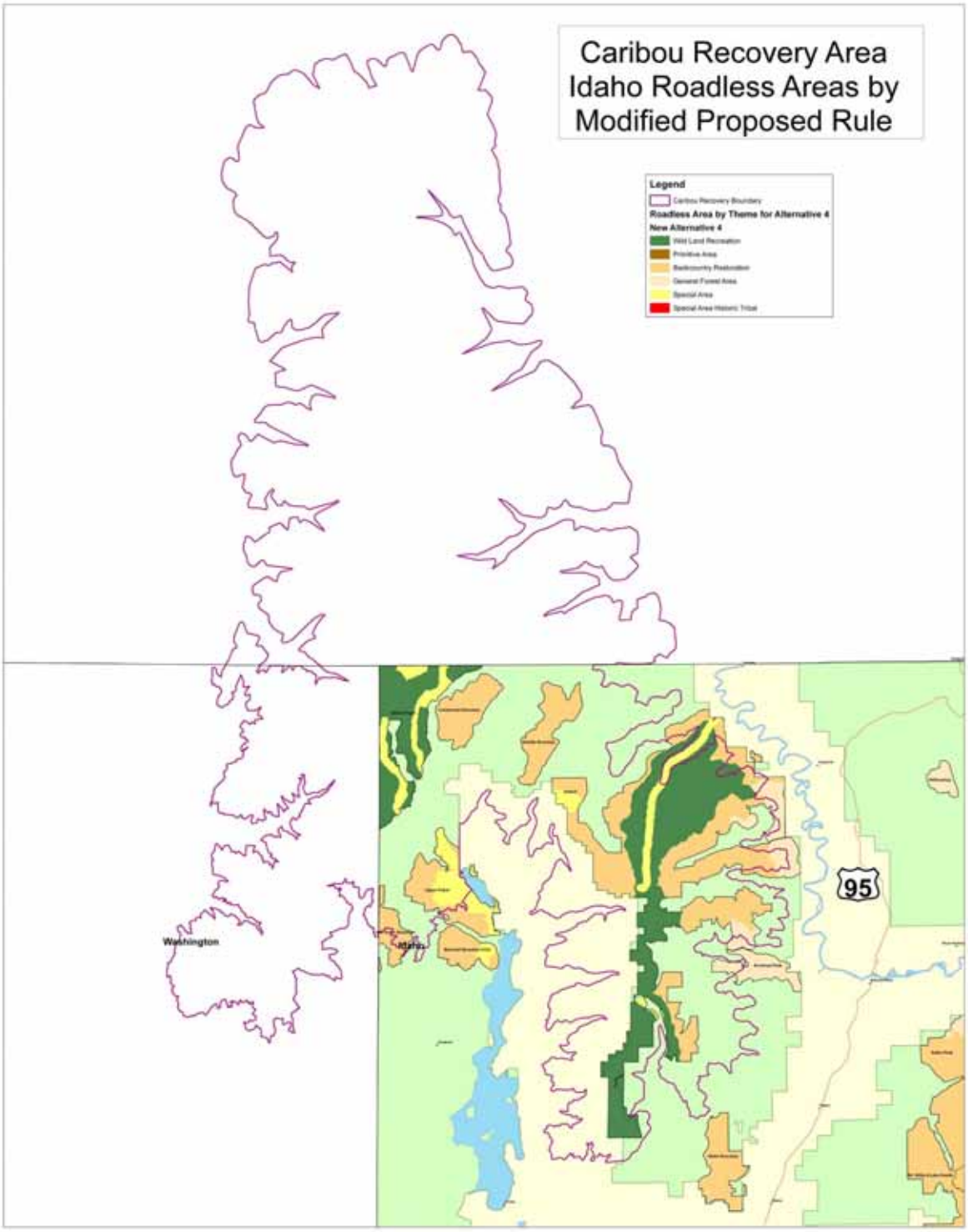

Figure VII-3. Overlap of the Caribou Recovery Area with Idaho Roadless Areas

Northern Idaho Ground Squirrel (*Spermophilus brunneus brunneus*)

The entire range of this geographically restricted subspecies covers an approximate 1,200 square-mile area. Colonies are found primarily in dry, montane meadows, between 3,280 and 5,580 feet in elevation. The predicted historic distribution (PHD) of the northern Idaho ground squirrel (NIDGS) totals 843,434 acres and overlaps the Payette and Boise National Forests (Figure VII-4); but this species is only known to occur on the Payette National Forest, endemic to Adams and Valley counties near New Meadows, Lost Valley Reservoir and nearby surrounding areas (USDI Fish and Wildlife Service 2003). 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.

Of the 843,434 acres[16] encompassed by the probable historic distribution for NIDGS, 6 percent (47,313 acres) falls within IRA (Figure VII-4). Of 40 known metapopulation sites[17] for NIDGS within the PHD, none occurred 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 (Appendix A, Table A-11). These four colonies occur outside of metapopulation sites.

The PHD of the NIDGS overlaps five IRAs: Indian Creek, Cuddy Mountain, Council Mountain, and tiny slivers of Rapid River and Poison Creek (Figure VII-4). One additional IRA is situated between metapopulations – Snowbank – and seven IRAs surround the outer boundaries of the PHD – 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, 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.

The FWS (2003) list the chief threat to northern Idaho ground squirrel 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. Conservation of and management for northern Idaho ground squirrel on Forest Service lands (i.e., the Payette

[16] The total acreage of the PHD estimated based on GIS analysis conducted for the purposes of this document totaled 843,411 acres, differing only slightly from that reported in FWS (2003).
[17] Defined as clusters of population sites.

National Forest) is guided by the following: The Recovery Plan for the Northern Idaho Ground Squirrel (USDI Fish and Wildlife Service 2003), the Land and Resource Management Plans for the Boise, Payette and Sawtooth National Forests (USDA Forest Service 2003), and district-level 5-year Habitat Management Plans (USDI Fish and Wildlife Service 2003). For more comprehensive information regarding the habitat requirements, life history, and threats to this species, see FWS (2003) and Evans Mack (2006, 2007).

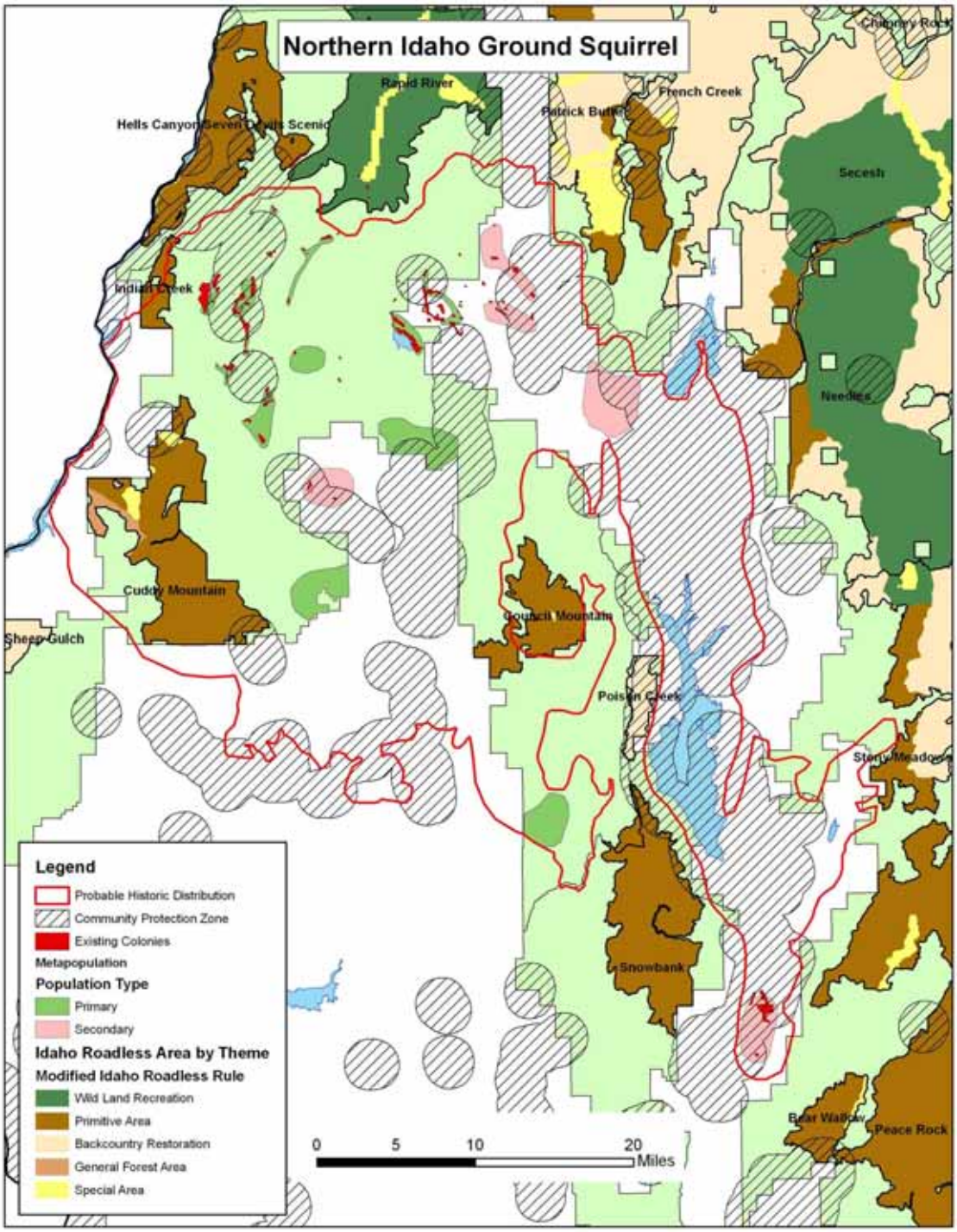

Figure VII-4. Probable Historic Distribution (PHD), metapopulations, and existing colonies for northern Idaho ground squirrel and their overlap with Idaho Roadless Areas

Grizzly Bear (*Ursus arctos horribilis*)

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.

Three recovery zones relevant to grizzly bears listed under ESA overlap NFS lands within Idaho – the Cabinet-Yaak (CYRZ), Selkirk (SRZ), and Bitterroot (BRZ) Ecosystems – the former two of which currently contain grizzly bears (listed entity) and overlap Idaho Roadless Areas. All three recovery zones 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 2007b). Although we report parameters relevant to habitat within the recovery zone boundaries, we acknowledge that the areas adjacent to and surrounding the recovery zones may 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 (Figure VII-5). The CYE includes 929,607 acres of grizzly bear core habitat, areas typically characterized by limited roads and low potential for human disturbance.

The grizzly bear population in the CYE is estimated conservatively at 30 to 40 bears (USDI Fish and Wildlife Service 1993b). From the 1980s through 1999, the population appeared to be slowly increasing ($\lambda = 1.067$), 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 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. 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.

The Selkirk Ecosystem) – The Selkirk Ecosystem (S) is approximately 688,734 acres in size, and spans portions of northwestern Idaho, northeastern Washington, and southwest Canada (Figure

VII-5). This recovery zone overlaps two national forests – the IPNF and the Colville - and consists of ten BMUs delineated with the U.S. portion of the SE. Approximately 47 percent of the Selkirk Ecosystem (325,498 acres) is considered grizzly bear core habitat. Wakkinen and Kasworm (1997, as cited in the USDI, Fish and Wildlife Service 2007b)) estimated about 45 to 55 bears in the Selkirk Ecosystem, 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 its small size and the potential isolation it may face due to activities across the border in Canada (USDI Fish and Wildlife Service 1999c).

Twenty-three percent of the Selkirk Ecosystem (~158,530 acres) consists of IRA, with nine of the ten Bear Management Units overlapping IRA to some degree: Ball-Trout, Blue-Grass, Jackson-Hughes, Kalispel-Granite, Lakeshore, Long-Smith, Myrtle, Salmo-Priest, and State-land. Approximately 136,917 acres of grizzly bear core habitat within the SE includes fall within IRAs; this equates to 42 percent of total grizzly bear core habitat for the SE.

Bitterroot Ecosystem - "The Bitterroot Ecosystem (BE) is one of the largest contiguous blocks of Federal land remaining in the lower 48 United States [see Figure B-15]. 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).

"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 shooting of this grizzly bear there have not been any 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 (USDI Fish and Wildlife Service 2007c, pgs. 2-3). At this time, the FWS does not consider this one male grizzly bear to constitute a population.

The BE recovery zone does not include any Idaho Roadless Areas, although it is proximate and adjacent to IRAs; consequently, it is not discussed further in this document.

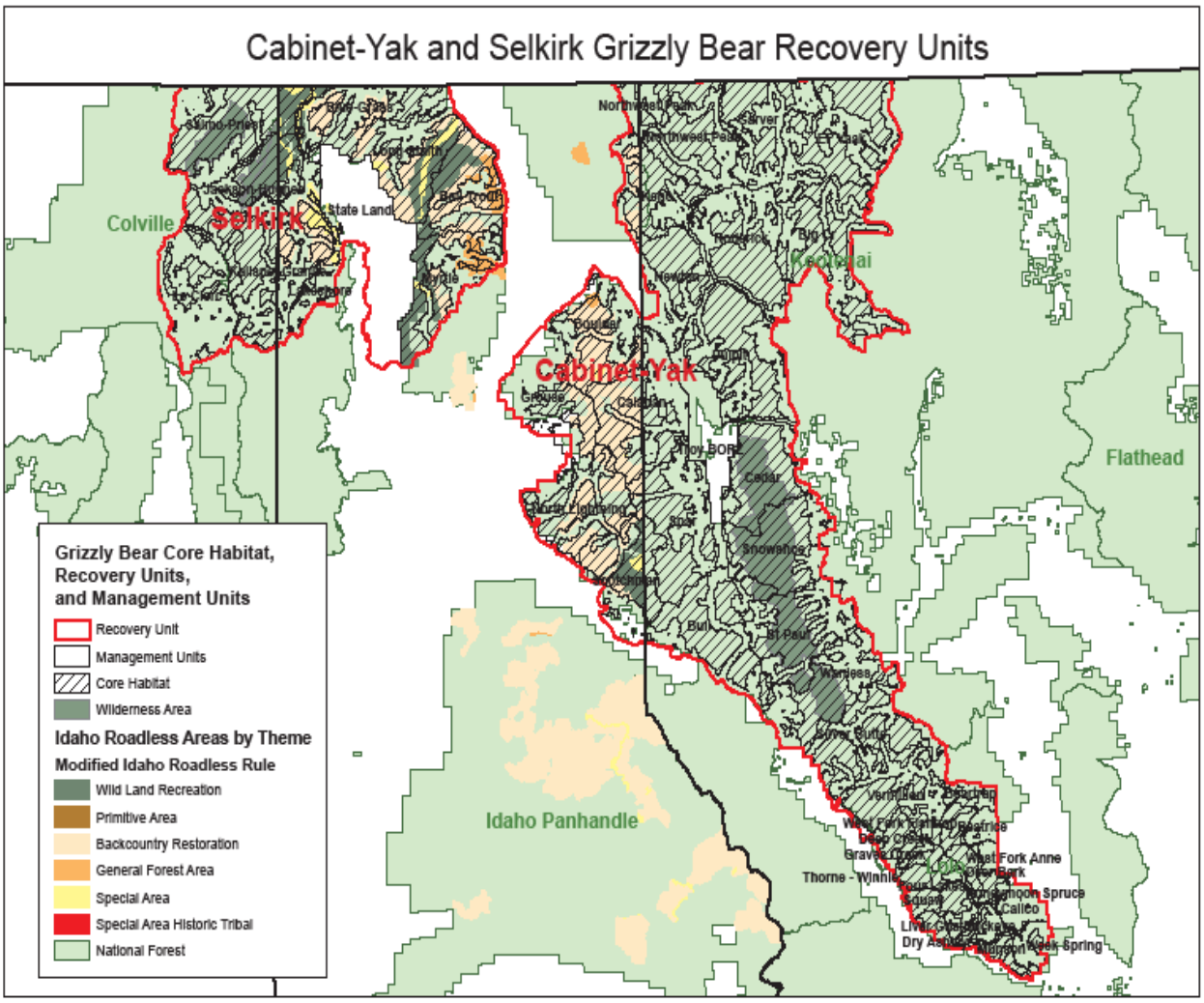

Figure VII-5. Grizzly bear core habitat, bear management units (BMUs), and Idaho Roadless Areas in the Selkirk and Cabinet-Yaak Ecosystems

Canada Lynx (*Felis canadensis*)

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.

Most records of lynx in the western U.S. 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 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.

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 forest Land and Resource Management Plans (LRMP) were amended or revised to provide for lynx conservation (USDA, Forest Service, USDI Fish and Wildlife Service 2006). 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.

Conservation 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 D for more detailed descriptions of these measures relevant to the Idaho national forests.

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 VII-6). 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 VII-5). Approximately 3,503,000 acres (~48%) of mapped lynx habitat on Idaho's National Forests overlap Idaho Roadless Areas.

Based on historical and current documentation of lynx presence and reproduction, 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. However, based on criteria applied to the other Forests in Idaho, occupancy by lynx may be unlikely.

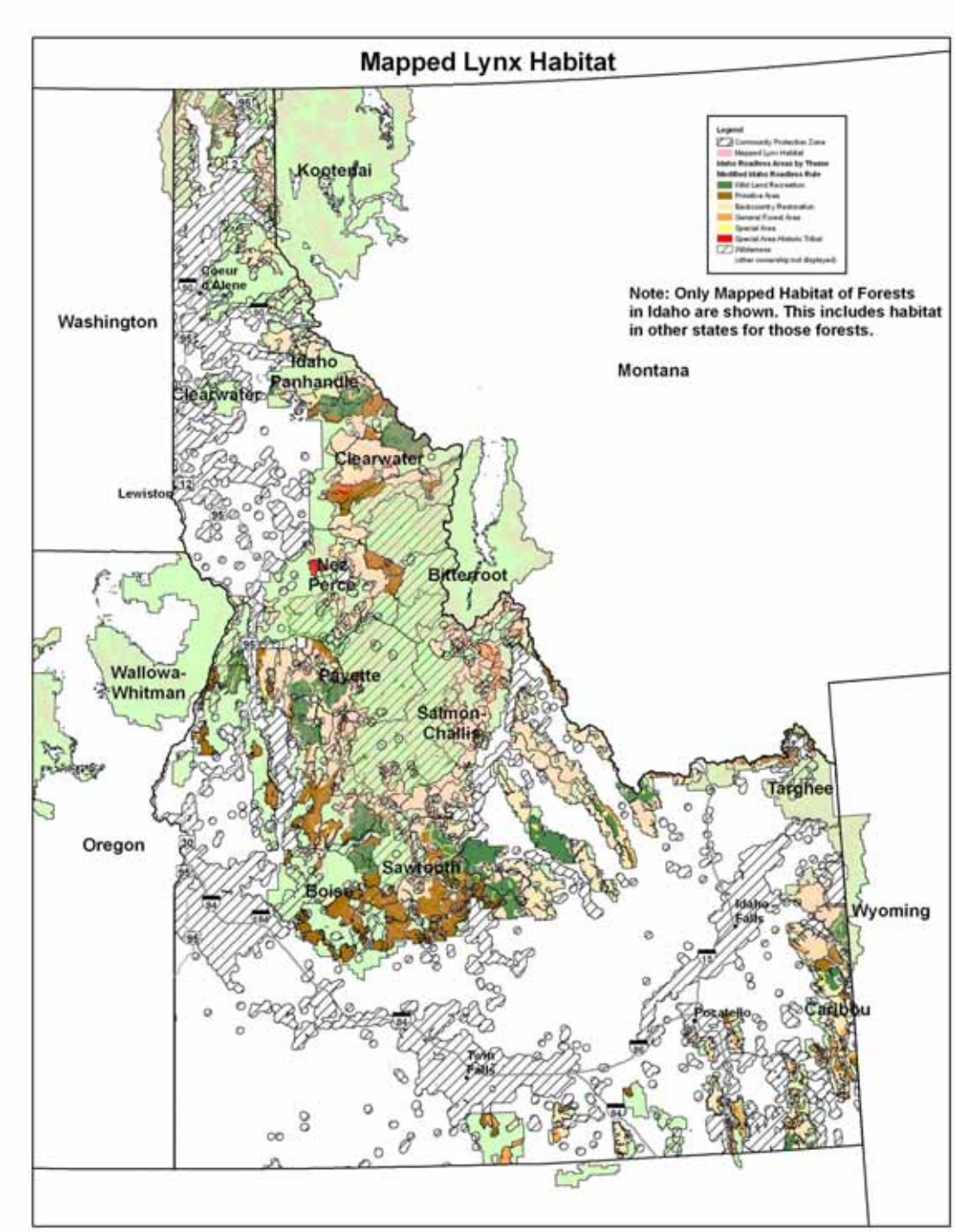

Figure VII-6. Mapped lynx habitat on National Forests in Idaho and its overlap with Idaho Roadless Areas

Table VII-5. Mapped lynx habitat, overlap of habitat with IRA, likelihood of occupancy, and management direction for lynx on national forests in Idaho

National Forest	Mapped Lynx habitat	Mapped lynx habitat in IRA	%	Likelihood of occupancy[1]
Bitterroot	193,604[2]	0	0%	Not likely
Boise	601,683	434,171	72%	Undetermined[3]
Clearwater	932,666	578,329	62%	Likely
Idaho-Panhandle	700,751[2]	305,783	44%	Likely
Kootenai	36,341[2]	25,816	71%	Likely
Nez Perce	804,950	217,076	27%	Not likely[4]
Payette	831,202	377,907	45%	Undetermined[3]
Salmon-Challis	1,803,502	798,757	44%	Not likely
Sawtooth	555,180	384,457	69%	Undetermined[3]
Targhee[3]	868,582	380,555	44%	Likely
Wallowa-Whitman	24,655[2]	41	.17%	Not likely
Total	**7,354,755**	**3,503,401**	**48%**	

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

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

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

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

Canada Lynx Proposed Critical Habitat – Approximately 51 miles^2 (~32,940 acres) of the Northern Rocky Mountains Unit (Figure VII-7) overlap into Idaho, which represents about 17 percent of that unit (Table VII-6). The majority (98%) of proposed lynx critical habitat in Idaho occurs on Federal lands in northeastern Idaho. Of the approximate 33,000 acres[18] of proposed lynx critical habitat in Idaho, 5,668 acres overlap IRA, all falling within the Buckhorn Ridge Roadless Area. This equates to approximately 0.08 percent of the entire Northern Rocky Mountains unit. See Appendix C of the FEIS, for more detailed information on the Buckhorn Roadless Area.

[18] This estimate was generated through GIS analysis conducted for the purposes of this document and differs slightly from the estimate for CH in Idaho reported in USDI Fish and Wildlife Service 2008c.

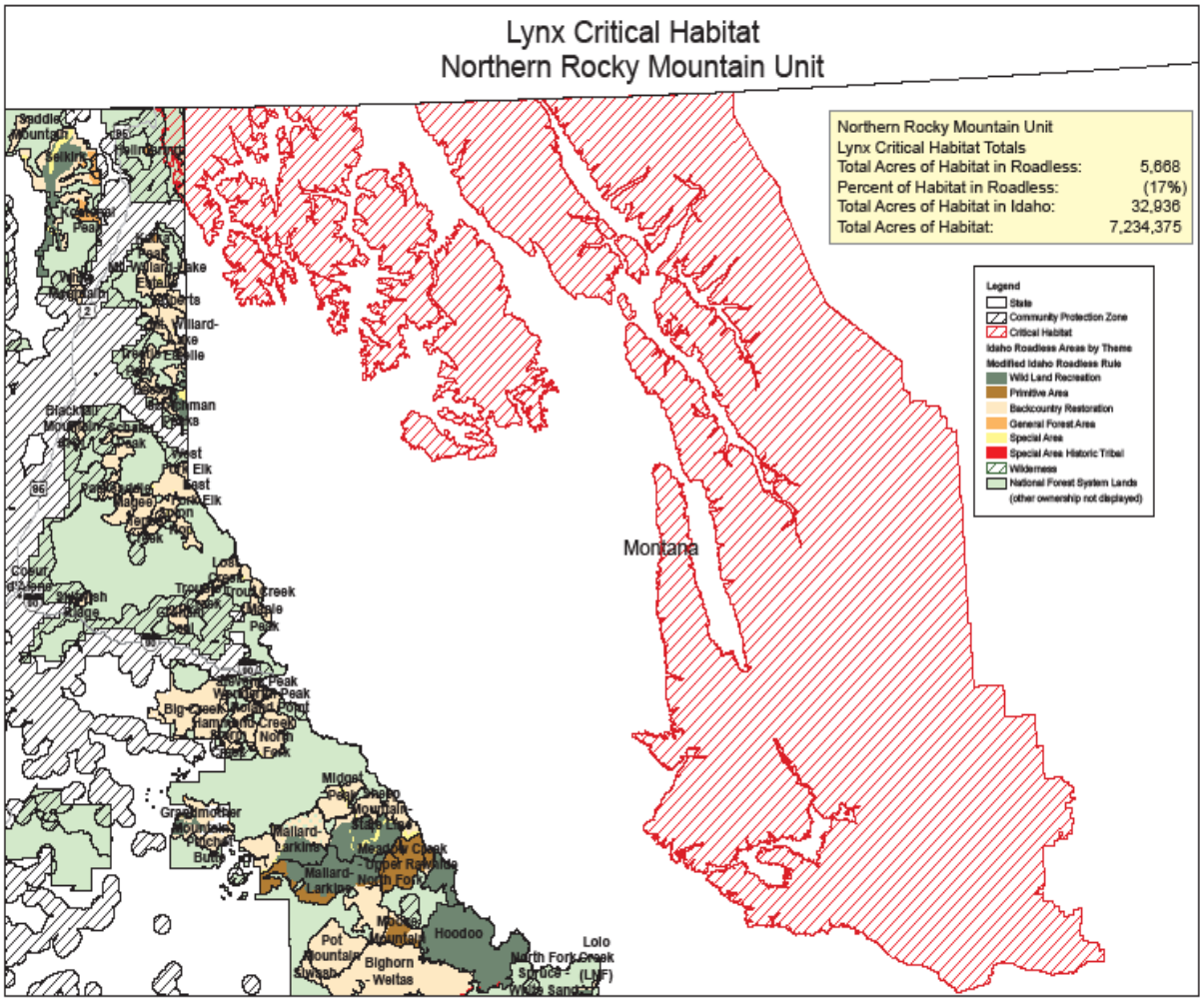

Figure VII-7. Proposed designated critical habitat for lynx in the Northern Rocky Mountain Unit.

Table VII-6. Critical habitat proposed for the Canada lynx by landownership 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 2008c.*

[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.*

Western Yellow-Billed Cuckoo (*Coccyzus americanus*)

Albeit presence is rare in Idaho, there are documented occurrences of western yellow-billed cuckoo in southeastern Idaho where the majority of its predicted breeding distribution is concentrated along riparian corridors (Figure VII-8). Of the 488,430 acres of yellow-billed cuckoo breeding distribution in Idaho, 128,873 acres (26%) overlaps IRA (Appendix A, Table A-8).

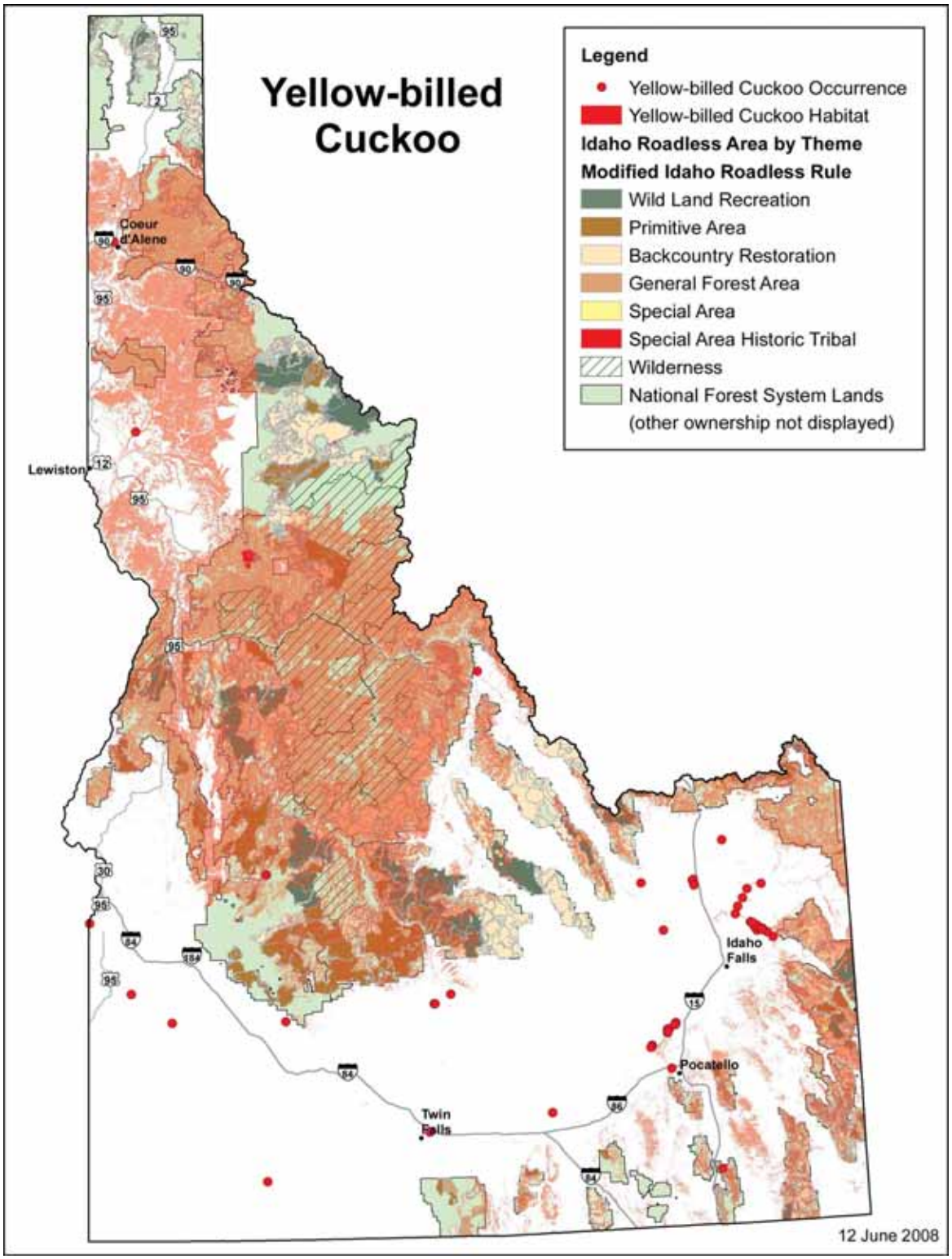

Figure VII-8. Predicted distribution for the western yellow-billed cuckoo in Idaho

Forest Service Sensitive Species

Nine mammals, 18 birds, and one reptile listed as Forest Service sensitive have predicted distributions overlapping Idaho Roadless Areas. Of these 28 species, 24 have documented occurrences in IRAs. Table VII-7 displays the following for sensitive species: 1) acres and percent of the predicted distribution for sensitive species in both the State and in IRAs; 2) known occurrences of each sensitive species in IRAs and the number of IRAs and national forest(s) that contain known occurrences for each species if available. Species occurrence information may be lacking on sensitive species because wildlife survey work may not be complete in Idaho Roadless Areas.

Table VII-7. Predicted Distribution and Occurrences of Forest Service Sensitive Terrestrial Wildlife Species[3] of Idaho Roadless Areas. ***Data were not available (NA) for some species***

Species	State Ranking/ Species of Greatest Conservation Need?	Habitat	Acres of Predicted Distribution[1]		%Predicted Distribution within IRAs	Occurrences (OC) of Species in IRAs?
			In Idaho	Within IRAs		
Sensitive Mammals						
Fisher (*Martes pennanti)*	S1-Yes	Dense, mesic old growth, especially spruce fir associated with riparian areas that have >50% crown closure and abundant snags and downed woody debris	11,889,633	3,601,637	30%	OCs in 37 IRAs on 8 NFs
Fringed myotis (*Myotis thysanodes)*	S2-Yes	Low-and mid-elevation mines in steep river valleys, large canyons or other sites having steep and rock terrain	3,621,777	122,920	3.4%	1OC in the Caribou City IRA of the Caribou NF
Grizzly bear[2] (*Ursus arctos horribilis)*	S3-Yes	Large tracts of undisturbed habitat with a variety of aspects, elevations and vegetative communities	640,392	61,166	10%	OC in 4 IRAs of the Targhee NF
Northern bog lemming (*Synaptomys borealis)*	S1-No	Sphagnum moss dominated fens/bogs in or adjacent to conifer forests often in alpine zones	547,937	132,216	24%	OC in two IRAs of the Idaho Panhandle NF
Pygmy rabbit (*Brachylagus idahoensis)*	S2-Yes	Tall stands of big sagebrush growing on deep soils with grasses and forbs	13,948,908	961,544	7%	4 IRAs with pygmy rabbit OC on the Salmon and Challis NFs
Spotted bat (*Euderma maculatum)*	S3-Yes	Xeric and riparian habitats in deep, narrow canyons with cliffs and rocky outcrops	5,755,787	109,600	1.9%	3 NFs with OC; no known OC in IRAs.
Townsend's big-eared bat (*Corynorhinus townsendii)*	S3-Yes	A wide variety of habitats from arid sagebrush and juniper breaks to high elevation forests including caves, mines, and rock crevices	3,604,080	120,390	3.3%	8 IRAs on 4 NFs with OC
Wolverine (*Gulo gulo*)	S2-Yes	Wide ranging species that prefers extensive tracts of remote wilderness coniferous forests and riparian areas in winter; often associated with talus and downed woody debris for denning	13,745,972	5,755,374	42%	48 IRAs with OC on 10 NFs

Species	State Ranking/ Species of Greatest Conservation Need?	Habitat	Acres of Predicted Distribution[1]		%Predicted Distribution within IRAs	Occurrences (OC) of Species in IRAs?
			In Idaho	Within IRAs		
Sensitive Birds						
American peregrine falcon (*Falco peregrinus anatum*)	S2B-Yes	Cliff habitat over 200 feet high with ledges suitable for nesting usually associated with river corridors, reservoirs or lake basins	34,165,535	7,716,463	23%	OC in 13 IRAs on 6 NFs
Bald eagle (*Haliaeetus leucocephalus)*	S3B-Yes; S4-No	Large trees for nesting near fish-bearing aquatic ecosystems	9,067,139	2,704,910	30%	15 IRAs on 8 NFs have bald eagle OCs.
Black-backed woodpecker (*Picoides arcticus*)	S3-No	Mature, montane coniferous forests with abundant dead and dying fire-killed or insect infested trees for foraging and nesting	16,780,073	5,223,918	31%	1OC in the Mallard IRA of the Nez Perce
Black swift (*Cypseloides niger*)	S1B-Yes	Rock ledges associated with waterfalls	11,371,633	3,280,631	29%	2 OCs on Idaho Panhandle NF; none in IRA
Boreal owl (*Aegolius funereus*)	S1-Yes	Mature, mixed stands of subalpine fir and Engelmann spruce with cavities	18,584,513	6,111,908	33%	OCs in 33 IRAs
Columbian sharp-tailed grouse (*Tympanuchus phasianellus)*	S1-Yes	Mid-tall prairie grasslands, upland sagebrush and montane scrub during breeding and riparian scrub and open coniferous forests in winter	8,771,702	531,884	6%	OCs in 4 IRAs on the Sawtooth NF; 1 OC on the Caribou NF
Common loon (*Gavia immer*)	S1B-Yes; S2N-No	Clear, fish bearing lakes >22 acres in size	566,654	13,823	2.4%	OCs in 3 IRAs on the Targhee ID Panhandle
Flammulated owl (*Otus flammeoulus*)	S3B-Yes	Open ponderosa pine or mixed conifer forests with cavities for nesting intermixed with grassy openings and dense thickets	9,136,949	2,395,264	26%	OCs in 18 IRAs on 10 NFs
Great gray owl (*Strix nebulosa*)	S3-No	Mixed coniferous forests bordering small openings	18,909,374	5,940,665	31%	OCs in 10 IRAs on 6 NFs
Greater Sage grouse (*Centrocercus urophasianus*)	S2-Yes	Sage-brush, grasslands	21,424,203	1,294,853	6%	Leks documented in 7 IRAs in 3 NFs
Harlequin duck (*Histrionicus histrionicus)*	S1B-Yes	Low-gradient streams with boulders and downed logs and streamside vegetation	1,560,081	420,766	27%	OCs in 11 IRAs on 3 NFs
Mountain plover (*Charadrius montanus)*	SNA-Yes	Short-grass prairie; bare ground or prairie dog towns	NA	NA	NA	NA
Mountain quail (*Oreortyx pictus)*	S1-Yes	Shrub dominated communities of hawthorn, willow and chokecherry near riparian areas	6,654,270	697,212	10.5%	OCs in 8 IRAs on 4 NFs

Species	State Ranking/ Species of Greatest Conservation Need?	Habitat	Acres of Predicted Distribution[1]		%Predicted Distribution within IRAs	Occurrences (OC) of Species in IRAs?
			In Idaho	Within IRAs		
Northern goshawk (*Accipiter gentiles*)	S3-No	Large tracts of mature, closed canopy, deciduous, coniferous and mixed forests with an open understory	19,822,640	6,436,885	32.5%	OCs in 17 IRAs on 7 NFs
Pygmy nuthatch (*Sitta pygmaea)*	S1-Yes	Primarily associated with mature dry forest types of ponderosa pine and Douglas-fir with snag cavities	5,018,652	1,107,824	22%	1 IRA with OC; White Cloud Boulder
Three-toed woodpecker (*(Picoides tridactylus)*	S2-Yes	Mature and over-mature coniferous forests with dead and dying trees infested with insects	7,596,093	2,639,620	35%	10 IRAs with OCs on 8 NFs
Trumpeter swan (*Cygnus buccinator)*	S1B-Yes; S2No	Shallow wetlands and slow moving streams with emergent and submergent aquatic vegetation	202,346	7	<1%	3 IRAS with OCs.; Garns Mountain; Winegar Hole and Raynolds Pass of the Targhee NF
White-headed woodpecker (*Picoides alborlarvatus)*	S2-Yes	Multi-storied and open-canopied ponderosa pine and ponderosa pine/Douglas-fir forests with large trees and snags	4,771,985	1,067,469	22%	4 IRAs with OCs on the Payette and Wallowa-Whitman NFs
Sensitive Reptiles						
Ringneck Snake (*Diadophis punctatus*)	S2	Variety of habitats including woodlands, grasslands, shrubby areas and rocky canyons	1,533,249	97,815	6.4%	OCs in 2 IRAs of the Caribou NF

[1]Predicted Distribution information is approximate and derived from the Wildlife Habitat Relationships Models, A Gap Analysis of Idaho: Final Report. Idaho Cooperative Fish and Wildlife Research Unit, Moscow, ID (Scott et al. 2002).

[2]Only reported for the Yellowstone DPS of grizzly bear, which is considered Forest Service Sensitive. Does not include grizzly bears in the Cabinet-Yaak or Selkirk Ecosystems as they are currently federally-listed and are discussed previously.

[3]Sensitive species are based on sensitive species lists issued by Region 1 and Region 4 (USDA Forest Service 2007a, and USDA Forest Service 2008a)

S1=State critically imperiled: at high risk because of extreme rarity, rapidly declining numbers, or other factors that make it particularly vulnerable extirpation in the state.

S1B=Breeding:conservation status refers to the breeding population of the species.

S2B=Nonbreeding: conservation status refers to the non-breeding population of the species.

S2=State Imperiled: at risk because of restricted range, few populations, rapidly declining numbers or other factors that make it vulnerable to rangewide extinction or extirpation.

S3=State Vulnerable: at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation.

SNA=Not Applicable: a conservation status rank is not applicable because the species is not a suitable target for conservation?

Maps of the predicted distribution and occurrences (where available) of sensitive species in the State of Idaho are included in Appendix B (Figures B-16 through B-41).

Generally, species associated with forested ecosystems are characterized by a relatively high overlap with IRAs based on their predicted distributions. For example, various cavity nesting birds such as the black-backed woodpecker, boreal owl, flammulated owl, pygmy nuthatch, three-toed woodpecker, and white-headed woodpecker all have predicted distributions that overlap IRAs by at least 22 percent. This relatively high degree of overlap underlines the importance of IRAs in providing important habitat components, such as snags, for these species. The two sensitive forest carnivores – the fisher and the wolverine – also have relatively high overlap with IRAs. Wolverines have the highest percentage of overlap with IRAs (42% of predicted distribution) and occur within the most Idaho Roadless Areas (48 IRAs) of all sensitive species. Remoteness and inaccessibility are important habitat attributes for wolverines and this high rate of occurrence and predicted distribution suggests the importance of Idaho Roadless Areas to wolverines.

The following sensitive species have less than 10 percent of predicted distribution in Idaho Roadless Areas:

- Trumpeter swan – less than 1 percent
- Spotted bat – 1.9 percent
- Common loon – 2.4 percent
- Townsend's big-eared bat – 3.3 percent
- Fringed myotis – 3.4 percent
- Ring-necked snake – 6.4 percent
- Pygmy rabbit – 7 percent
- Greater sage grouse – 6 percent
- Columbian sharp-tailed grouse – 6.1 percent

Those species with relatively low overlap with IRAs tend to include the following: a) those associated with grasslands and/or sagebrush (e.g., pygmy rabbit, greater sage grouse, Columbian sharp-tailed grouse, ring-necked snake), ecosystems that make up a smaller percentage of the landbase within IRAs in comparison to forested communities (Martin 2008); b) bat species that depend on mines, narrow canyons, and rocky outcrops, habitats that tend to be more limited in availability on the landscape; and c) species associated with open water systems (e.g., trumpeter swan and common loon), which do not make up much acreage on the landscape, including IRAs.

Columbian sharp-tailed grouse are known to occur in four Idaho Roadless Areas on the Sawtooth National Forest and one Idaho Roadless Area on the Caribou National Forest. Shrubland habitat available on the Caribou National Forest and within Idaho Roadless Areas may be used by Columbian sharp-tailed grouse during the winter months. There are 15 Idaho Roadless Areas within one mile of Columbian sharp-tailed grouse leks on the Caribou National Forest. However, no studies have been done to determine Columbian sharp-tailed grouse habitat use on the Caribou National Forest (Orme, personal communication, July 14, 2007). Site-

specific data were not available from other Idaho national forests and thus we cannot make any statements regarding presence or absence of sharp-tailed grouse leks on these forests.

Approximately 1,294,853 acres of the predicted distribution for the greater sage grouse overlap Idaho Roadless Areas. This equates to about 6 percent of the total predicted distribution (21,424,203 acres) for this species across the entire state. Seven roadless areas contain 29 records of greater sage grouse leks, all located in the southeastern portions of the state (Table VII-8). Persistent population declines in Idaho since 1965 likely contributed to this species being considered 'imperiled' in the state (Idaho Department of Fish and Game 2005).

Table VII-8. The status of known greater sage grouse leks within Idaho Roadless Areas in Southeast Idaho[1]

Roadless Area	Forest	Lek Status[2]		
		Active	Inactive	Unknown
Cottonwood	Sawtooth	4	0	0
Fifth Fork Rock Creek	Sawtooth	1	2	2
Italian Peak	Targhee	0	1	0
Lone Cedar	Sawtooth	0	1	0
Mahogany Butte	Sawtooth	1	10	2
Red Mountain	Caribou	0	0	1
Third Fork Rock Creek	Sawtooth	2	1	1

[1]*Based on IDFG/CDC 2005.*
[2]*Lek status based on counts conducted sometime between 2000 and 2007, depending on the lek.*

Two terrestrial wildlife species previously listed under ESA were recently delisted, now managed as Forest Service sensitive on NFS lands: the Yellowstone grizzly bear population on March 29, 2007, and the bald eagle on July 7, 2007.

In Idaho, the Yellowstone grizzly bear overlaps the Yellowstone Highlands Ecosection of Idaho and is found on the Targhee National Forest. There are 61,166 acres of predicted distribution for grizzly bears in the Yellowstone Highlands. Grizzly bears occur in the Bald Mountain, Bear Creek, Lionhead and Two Top Roadless Areas on the Targhee National Forest.

The bald eagle is broadly distributed along river corridors throughout Idaho, with a total predicted distribution in the state covering over 9 million acres, of which 2.7 million overlap IRAs (Table VII-7). Fifteen IRAs have known occurrences of the bird and eight national forests in Idaho have IRAs that overlap with the predicted distribution for the bald eagle.

There are 125 Idaho Roadless Areas that have known occurrences of at least one threatened, endangered or sensitive terrestrial wildlife species. Table VII-9 displays the 13 Idaho Roadless Areas by national forest with occurrences of five or more threatened, endangered and sensitive species. The 45 Roadless Areas on the Idaho Panhandle National Forest have the greatest number of sensitive species associated (via predicted distribution and/or occurrences) with them. Eleven sensitive species – the northern bog lemming, fisher, wolverine, boreal owl, common loon, flammulated owl, great gray owl, harlequin duck, goshawk, Townsend's big-eared bat and three-toed woodpeckers – are known to occur in at least one Roadless Area on the Idaho Panhandle National Forest. Furthermore, based on occurrence data and predicted distribution, the northern bog lemming is only found on the Idaho Panhandle National Forest, with known occurrences in Blacktail Mountain and Selkirk. Again, it is important to keep in mind that occurrences represent locations where individuals of the species have been documented. The lack of occurrences does not equate to absence. Consequently, the IRAs

displayed below could provide habitat for additional TES species for which occurrence information was lacking.

Table VII-9. Idaho Roadless Areas with documented occurrences for the most threatened, endangered and sensitive terrestrial species

National Forest	Idaho Roadless Area	Number of TES Species
Idaho Panhandle	Salmo-Priest	7
Idaho Panhandle	Blacktail Mountain	6
Idaho Panhandle	Selkirk	6
Idaho Panhandle	Upper Priest	5
Targhee	Mt. Jefferson	7
Targhee	Garns Mountain	5
Payette	French Creek	7
Payette	Hells Canyon/7 Devils Scenic	6
Payette	Needles	5
Payette-Nez Perce	Rapid River	5
Nez Perce	Mallard	7
Salmon-Challis	West Big Hole	5
Sawtooth	Hanson Lakes	5

Management Indicator Species

Management indicator species (MIS) are monitored over time to assess the effects of management activities on their populations and habitat, and the populations of other species with similar habitat needs. The 12 national forests in Idaho have designated 31 terrestrial wildlife species – 11 mammals and 20 birds – as management indicator species. Aspen is a management indicator community designated by the Caribou National Forest. Table VII-10 displays the terrestrial wildlife species selected to serve as management indicators by each national forest in Idaho. Maps illustrating the predicted distribution for most MIS species are provided in Appendix B (Figures B-42-53).

Table VII-10. Terrestrial management indicator species of Idaho forests

MIS Species	Boise	Caribou	Challis	Clearwater	Idaho Panhandle	0ez Perce	Payette	Salmon	Sawtooth	Targhee
MAMMALS										
Elk				X	X	X				X
Fisher						X				X
Gray wolf				X	X	X				X
Grizzly bear				X	X	X				X
Pine Marten				X	X	X				X
Moose				X	X	X				
Red squirrel										X
Townsend's big-eared bat										X
White-tailed deer				X	X					

MIS Species	Boise	Caribou	Challis	Clearwater	Idaho Panhandle	0ez Perce	Payette	Salmon	Sawtooth	Targhee
Wolverine										X
Woodland caribou					X					
BIRDS										
Bald eagle				X	X	X				X
Belted kingfisher				X						
Black-backed woodpecker										X
Boreal owl										X
Common loon										X
Downy woodpecker										X
Flammulated owl										X
Great gray owl										X
Hairy woodpecker										X
Harlequin duck										X
Northern goshawk		X		X	X	X				X
Northern flicker										X
Peregrine falcon				X		X				X
Pileated woodpecker	X		X	X	X	X	X	X	X	
Red-napped sapsucker										X
Three-toed woodpecker										X
Sage grouse		X	X					X	X	
Trumpeter swan										X
Williamson's sapsucker										X
White-headed Woodpecker	X						X			

Bolded Species = Management indicator species that are NOT threatened, endangered or sensitive species

Four of the 31 management indicator species threatened or endangered species under ESA and have been discussed in the previous section; another 15 are considered Forest Service sensitive, also discussed previously. There are 12 management indicator species whose habitats overlap Idaho Roadless Areas and that have not been discussed previously in the context of Idaho Roadless Areas; these include the pileated woodpecker, elk, white-tailed deer, moose, pine marten, belted kingfisher, downy woodpecker, hairy woodpecker, northern flicker, red-napped sapsucker, red squirrel, and Williamson's sapsucker.

In general, MIS species that are not Federally-listed or Forest Service sensitive, tend to be relatively ubiquitous (> 15,000,000 acres of habitat throughout Idaho), broadly distributed, and have high overlap with IRAs (> 20% overlap with predicted distribution). All MIS birds, with exception of the belted kingfisher, are cavity nesters. Consequently, high overlap with IRAs is not surprising given these species are associated with forested communities. The predicted distributions for elk, white-tailed deer, moose, and pine marten within Idaho all overlap IRAs;

in fact, the overlap with IRA is equal to or greater than 25 percent of the statewide distribution for these species. These species are either habitat generalists (e.g., elk, white-tailed deer) or associated with forested ecosystems (e.g., marten) and thus the overlap with IRAs again is not surprising.

The belted kingfisher is the only MIS with a predicted distribution for which there is less than a 15 percent overlap with IRAs. This is likely a function of its association with riparian forests along river corridors, habitat that is narrowly distributed across the landscape (Appendix B, Figure B-47).

Table VII-11. Acres and percent predicted distribution of the management indicator species

MIS	Acres Predicted Distribution in Idaho	Acres in IRA	% of predicted distribution w/in IRA
Mammals			
Elk	36,990,587	8,869,244	24%
Pine Marten	18,361,762	6,098,544	33%
Moose	19,657,721	6,466,190	33%
Red Squirrel	19,001,725	6,302,449	33%
White-tailed Deer	23,210,569	5,842,374	25%
Birds			
Belted Kingfisher	303,303	36,102	12%
Downy woodpecker	19,569,146	5,784,363	30%
Hairy woodpecker	20,243,531	6,461,068	32%
Northern Flicker	51,744,313	8,955,027	17%
Pileated woodpecker	17,266,380	5,535,382	32%
Red-napped sapsucker	20,152,379	6,442,114	32%
Williamson's sapsucker	15,595,863	4,888,778	31%

Migratory Birds

Migratory birds as a group encompass a broad array of avian taxons, including but not limited to the following: waterfowl (e.g., ducks, geese, swans), waders and shorebirds, woodpeckers, raptors, owls, songbirds, and upland game birds (e.g., quail, pheasant, chukkars). The Idaho Partners in Flight Idaho Bird Conservation Plan (2000) identifies priority species and habitats and establishes objectives for bird populations and habitats in the State of Idaho. The northern two-thirds of Idaho are located within the Central Rocky Mountains Physiographic Area 64; the rest of Idaho is within the Columbia Plateau Physiographic Area 89.

Idaho Priority Bird Species and Habitats – Breeding bird surveys are conducted annually during the peak of the nesting season across North America. Breeding bird survey routes are randomly located in order to sample habitats that are representative of the entire region (Sauer et al. 2005). There are 56 permanent active breeding bird survey routes in Idaho. Most of these routes have had breeding bird surveys conducted annually since the 1960's. Seven national forests have breeding bird survey routes and 12 routes occur within all or portions of 17 Idaho Roadless Areas (Table VII-12).

Table VII-12. Migratory bird information – breeding bird survey routes, habitats, and IRAs

BBS Route Name	Dominant Landcover Type	Forest	Idaho Roadless Area	# Bird Species on Route	#S1-S3 Priority Bird Species
Yellow Pine	Evergreen Forest	Boise	Horse Heaven	86	Goshawk, sandhill crane, black-backed woodpecker, three-toed woodpecker, olive-sided flycatcher
Pierce	Evergreen Forest	Clearwater	Bighorn-Weitas Siwash	80	Vaux's swift olive-sided flycatcher
Avery	Evergreen Forest	Idaho Panhandle	Grandmother Mountain	72	Vaux's swift Olive-sided flycatcher
N Fork Cedar	Evergreen Forest	Idaho Panhandle	Spion Kop	79	Bald eagle, Vaux's swift, olive-sided flycatcher
Nez Perce	Evergreen Forest	Nez Perce	Ohara-Falls Creek Rackliff-Gedney	89	Vauz's swift, Lewis's woodpecker
Nez Perce NF	Evergreen Forest	Nez Perce	Gospel Hump Mallard	75	Olive-sided flycatcher
Challis	Shrubland	Salmon-Challis	Taylor Mountain	110	Peregrine falcon Lewis's woodpecker Sage thrasher Brewer's sparrow
Cobalt	Evergreen Forest	Salmon-Challis	Deep Creek Perreau Creek	69	Goshawk Olive-sided flycatcher Brewers sparrow
Leadore	Shrubland	Salmon-Challis	Goat Mountain	103	Ferruginous hawk, sage grouse, sandhill crane, sage thrasher, Brewers sparrow, grasshopper sparrow
Sunbeam	Evergreen Forest	Salmon-Challis	Squaw Creek	57	Goshawk, olive-sided flycatcher
Alturas	Evergreen Forest; Grasslands/Heraceous	Sawtooth	Smoky Mountains	83	Pygmy nuthatch; Brewers sparrow, Olive-sided flycatcher, sandhill crane
Magic Mountain	Shrubland	Sawtooth	Fifth Fork Rock Creek Third Fork Rock Creek	129	Goshawk, sandhill crane, Lewis's woodpecker, Olive-sided flycatcher, sage thrasher, Brewer's sparrow, sage sparrow, grasshopper sparrow

Idaho Terrestrial Game Species

Game species are wild animals that people hunt or fish for food or recreation according to prescribed seasons and limits (USDA Forest Service 2000b). In many areas of the United States, NFS lands (including Idaho Roadless Areas) are a significant source of high quality game species habitat, given the influences of private land conversions, including urbanization, agriculture, and development. In some cases, NFS lands are strongholds for some game species. For example, black bear populations are increasing in some areas of the Eastern United States in

part because of security within NFS lands (Vaughan and Pelton 1995, as cited in USDA, Forest Service 2000n). Because of their limited accessibility and human disturbance, Idaho Roadless Areas are important refuges for various games species throughout Idaho (Curley et al. 2004).

Primary game species in Idaho include: (1) big game – white-tailed deer, mule deer, elk, moose, bighorn sheep, mountain goat, pronghorn antelope, bear, mountain lion and turkey; and (2) small game – upland birds (e.g., grouse, pheasant, quail, chukars, etc.), waterfowl (e.g., ducks, geese, swans), and small mammals (e.g., hare, cottontail rabbits, gray squirrel). White-tailed deer, elk, moose, grouse, and some waterfowl are considered Forest Service sensitive and/or MIS and thus are discussed above. The predicted distributions for these species overlap IRA in varying degrees (see Tables VII-7 and VII-11).

Mule deer, not discussed previously, are a species of interest in the West, particularly due to their economic and recreational values. Approximately 6,375,295 acres mule deer summer habitat and 663,717 acres of winter habitat overlap Idaho Roadless Areas (Appendix B, Figures B-54 and 55).

Game species are generally associated with mixed habitat patterns that include a variety of habitat types and age classes. Some games species are habitat generalists (e.g., deer, elk and ruffed grouse,) using a variety of habitats; these generalists, therefore, cannot be easily associated with specific habitat types (Southern Appalachian Man and the Biosphere 1996). Nevertheless, in forested areas, early seral patches, natural openings, and open woodlands are important components of game species habitats.

Idaho Species of Concern

The Idaho Conservation Data Center recognizes 379 terrestrial wildlife species that regularly occur and breed in the State. This list includes 15 amphibians, 22 reptiles, 104 mammals and 238 birds (Scott et al. 2002). The number of State "species of concern" ranked from S1 to S3 that are not included as threatened, endangered, non-essential experimental, sensitive or management indicator species previously discussed in this document are displayed in Table VII-13).

Table VII-13.Number of Idaho species of concern not discussed elsewhere

Taxa	S1	S2	S3	Total
Birds	16	18	34	68
Mammals	10	7	12	29
Reptiles	1	2	1	5
Insects	8	2	0	10

There are numerous species that have not been discussed previously that likely occur within Idaho Roadless Areas. These species are listed in Table VII-14 and include small mammals, fur-bearers, raptors, songbirds, shorebirds, and herptiles.

Table VII-14. Other terrestrial species known to occur in Inventoried Roadless Areas

Mammals		
Pika	Snowshoe hare	Dwarf shrew
Beaver	Red-backed voles	Little pocket mouse
Bobcat	Meadow voles	Idaho Pocket gopher
Kit fox	Wyoming ground squirrel	Merriam's shrew
Mink	Merriam's ground squirrel	Red-tailed chipmunk
Muskrat	Piute ground squirrel	Townsend's pocket gopher
weasel	Cliff chipmunk	Unita chipmunk
River otter	Coast Mole	Rock squirrel
Badger	Pinion mouse	Pygmy shrew
coyote	Dark Kangaroo mouse	
Birds		
Osprey	Short-eared owl	Cattle Egret
Golden eagle	American White Pelican	Snowy egret
Vesper sparrow	Black Tern	Clark's grebe
Great horned owl	Black-crowned night-heron	Western grebe
Varied thrush	Sandhill crane	Forster's tern
Mountain chickadee	Hooded merganser	Franklin's gull
Yellow warblers	Brewer's sparrow	Great egret
Virginia's warbler	Burrowing owl	Lesser goldfinch
Pinion jay	California gull	Lewis' woodpecker
Ferruginous hawk	Caspian tern	Upland sandpiper
Prairie falcon	Red-necked grebe	Juniper titmouse
Ravens	Long-billed curlew	White-winged crossbill
Merlin	White-faced ibis	Swainson's hawk
Herptiles		
Long nose snake	Great basin collared lizard	Ground snake
Northern alligator lizard		

Biodiversity and Species Richness

In the ecological literature, diversity refers to both the number of species present and their relative abundance. Thus, an area with many abundant species is more "diverse" than an area with an equal number of species, few of which are abundant and most of which are rare. Marcot et al. (1997) examined centers of endemism (restricted to a small area) and high biodiversity within the Interior Columbia Basin, much of which covers the State of Idaho. Two centers overlapped with NFS lands in Idaho, one located on the upper Panhandle of Idaho, characterized by mixed conifer forests, and another located in the southwestern edge of the State along the Salmon River and Hell's Canyon.

Based on the predicted distributions for the 42 TES and/or MIS species[19], every roadless area in Idaho overlaps with at least 13 of these species (Table VII-15). In general, these findings corroborated that reported by Marcot et al. (1997). In particular, the highest species richness (29-32 species) was identified in more IRAs in the Idaho Panhandle and along the southwestern Idaho Forests – the Boise, and the Payette – than the other national forests in Idaho (Table VII-16 and Appendix B, Figure B-56). The two IRAs overlapping the most (32) TES and MIS species were the Sheep Creek (Boise National Forest) and the Cuddy Mountain (Payette National Forest). In contrast, all IRAs on the Caribou National Forest fell into the two lowest species richness categories. It should be noted that Idaho Roadless Areas also provide habitat to a host of other wildlife species not discussed in detail here (see Table VII-14) and thus the number of species depicted here is a subset of total wildlife richness within these roadless areas.

Table VII-15. The number of species' predicted distributions that overlap IRAs

# of species	# of IRAs
13-17	24
18-22	37
23-25	49
26-28	112
29-32	51

Table VII-16. Species richness in IRAs by forest

Forest	13-17	18-22	23-25	26-28	29-32
Boise	0	0	8	20	14
Caribou	11	23	0	0	0
Clearwater	0	1	10	5	0
IPNF	0	1	5	27	14
Nez Perce	0	0	0	11	7
Payette	0	0	2	10	10
Salmon-Challis	4	5	15	33	1
Sawtooth	10	0	3	6	4
Targhee	0	8	7	1	0
Wallowa-Whitman	0	0	0	0	2

[19] Does not include the two candidate species – southern Idaho ground squirrel and yellow-billed cuckoo – or the mountain plover (Forest Service sensitive).

VIII. Terrestrial Wildlife Habitat and Species: Effects

The four alternatives under evaluation represent different management strategies prescribing the conditions under which road construction/reconstruction, timber cutting, and discretionary mining could occur within Idaho Roadless Areas. All of the alternatives may permit these activities within IRAs, albeit they vary with respect to the circumstances, locations, and extent that these activities are permissible. It is this 'variation' that we seek to evaluate in this document. To minimize the need to reiterate effects of these activities under all alternatives, we provide a general discussion on the impacts of road construction/reconstruction, timber cutting, and discretionary mining on terrestrial wildlife species and their habitats in Idaho, followed by a more specific evaluation of the implications of each alternative to these resources, including TES species, management indicator species, and other terrestrial species of interest.

In this section, we do not discuss the potential impacts of activities that would not differ across alternatives or that are addressed through other planning efforts (e.g., grazing, recreation, etc). However, the impacts of other activities may be disclosed as part of our analysis of cumulative effects should they be determined relevant.

General Effects of Selected Management Activities

In this section, we present the effects that roads (their construction, reconstruction and maintenance), timber cutting, and discretionary mineral development could have on wildlife species and their habitats in Idaho.

Road Construction, Reconstruction, and Maintenance

National Forest System roads are defined as those motor vehicles routes greater than 50 inches wide that are not managed as trails. They may be temporary or permanent, varying in character and maintenance depending on their primary function. Temporary roads are most typically constructed of materials that allow for decommissioning (e.g., road closure and revegetation) following use (e.g., dirt). Permanent roads intended to facilitate long-term access into or through NFS lands may be constructed of native, onsite materials, gravel, or pavement. In Idaho, approximately 98 percent (33,398 miles) of all roads managed by the Forest Service have substrates consisting of gravel (19%, 6,583 miles) or native materials (e.g., dirt-80%, 26,815 miles) with paved roads (1%, 413 miles) constituting less than 2 percent of NFS roads (Bower 2008). Roads that facilitate high speed motorized travel (e.g., highways, freeways) do bisect NFS lands, although their maintenance typically does not fall under Forest Service jurisdiction. Although we acknowledge the impacts these larger thoroughfares can have on wildlife populations, we focus the discussion and analysis on the nature of effects that result from roads managed under Forest Service jurisdiction. Further, we do not include effects that could result from unauthorized roads on NFS lands, as they are not addressed by this proposal.

The potential impacts of roads on terrestrial species and their habitats are well documented in the scientific literature. Based on several comprehensive syntheses on this topic (Wisdom et al. 2000, Trombulak and Frissell 2000, Forman et al. 2003, pg. 113-138), we organized our discussion of road effects under the following categories: habitat availability and effectiveness, habitat fragmentation, invasive species; and human access. We recognize that these categories are not mutually exclusive as they represent effects that can be difficult to tease apart from one another.

Habitat Availability and Effectiveness

Road construction, maintenance and use can directly and indirectly affect habitat availability within terrestrial ecosystems. First, construction and maintenance of roads can contribute to an immediate loss of habitat by removing pre-existing vegetation and altering the substrate (Forman et al. 2003, pg. 123). Because roads tend to be narrow, linear features, their contribution to habitat loss on a landscape scale may appear minimal. However, given the extent of the landscape that is roaded nationwide (Forman 2000), this loss should not be considered inconsequential to terrestrial species (Forman et al. 2003 pg. 123). In Idaho, roads managed under Forest Service jurisdiction likely create a physical footprint covering approximately 26 square miles or 16,860 acres[20]. Logically, the impact of this direct loss of habitat may be more significant for species that are endemic, sedentary, and/or have small home ranges such as terrestrial mollusks, small mammals, and various invertebrates.

The indirect effects of roads on terrestrial species and their habitats extend well beyond the area of the actual road surface and thus have the potential to impact significantly larger areas than direct effects. Roads and the human activities they facilitate can displace wildlife species or cause them to avoid habitats that would otherwise be suitable. Where avoidance of a particular area is 100 percent, the effect equates to habitat loss as opposed to a decrease in habitat quality (Forman et al. 2003, pg. 124).

Terrestrial species that are larger in size, long-lived, and/or having substantial area requirements appear particularly vulnerable to this type of habitat loss (Forman et al. 2003, pg. 123). For example, available grizzly bear habitat in the Cabinet Mountains was reduced by as much as 28 percent because of road avoidance behavior by grizzly bears (Fredrick 1991). Female grizzly bears appear more sensitive to disturbance from roads in comparison to males in some cases (Gibeau et al. 2002). Gaines et al. (2005) found that the presence of roads reduced habitat effectiveness across all seasons for female black bears in the North Cascades Mountains of Washington. Whittington et al. (2004, 2005) monitored movements of collared wolves in relation to various landscape features, including roads, and reported avoidance by both monitored packs of areas characterized by high road and trail densities. There is some evidence to suggest that marten may use areas adjacent to forest roads less than interior habitats (Robitaille and Aubry 2000). However, Mowat (2006) did not detect selection against roads or logging in winter habitat associations of marten at a coarse scale. Although habitat use by lynx does not appear to be affected by the presence of logging roads, little is know about the impacts of increasing forest road densities within lynx habitat (Ruediger et al. 2000).

Numerous ungulate species have also exhibited reduced use of habitat in response to roads. For example, seasonal (summer and autumn) avoidance of roads by mule deer has been observed in more arid climates (Marshal et al. 2006). 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). Cole et al. (2004) documented increased use of open foraging habitats by elk within road management areas when vehicular traffic was excluded for several years, suggesting human disturbance prior to vehicular exclusion may have precluded use by elk. Habitat effectiveness for deer and elk has been shown to decrease with increases in open road density in some areas (Thomas et al. 1979). Rowland et al. (2004) found that female elk in the Starkey Experimental Forest consistently used areas away from open roads in spring and summer, and that spatial

[20] This is based on 33,398 miles of roads in Idaho on NFS lands that are at least 50 inches in width.

distribution and distance to roads were more accurate predictors of habitat effectiveness than overall road density. The presence of poaching or hunting can exacerbate avoidance behavior and displacement of wildlife, particularly targeted species, from roads and adjacent areas. Such displacement can have implications for survival and recruitment where these areas are important for foraging and reproduction (Donadio and Buskirk 2006, Laurance et al. 2006).

Various avian species have also demonstrated sensitivity to the presence of roads. In selection of nest sites, some bird species, including bald eagles, golden eagles, and sandhill cranes, may avoid areas close to roads (Anthony and Isaacs 1989, Norling et al. 1992, Fernandez 1993). Lyon and Anderson (2003) noted that even light traffic (1-12 vehicles per day) on roads associated with natural gas development appeared to alter nesting behavior (nest initiation rates and movement from leks) of female sage grouse.

Fragmentation

Roads also 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. For example, Ortega and Capen (2002) noted that densities of forest-interior dwelling birds were significantly lower in forested areas adjacent to unpaved roads. As fragmentation increases, patches of remaining habitat may become sufficiently small in size and/or isolated to the point that they are no longer used by these wildlife species, thus effectively resulting in habitat loss. This effect has been demonstrated in numerous species, including woodland caribou (Joly et al. 2006).

Ingelfinger and Stanley (2004) examined the responses of breeding song birds to dirt and gravel roads associated with natural gas extraction in sagebrush steppe habitat. They found that densities of sagebrush obligates, particularly Brewer's and sage sparrows, were 39-60 percent lower within 100 meters of roads than beyond this buffer. Although traffic volume could have contributed to avoidance of habitats adjacent to roads, authors suggested that these species could also have been responding to edge effects, fragmentation, and an increase in bird species typically found along roads. In areas where road densities are high, these effects can compound, having significant implications to local population dynamics.

In addition to changing configuration and availability of interior habitats, edges created by roads can alter environmental conditions within interior habitats bordering roads, such as microclimate (e.g., increased temperatures, humidity, exposure to direct sunlight, etc) and humidity (Chen et al. 1996, Chen et al. 1993). Such changes may make these areas less hospitable to particular species (Marsh and Beckman 2004).

Habitat can become inaccessible to species where roads function as a barrier to their movement. For example, studies cited by Trombulak and Frissell (2000) indicate that the land snail *arianta arbustorum* (Baur and Baur 1990) avoids even unpaved and narrow roads. Other examples are provided by Merriam et al. (1988), Swihart and Slade (1984), and Oxley and Fenton (1974), who found that some rodent species are reluctant to cross even the narrowest gravel roads. Similar results have been reported for certain herptiles such as turtles (Weatherhead and Prior 1992) and terrestrial salamanders (Marsh et al. 2005). For example, Marsh et al. (2005) noted that forest roads, regardless of substrate (gravel versus paved), functioned as a partial barrier to terrestrial salamanders. This behavior can result in substantial amounts of suitable habitat being unavailable to these species.

Habitat loss can fragment populations into smaller subpopulations through loss of habitat connectivity (Shine et al. 2004), which can lead to demography fluctuations, inbreeding, loss of genetic variability, and local population extinctions (USDA Forest Service 2000c). Where roads function as barriers to movement, travel and dispersal, they can significantly alter population demographics and genetics of a species. Roads have been shown to act as barriers to gene flow in a common frog (*Rana temporaria*) and can lead to significant genetic differentiation among populations (Reh and Seitz 1990). 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.

Spread of Non-native Invasives

The construction of roads creates new edge habitat, and consequently, edge-dwelling species of plants, birds and animals can be introduced into previously contiguous environments, adversely affecting interior (e.g., forest and grassland) dwelling species. For example, building roads into or adjacent to grasslands/prairie habitats (Patten et al. 2006) can lead to invasions by parasitic cowbirds, thus reducing resulting in decreased reproductive success in several passerine species (e.g., sparrows, blackbirds, meadowlarks).

Trombulak and Frissell (2000) cite studies by Wester and Juvik (1983), Henderson and Wells (1986), Tyser and Worley (1992) and Wein et al. (1992) showing that some non-native invasive plants establish themselves preferentially along roadsides and in other disturbed habitats. Roads serve as a means of entry for many non-native invasive plant species, with seeds or plant parts inadvertently transported into previously unaffected areas. Ground disturbance associated with roads and with other activities enabled by roads provides additional opportunity for establishment or expansion of non-native invasive plant populations (Parendes and Jones 2000). The establishment of these non-natives can lead to habitat loss, inter-specific competition, loss of quality forage, and lowered reproductive success for some wildlife species.

Human Access

Roads facilitate human access and activities that can contribute to habitat alteration and direct and indirect mortality of some animal species, including those caused by collisions and crushing. We focus primarily on species that are vulnerable to road mortality on those roads within the NFS jurisdiction – dirt, gravel, and paved. Although we acknowledge the role of freeways and highways on road mortality statistics, we do not discuss it in detail here. As we have already discussed the range of effects that human disturbance can have on terrestrial wildlife species and their habitats, we do not repeat them here.

Large numbers of animals are killed annually on roads, including Forest Service roads. Amphibians may be especially vulnerable to roadkill because their life histories often involve migration between wetlands and uplands, and individuals are inconspicuous and sometimes slow moving. Further, some species of amphibians and reptiles tend to respond to road traffic by becoming immobile, which makes them more vulnerable to traffic-mortality than species that limit the amount of time spent on the road (Andrews and Gibbons 2005, Mazerolle et al. 2005). Reptiles seek roads for thermal cooling and heating, and experience substantial mortality from motorized vehicles (Vestjens 1973). In selected situations, such as for some amphibians and rodents with highly restricted home ranges, populations of rare animals may be reduced to dangerously low sizes by road kills (USDA Forest Service 2000c). Kuitunen et al. (2003)

hypothesized that decreased nest success of pied flycatchers along busy roads might be due to mortality of parent birds resulting from vehicle collisions.

Lastly, road maintenance can increase incidence of mortality resulting from collisions with vehicles for some species. For example, road salt used to de-ice roads under winter conditions can serve as attractants for some terrestrial species, like moose, thus increasing the likelihood of collisions with vehicles (Fraser and Thomas 1982, as cited in Forman et al. 2003, p. 217).

As mentioned above, roads allow people to access landscapes that would otherwise be difficult to reach. The presence of people and their activities can result in both direct and indirect impacts to wildlife species and their habitats. Some of these impacts are listed below.

- Loss of large trees, snags and logs in areas adjacent to roads through commercial harvest or firewood cutting has adverse effects on cavity dependent birds and mammals (Hann et al. 1997).
- Increased human access can contribute to great human ignitions of wildfire, which can result in both habitat loss and degradation.
- Increased vulnerability to hunting and poaching –Sitka black-tailed deer and elk were more vulnerable to hunting mortality in landscapes accessible by roads (Farmer et al. 2006, Hayes et al. 2002). Roads facilitate poaching (Cole et al. 1997) of some large mammals, such as caribou, pronghorn, mountain goat, bighorn sheep, wolf, and grizzly bear (see Dood et al. 1985, Knight et al. 1988, McLellan and Shackleton 1988, Mech 1970, Stelfox 1971, Yoakum 1978).
- Increased access for recreational shooting – 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 2003).
- Increased trapping of furbearers along roads (Hodgman et al. 1994 and Thompson 1994, as cited in Wisdom et al. 2000).
- Negative wildlife-human interactions that could lead to increased mortality – Roads provide access for chronic, negative interactions between humans and wolves and grizzly bears (Mace et al. 1996, Mattson et al. 1992, Thiel 1985), increasing the probability of mortality of these species and often causing high quality habitats near roads to serve as population sinks (Mattson et al. 1996). Subadult grizzly bears are often found closer to high density roads than adults, making them more likely to encounter humans and thus increasing the vulnerability of this age-class to habituation and food-condition, both of which can result in destruction of animals (Mueller et al. 2004).

Benefits of Roads and Associated Activities to Terrestrial Species and Their Habitats

Some of the potential beneficial effects of road construction and timber harvest include the following:

- Enhanced access for some plant and wildlife management activities (e.g., census survey and collection, and structure installation and/or maintenance);

- Easier access for habitat restoration and enhancement for some species using stand manipulation and vegetation management;
- Creation of edge habitat and early successional habitat used by some species;
- Easier access for hunting and wildlife viewing activities.

Collinge et al. (2005) suggested that roads may serve as barriers to plague-carrying hosts, which could reduce infection of prairie-dog colonies that are vulnerable to the disease. Such benefits, of course need to be balanced by any increased mortality these colonies experience due to recreational shooting that could be facilitated by roads.

Temporary Roads and Reconstruction

Temporary roads present many of the same risks and benefits posed by permanent roads, although some are likely to be of shorter duration. Many temporary roads are designed based on lower standards than permanent roads, are typically not maintained to the same standards, and are associated with additional ground disturbance during their removal. Also, use of temporary roads to support timber harvest or other activities often involves construction of multiple roads over time, providing a more continuous disturbance to an area than a single, well-designed, maintained, and use-regulated road.

In addition to posing many of the same risks as road construction, road reconstruction could result in substantial changes in the kinds and amount of human uses in an area. Improvements such as realignment or improving road surfacing or gradient to provide easy access for low clearance vehicles may promote increases in the amount of human disturbances and disruptions to species and habitats, exceeding those previously experienced before reconstruction.

Summary

Almost all roads present some level of benefit and risk to terrestrial wildlife species. These effects can vary greatly in degree (USDA Forest Service 2000c), and can shift over time. Some effects are immediately apparent, but others may require external events, such as a large storm, to become visible. Still other effects may be subtle, such as increased susceptibility to invasion by nonnative species or pathogens noticed only when they become widespread in the landscape, or with increased road use as recreation styles and motor vehicles change (USDA Forest Service 2000c). A road-related beneficial effect for one species may in fact represent an adverse effect for another. For example, although forest edges, such as those created by road construction and timber harvest, may benefit some species like deer and bobwhite quail, they also provide access to interior forest patches for opportunistic or predator species (Norse et al. 1986).

Although wildlife responses to habitat change and disturbance vary with species, individual, activity, and context, road-related impacts have been documented in a number of taxonomic groups, including ungulates (Cole et al. 2004, Joly et al. 2006, Marshal et al. 2006, Preisler et al. 2006), carnivores (Fredrick 1991, Gaines et al. 2005, Ream and Mattson 1982 (as cited in USDA, Forest Service 2000a), Waller and Servheen 2005), reptiles (Andrews and Gibbons 2005, Shine et al. 2004), amphibians (Marsh et al. 2005), and birds (Anthony and Isaacs 1989, Stolen 2003).

Timber cutting/Vegetation Management

Timber cutting activities permitted in roadless areas under the four alternatives vary in degree from slashing in preparation for prescribed burns to commercial harvest that could remove large diameter trees. Timber cutting is defined here as any cutting of any trees for management purposes. Timber harvest is defined as the removal of trees for wood fiber use and other multiple-use purposes (Martin 2008). Timber cutting is a broader term, and encompasses timber harvest. Timber cutting, exclusive of timber harvest, could be used to support activities such as prescribe burning and timber stand improvement (Martin 2008). The trend in silvicultural practices is shifting away from traditional even-aged management to even-aged management with leave trees, two-aged management, and uneven-aged managed stands. From 2002 to 2006, clear-cutting on Idaho's national forests accounted for only 7 percent of the total cutting method used on the 49,600 acres harvested (USDA Forest Service, Intermountain & Northern Region data bases, 2007). In this section, we consider the effects of all of these management regimes on terrestrial wildlife species, although we recognize that even-aged management will be applied infrequently based on recent practices.

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 terrestrial habitats, as discussed above. Further, the nature of effects resulting from timber cutting (i.e., habitat loss, degradation, and fragmentation, human disturbance) is similar to those created by roads, albeit different with respect to scale, configuration, and total area directly affected. To reduce redundancy, we focus this discussion on effects on terrestrial wildlife species attributed specifically to timber cutting and harvest.

Habitat Availability and Effectiveness

Timber cutting and harvest can alter habitat availability, configuration, and effectiveness for terrestrial wildlife species. The effects of uneven-aged management regimes, such as thinning, can have variable effects on animal communities, depending on the species. Hayes et al. (2003) found that thinning densely stocked conifer stands decreased detections of Hutton's vireos *(Vireo huttoni)*, golden-crowned kinglets *(Regulus satrapa)*, brown creepers *(Certhia americana)*, blackthroated gray warblers *(Dendroica nigrescens)*, and varied thrushes *(Ixoreus naevius)*, but increased densities of American robins *(Turdus migratorius)*, Townsend's solitaires *(Myadestes towizsendi)*, and Hammond's flycatchers *(Empidonax hammondii)* western tanagers *(Piranga ludoviciana)*, evening grosbeaks *(Coccothrazistes vespertinus)*, and hairy woodpeckers *(Picoides villosus)*. Patriquin and Barclay (2003) also documented differential responses of bats depending on species. For example, bat species that glean prey from surfaces did not forage in clear-cut plots, whereas aerial foragers frequented areas along the forest edges.

Several studies have found that post-fire salvage logging reduces diversity and densities of cavity-nesting birds, such as the American three-toed *(Picoides dorsalis)* and black-backed woodpeckers *(P. arcticus)* (Hutto and Gallo 2006, Wesolowski et al. 2005). Decreases in primary cavity nesters may be due to a reduction in food availability (e.g., wood-boring beetle larvae) versus nest sites where sufficient snags are retained to support maximum densities of birds (Hutto and Gallo 2006).

Fragmentation

Research over the past two decades has shown that habitat edge is not benign to many species (Noss and Cooperrider 1994, as cited in USDA, Forest Service, 2000n). In terrestrial ecosystems, the edge effect of timber harvest can extend substantial distances from the harvest area. Some timber harvest introduces new edge habitat that influences air and soil temperature, wind velocity, radiation, and soil and air moisture in the adjacent forest stands (Chen et al. 1995). Further, creation of edge due to harvest can result in the introduction of edge-dwelling species, such as parasitic cowbirds or non-native invasive plants, which can have detrimental effects on native, interior forest dwelling species (Baker and Lacki 1997, Robinson et al. 1995, Rosenberg et al. 1999). The establishment of these non-natives can lead to habitat loss, inter-specific competition, loss of quality forage, and lowered reproductive success for some plant and wildlife species (Trombulak and Frissell 2000).

As with roads, fragmentation from timber harvest can create travel barriers for some species, which may make substantial amounts of suitable habitat inaccessible. These travel barriers can fragment and isolate populations into smaller subpopulations causing demography fluctuations, inbreeding, loss of genetic variability, and local population extinctions. Amphibian species, because of their temporally and spatially dynamic populations, may be especially prone to local extinction resulting from human-caused fragmentation (Gibbs 1998). Many amphibian species are found in lower densities in some timber harvest areas when compared to mature, unmanaged forests (deMaynadier and Hunter, Jr. 1998, Petranka et al. 1993, Ash 1997, deMaynadier and Hunter, Jr. 1999). Factors identified as potential threats to Canada lynx included some types of timber harvest, fragmentation, and degradation that potentially reduced essential prey habitat (USDI Fish and Wildlife Service 1998c). Clearcuts greater than 100 meters wide may create barriers to lynx movements (Ruggiero et al. 1994).

Beneficial Effects of Timber Cutting

Beneficial effects to terrestrial species from timber harvest activities are often due to creating or maintaining some specific habitat condition. Timber harvest creates forest age-class diversity and mosaic habitats used by some species (Wisdom et al. 2000, USDA Forest Service et al. 2000a, Southern Appalachian Man and the Biosphere 1996, USDA Forest Service 1995b, USDI Fish and Wildlife Service 1990, USDI Fish and Wildlife Service 1976 (as cited in USDA, Forest Service, 2000n)). In fire-adapted ecosystems where fire suppression has altered composition and spatial distribution and configuration of openings, timber cutting can be a tool used to improve the condition of these ecosystems.

Some species require early seral or open-forest habitats that can be created and maintained by properly planned, restorative timber harvest. Timber harvest activities may also reduce the risk of uncharacteristic large stand-replacing insect and disease outbreaks and severe wildland fires. These disturbance events can present both benefits and risks to some species (Wisdom et al. 2000, USDI Fish and Wildlife Service 1995, USDA Forest Service et al. 1993), at least at a local level. Some examples of the potential beneficial effects of timber harvest include the following:

- The snowshoe hare, a primary lynx prey species, can benefit from properly planned regeneration harvests (Ruediger et al. 2000).
- Juvenile goshawks could benefit from forest management regimes that are designed to support abundant prey items while maintaining forest structural conditions to allow juveniles to access prey within breeding areas (Wiens et al. 2006).

- Some species of bats appear to respond favorably to thinning in forested ecosystems (Loeb et al. 2002).
- Reynolds et al. (1991) suggest that active management activities like tree thinning may be beneficial in producing and maintaining the desired conditions for sustaining goshawks and their prey species.
- Timber harvest activities that create, restore, and maintain a mixture of habitats and a variety of age classes are generally beneficial to most game species. Thus, timber harvest activities can be designed to meet specific game species habitat needs, with overall positive impacts to these species (Brown 1985, Hoover and Wills 1984, Thomas et al. 1979).
- Mitchell and Powell (2003) noted that forest harvest can increase food resources for black bears due to an increase in soft mast that is typically more limited in stands with significant overstory canopy. In terms of larger implications to black bear populations, one needs to consider the tradeoffs between the resources mature stands offer and the food resources harvested stands offer. Where food resources are not limiting, forest management will have limited impacts on populations.
- Northern Idaho ground squirrels have benefited from timber harvest that has removed encroaching conifers from dry meadows, thus improving habitat for this species (USDI Fish and Wildlife Service 2003).

Summary

Timber cutting and harvest have variable effects on terrestrial wildlife species depending on the methods, prescriptions, and species involved. Vegetation management prescriptions that apply even-age strategies can alter habitat availability, configuration, and fragmentation at a landscape scale for many terrestrial wildlife species. However, species dependent upon early seral forests may benefit from such prescriptions where they increase suitable habitats for these species or that of their prey. Uneven-aged management regimes, such as thinning, differentially affect animal communities depending on the species and prescriptions. Although such regimes may generally maintain forest structure, important habitat components such as snags, downed logs, horizontal and vertical structure, can be altered sufficiently to impact species dependent upon these components. However, these same regimes can be used to reduce hazardous fuels in wildlife habitats that could be lost due to uncharacteristic wildfires, an effect that could be beneficial to other species.

Discretionary Mining

Roadless areas within Idaho contain salable, leasable, and locatable mineral resources. Locatable minerals, such as gold and silver, are subject to the General Mining Law of 1872 and are not discretionary. Because the proposed IRA alternatives do not seek to impose limits on activities related to locatable minerals, they will not be discussed further in this document. Further, development and/or removal of salable mineral resources (i.e. sand, stone, gravel, pumice, pumicite, cinders and clay) from IRAs is typically very limited due to a lack of commercial interest (Abing 2008). Further, we cannot predict in place and time where these minerals might be used and thus we do not describe species-specific effects here. We focus this discussion of effect primarily on discretionary mining related to leasable minerals (e.g. oil, oil shale, gas, coal,

phosphate, geothermal resources), as such activity could occur within IRAs and management proposed for leasable minerals varies across the four alternatives.

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. For example, development of geothermal energy would include the following: exploratory drilling (some ground disturbance, road to access if not already there); if exploratory is favorable, construct well pad (about 3 acres); existence or construction of a power plant within one to two miles of the well pad, installation of pipelines which are above ground (Abing 2008). Oil and gas development also results in surface disturbance related to the actual footprint of the mine and required infrastructure. The environmental disturbance created by such mining operations can impact terrestrial wildlife species through the physical removal or degradation of habitats or by making adjacent suitable habitats less accessible or desirable where wildlife is displaced by human activities. As mentioned earlier, the effects of selenium are always a concern with extraction of phosphates. However, BMPs are in place in new mines to reduce effects (see Abing 2008 for more discussion).

Summary

In general, many of the impacts discretionary mining could have on terrestrial wildlife species are related to the mine development and required infrastructure, primarily road construction and development. The impacts resulting from these activities include habitat loss, degradation, fragmentation, and human disturbance, and the potential for selenium toxicity, all of which are discussed above.

Specific Effects of Management Activities on Terrestrial Wildlife Habitat and Species in Idaho Roadless Areas

In this section, we present the risk of the selected management activities – road construction/reconstruction, timber cutting, and discretionary mining – to TES and MIS terrestrial wildlife species in Idaho. These estimates summarize an analysis presented in Appendix C, which applied several analytical filters to each species and its habitat. First, we determined the degree to the species might be exposed to the selected management activities (improbable, probable). Exposure is a function of the species overlap with IRAs and where management activities might be expected to occur (i.e., habitat type, location, etc.). Second, we considered the intensity and likelihood of species response to management activities. Lastly, we estimated level of the risk (low, moderate, high) to the species based on exposure and response. Determinations made at each juncture were based on scientific information presented in the previous section and analyses conducted as part of the Interior Columbia Basin Ecosystem Management Project (Wisdom et al. 2000), and the Idaho Comprehensive Wildlife Conservation Strategy (Idaho Department of Fish and Game 2005), and the Smoky Canyon Mine DEIS (USDI Bureau of Land Management and USDA Forest Service 2006). Where information was lacking on particular species, we estimated possible effects based on responses of similar species or taxa

We summarize the risk levels for terrestrial species, including TECS, and MIS, below in Tables VIII-1 and VIII-2.

Table VIII-1. Estimate of the risk that roads, timber cutting, and discretionary mining could pose to threatened, endangered, and Forest Service sensitive species in Idaho Roadless Areas

Species	Low	Moderate	High
Federally Endangered, Threatened, and Candidate Species			
Canada lynx		X	
Grizzly bear			X
Northern Idaho ground squirrel	X		
Woodland caribou		Moderate-High	
Gray wolf	X		
Western yellow-billed cuckoo	X		
Southern Idaho ground squirrel	X		
Forest Service Sensitive			
American peregrine falcon	X		
Bald eagle	X		
Black swift	X		
Black-backed woodpecker		X	
Boreal Owl		X	
Columbian sharp-tailed grouse		X	
Common loon	X		
Fisher		X	
Flammulated owl		X	
Fringed myotis	X		
Great gray owl		X	
Greater sage grouse		X	
Grizzly bear			X
Harlequin duck	X		
Marten		X	
Mountain plover - undetermined			
Mountain quail	X		
Northern bog lemming	X		
Northern goshawk		X	
Pygmy nuthatch		X	
Ring-necked snake	X		
Pygmy rabbit	Low-moderate		
Spotted bat	X		
Three-toed woodpecker		X	
Townsend's big-eared bat	X		
Trumpeter swan	X		
White-headed woodpecker		X	
Wolverine		X	

Table VIII-2. Estimate of the risk that roads, timber cutting, and discretionary mining could pose to select management indicator species

Species	Low	Moderate	High
Management Indicator Species not addressed above			
Belted kingfisher	X		
Downy woodpecker		X	
Elk		X	
Hairy woodpecker		X	
Moose		X	
Northern flicker	X		
Red squirrel	X		
Red-naped sapsucker		X	
White-tailed deer	Low-moderate		

In general, terrestrial species associated with open water systems, rocky cliffs, or mine shafts typically were categorized as a low risk for effect from selected management activities. These included primarily avian species – waterfowl, select raptors, and the black swift – and some bats. Species considered relatively ubiquitous and habitat generalists, such as the northern flicker, red squirrel, and white-tailed deer, also were considered at low risk relative to select management activities as individuals would be able to utilize alternate habitats, unaffected by activities.

Species most likely to be vulnerable to activities were those associated with forested or grassland ecosystems where most roads, timber cutting, or discretionary mining could occur. Species such as the marten, fisher, goshawk, and great gray owl were considered at moderate risk as timber cutting activities can contribute to changes in forest structure. Cavity nesters, such as several of the woodpecker species and the flammulated owl ranked out as moderate risk due to the potential for timber cutting to remove or degrade important habitat components such as snags or small-diameter trees. Species sensitive to the effects of human disturbance or access or to loss of secure cover – such as the woodland caribou, elk, and greater sage grouse – also ranked out as moderate risk. The grizzly bear was the only species that ranked out as a high risk due to the severity of impact (increased direct mortality) and the likelihood of effect related to increased human-bear conflicts facilitated by roads.

For all species, including the grizzly bear, impacts resulting from select management activities would be subject to existing species-specific management direction in the form of standards, guidelines and conservation measures intended to mitigate effects at the project level, and, in the case of Federally listed species, contribute to recovery (see Appendix D for examples relevant to Federally-listed species). Further, although the select management activities relevant to this proposal pose some level of risk to most species considered, vegetation treatments designed to improve and/or restore habitats could have beneficial effects on particular species (e.g., certain game species, northern Idaho ground squirrel, Canada lynx, etc.).

Evaluation of the Alternatives

In this section, we examine the implications of each alternative to terrestrial species and their habitats within Idaho. The implications of all alternatives to terrestrial wildlife species are a function of a) the risk that road construction and reconstruction, timber cutting, and discretionary minerals activities pose to species; and b) the overlap of species and their habitats with these activities across the landscape based on distribution of land-management prescriptions (e.g., themes). Therefore, this analysis considered both the risk posed by management activities to individual species and the overlap with various IRA management themes in evaluating the potential impacts of each alternative on terrestrial species.

Effects and Assumptions Common to All Alternatives

Land management activities in roadless areas often cost more to plan and implement than on other NFS lands (USDA Forest Service 2001). Typically these areas can be difficult to access or have not been the focus of past management and, therefore, have retained their roadless character. It is unlikely that Idaho Roadless Areas would be the primary focus of future land management activities that involve road construction, road reconstruction, or timber cutting because of these logistical constraints. The possible exceptions to this generalization are areas that have a high priority for fuels treatment and areas with leasable mineral resources, such as phosphate and geothermal. Past and projected future land management activities in Idaho Roadless Areas have been and are expected to remain relatively low, which is reflected in the relatively low projections for permanent and temporary road construction and timber cutting for all of the alternatives.

Under all alternatives, existing species-specific management direction, best management practices, and legal requirements (for example, the ESA, Migratory Bird Treaty Act, National Forest Management Act, and others) remain applicable to all activities proposed in Idaho Roadless Areas. Therefore, management direction intended to minimize project effects to species—such as those outlined in the Northern Rockies Lynx Amendment (USDA Forest Service 2007), the Forest Plan Amendment for Grizzly Bear Habitat Conservation for the Greater Yellowstone Area National Forests (USDA Forest Service 2006), and individual LRMPs—or USFS commitments to species conservation (that is, candidate conservation agreements) would be in place under all alternatives. Any projects anticipated to affect federally-listed species or migratory birds would necessitate coordination and/or consultation with the FWS. All subsequent projects proposed in Idaho Roadless Areas would be subject to the requirements of NEPA, ESA, and NFMA.

There are about 20,450 acres of known phosphate leasing areas (KPLAs) and existing lease areas inside Idaho Roadless Areas, of which about 70 percent are unleased. None of the alternatives prohibit road construction or reconstruction associated with developing existing mineral leases on the Caribou-Targhee National Forest. About 7,230 acres of phosphate deposits can be found in seven roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, Stump Creek, and Mount Jefferson) and are under existing lease. About 30 acres have been mined to date. About 1,100 acres, associated with the Smoky Canyon mine expansion, are reasonably foreseeable to be developed within the next 15 years. The Smoky Canyon Mine expansion would affect the Sage Creek and Meade Peak Roadless Areas.

It is also reasonable to assume that the remaining phosphate deposits currently under lease, roughly 6,100 acres within the seven roadless areas, would likely be permitted and developed

sometime in the extended future (50 or more years). Using the Smoky Canyon expansion as an example of the level of activity expected, an estimated 17 miles of haul road construction and other surface mining disturbance would ultimately take place within the seven roadless areas.

Any future phosphate development could affect terrestrial habitats in a number of ways: through physical removal of habitat, increased disturbance to adjacent habitat, and increased potential for road-related mortality or human activities in wildlife habitats. Any future development would undergo environmental analysis, and environmental mitigations would be required to lessen effects.

2001 Roadless Rule

The 2001 Roadless Rule prohibits road construction/ reconstruction except when done under seven exceptions (see Section III –Alternatives Analyzed). Under the 2001 Roadless Rule, 12 miles of permanent roads are projected to be constructed and 3 miles of temporary roads in Idaho Roadless Areas over the next 15 years. The projections for road construction/reconstruction above do not consider roads that might be needed under the seven exceptions attached to this alternative. We cannot predict geographically where such exceptions might be relevant at this point in time, but anticipate they will be rare.

Construction of 1 mile of road equates to a physical footprint approximately .5 acres in size, or 7.5 acres over 15 years. As discussed earlier, the indirect effects of roads extend beyond the road prism, and have the potential to impact a much greater area. Given the limited extent of road projected (1 mile per year on average), the opportunities for negative impacts on terrestrial wildlife species and their habitats resulting from road construction and reconstruction under the 2001 Roadless Rule are few, although we cannot completely discount that some individuals might be affected.

The 2001 Roadless Rule prohibits timber cutting, sale, or removal except as provided in four exceptions including, but not limited to meeting needs for threatened and endangered species habitat improvement, ecosystem restoration, and hazardous fuel reduction purposes. No road construction is permitted to support timber cutting for these purposes. Timber cutting is projected to occur on about 9,000 acres over the next 15 years.

Based on the exceptions to timber cutting under this alternative, and the intent to maintain roadless characteristics, timber cutting in IRAs would be restricted to removal of small diameter materials and that maintains some structure and canopy. This alternative should result in a very low amount of timber cutting in IRAs (about 9,000 acres over 15 years). Such treatments are less likely to alter habitats significantly in comparison to even-aged management regimes. Species depending on specific structural components or characteristics of forested ecosystems such standing snags, downed woody debris, horizontal cover, or high canopy cover (e.g., various woodpecker species, owls, goshawks) will benefit from restrictions on timber cutting under this alternative

With the added prohibition against non-stewardship timber cutting, this alternative presents a very low risk to terrestrial wildlife resources from habitat loss, degradation, and fragmentation resulting from timber cutting due to the limitations on the type and extent of change to existing vegetation. Further, other impacts to wildlife species from timber cutting activities, like disturbance, will be minimal.

Based on foreseeable projections, most timber-cutting activities are not likely to affect the overall amount or severity of wildfires. As a result, the effects of wildfires on terrestrial species are likely to be similar with or without the prohibitions. Whereas the benefits of less ground disturbance from road construction and timber cutting are well documented in the literature, it is less clear whether failure to reduce fuel loading would constitute a substantially increased level of risk for terrestrial wildlife communities.

The 2001 Roadless Rule does not address mineral resources except to limit road construction and reconstruction to reserved or outstanding rights, or as provided for by statute or treaty; or for the continuation, extension, or renewal of a mineral lease. Proposals for exploration or development of leasable minerals using existing roads or not requiring use of roads would be allowed within roadless areas. However, the prohibition of road construction or reconstruction severely limits the opportunity for exploration and essentially precludes development of presently undiscovered leasable mineral resources in IRAs, including the 14,460 acres of unleased deposits within known phosphate lease areas on the Caribou-Targhee National Forests (Abing 2008). Thus species likely to overlap with unleased KPLAs, such as the three-toed woodpecker, greater sage-grouse, sharp-tailed grouse, northern goshawk, Canada lynx, and wolverine would benefit from such restrictions on development on the Caribou-Targhee National Forests.

Effects on Threatened, Endangered, and Candidate Terrestrial Species and Their Habitats – 2001 Roadless Rule

Actions that could occur pursuant to the 2001 Roadless Rule may affect individual terrestrial species listed under the ESA. In general, prohibitions on road construction/reconstruction in roadless areas will benefit most listed terrestrial species, particularly those characterized by large home ranges, sensitivity to human disturbance, and/or those that might experience higher mortality rates due to increased human access facilitated by roads. Although all species listed under ESA within Idaho seek to benefit from prohibitions on road construction, the grizzly bear and woodland caribou will likely benefit most due to reduced disturbance and wildlife-human interactions that are typically facilitated by roads. Given its dependence on old-growth forests, the woodland caribou would also benefit by restrictions on timber cutting.

Based on information provided by each national forest in 2000, the current need for road construction or reconstruction within roadless areas for recovery or protection of threatened or endangered species appears to be minimal. There is no reason to expect that this would change in the upcoming decades. It is unlikely that alternate means of access could not be found to accomplish recovery or conservation objectives, although costs may increase in some situations. With the exception provided under all of the prohibition alternatives that an existing road may be realigned to prevent irreparable resource damage, adverse effects to TEP and other species caused by existing roads may be mitigated.

Project-level NEPA is required for all timber cutting, sale, and removal; road construction and/or reconstruction; and mineral activities in Idaho Roadless Areas. Further, all activities in IRAs would be subject to applicable land management components required in LRMPs and amendments that are designed to avoid or minimize adverse effects on threatened and endangered wildlife species and their habitats. Such components include, but are not limited to those outlined in the following:

- Idaho Panhandle, Kootenai, and Colville National Forests LRMPs (grizzly bear and caribou);
- Northern Rockies Lynx Amendment (Canada lynx);
- Southwest Idaho Forest Ecogroup LRMPs (Canada Lynx, northern Idaho ground squirrel, gray wolf, yellow-billed cuckoo).

Given these factors described above, there is a very low likelihood that individuals will be affected by select management activities where exceptions under the 2001 Rule apply. Consequently, the 2001 Roadless Rule poses little risk to listed species and their habitats on a landscape level. Furthermore, by providing prohibitions beyond the existing forest plans broadly across all IRAs in the State, the 2001 Roadless Rule may beneficially affect threatened and endangered terrestrial species and their habitats by promoting large continuous landscapes that have unroaded character.

Effects on Sensitive Species and Their Habitats – 2001 Roadless Rule

As with Federally-listed species, the 2001 Roadless Rule generally is expected to be beneficial to most Forest Service sensitive species, although there is a small potential for individuals to be affected by timber cutting, road construction/reconstruction, or discretionary mining where exceptions outlined in the 2001 Rule apply. Sensitive species most likely to benefit from the 2001 Roadless Rule are those that require large, undisturbed landscapes (e.g., wolverine, grizzly bear) and/or are vulnerable to more site-specific effects of timber cutting, roads, and discretionary mining (e.g., cavity nesters). Consequently, the activities proposed under the 2001 Roadless Rule may affect individuals, but are not likely to cause a trend towards Federal listing or a loss of viability for any sensitive species. Furthermore, the 2001 Roadless Rule may beneficially affect sensitive species and their habitat due to prohibitions on road construction/reconstruction and timber cutting.

Effects on Management Indicator Species and Their Habitats – 2001 Roadless Rule

As with Federally-listed and Forest Service sensitive species, the 2001 Roadless Rule is generally expected to be beneficial to most MIS species, although there is a small potential for individuals to be affected by timber cutting, road construction/reconstruction, or discretionary mining where exceptions outlined in the 2001 Rule apply. Consequently, the 2001 Roadless Rule may affect individuals, but is not likely to alter the distribution or population trends of MIS on National Forests within the analysis area. Furthermore, the 2001 Roadless Rule Alternative may beneficially affect MIS and their habitat by promoting large, unfragmented landscapes that remain unroaded.

Effects on Other Terrestrial Wildlife Species and Biodiversity – 2001 Roadless Rule

Migratory Birds – Although migratory birds as a group contain an enormous diversity of species, restrictions on road construction/reconstruction will likely benefit most migratory birds, regardless of taxon. Under the 2001 Rule, all 17 IRAs that contain breeding bird survey routes will remain relatively undisturbed by management activities, except under limited circumstances (i.e., exceptions).

Game species – Roads can facilitate treatments designed specifically to improve habitats for other terrestrial wildlife, particularly game species such as mule deer, elk, wild turkey, upland birds,

and black bear. However, such treatments in IRAs in the absence of revenues generated from associated timber harvest are difficult to implement financially and thus infrequently proposed within IRAs. Consequently, it is unlikely that prohibitions on road construction in IRAs proposed under this alternative will significantly alter the level of current management conducted in IRAs to benefit these other terrestrial wildlife species. Further, big game species will benefit from restrictions on road construction that help in maintaining secure habitat with limited human disturbance and access. For example, the 2001 Roadless Rule would protect 633,717 acres of mule deer winter habitat, a limiting factor for this species, from disturbance.

Biodiversity – In general, the 2001 Roadless Rule will maintain roadless characteristics throughout Idaho Roadless Areas. Areas supporting a high diversity of terrestrial species, such as IRAs on the Idaho Panhandle, Boise, and Payette National Forests, are expected to maintain high species richness under this alternative. Prohibitions on road construction/reconstruction, timber cutting, and discretionary mining should benefit overall biodiversity of terrestrial species within IRAs across the State of Idaho.

Summary of Effects – 2001 Roadless Rule

The permissions provided in this alternative include limited road construction and reconstruction under special situations. Timber cutting, sale and removal also are permitted under limited situations. Limited mineral-related activities would be allowed on new leases however, roads could not be constructed or reconstructed.

No direct adverse environmental effects on terrestrial species would occur under the 2001 Roadless Rule because it does not authorize any ground-disturbing activities. Indirectly, the restricted activities permitted in IRAs under the 2001 Roadless Rule have the potential to adversely affect individual terrestrial organisms through short-term habitat degradation, albeit the likelihood of exposure to such activities under this alternative is exceptionally low.

Limiting the ability to harvest timber for stewardship purposes except when needed for protection or recovery of TEPS species or to restore/maintain ecosystem characteristics, may reduce the capability of the agency to enhance habitat directly and indirectly at the stand level, but it is unlikely to have much impact at larger scales. The agency's ability to use timber harvest to manage for early successional habitats or other structural stages in some areas would be reduced under this alternative; although where such a need is identified, prescribed fire can be an effective tool under certain conditions.

At the project level, all activities will be subject to existing species-specific standards and guidelines (e.g., NRLA) that are designed to avoid or minimize adverse effects to terrestrial species, particularly those Federally-listed under ESA. Project level NEPA is required for all timber cutting, sale, and removal, road construction/reconstruction, and mineral activities in Idaho Roadless Areas. Given the factors outlined above, the 2001 Roadless Rule poses little risk to terrestrial wildlife species and their habitats – including TECS, MIS, migratory birds, and big game. Further, this alternative would benefit terrestrial wildlife species and their habitats due to the prohibitions on most ground disturbing activities in Idaho Roadless Areas. Overall, the effects on biodiversity would be beneficial. The Forest Service and other government agencies with jurisdictional responsibilities would retain the tools necessary to manage these resources.

Existing Plans

As indicated in Chapter II, this alternative proposes roadless area management regimes based on each national forest's land and resource management plan. These regimes were crosswalked to themes proposed under the Proposed Idaho Roadless Rule in order to compare across alternatives.

About 105 miles of road construction and 75 miles of reconstruction (equating to an approximate 90-acre footprint) are projected in Idaho Roadless Areas under the Existing Plans over the next 15 years. This estimate includes both permanent and temporary roads for timber cutting and non-timber related activities. Timber cutting is projected to occur on about 40,500 acres over the next 15 years, which could include both uneven-aged and even-aged management regimes.

Under Existing Plans, approximately 35 percent (3,224,600 acres) of the 9.3 million acres of Idaho Roadless Areas are included in land-management plan prescriptions similar to Wild Land Recreation and Primitive themes, under which road construction/reconstruction, timber cutting, and discretionary minerals activities are generally prohibited (Table IV-1)). Timber cutting may be done on a very limited basis under the Primitive theme, and in response to a threat (e.g., insect and disease, windstorms, salvage). In general, the limitations on road construction and reconstruction, timber cutting and harvest, and discretionary mining under these management prescriptions will benefit most terrestrial wildlife species. Consequently, these areas would continue to provide excellent habitat for terrestrial species due to the limited amount of human-induced disturbance.

Under Existing Plans, approximately 4.48 million acres are in prescriptions similar to the Backcountry theme; generally some level of road construction/reconstruction and timber cutting would be permitted. Discretionary mineral activities may or may not be permitted depending on the forest plan. Thus there is the potential for terrestrial wildlife species to be impacted, particularly in forested habitats. Removal of diseased, dead, and down materials could have negative impacts on primary cavity nesters, although existing snag retention requirements already included in most Forest Plans would assist in mitigating some of these effects.

About 1.26 million acres of IRAs are in prescriptions similar to GFRG. Most road construction/reconstruction and timber cutting is anticipated to take place in areas managed as GFRG. All Forests except the Challis National Forest and the Wallowa-Whitman National Forest have roadless areas with prescriptions similar to this theme. Most acres categorized as GFRG fall on the Caribou-Targhee, Idaho-Panhandle, Nez Perce, Salmon, and National Forests. The terrestrial wildlife species found on these forests that are vulnerable to effects of roads, timber cutting, and discretionary mining, as discussed in the General Effects section could be differentially impacted under this theme.

Management of leasable mineral resources in IRAs similar to GFRG would be guided by each forest's land and resource management plan. Approximately 58 percent of IRAs in GFRG have slopes less than 40 percent, and the potential to host geothermal activities (Abing 2008) and lease applications have been submitted for geothermal development on the Boise and the Salmon National Forests. Terrestrial wildlife species could be affected (see discussion under General Effects) should these areas be approved for geothermal development.

The Caribou-Targhee National Forest is the only forest with potential for oil and gas activity in the foreseeable future (next 15 years). However, the Targhee portion of the CTNF precludes leasing or places 'no surface occupancy' (NSO) stipulations in roadless areas making oil and gas development on the Targhee in roadless areas highly unlikely. At least 251,900 acres of roadless areas on the Caribou are available for oil and gas development; however the potential for recovering oil and gas reserves is low (Abing 2008). Consequently, the likelihood for oil and gas development to impact terrestrial species in IRAs is relatively low.

The existing Caribou forest plan permits leasing of the estimated 6,750 acres of unleased Known Phosphate Lease Areas (KPLA) and/or other possible roadless areas that contain undiscovered phosphate resources. These known unleased phosphate deposits occur in six roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek) and would likely to be developed over an extended period of time (50 or more years). In addition, there are 6,870 acres of unleased phosphate deposits on the Targhee portion of the Caribou-Targhee National Forest within the bald Mountain, Bear Creek, and Poker Creek Roadless Areas. If these areas were to be leased at some time in the future, roads, pits, and other surface mining facilities would be expected to be constructed within the IRAs, which would affect terrestrial species in these areas. An environmental analysis would have to be completed prior to exploration and development of these phosphate reserves.

Effects on Threatened, Endangered, and Candidate Terrestrial Species and Their Habitats – Existing Plans

In general, road construction/reconstruction, timber cutting, and discretionary mining activities pose a moderate to high risk to woodland caribou and grizzly bear (see Table VIII-1 and Appendix C). Under Existing Forest Plans, both species overlap prescriptions similar to GFRG (500 acres of the South Selkirk Caribou Recovery Area, and 5,900 acres of total grizzly bear core habitat) and Backcountry Restoration (51,600 acres of the South Selkirk Recovery Area of 101,000 acres of grizzly bear core habitat) where select management activities are permitted in varying degrees (Appendix A, Table A-12). Although the overlap of habitats and these themes is relatively low for both species (<10%), we cannot rule out the possibility that individual caribou and grizzly bears could be affected, adversely or beneficially, by activities permitted under these prescriptions. Standards and guidelines outlined in the Idaho Panhandle National Forest and Kootenai National Forest LRMPs will help minimize or avoid adverse effects to grizzly bears and caribou resulting from most management activities (See Appendix D).

Timber cutting activities pose a moderate risk to Canada lynx due to potential effects to snowshoe hares, a primary prey species. Under Existing Plans, 496,700 acres (7%) and 1.71 million acres (23%) of mapped lynx habitat in Idaho overlap prescriptions similar to GFRG and Backcountry themes, respectively. Consequently, there is the potential for individuals to encounter and/or be affected by select management activities in 30 percent of mapped lynx habitat in Idaho, albeit the likelihood is lower under in areas similar to Backcountry Restoration. Existing management direction for lynx provided in the Northern Rockies Lynx Amendment (USDA Forest Service 2007), the Southwest Idaho Ecogroup LRMP (USDA Forest Service 2003), and the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) will serve to avoid and/or minimize adverse effects to lynx, particularly from timber harvest activities.

A total of 615,200 acres of the predicted distribution for the gray wolf overlaps prescriptions similar to GFRG, which is only 3.7 percent of its distribution statewide. The home ranges for 54

packs overlap to some degree GFRG. Consequently, there is some potential for individual gray wolves to encounter activities. However, road construction/reconstruction, timber cutting, and discretionary mining pose a low risk to gray wolves as the likelihood that these activities might actually increase mortality of wolves is minimal, even in these areas of overlap.

Estimated risk to northern Idaho ground squirrels (NIDGS) from road construction and reconstruction, timber cutting and discretionary mining activities in IRAs is low (see Appendix C) based on the following: a) 94 percent of the probable historic distribution (PHD) falls outside IRA, b) there is only one known colony in IRA and; c) NIDGS habitat is unlikely to coincide with areas where select management activities would occur unless they are specifically intended to address management of NIDGS. In addition, under Existing Plans, less than 1 percent of the PHD overlaps prescriptions similar to GFRG, and the remaining 5 percent of the PHD that does overlap IRA is associated with relatively restrictive prescriptions (e.g., Primitive). Timber cutting activities designed to improve habitat conditions for NIDGS could occur in prescriptions managed as Primitive. In such cases, there is the potential for short-term impacts to individuals in order to benefit the species in the long-term. Such short-term adverse effects to NIDGS are very unlikely, but cannot be ruled out completely under Existing Plans.

Select management activities in IRA pose a low risk to both candidate species: the southern Idaho ground squirrel (SIDGS) and the western yellow-billed cuckoo. Management of IRAs proposed by Existing Plans is expected to have no effect on SIDGS as they are not currently found on NFS lands. Under Existing Plans, the predicted distribution for the western yellow-billed cuckoo overlaps GFRG by 7 percent. Consequently, although the risk to the species is low, we cannot discount the potential for individuals to be affected by management activities, particularly timber cutting and discretionary mining on the Caribou-Targhee (i.e., phosphates), where the species is known to occur. 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.

In summary, the Existing Plans alternative may result in adverse effects to individual Canada lynx, woodland caribou, grizzly bear, gray wolf, northern Idaho ground squirrel and yellow-billed cuckoo. Standards and guidelines outlined in existing LRMPs, the NRLA, etc., would apply to projects implemented under Existing Plans, which are expected to minimize such effects. Consequently, the risk to these listed species posed from Existing Plans is low. These effects have already been analyzed through consultation and NEPA conducted on the existing Forest Plans.

Effects on Sensitive Species and Their Habitats – Existing Plans

Select management activities that could occur within IRAs posed a low risk to 14 of 28 sensitive species based on a number of factors: a) limited overlap with IRAs; b) habitat associations that are unlikely to be subject to management activities; and/or c) the relatively low likelihood that individuals will be negatively impacted by such activities (Table VIII-1).

Of the sensitive species considered at moderate to high risk of impact from select management activities – black-back woodpecker, boreal owl, sharp-tailed grouse, fisher, flammulated owl, great gray owl, marten, northern bog lemming, northern goshawk, pygmy nuthatch, three-toed woodpecker, Townsend's big-eared bat, white-headed woodpecker, and wolverine – few have predicted distributions that overlap prescriptions similar to GFRG by more than 5 percent (see

Appendix A, Table A-13). Therefore, although some individuals could encounter activities and their impacts, the likelihood is relatively low.

The grizzly bear (Yellowstone population) is relatively sensitive to the effects of roads. However, only 10 percent of its predicted distribution in Idaho overlaps IRAs – all on the Caribou-Targhee National Forest. Further, there is no overlap with prescriptions similar to GFRG and only 2 percent overlaps prescriptions similar to Backcountry Restoration, where limited activities could occur. Consequently, the likelihood that grizzly bears will encounter such activities in IRA is low. The Forest Plan Amendment for Grizzly Bear Conservation for the Greater Yellowstone Area National Forests outlines specific standards and guidelines for management of grizzly bear habitat on the Caribou-Targhee to minimize or avoid adverse effects to the species and to maintain a recovered population. Based on limited overlap with IRA and application of existing management direction, this alternative is not likely to result in significant negative impacts on the Yellowstone population of grizzly bear.

Greater-sage grouse are at moderate risk of impact due to their habitat associations and sensitivity to human disturbance. Although only 6 percent of the predicted distribution for greater sage grouse falls in IRAs, 22 of 29 known leks occur in IRAs that are to be managed similar to GFRG, mostly on the Sawtooth, Caribou, and Targhee National Forests. Consequently, there is the potential for individuals to be exposed to and potentially affected by road construction/reconstruction, timber cutting, and discretionary mining permitted in these areas, particularly on the Caribou National Forest where discretionary mining is most likely. Standards and guidelines outlined in relevant LRMPs should minimize impacts to ensure subsequent project proposed in IRAs do not result in a trend towards listing.

In summary, the Existing Plans have the potential to adversely impact those sensitive species for which roads, timber cutting, and discretionary mining pose moderate to high risks. For most of these species, their limited overlap with prescriptions similar to the GFRG theme reduces, but does not eliminate, the likelihood that they will encounter, and be affected by, management activities. Further, standards and guidelines outlined in existing LRMPs and their amendments would apply to projects implemented under Existing Plans, which are expected to minimize such effects should they be anticipated. Consequently, we have determined that the Existing Plans alternative may affect individuals, but is not likely to cause a trend towards Federal listing or a loss of viability for any sensitive species. These effects have already been analyzed through NEPA conducted on the existing Forest Plans.

Effects on Management Indicator Species[21] and Their Habitats – Existing Plans

Select management activities that could occur within IRAs posed a low risk to four of nine management indicator species that are not also TECS species, based on a number of factors: a) relatively high abundance reduces impacts to species as a whole; and/or b) habitat associations that are unlikely to be subject to management activities.

Of the management indicator species that could be at moderate to high risk of impact – downy woodpecker, elk, hairy woodpecker, and moose – none have predicted distributions that overlap prescriptions similar to GFRG by more than 5 percent (Appendix A, Table A-13). Given the ubiquitous nature of these species, effects to individuals, should they occur, are unlikely to affect population dynamics. Consequently, although the Existing Plans alternative may affect

[21] Only addresses MIS not discussed in previous sections.

individuals, is not likely to alter the distribution or population trends of MIS on national forests within the analysis area. Further, prohibitions under some prescriptions may beneficially affect MIS and their habitat.

Effects on Other Terrestrial Wildlife Species and Biodiversity – Existing Plans

Migratory Birds – Migratory birds as a group include an extremely diverse array of avian taxon. Those species at low risk of effects from select management activities (e.g., waterfowl, shore-birds, cliff dwellers, etc.) are unlikely be affected by this alternative. Migratory birds associated with forested or grassland ecosystems have a greater potential for overlap with management activities, and thus could be impacted, particularly on the 1.26 million acres of IRA in prescriptions similar to GFRG. Fourteen of 17 IRAs containing breeding bird survey routes include some lands to be managed as GFRG (Appendix A, Table A-14). Most migratory birds afford protection from 'take' under the Migratory Bird Treaty Act (MBTA). Consequently, any activities proposed in IRAs pursuant to this alternative would need to address the legal obligation mandated by the MBTA.

Game Species – Some terrestrial game species, such as elk, deer, turkeys, could benefit from certain types of timber cutting allotted under this alternative where habitats are improved or restored. However, in general, management activities in 1.26 million acres of IRA to be managed as GFRG have a greater potential to negatively impact most game species as roads and timber cutting have the potential to increase human access and reduce security cover. Discretionary mining, expected primarily on the Caribou National Forest, can result in complete loss of habitat where permitted. Under Existing Plans, 1.2 million acres and 697,400 acres of the predicted distribution for elk and white-tailed deer, respectively, and another 105,402 acres of mule deer winter habitat, fall in prescriptions similar to GFRG, where there is the potential for habitat loss, degradation or increased human disturbance due to select management activities.

Biodiversity – Because IRAs on the IPNF overlap a large number of species distributions, management activities that could take place in areas managed as GFRG have the potential to impact more species, and thus areas of high species richness, than on other forests. Under Existing Plans, the IPNF places 110,300 acres within a theme similar to GFRG, where species richness could be impacted. However, the Salmo-Priest IRA, which provides for the most TES species on the Forest, does not include any management themes similar to GFRG. The Boise National Forest, which also contained IRAs characterized by high species richness, includes approximately 23,600 acres in themes similar to GFRG, where biodiversity could be affected by management activities permitted under this prescription.

The Salmon-Challis and the Caribou-Targhee National Forests contain the most IRA acres under prescriptions similar to GFRG - about 405,300 acres and 398,900 acres, respectively. Thirty-four of 58 IRAs on Salmon-Challis overlap the predicted distributions for at least 26 species that are Federally-listed, Forest sensitive, or MIS. Consequently, activities in these roadless areas have the potential to alter species-richness in these areas, particularly where species rank out at moderate to high risk from such activities. In general, IRAs on the Caribou-Targhee ranked lower in species richness (for TES species), than other forests and thus designation of GFRG, and thus the potential for impacts to large numbers of TES species is lower in these areas.

Table VIII-3 shows the Idaho Roadless Areas that contain documented occurrences for the most TES terrestrial wildlife species and the amount of acres by themes. About 764,700 acres in

roadless areas overlap with areas with documented occurrences of the most TES species. About 50 percent of these roadless areas are in equivalent themes that pose little risk to terrestrial species. About 3 percent are in GFRG, and 47 percent in prescription equivalent to Backcountry.

Table VIII-3. Existing Plans, acres by equivalent theme for Idaho Roadless Areas with documented occurrences of the most TES terrestrial wildlife species

Forest	Roadless Area	Wild Land Recreation	Primitive	Backcountry	GFRG	FPSA
Idaho Panhandle	Salmo-Priest	13,500	0	800	0	5,700
Idaho Panhandle	Blacktail Mountain #122	0	0	1,300	2,900	800
Idaho Panhandle	Selkirk	25,400	30,100	36,400	0	6,100
Idaho Panhandle	Upper Priest	0	0	4,500	2,000	6,200
Nez Perce	Mallard	0	0	12,700	6,900	0
Payette	French Creek	0	12,000	76,000	100	700
Payette	Hells Canyon/7 Devils Scenic	0	29,200	0	0	500
Payette	Needles	90,200	7,100	31,500	0	2,500
Payette- Nez Perce	Rapid River	0 0	6,000 14,000	45,700 2,400	0 300	6,000 4,300
Salmon	West Big Hole	0	26,000	43,900	11,600	2,900
Sawtooth	Hanson Lakes	15,000	2,500	13,800	0	8,600
Targhee*	Mt. Jefferson	0	41,000	13,200	0	6,800
Targhee*	Garns Mountain	0	0	90,600	0	5,000
Total		144,100	167,900	372,800	23,800	56,100

** Targhee portion of the Caribou-Targhee National Forest.*

Summary of Effects – Existing Plans

The Existing Plans will not directly result in adverse environmental effects on terrestrial species or their habitats because no ground-disturbing activities are directly authorized. However, the projected trend that road construction/reconstruction, timber cutting, and discretionary mineral activities would be highest under this alternative. Given the numerous negative direct and indirect effects to terrestrial wildlife species and their habitats identified in the literature associated with these activities, the Existing Plans alternative has the greatest potential for adverse effects to terrestrial wildlife species and their habitats. Mitigation measures offsetting some adverse effects would undoubtedly be identified as part of site-specific NEPA decisions and ESA consultations. And, as indicated above, existing species-specific management direction, best management practices, and legal requirements (for example, the ESA, Migratory Bird Treaty Act, National Forest Management Act, and others) remain applicable to all activities proposed in Idaho Roadless Areas. However, some adverse effects, particularly landscape-scale impacts such as increased habitat fragmentation and loss of connectivity, cannot be effectively mitigated.

Proposed Idaho Roadless Rule (Proposed Action)

The Proposed Idaho Roadless Rule proposes five themes for Idaho Roadless Areas, each containing different restrictions and permissions. About 38 miles of road are projected to be constructed and 23 miles reconstructed over a 15-year period (equating to an approximate 30-acre footprint). About 18,000 acres of timber cutting are projected to occur over 15 years under this alternative, which could include both uneven- and even-aged management regimes.

Under the Proposed Idaho Roadless Rule, road construction/reconstruction, timber cutting, and discretionary mineral activities are prohibited on 1.38 million of acres within the Wild Land Recreation theme. About 1.7 million acres of land are proposed within the Primitive and SAHTS themes, where road construction/reconstruction and discretionary mining activities are generally prohibited and limited timber cutting could occur where it improves habitat for TEPS species or maintains characteristics of ecosystem composition and structure or reduces significant risk of wildlife fire effects. About 1,300 acres of unleased phosphate deposits are in Primitive, which prohibits road construction/reconstruction or surface occupancy for phosphates; therefore, this area would likely not be developed (see Abing 2008); effects on terrestrial species found in this area are not anticipated. Because of the prohibitions on ground disturbing activities, the Wild Land Recreation, Primitive and SAHTS themes should provide for good conditions for and the best protection of terrestrial wildlife species and their habitats.

Under the Proposed Idaho Roadless Rule, approximately 5.25 million acres are in the Backcountry Restoration theme. Road construction/reconstruction would be permissible under the same exceptions as the 2001 Roadless Rule and to facilitate timber cutting for stewardship and fuel reduction purposes. Most new roads would be temporary, unless the responsible official determines that a permanent road meets the road exceptions and it would not substantially alter any of the roadless characteristics.

Timber cutting would be permitted for forest health, threatened and endangered species habitat improvement, and fuel-reduction purposes. Removal of diseased, dead, and down materials could have negative impacts on primary cavity nesters, although existing snag retention requirements already included in most LRMPs would assist in mitigating some of these effects.

No road construction or reconstruction associated with new mineral leases (except phosphates) is permitted under Backcountry, although surface use and occupancy could occur where new road construction/reconstruction is not needed. However, as indicated in previous sections, development of geothermal, oil, or gas reserves is highly unlikely without the ability to construct/reconstruct roads. Consequently, such development in Backcountry is not expected under the Proposed Idaho Roadless Rule. Effects to terrestrial species associated with phosphate development, particularly on the Caribou-Targhee, could occur within the Backcountry theme given both surface occupancy and associated roads are permitted.

About 609,600 acres (7%) of roadless areas fall within the General Forest Rangeland Grassland theme. Road construction, road reconstruction, timber cutting and discretionary mineral activities generally are permitted in these areas, except as addressed in the existing forest plans. The roadless characteristics and values in GFRG areas may not be maintained into the future. All of the forests, except for the Challis, Clearwater, Nez Perce, and the Wallowa-Whitman have acres proposed under the GFRG theme. The Caribou National Forest (~251,800), the Targhee National Forest (~146,900), and the Sawtooth National Forest (107,200) have the most acres of

any of the forests in the FGRG theme. Many of the lands in the GFRG theme are managed as rangelands.

The Proposed Idaho Roadless Rule permits road construction and/or reconstruction for geothermal development in the GFRG theme. Although 7 percent of acreage within IRAs fall in this theme, only 4 percent could be developed for geothermal based on slope restrictions (see Abing 2008). It is possible some of these areas would be developed over time; however, except for two pending lease applications there is no information about where or when the activity would occur. If fully developed, roads, transmission lines, and other facilities would likely be constructed. Site-specific analysis would occur prior to exploration or development of geothermal energy resources and would include consideration of terrestrial resources.

Currently lease applications have been submitted for geothermal exploration within 7,000 acres of the Peace Rock Roadless Area on the Boise National Forest and 33 acres of the West Panther Roadless Area on the Salmon National Forest. Both these areas are in either the Primitive or Backcountry theme; therefore, they would not be developed because of the inability to construct roads to access the area (see the Minerals section). No terrestrial resources would be affected in these areas.

The Proposed Rule would allow road construction/reconstruction and surface occupancy for phosphate exploration and development within the Backcountry and GFRG themes. There are 14,460 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. About 13,190 acres[22] (91 percent) are located within the Backcountry and GFRG themes. Under these themes road construction or reconstruction would be permissible to develop these phosphate deposits. These deposits are located within nine roadless areas (Dry Ridge, Huckleberry Basin, Meade Peak, Sage Creek, Schmid Peak, and Stump Creek on the Caribou portion of the Caribou-Targhee National Forest; and Bald Mountain, Bear Creek, and Poker Creek on the Targhee portion of the forest) and could eventually be mined over an extended period of time (50 or more years). There is a potential risk to terrestrial species habitat on these 13,190 acres when and if this development should occur. Site-specific analysis would occur prior to any future leasing and mitigations applied.

Effects on Threatened, Endangered, and Candidate Species and Their Habitats – Proposed Idaho Roadless Rule

Changes in road densities pose a high risk to grizzly bears. Under the Proposed Idaho Roadless Rule, core habitat for grizzly bears overlaps GFRG – 8,000 acres in the Selkirk Ecosystem and 2,400 acres in the Cabinet-Yaak Ecosystem. This overlap represents 2 percent and less than 1 percent of total core habitat in these recovery ecosystems, respectively. An additional 93,200 acres (10%) and 60,400 acres (18.5%) of grizzly bear core habitat fall in Backcountry Restoration in the Cabinet-Yaak and Selkirk Ecosystems, respectively, where some activities could occur, albeit under limited circumstances. Standards and guidelines outlined in the Idaho Panhandle National Forest and Kootenai LRMPs will help minimize adverse effects to grizzly bears resulting from most management activities (See Appendix D). Grizzly bears should benefit in the 18 percent of core habitat that falls in Wild Land Recreation and Primitive themes, where prohibitions on road construction/reconstruction and timber cutting should maintain areas free from human access and disturbance. However, due to the small overlap of grizzly bear core

[22] Based on past history, phosphate mining could occur on an additional 1,850 acres around unleased KPLAs on the Caribou-Targhee National Forest (Abing 2008).

habitat and management themes where select management activities are permitted, we cannot discount the potential for individual grizzly bears to encounter and be adversely affected by activities permitted under these themes.

Approximately 4,700 acres of the South Selkirk Caribou Recovery Area (~1%) falls in GFRG where there are few restrictions on road construction/reconstruction, timber cutting, and discretionary mining. An additional 58,400 acres overlaps Backcountry (6%) where such activities could occur under limited circumstances. Standards and guidelines outlined in the Idaho Panhandle National Forest LRMP will help minimize adverse effects to caribou resulting from most management activities (see Appendix D). Woodland caribou should benefit across the 6 percent of the South Selkirk Caribou Recovery Area that falls in Wild Land Recreation and Primitive themes, where prohibitions on road construction/reconstruction and timber cutting should maintain areas free from human access and disturbance. However, given the overlap with themes permitting such activities, primarily GFRG, we cannot discount the possibility that individual caribou may encounter and be adversely affected by activities in these roadless areas.

Timber cutting activities pose a moderate risk to Canada lynx due to potential effects to snowshoe hares, a primary prey species. Under the Idaho Roadless Rule, 125,900 acres (1.7%) and 2.1 million acres (29%) of mapped lynx habitat in Idaho overlaps GFRG and Backcountry Restoration, respectively. Consequently, there is the potential for individuals to encounter and/or be affected by select management activities in 31% of mapped lynx habitat. Existing management direction for lynx provided in the Northern Rockies Lynx Amendment (USDA Forest Service 2007), the Southwest Idaho Ecogroup LRMP (USDA Forest Service 2003), and the Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) to minimize adverse effects to lynx, particularly from timber harvest activities.

About 87,800 acres of the predicted distribution for the gray wolf overlaps GFRG, less than one percent of its distribution statewide. The home ranges for 18 packs overlap GFRG to some degree. Consequently, there is some potential for individual gray wolves associated with these packs to encounter activities. However, road construction/reconstruction, timber cutting, and discretionary mining pose a low risk to gray wolves as the likelihood that these activities might actually increase mortality of wolves is minimal, even in these few areas of overlap.

Estimated risk to northern Idaho ground squirrels (NIDGS) from road construction and reconstruction, timber cutting and discretionary mining activities in IRAs is low (see Appendix C) based on the following: a) 94% of the probable historic distribution (PHD) falls outside IRA, b) there is only one known colony in IRA and; c) NIDGS habitat is unlikely to coincide with areas where select management activities would occur unless they are specifically intended to address management of NIDGS. Approximately 2,675 acres of the PHD, less than 1 percent, overlaps GFRG, and 1.49 acres overlap Backcountry. The remaining 5.1 percent of the PHD (42,814 acres) in IRA is associated with Primitive, a relatively restrictive prescription. Timber cutting activities designed to improve habitat conditions for NIDG could occur in Primitive, albeit existing roads must be used. It is possible that timber cutting intended to improve NIDGS habitat, such as removal of encroaching conifers from montane meadow ecosystems, could have short-term impacts to individuals. Such short-term adverse effects to NIDGS are unlikely but cannot be ruled out under the Proposed Idaho Roadless Rule. Species-specific standards and guidelines outlined in the LRMPs for the Southwest Idaho Ecogroup, should serve to minimize any adverse effects to the species that might occur pursuant to this alternative (Appendix C).

Select management activities in IRA pose a low risk to both candidate species: the southern Idaho ground squirrel (SIDGS) and the western yellow-billed cuckoo. Management of IRAs proposed by the Proposed Idaho Roadless Rule is expected to have no effect on SIDGS as none are known to occur on NFS lands, including IRAs, at this time. Under this alternative, the predicted distribution for the western yellow-billed cuckoo overlaps GFRG by 7 percent. Consequently, although the risk to the species is low, we cannot discount the potential for individuals to be affected by management activities, particularly timber cutting and discretionary mining on the Caribou-Targhee, where the species is known to occur. 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.

In summary, activities undertaken as allowed by the Proposed Rule may result in adverse effects to individual Canada lynx, woodland caribou, grizzly bear, gray wolf, northern Idaho ground squirrel, and yellow-billed cuckoo. Standards and guidelines outlined in existing LRMPs, the NRLA, etc., would apply to projects implemented under the Proposed Rule, which are expected to minimize such effects. Consequently, the risk to these listed species posed from the Proposed Rule is low.

Effects on Sensitive Species and Their Habitats – Proposed Idaho Roadless Rule

Select management activities that could occur within IRAs posed a low risk to 14 of 28 sensitive species based on a number of factors: a) limited overlap with IRAs; b) habitat associations that are unlikely to be subject to management activities; and/or c) the relatively low likelihood that individuals will be negatively impacted by such activities.

Of those species at moderate to high risk from roads, timber cutting, and/or discretionary mining – the black-back woodpecker, boreal owl, sharp-tailed grouse, fisher, flammulated owl, great gray owl, northern bog lemming, northern goshawk, pygmy nuthatch, three-toed woodpecker, Townsend's big-eared bat, white-headed woodpecker, and wolverine – none have predicted distributions that overlap prescriptions GFRG (where most activities would be expected to occur) by more than 3 percent (see Appendix A, Table A-13). Therefore, although some individuals could encounter activities and their impacts, the likelihood is relatively low.

Under the Proposed Idaho Roadless Rule, the predicted distribution of the Yellowstone population of the grizzly bear does not overlap with and IRAs designated as GFRG; 2.2 percent overlaps Backcountry Restoration, where limited activities could occur. Consequently, the likelihood that grizzly bears will encounter such activities in IRA is very low. The Forest Plan Amendment for Grizzly Bear Conservation for the Greater Yellowstone Area National Forests outlines specific standards and guidelines for management of grizzly bear habitat on the Caribou-Targhee to minimize or avoid adverse effects to the species and to maintain a recovered population. Based on limited overlap with IRA and application of existing management direction, this alternative is not likely to result in significant negative impacts on the Yellowstone population of grizzly bear.

Twenty-two of 29 known greater sage grouse leks occur in IRAs that contain GFRG on the Sawtooth, Caribou, and Targhee National Forests. Consequently, there is the potential for individuals could be exposed to and potentially affected by road construction/reconstruction, timber cutting, and discretionary mining permitted in these areas. Standards and guidelines outlined in relevant LRMPs should minimize impacts to ensure subsequent project proposed in IRAs do not result in a trend towards listing.

In summary, the Proposed Rule has the potential to adversely impact those sensitive species for which roads, timber cutting, and discretionary mining pose moderate to high risks. For most of these species, their limited overlap with prescriptions similar to the GFRG theme reduces, but does not eliminate, the likelihood that they will encounter, and will be affected by management activities. Standards and guidelines outlined in existing LRMPs and their amendments would apply to projects implemented under the Proposed Rule, which are expected to minimize such effects. Consequently, we have determined that the Proposed Idaho Roadless Rule alternative may affect individuals, but is not likely to cause a trend towards Federal listing or a loss of viability for any sensitive species.

Effects on Management Indicator Species[23] - Proposed Idaho Roadless Rule

Select management activities that could occur within IRAs posed a low risk to four of nine management indicator species not considered TECS species, based on a number of factors: a) relatively high abundance reduces impacts to species as a whole; and/or b) habitat associations that are unlikely to be subject to management activities.

Of those management indicator species that could be at moderate to high risk of impact – downy woodpecker, elk, hairy woodpecker, and moose – none have predicted distributions that overlap GFRG areas by more than 1.6 percent (see Appendix A, Table A-13) and thus opportunities for impact are limited. Further, given the ubiquitous nature of these species, effects to individuals, should they occur, are unlikely to affect population dynamics. Consequently, although the Proposed Rule Alternative may affect individuals, it is not likely to alter the distribution or population trends of MIS on national forests within the analysis area. Further, prohibitions under Wild Land Recreation, Primitive and SAHTS are likely to contribute beneficially to MIS and their habitats.

Effects on Other Terrestrial Wildlife Species and Biodiversity – Proposed Idaho Roadless Rule

Migratory birds – Only five of 17 IRAs containing breeding bird survey routes include some lands to be managed as GFRG under the Proposed Rule (Appendix A, Table A-14). Most migratory birds afford protection from 'take' under the Migratory Bird Treaty Act (MBTA). Consequently, any activities proposed in IRAs pursuant to this alternative would need to address the legal obligation mandated by the MBTA.

Game Species – Some terrestrial game species, such as elk, deer, turkeys, could benefit from certain types of timber cutting allotted in GFRG and Backcountry under this alternative. However, in general, management activities in 609,600 acres of IRA to be managed as GFRG have a greater potential to negatively impact most game species as roads and timber cutting has the potential to increase human access and reduce security cover and discretionary mining can result in complete loss of habitat where permitted. Under the Proposed Rule, 549,500 acres and 157,700 acres of the predicted distribution for elk and white-tailed deer, respectively, and another 74,040 acres of mule deer winter habitat, fall in GFRG, where there is the potential for habitat loss, degradation or increased human disturbance due to select management activities.

Biodiversity – The IPNF and Boise National Forests contained the most IRAs that fell within relatively high species richness categories. Under the Proposed Idaho Roadless Rule, the IPNF

[23] Only addresses MIS not discussed in previous sections.

and Boise NF include 20,400 acres and 23,500 acres, respectively, within the GFRG theme, where activities, and thus potential impacts to terrestrial species, are most likely to occur.

Thirty-four of 58 IRAs on Salmon-Challis overlap the predicted distributions for at least 26 species that are Federally-listed, Forest sensitive, or MIS. Consequently, activities in these IRAs have the potential to alter species-richness in these areas, particularly where species present are at a moderate to high risk from such activities. In general, IRAs on the Caribou-Targhee ranked lower in species richness (for TES species), than other forests and thus designation of GFRG, and thus the potential for impacts to large numbers of TES species is lower in these areas.

Table VIII-4 shows the Idaho Roadless Areas that contain documented occurrences for the most threatened, endangered, and sensitive terrestrial wildlife species and the amount of acres by themes. About 764,700 acres in roadless areas overlap with areas the most TES species. Under the Proposed Rule, about 52 percent of these roadless areas are in themes that pose little risk to terrestrial species – WLR, Primitive, and SAHTS. Only 1 percent is in GFRG, where most activities would be expected to occur.

Table VIII-4. Proposed Idaho Roadless Rule acreage, by theme, for Idaho Roadless Areas with the most threatened, endangered, and sensitive (TES) terrestrial wildlife species

Forest	Roadless area	Wild Land Recreation	Primitive	Backcountry	GFRG	FPSA
Idaho Panhandle	Salmo-Priest	14,300	0	0	0	5,700
Idaho Panhandle	Blacktail Mountain #122	0	0	4,200	0	800
Idaho Panhandle	Selkirk	31,300	10,700	41,300	8,600	6,100
Idaho Panhandle	Upper Priest	0	0	6,300	200	6,200
Nez Perce	Mallard	0	0	19,600	0	0
Payette	French Creek	0	12,000	76,000	100	700
Payette	Hells Canyon/7 Devils Scenic	0	29,200	0	0	500
Payette	Needles	90,200	7,100	31,500	0	2,500
Payette- Nez Perce	Rapid River	0	51,700 16,700	0	0	6,000 4,300
Salmon	West Big Hole	0	20,500	61,000	0	2,900
Sawtooth	Hanson Lakes	15,100	2,500	13,700	0	8,600
Targhee*	Mt. Jefferson	0	41,000	13,200	0	6,800
Targhee*	Garns Mountain	0	0	90,800	0	4,800
TOTAL		150,900	191,400	357,600	8,900	55,900

** Targhee portion of the Caribou-Targhee National Forest.*

Summary – Proposed Idaho Roadless Rule

Roadless areas in the Wild Land Recreation, Primitive, and Special Areas of Tribal and Historic Significance themes should be well protected from ground disturbing activities under the Proposed Rule because of the restricted permissions on activities related to road construction/reconstruction, timber cutting and discretionary minerals. These three themes provide for natural processes, habitat integrity and species diversity. Areas in the Backcountry Restoration theme have a higher risk of ground disturbing activities (including road construction/reconstruction, timber cutting and discretionary minerals activities) occurring

depending on future land uses and the risk of wildland fire. Areas in the GFRG theme have the greatest potential for increased risk of adverse effects to terrestrial animal species and habitat, albeit most species have less than 3 percent of their predicted distributions that overlap with this theme. Mitigation measures offsetting some adverse effects would undoubtedly be identified as part of site-specific NEPA decisions and ESA consultations. However, some adverse effect, such as increased habitat fragmentation and loss of connectivity, cannot be effectively mitigated.

Modified Idaho Roadless Rule – Alternative 4 (Preferred Alternative)

Like the Proposed Idaho Roadless Rule described above, the Modified Idaho Roadless Rule proposes management themes for the Idaho Roadless Areas, each theme containing different restrictions and permissions (see Chapter 2 of the FEIS for a detailed description of the alternative themes). Under the Modified Idaho Roadless Rule, 15,000 acres of timber harvest; 33 miles of road constructed, and 17 miles of road reconstructed are projected to take place in IRAs over a 15-year time period.

Of the five management themes, the Wild Land Recreation, Primitive, and SAHTS themes are the most restrictive because road construction, road reconstruction and mineral activities would be prohibited and timber cutting only permitted under very limited situations within Primitive and SAHTS. Because of the prohibitions on ground disturbing activities within WLR, Primitive, and SAHTS (about 3.25 million acres), there would be very little effect on terrestrial wildlife resources. Further, IRAs within these themes should provide for good conditions for terrestrial wildlife species and the best protection for terrestrial habitats including those which provide for TES and MIS species.

Approximately 5.31 million acres fall within Backcountry Restoration of which 442,000 acres are within a community protection zone (CPZ). Temporary road construction would be permitted within the Backcountry CPZ to facilitate hazardous fuel reduction projects. Outside the CPZ temporary roads could be constructed to reduce the significant risk of wildland fire effects on at-risk communities or municipal water supply systems, if it is the only feasible way to accomplish objectives. Roads would be designed to minimize effects to resources, could only be used for the specified purpose, and would be decommissioned after use. In most cases, the 4.87 million acres within BCR outside the CPZ would be managed the same as the 2001 Roadless Rule. In the Backcountry theme, timber cutting would be permitted for TES habitat improvement, to restore ecosystem composition and structure, or for fuels reduction purposes. If these purposes applied, activities would be further subject to certain conditions, including but not limited to Regional Forester approval and meeting consistency with applicable plan components.

Under the Modified Idaho Roadless Rule, approximately 405,900 acres of IRAs are in GFRG theme. Road construction/reconstruction and timber cutting are permitted in these areas. No IRAs are proposed for GFRG within the following national forests under the Modified Idaho Roadless Rule: the Challis, Clearwater, Kootenai, Nez Perce, and Wallowa-Whitman. The Caribou National Forest (167,000) and the Salmon National Forest (101,400) are proposing the most acres under this theme. Many of the lands in the GFRG theme on the Caribou National Forest are managed as rangelands. On the Salmon National Forest, most lands placed in GFRG

are roaded[24]. The roadless characteristics and values in GFRG areas may not be maintained into the future.

Most of the projected road construction/reconstruction and timber harvest is expected to occur within GFRG. However, there is the potential for timber harvest and cutting and road construction/reconstruction within Backcountry, particularly within the CPZ, albeit the circumstances under which it would occur are limited. Most new roads will be temporary, unless the responsible official determines that a permanent road meets the road exceptions and it will not substantially alter any of the roadless characteristics.

Road construction/reconstruction for development of geothermal, oil, and/or gas reserves is not permitted within GFRG, although surface use and occupancy for these leasable minerals would be permitted if allowed in the existing forest plans. It is unlikely that new development for these minerals, however, would occur in any of the themes without road access. Consequently effects to terrestrial species and their habitats from these action are not likely.

There are 14,460 acres of known unleased phosphate deposits on the Caribou-Targhee National Forest. The Modified Idaho Roadless Rule would allow road construction/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. Road construction/reconstruction would not be permitted to access 1,280 acres of KPLA in the Primitive theme, or 6,470 acres of KPLA in the Backcountry theme. Under the Modified Idaho Roadless Rule, 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 terrestrial species 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.

Effects on Threatened, Endangered, and Candidate Species and Their Habitats – Modified Idaho Roadless Rule

Changes in road densities pose a high risk to grizzly bears. Under the Modified Idaho Roadless Rule, core habitat for grizzly bears overlaps GFRG – 7,992 acres in the Selkirk Ecosystem and 979 acres in the Cabinet-Yaak Ecosystem. This overlap represents 2 percent and less than 1 percent of total core habitat in these recovery ecosystems, respectively. An additional 11,719 acres (1%) and 471 acres (<1%) of grizzly bear core habitat fall in Backcountry Restoration CPZ theme in the Cabinet-Yaak and Selkirk Ecosystems, respectively. Standards and guidelines outlined in the Idaho Panhandle National Forest and Kootenai LRMPs will help minimize or avoid adverse effects to grizzly bears resulting from most management activities. Grizzly bears should benefit in the 16.5 percent of total core habitat across both the Cabinet Yaak and Selkirk Ecosystems that falls in Wild Land Recreation and Backcountry themes, where prohibitions on road construction/reconstruction and timber cutting should maintain areas free from human access and disturbance. However, due to the overlap of grizzly bear core habitat and management themes where select management activities are permitted, we cannot discount the

[24] The roadless area inventory for the Salmon portion of the Salmon-Challis National Forest has not been updated since the 1980s; therefore, road construction and timber harvest have occurred in some roadless areas since that time. If these areas were re-inventoried they would not be part of the updated inventory because they do not meet the requirements in FSH 1909.12, chapter 70.

potential for individual grizzly bears to encounter and be adversely affected by activities permitted under these themes.

Under the Modified Idaho Roadless Rule, approximately 4,545 acres of the South Selkirk Caribou Recovery Area (~1%) falls in GFRG where there are few restrictions on road construction/reconstruction, timber cutting, and discretionary mining. An additional 58,408 acres overlaps Backcountry (6%) where such activities could occur, but under relatively limited circumstances. Standards and guidelines outlined in the Idaho Panhandle National will help minimize or avoid adverse effects to caribou resulting from most management activities (Appendix D). Woodland caribou should benefit across the 5.7 percent of the South Selkirk Caribou Recovery Area that falls in Wild Land Recreation and Primitive themes, where prohibitions on road construction/reconstruction and timber cutting should maintain areas free from human access and disturbance. However, given the overlap with themes permitted such activities, we cannot discount the possibility that individual caribou may encounter and be adversely affected by activities that could occur under these themes.

Timber cutting activities pose a moderate risk to Canada lynx due to potential effects to snowshoe hares, a primary prey species. Under the Modified Idaho Roadless Rule, 115,795 acres (2%) and 2.03 million acres (28%) of mapped lynx habitat in Idaho overlaps GFRG and Backcountry Restoration, respectively. Consequently, there is the potential for individuals to encounter and/or be affected by timber cutting activities in 31 percent of mapped lynx habitat. Existing management direction for lynx provided in the Northern Rockies Lynx Amendment (USDA 2007), the Southwest Idaho Ecogroup LRMP, and the Lynx Conservation Assessment and Strategy to minimize adverse effects to lynx, particularly from timber harvest activities.

Approximately 2,675 acres of the PHD for NIDGS, less than 1 percent, overlaps GFRG, and 1.49 acres overlap Backcountry. The remaining 5.1 percent of the PHD (42,814 acres) in IRA is associated with Primitive, a relatively restrictive prescription. Timber cutting activities designed to improve habitat conditions for NIDGS could occur in Primitive, albeit existing roads must be used. It is possible that timber cutting intended to improve NIDGS habitat, such as removal of encroaching conifers from montane meadow ecosystems, could have short-term impacts to individuals. Such short-term adverse effects to NIDGS are unlikely but cannot be ruled out under the Modified Idaho Roadless Rule. Species-specific standards and guidelines outlined in the LRMPs for the Southwest Idaho Ecogroup, should serve to minimize any adverse effects to the species that might occur pursuant to this alternative.

Under the Modified Idaho Roadless Rule, about 117,100 acres of the predicted distribution for the gray wolf overlaps to GFRG. This is only less than one percent of its distribution statewide. The home ranges for 18 packs overlap GFRG to some degree. Consequently, there is some potential for individual gray wolves associated with these packs to encounter activities. However, road construction/reconstruction, timber cutting, and discretionary mining pose a low risk to gray wolves as the likelihood that these activities might actually increase mortality of wolves is low, even in these few areas of overlap.

Select management activities in IRA pose a low risk to both candidate species: the southern Idaho ground squirrel (SIDGS) and the western yellow-billed cuckoo. Management of IRAs proposed by the Modified Rule is expected to have no effect on SIDGS as none are known to occur on NFS lands, including IRAs, at this time. Under this alternative, the predicted distribution for the western yellow-billed cuckoo overlaps GFRG by 3 percent. Consequently, although the risk to the species is low, we cannot discount the potential for individuals to be

affected by management activities, particularly timber cutting and discretionary mining on the Caribou-Targhee, where the species is known to occur. Again, 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.

In summary, the Modified Idaho Roadless Rule may result in adverse effects to individual Canada lynx, woodland caribou, grizzly bear, gray wolf, northern Idaho ground squirrel, and yellow-billed cuckoo. Standards and guidelines outlined in existing LRMPs, the NRLA, etc., would apply to projects implemented under the Modified Rule, which are expected to minimize such effects. Consequently, the risk to these listed species posed from the Modified Rule is low.

Table VIII-5. Final EIS Biological Assessment threatened, endangered, and candidate Terrestrial Species, designated critical habitat, and determinations, based on the Modified Rule

Scientific Name	Common Name	Status	Determination*	Designated Critical Habitat and Determination
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

** LAA: Likely to adversely affect; NLAA: Not likely to adversely affect*

In summary, the Modified Idaho Roadless Rule may result in adverse effects to individual Canada lynx, woodland caribou, grizzly bear, gray wolf, northern Idaho ground squirrel, and yellow-billed cuckoo (Table VIII-5). Standards and guidelines outlined in existing LRMPs, the NRLA, etc., would apply to projects implemented under the Modified Rule, which are expected to minimize such effects. Consequently, the risk to these listed species posed from the Modified Rule is low.

Effects on Sensitive Species and Their Habitats – Modified Idaho Roadless Rule

Of sensitive species that could be at moderate to high risk of impact (see Table VIII-2) – black-back woodpecker, boreal owl, sharp-tailed grouse, fisher, flammulated owl, great gray owl, northern bog lemming, northern goshawk, pygmy nuthatch, three-toed woodpecker, Townsend's big-eared bat, white-headed woodpecker, and wolverine – none have predicted distributions that overlap GFRG areas by more than 2 percent (see Appendix A, Table A-12). Although some individuals could encounter activities and their impacts, the likelihood is relatively low.

Under the Modified Rule, less than 1 percent of the predicted distribution of the Yellowstone population of the grizzly bear in Idaho overlaps GFRG; 1 percent overlaps Backcountry Restoration/CPZ, where limited activities could occur. In these areas of overlap, there is a potential for grizzly bears to encounter select management activities – road

construction/reconstruction, timber cutting, and discretionary mining (only in GFRG). The Forest Plan Amendment for Grizzly Bear Conservation for the Greater Yellowstone Area National Forests outlines specific standards and guidelines for management of grizzly bear habitat on the Caribou-Targhee to minimize or avoid adverse effects to the species and to maintain a recovered population.

Twenty-two of 29 known greater sage grouse leks occur in IRAs that contain GFRG on the Sawtooth, Caribou, and Targhee National Forests. Consequently, there is the potential for individuals to be exposed to and potentially affected by road construction/reconstruction, timber cutting, and discretionary mining permitted in these areas. Standards and guidelines outlined in relevant LRMPs should minimize impacts to ensure subsequent project proposed in IRAs do not result in a trend towards listing.

In summary, the Modified Idaho Roadless Rule has the potential to adversely impact those sensitive species for which roads, timber cutting, and discretionary mining pose moderate to high risks. For most of these species, their limited overlap with prescriptions similar to the GFRG theme reduces, but does not eliminate, the likelihood that they will encounter, and will be affected by management activities. Standards and guidelines outlined in existing LRMPs and their amendments would apply to projects implemented under the Proposed Idaho Roadless Rule, which are expected to minimize such effects. Consequently, we have determined that the Modified Idaho Roadless Rule may affect individuals, but is not likely to cause a trend towards Federal listing or a loss of viability for any sensitive species.

Effects on Management Indicator Species[25] and Their Habitats – Modified Idaho Roadless Rule

Select management activities that could occur within IRAs posed a low risk to four of nine management indicator species not considered TECS species, based on a number of factors: a) relatively high abundance reduces impacts to species as a whole; and/or b) habitat associations that are unlikely to be subject to management activities.

Of those management indicator species that could be at moderate to high risk of impact – downy woodpecker, elk, hairy woodpecker, and moose – none have predicted distributions that overlap GFRG areas by more than 1.4 percent (see Appendix A, Table A-13) and thus opportunities for impact are limited. Further, given the ubiquitous nature of these species, effects to individuals, should they occur, are unlikely to affect population dynamics. Consequently, although the Modified Idaho Roadless Rule alternative may affect individuals, it is not likely to alter the distribution or population trends of MIS on national forests within the analysis area. Prohibitions under Wild land Recreation, Primitive and SAHTS are likely to contribute beneficially to MIS and their habitats.

Effects on Other Terrestrial Wildlife Species and Biodiversity – Modified Idaho Roadless Rule

Migratory birds – Only 5 of 17 IRAs containing breeding bird survey routes include some lands to be managed as GFRG under the Idaho Roadless Rule (Appendix A, Table A-13). Most migratory birds afford protection from 'take' under the Migratory Bird Treaty Act (MBTA).

[25] Only addresses MIS not discussed in previous sections.

Consequently, any activities proposed in IRAs pursuant to this alternative would need to address the legal obligation mandated by the MBTA.

Game species – Some terrestrial game species, such as elk, deer, turkeys, could benefit from certain types of timber cutting allotted in GFRG and Backcountry under this alternative. However, in general, management activities in 405,900 acres of IRA to be managed as GFRG and 442,000 acres under Backcountry Restoration in CPZ have a greater potential to negatively impact most game species as roads and timber cutting has the potential to increase human access and reduce security cover and discretionary mining can result in complete loss of habitat where permitted. Under the Modified Idaho Roadless Rule, 389,396 acres, 248,034 acres, 154,471 acres of the predicted distribution for elk, moose, and white-tailed deer, respectively, and another 31,549 acres of mule deer winter habitat fall in GFRG, where there is the potential for habitat loss, degradation or increased human disturbance due to select management activities.

Biodiversity – The IPNF and Boise National Forests contained the most IRAs that fell within relatively high species richness categories. Under the Modified Idaho Roadless Rule, the IPNF and Boise NF include 17,600 acres and 23,400 acres, respectively, within the GFRG theme, where activities, and thus potential impacts to terrestrial species, are most likely to occur.

Thirty-four of 58 IRAs on Salmon-Challis overlap the predicted distributions for at least 26 species that are Federally-listed, Forest sensitive, or MIS. Consequently, activities in these IRAs have the potential to alter species-richness in these areas, particularly where species present are at a moderate to high risk from such activities. In general, IRAs on the Caribou-Targhee ranked lower in species richness (for TES species), than other forests and thus designation of GFRG, and thus the potential for impacts to large numbers of TES species is lower in these areas.

Table VIII-6 shows the Idaho Roadless Areas that contain documented occurrences for the most threatened, endangered, and sensitive terrestrial wildlife species and the amount of acres by themes. About 764,700 acres in roadless areas overlap with areas the most TES species. Under the Modified Idaho Roadless Rule, about 50 percent of these roadless areas are in themes that pose little risk to terrestrial species – WLR, Primitive, and SAHTS. Three percent is in GFRG, where most activities would be expected to occur.

Table VIII-6. Modified Idaho Roadless Rule acres by theme for Idaho Roadless Areas with the most TES terrestrial wildlife species

Forest	Roadless Area	Wild Land Recreation	Primitive	Backcountry/ Backcountry CPZ	GFRG	FPSA
Idaho Panhandle	Salmo-Priest	14,300	0	0	0	5,700
Idaho Panhandle	Blacktail Mountain #122	0	0	4,200/500	0	800
Idaho Panhandle	Selkirk	42,000	0	41,300/300	8,600	6,100
Idaho Panhandle	Upper Priest	0	0	6,300/500	0	6,200
Nez Perce	Mallard	0	0	19,600/3,600	0	0
Payette	French Creek	0	12,000	76,000/3,900	100	700
Payette	Hells Canyon/7 Devils Scenic	0	29,200	0	0	500
Payette	Needles	90,200	7,100	31,500	0	2,500
Payette- Nez Perce	Rapid River	51,700 16,700	0 0	0	0	6,000 4,300
Salmon	West Big Hole	0	0	32,500/3,400	9,600	2,900
Sawtooth	Hanson Lakes	15,100	2,500	13,700/4,200	0	8,600
Targhee*	Mt. Jefferson	0	41,300	10,200/1,800	2,700	6,800
Targhee*	Garns Mountain	0	0	88,000/8,300	2,600	4,800
TOTAL		230,000	92,000	323,300/ 26,500	23,600	55,900

** Targhee portion of the Caribou-Targhee National Forest*

Summary – Modified Idaho Roadless Rule

Under the Modified Idaho Roadless Rule, IRAs in the Wild Land Recreation, Primitive, Special Areas of Tribal and Historic Significance themes should be well protected from ground disturbing activities under this alternative because of the restricted permissions on activities related to road construction/reconstruction, timber cutting and discretionary minerals. These three themes should provide for natural processes, habitat integrity and species diversity. Areas proposed for the Backcountry Restoration theme are also afforded a good deal of protection. Backcountry Restoration within community protection zones have a higher risk of ground disturbing activities (including road construction/reconstruction, timber cutting) occurring depending on the risk of wildland fire. Areas proposed for GFRG have the greatest potential for increased risk of adverse effects to terrestrial animal species and habitat, albeit most species have less than 3 percent of their predicted distributions that overlap with this theme. Mitigation measures offsetting some adverse effects would undoubtedly be identified as part of site-specific NEPA decisions and ESA consultations. However, some adverse effect, such as increased habitat fragmentation and loss of connectivity, cannot be effectively mitigated.

IX. Cumulative Effects on Terrestrial and Aquatic Animal Species and Habitats

Cumulative effects are the "incremental effect of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR 1508.7).

Biological diversity or "biodiversity" refers to the variety and abundance of species, their genetic composition, and their communities (Wilson 1988).

The cumulative effects of the alternatives were addressed by considering land use and land conversion trends, as well as laws, regulations, and policies that affect species, habitat characteristics, and biodiversity. The cumulative effects on both terrestrial and aquatic species are addressed here to reduce redundancy.

All Alternatives

Since NFS lands, including roadless areas, provide habitats for so many terrestrial and aquatic species, the anticipated beneficial effects of roadless area conservation in combination with the other forest planning and broad-scale assessments could cumulatively benefit terrestrial and aquatic species at State, regional, and local scales. All the alternatives that contain direction for roadless area management would have the potential for important cumulative beneficial effects on conservation of native biological diversity and species viability by reducing substantial causes of habitat loss and reduction in habitat quality. Biological strongholds and other important habitats for terrestrial and 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 53 million acres of land in Idaho, of which about 20.5 million acres are NFS lands. The Federal Government manages approximately 60 percent of all Idaho lands; the remaining 40 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 1.4 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 for terrestrial and aquatic species. In light of projected future population trends, Idaho Roadless Areas can provide some of the best terrestrial and 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 on 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. Because of these efforts, terrestrial and aquatic habitats on non-Federal land would in general remain stable or slightly improve over the long term. 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

In 2003 Forest Service Chief Dale Bosworth identified invasive species as being one of the four significant threats to our Nation's forest and rangeland ecosystems. Invasive species have been characterized as a "catastrophic wildfire in slow motion" (USDA Forest Service 2004a). Thousands of invasive plants, insects, fish, mollusks, crustaceans, pathogens, mammals, birds, reptiles, and amphibians have infested hundreds of millions of acres of land and water across the nation, causing massive disruptions in ecosystem function, reducing biodiversity, and degrading ecosystem health in the Nation's forests, prairies, mountains, wetlands, rivers, and oceans (USDA Forest Service 2004a). The Forest Service has developed a National Strategy and Implementation Plan for Invasive Species Management (USDA, Forest Service 2004a) which sets the objective of protecting forest and rangeland ecosystems by preventing the release of non-native species and by controlling the spread, or eradicating, invasive species.

Non-native invasive species are a problem throughout Idaho. Current state activities and authorities address some invasive species, their prevention, and control (Idaho Invasive Species Council 2005). Of particular concern is that the presence or spread of invasive species could potentially limit the effectiveness of habitat improvements or efforts to recover species. Roads often provide vectors for spread of invasive species. In general, areas with fewer roads have a lower risk of having invasive species populations established.

Invasive species can threaten the diversity or abundance of native species. Invasive species often compete with native species that result in displacement of natives. Non-native fish species sometimes hybridize with native species resulting in reduced genetic purity. The widespread distribution of some exotic species within native fish habitat is problematic because resources are being taken away from the native fish by non-natives. The State of Idaho and the tribes have targeted eradication of some local populations of exotic fish species under their conservation plans. A key component to increase the effectiveness of habitat restoration and limit the spread of invasive species in Idaho is collaboration between federal and on-federal land owners.

Impacts of Past Direction

Since 1995, PACFISH and INFISH have provided interim direction for management of lands administered by the BLM and Forest Service, 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 habitats in Idaho and the interior Columbia River basin.

For much of the past decade, planning for the Forest Service's road transportation system, especially the 2001 Forest Service Roads Policy and the 2005 Travel Management Rule, has contributed to improved management of NFS roads and has reduced impacts on watersheds and aquatic resources. Over the coming year, as each Idaho national forest adopts a new travel plan that defines a system of approved roads and restricts motorized travel off roads, further improvement in watershed and aquatic conditions are likely.

More recently, expanded fuels management sparked by the Healthy Forests Initiative and the Healthy Forests Restoration Act has contributed some limited impacts on aquatic condition while reducing risk of wildland fire-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. Other past and upcoming plans, policies, and directives described in the FEIS, appendix N are not expected to have material effects on aquatic resources in Idaho.

Impacts of Existing Management Practices

Existing management practices within and outside of Idaho Roadless Areas have the potential to affect terrestrial and 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, success ional processes, nutrient cycling, water quality and quantity, and habitat complexity. Other human activities related to urbanization can have dramatic effects on terrestrial and aquatic species and habitats.

Effects to terrestrial and 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, it is important to recognize that native species evolved with natural disturbances processes and that they can often recover from these types of events, even when they appear to be catastrophic.

Idaho Roadless Areas provide areas where natural process can largely occur without human management influences. Information gained from these areas can help us to gain a better understanding of cumulative effects occurring elsewhere on the landscape and how these effects impact terrestrial and aquatic species and habitats.

Fire

Fire is one of the most important natural disturbances influencing the complexity and diversity of terrestrial and aquatic ecosystems (Bêche et al. 2005). Fire is a part of the landscape in the western United States. Settlement, development, natural resource management, and climate variation have transformed the fire regimes, vegetation and fuel patterns, and overall functionality of western forests (Bisson et al. 2003). Despite efforts to prevent and suppress wildland fires, fire nonetheless revisits western landscapes at irregular intervals- sometimes with catastrophic effects, sometimes not (Bisson et al. 2003).

For many aquatic ecosystems, fire has played an important role in creating and maintaining suitable habitat at varying temporal and spatial scales. 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.

Mortality of fish and aquatic invertebrates from wildfires has been reported in a number of studies (Minshall et al.1997). According to Gresswell (1999), the cause of fire-related fish mortalities is generally associated with more intense and severe fires. Several studies have found that fire-induced changes in stream pH, ash extracts and smoke gases can be lethal to aquatic organisms (Spencer and Hauer 1991). In some cases, water temperature can apparently reach lethal levels.

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. Burns (2000) found that risks to fish populations from fire, either prescribed or wildfire, are low where fish populations can freely migrate and ecosystems are not severely fragmented. 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.

Fire can directly and indirectly affect aquatic and riparian communities at spatial scales ranging from microhabitats to entire watersheds (Bêche et al. 2005). For many aquatic ecosystems, fire has played an important role in creating and maintaining suitable habitat at varying temporal scales (Minshall et al. 1989, Minshall 2003). Although Rieman et al. (1997) documented that large fires can adversely affect aquatic systems, and can result in fish mortality and even extirpation, they concluded that the resilience and persistence of salmonid populations are heavily influenced by the complexity and spatial diversity of habitats. A complex, well-dispersed network of habitats is likely to be an important element in the persistence of fish populations during and after large fires. 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.

At a landscape level, fires create and maintain habitat mosaics of different vegetation types (Mushinsky and Gibson 1991). These mosaics include a diversity of patch size, composition, and structure, as well as connectivity among patches. Smith (2000) identified the following landscape-level fire effects on terrestrial species: (1) changed availability of habitat patches and heterogeneity within them; (2) changed compositions and structures of larger areas, such as watersheds, which provide the spatial context for habitat patches; and (3) changed connections among patches. During the course of post-fire succession, all three of these landscape features are in flux.

Terrestrial and aquatic ecosystems are often referred to as separate ecosystems, however aquatic ecosystems are structured by interactions among terrestrial and aquatic processes and climate

(Bisson et al. 2003). Wildfires influence hillslope erosion, stream sedimentation, and large woody debris recruitment to streams (Benda et al. 2003), Miller et al. 2003, Wondzell and King 2003). The timing and severity of erosion and sedimentation differ by geography, geology, precipitation regime, and fire regime. The dynamics of aquatic habitats are largely driven by topography, climate, and the pattern of disturbances such as fire and large storms (Bisson et al. 2003). Fire is one of several disturbance processes that results in patterns of disturbance and recovery across the landscape yielding a mosaic of diverse, changing habitats and communities.

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 (USDA Forest Service 2000b). 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.

National Oceanic and Atmospheric Administration (NOAA) Fisheries, 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 (USDC, NOAA-NMFS 2005c), which is scheduled to be completed in 2008.

On April 24, 2007, the 9th circuit rejected the latest NOAA Fisheries 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 NOAA Fisheries consult on remand with States of Idaho, Montana, Oregon, and Washington, and any Tribes involved in the litigation, in developing a new biological opinion.

Terrestrial Wildlife Conservation Strategies

There are a number of terrestrial species-specific conservation strategies and recovery plans that have been developed to direct management for the protection and conservation of threatened and endangered species. For example, the Interagency Lynx Conservation Assessment and Strategy (Ruediger et al. 2000) was developed to provide a consistent and effective approach to conservation of the Canada lynx on Federal lands in the conterminous United States. The Grizzly Bear Recovery Plan (USDI Fish and Wildlife Service 1993a) identifies actions necessary for the conservation and recovery of grizzly bears. These conservation strategies provide additional conservation benefits to TES terrestrial wildlife species.

Climate Change

Warming of the global climate is unequivocal (Independent Scientific Advisory Board [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 affect 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. 2005). 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 high levels 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 affect this species.

Biodiversity

Based on current literature (Noss and Cooperrider 1994 (as cited in USDA, Forest Service, 2000n), Flather et al. 1999, Stein et al. 2000) it is possible to conclude that with or without conservation of inventoried 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 inventoried roadless areas characteristics, however, may lessen this risk at least in the short term (20 years). By reducing the level of potential adverse impacts on inventoried 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 inventoried roadless areas 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 IRA prohibitions is combined with the 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 TES species and biodiversity could include:

- Conserving and protecting large contiguous blocks of habitat that provide habitat connectivity and biological strongholds for a variety of terrestrial and aquatic plant and animal species including TES species.
- Providing important local and regional components of conservation strategies for protection and recovery of listed TES 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 inventoried roadless areas including the maintenance of native plant and animal communities where nonnative species are currently rare, uncommon, or absent.

The value of Idaho Roadless Areas in conserving biodiversity is likely to increase as habitat loss and habitat degradation increase 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.

The IRAs when considered alone may not be as important as when considered in combination with other land conservation laws, policies, and strategies. For example, many inventoried roadless areas in combination with Wilderness Areas, Nature Conservancy Preserves, some NFS land allocations, National Parks, or conservation easements provide large contiguous habitat blocks with national significance for biodiversity conservation.

Conclusions on Cumulative Effects by Alternative

As population growth and associated land uses and land conversions place pressures on both NFS and non-NFS lands, the value and importance of inventoried roadless areas in conserving biological diversity will probably increase. In the future, habitat loss and loss of viable animal populations may be of a magnitude such that the beneficial effects of the prohibitions, and other laws, regulations and policies relative to the conservation of native biodiversity may be lost or overwhelmed. Even under this scenario, inventoried roadless areas would likely still convey some beneficial effects relative to conservation of terrestrial and aquatic animal species and habitat in Idaho.

2001 Roadless Rule

Overall, the 2001 Roadless 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. 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.

Existing Plans

Because of the permissions provided in the Existing Plans—when considered with the effects of land uses; land conversions; laws, regulations, and policies; and nonnative species invasions—Existing Plans may or may not be sufficient to provide for biological diversity, including species habitats, populations, and landscape diversity into the future. This assessment was based largely on the following cumulative effects:

- The projected increasing trends in population growth, deleterious land uses, land conversion, and non-native species invasion are likely to contribute to increased risks to biodiversity.
- It is likely that Federal, State, local, and private land laws, regulations, and policies will become more pivotal in conserving biodiversity.
- Climate changes may lead to less favorable habitat availability for some TES species, leading to more restricted ranges and some local extirpations of populations.

Proposed Idaho Roadless Rule

The Proposed Idaho Roadless Rule permissions and prohibitions—when considered with the effects of land uses; land conversions; laws, regulations and policies; and nonnative species invasions—would overall be beneficial to biological diversity, including species habitats, populations, and landscape diversity, for the same reasons listed above under the 2001 Roadless Rule.

The Proposed Rule would provide additional protections compared to the 2001 Rule on 3.1 million acres (33 percent of Idaho Roadless Areas), because the rule prohibits road construction, reconstruction, or surface occupancy on these lands. It would provide similar protections on 5.2 million acres (56 percent of Idaho Roadless Areas), even though it would permit limited road construction/reconstruction to facilitate timber cutting to address forest health concerns and to

reduce hazardous fuels that could affect communities. It would provide lesser protections on 0.6 million acres (0.6 percent of Idaho Roadless Areas); however, not every acre within the 0.6 million acres is likely to be affected.

The Proposed Rule would permit phosphate development on 20,380 acres[26] (existing and unleased lands), whereas the 2001 Roadless Rule would permit development on 7,200 acres. This difference is immeasurable, within the context of Idaho Roadless Areas as a whole. The phosphate development would potentially occur on the edges of nine roadless areas, leaving the core of the roadless areas intact. Prior to development, additional environmental study would occur and any necessary protection measures would be applied.

Modified Idaho Roadless Rule

Like the Proposed Rule, the Modified Idaho Roadless Rule would overall be beneficial to biological diversity, including species habitats, populations, and landscape diversity, for the same reasons listed above under the 2001 Rule.

Compared to the Proposed Rule, the Modified Idaho Roadless Rule would provide 101,700 more acres in the Wild Land Recreation theme, and 69,900 more acres in the Primitive theme. These changes are small percentages and would not result in discernible effects on terrestrial and aquatic resources. The Modified Idaho Roadless Rule would provide 54,200 acres more in the Backcountry theme; however, with the changes in the Modified Idaho Roadless Rule most of the Backcountry (4.87 million acres) theme would be managed in a manner similar to the 2001 Rule. In addition there would be 203,700 fewer acres in the GFRG theme, a reduction of one-third. Both the changes in the permissions and prohibitions to the Backcountry theme and the reductions in the GFRG theme could benefit terrestrial and aquatic resources locally but would not be discernible at the Statewide scale.

The Modified Idaho Roadless Rule would permit phosphate development on 5,770 acres (unleased KPLA in the GFRG theme) in addition to existing leased lands (12,570 acres total), whereas the Proposed Rule would permit development on 20,380 acres. As with the Idaho Roadless Rule, the difference is minor, within the context of Idaho Roadless Areas as a whole.

[26] 13,190 unleased plus 7,200 currently leased.

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Appendix A: Supplemental Tables: Aquatic and Terrestrial Analyses

Table A-1. Idaho Roadless Areas that overlap aquatic threatened and endangered species ranges

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

Forest	Idaho Roadless Area	Forest	Idaho Roadless Area
Clearwater	Moose Mountain	Nez Perce	East Meadow Creek
Clearwater	North Fork Spruce - White Sand	Nez Perce	Gospel Hump
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	Anderson Mountain
Salmon	Deep Creek 509	Salmon	Sal Mountain
Salmon	Duck Peak	Salmon	Sheepeater
Salmon	Goat Mountain	Salmon	South Deep Creek
Salmon	Goldbug Ridge	Salmon	South Panther
Salmon	Haystack Mountain	Salmon	West Big Hole
Salmon	Jesse Creek	Salmon	West Panther Creek
Salmon	Jureano	Salmon/Challis	Lemhi Range

Forest	Idaho Roadless Area	Forest	Idaho Roadless Area
Salmon	Little Horse	Salmon/Challis	Taylor Mountain
Salmon	Long Tom	Salmon/Targhee	Italian Peak
Salmon	McEleny	Sawtooth	Buttercup Mountain
Salmon	Musgrove	Sawtooth	Elk Ridge
Salmon	Napias	Sawtooth	Huckleberry
Salmon	Napoleon Ridge	Sawtooth	Liberal Mountain
Salmon	Oreana	Sawtooth	Pettit
Salmon	Perreau Creek	Wallowa-Whitman	Big Canyon, Idaho
Salmon	Phelan	Wallowa-Whitman	Klopton Creek - Corral Creek, Idaho

Table A-2. Idaho Roadless Areas that Overlap Aquatic Sensitive Species Ranges and the Number of Aquatic Sensitive Species within each Idaho Roadless Area Identified

IRA Name	# Sp	IRA Name	# Sp	IRA Name	# Sp
Agency Creek	3	Indian Creek	2	Sage Creek	2
Allan Mountain	4	Italian Peak	4	Sal Mountain	4
Anderson Mountain	4	Jesse Creek	4	Salmon Face	3
Bald Mountain 019	2	John Day	5	Salmo-Priest	3
Bald Mountain 614	3	Jumpoff Mountain	2	Schafer Peak	5
Bear Creek	2	Jureano	4	Schmid Peak	2
Bear Wallow	3	Katka Peak	6	Scotchman Peaks	4
Beetop	4	King Mountain	2	Scout Mountain	2
Bernard	4	Klopton Cr. - Corral Cr. Id	5	Seafoam	4
Big Canyon Id	4	Kootenai Peak	6	Secesh	4
Big Creek	4	Lemhi Range	4	Selkirk	6
Big Creek Fringe	4	Liberal Mountain	4	Sheep Creek	3
Bighorn - Weitas	7	Liberty Creek	2	Sheep Gulch	2
Black Lake	4	Lick Point	6	Sheep Mountain-State Line	4
Black Pine	2	Lime Creek	4	Sheepeater	5
Blackhorse Creek	2	Lionhead	3	Sherman Peak	2
Blacktail Mountain #122	3	Little Grass Mountain	3	Silver Creek - Pilot Knob	7
Blacktail Mountain #161	5	Little Horse	4	Siwash	5
Blue Bunch	4	Little Slate Creek	4	Skitwish Ridge	4
Blue Joint Mountain	3	Little Slate Creek North	4	Smith Creek	4
Bonneville Peak	2	Lochsa Face	7	Smoky Mountains	5
Borah Peak	3	Lolo Creek (LNF)	5	Sneakfoot Meadows	6
Boulder-White Clouds	5	Lone Cedar	1	Snowbank	3
Breadwinner	3	Long Tom	5	Soda Point	2
Buckhorn Ridge	4	Loon Creek	4	South Deep Creek	4
Burnt Log	4	Lost Creek	4	South Panther	4
Buttercup Mountain	4	Lost Man Creek	3	Spion Kop	4
Cache Peak	2	Magee	4	Spring Basin	4
Camas Creek	4	Mahogany Butte	3	Squaw Creek	4

IRA Name	# Sp	IRA Name	# Sp	IRA Name	# Sp
Caribou City	3	Mallard	6	Station Creek	2
Cathedral Rocks	3	Mallard-Larkins	5	Stauffer Creek	2
Caton Lake	4	Maple Peak	4	Steel Mountain	3
Challis Creek	4	Mceleny	4	Stevens Peak	4
Chimney Rock	4	Meade Peak	3	Stony Meadows	4
Clarkston Mountain	2	Meadow Creek	4	Storm Creek	4
Clear Creek	6	Meadow Creek - Upper North Fork	5	Stump Creek	2
Cold Springs	2	Midget Peak	4	Sugar Mountain	3
Continental Mountain	3	Mink Creek	2	Swan Creek	2
Copper Basin	2	Moose Mountain	5	Taylor Mountain	4
Cottontail Point/Pilot Peak	5	Mosquito-Fly	4	Telephone Draw	2
Cottonwood	2	Mount Harrison	2	Ten Mile/Black Warrior	3
Council Mountain	3	Mount Naomi	1	Tennessee	3
Cow Creek	3	Mt Heinen	3	Tepee Creek	4
Crystal Mountain	4	Mt. Jefferson	3	Third Fork Rock Creek	2
Cuddy Mountain	3	Mt. Willard-Lake Estelle	6	Thorobred	3
Danskin	3	Musgrove	4	Toponce	2
Deadwood	3	Nameless Creek	4	Trestle Peak	4
Deep Creek 158	2	Napias	5	Trouble Creek	4
Deep Creek 509	4	Napoleon Ridge	5	Trout Creek	4
Diamond Peak	2	Needles	4	Two Top	4
Dixie Summit - Nut Hill	5	North Fork	4	Upper Priest	3
Dry Ridge	3	North Fork Slate Creek	6	Warm Creek	1
Duck Peak	5	North Fork Spruce - White Sand	6	Weir - Post Office Creek	7
East Cathedral Peak	4	North Lochsa Slope	7	West Big Hole	4
East Fork Elk	4	North Pebble	2	West Fork Crooked River - NEW	5
East Meadow Creek	6	O'Hara - Falls Creek	7	West Fork Elk	4
Eldorado Creek	6	Oreana	4	West Meadow Creek	7
Elk Creek	4	Oxford Mountain	3	West Mink	2
Elk Ridge	4	Packsaddle	4	West Panther Creek	4
Elkhorn Mountain	3	Pahsimeroi Mountain	4	West Slope Tetons	3
Fifth Fork Rock Creek	3	Palisades	3	Whiskey	4
French Creek	4	Paris Peak	2	Whiskey Jack	3
Gannett-Spring Creek	3	Patrick Butte	5	White Knob	2
Garfield Mountain	3	Peace Rock	4	White Mountain	5
Garns Mountain	3	Perreau Creek	4	Whitehawk Mountain	4
Gibson	2	Pettit	4	Williams Creek	2
Gilt Edge-Silver Creek	4	Phelan	4	Wilson Peak	3
Goat Mountain	4	Pinchot Butte	2	Winegar Hole	3

IRA Name	# Sp	IRA Name	# Sp	IRA Name	# Sp
Goldbug Ridge	4	Pioneer Mountains	4	Wonderful Peak	4
Gospel Hump	5	Placer Creek	4	Wood Canyon	2
Gospel Hump Adjacent to Wilderness	5	Poison Creek	3	Worm Creek	2
Graham Coal	4	Poker Meadows	3		
Grand Mountain	3	Poker Peak	3		
Grandmother Mountain	5	Pole Creek	2		
Greylock	4	Pot Mountain	5		
Grimes Pass	3	Prophyry Peak	2		
Grouse Peak	4	Rackliff - Gedney	7		
Hammond Creek	4	Railroad Ridge	4		
Hanson Lakes	4	Rainbow	3		
Hawley Mountain	3	Rapid River	4		
Haystack Mountain	5	Rawhide	5		
Hell Hole	2	Raynolds Pass	3		
Hellroaring	4	Red Hill	2		
Hells Canyon/7 Devils Scenic	3	Red Mountain 916	4		
Hoodoo	6	Red Mountain 170	3		
Horse Heaven	4	Reeves Creek	4		
House Mountain	3	Roberts	4		
Huckleberry	4	Roland Point	4		
Huckleberry Basin	1	Saddle Mountain	6		

Table A-3. Existing Plans – Idaho Roadless Areas that provide important aquatic TES habitat, distribution by theme, in acres

Forest	Idaho Roadless Area	WLR	Primitive	BCR	GFRG	FPSA
Idaho Roadless Areas overlapping the range of four or five threatened or endangered fish species						
Boise/ Challis/ Sawtooth	Hanson Lakes	13,600 0 15,100	3,800 0 2,500	0 13,500 13,700	0 0 0	200 0 8,600
Boise/ Sawtooth	Smoky Mountains	0 0	41,700 191,900	0 102,600	100 0	1,110 9,600
Challis	Grouse Peak	0	0	9,000	0	0
Challis	Red Hill	0	0	15,000	0	0
Challis	Squaw Creek	0	0	99,600	0	0
Challis/ Salmon	Camas Creek	0 0	0 0	68,500 27,800	0 7,600	0 0
Challis/ Salmon	Lemhi Range	0 0	0 9,300	154,500 92,300	0 49,100	500 2,800
Challis/ Salmon	Taylor Mountain	0 0	0 0	16,800 21,600	0 25,000	0 0
Challis/ Sawtooth	Boulder-White Clouds	35,200 158,900	52,300 43,900	51,800 84,500	0 700	0 34,700

Forest	Idaho Roadless Area	WLR	Primitive	BCR	GFRG	FPSA
Challis/ Sawtooth	Loon Creek	0 0	0 0	106,400 3,200	0 0	0 0
Challis/ Sawtooth	Railroad Ridge	0 0	7,900 0	0 41,900	0 0	0 1,000
Nez Perce	Adj to Gospel Hump	0	0	1,000	1,400	0
Nez Perce	Gospel Hump	0	0	9,800	36,500	0
Nez Perce	John Day	0	0	2,000	8,300	0
Nez Perce	Mallard	0	0	12,700	6,900	0
Nez Perce	North Fork Slate Creek	0	0	3,800	6,600	0
Payette	Cottontail Point/ Seven Devil Scenic	0	36,700	54,500	0	1,700
Payette	Hells Canyon/7 Devils Scenic	0	29,200	0	0	500
Payette	Patrick Butte	0	20,800	47,900	0	12,000
Salmon	Goldbug Ridge	0	7,200	4,500	1,100	0
Salmon	Haystack Mountain	0	0	0	12,100	0
Salmon	Jesse Creek	0	9,500	0	4,500	0
Salmon	Long Tom	0	13,400	800	4,300	1,900
Salmon	Napais	0	0	0	9,300	0
Salmon	Napoleon Ridge	0	0	9,900	38,400	3,100
Salmon	Perreau Creek	0	0	0	8,200	0
Salmon	Phelan	0	0	0	13,000	0
Salmon	Sal Mountain	0	0	0	14,000	0
Salmon	Sheepeater	0	0	6,500	27,000	1,900
Salmon	West Big Hole	0	26,000	43,900	11,600	2,900
Sawtooth	Huckleberry	0	0	5,200	0	2,500
Sawtooth	Pettit	0	0	2,100	0	1,000
Wallowa-Whitman	Big Canyon, Idaho	0	0	14,100	0	0
Wallowa-Whitman	Klopton Creek - Corral Creek, Idaho	0	0	21,300	0	0
TOTAL (acres)		**222,800**	**496,100**	**1,162,700**	**285,700**	**86,010**
Idaho Roadless Areas overlapping priority watersheds for steelhead trout, Chinook salmon, and bull trout						
Challis	Challis Creek	0	0	44,300	0	0
Challis/ Sawtooth	Loon Creek	0	0	106,400 3,200	0	0
Challis/ Salmon	Camas Creek	0 0	0 0	68,500 27,800	0 7,600	0 0
Challis/ Salmon	Lemhi Range	0 0	0 9,300	154,500 92,300	0 49,100	500 2,800
Challis/ Salmon	Taylor Mountain	0 0	0 0	16,800 21,600	0 25,000	0 0
Nez Perce	Dixie Summit - Nut Hill	0	0	4,000	8,000	1,000

Forest	Idaho Roadless Area	WLR	Primitive	BCR	GFRG	FPSA
Nez Perce	East Meadow Creek	0	95,600	500	200	500
Nez Perce	John Day	0	0	2,000	8,300	0
Nez Perce	Little Slate Creek	0	0	3,500	8,700	0
Nez Perce	Mallard	0	0	12,700	6,900	0
Nez Perce	North Fork Slate Creek	0	0	3,800	6,600	0
Nez Perce	Salmon Face	0	0	2,000	7,200	0
Nez Perce	West Meadow Creek	0	400	88,600	26,600	300
Nez Perce/ Payette	Rapid River	0 0	14,000 6,000	2,400 45,700	300 0	4,300 6,000
TOTAL (acres)		**0**	**125,300**	**700,600**	**154,500**	**15,400**
Idaho Roadless Areas that overlap large stronghold or strongholds for multiple species						
Boise	Deadwood	0	29,100	18,300	0	5,100
Boise	Peace Rock	0	137,400	47,200	0	7,100
Boise	Sheep Creek	0	67,400	0	0	3,000
Boise	Ten Mile/Black Warrior	76,500	37,000	0	1,100	4,200
Boise/ Challis	Red Mountain 916	85,900 0	11,800 0	11,400 4,900	600 0	700 0
Boise/ Payette	Needles	3,300 90,200	5,800 7,100	19,500 31,500	100 0	1,200 2,500
Boise/ Payette	Snowbank	0 0	34,200 1,500	0 0	0 0	0 0
Boise/ Sawtooth	Lime Creek	0 0	13,500 81,900	0 0	0 0	0 1,700
Boise/ Sawtooth	Smoky Mountains	0 0	41,700 191,900	0 102,600	100 0	1,100 9,600
Challis	Challis Creek	0	0	44,300	0	0
Challis	Seafoam	0	0	31,100	0	0
Challis	Squaw Creek	0	0	99,600	0	0
Challis/ Salmon	Camas Creek	0 0	0 0	68,500 27,800	0 7,600	0 0
Challis/ Salmon	Lemhi Range	0 0	0 9,300	154,500 92,300	0 49,100	500 2,800
Challis/ Sawtooth	Boulder-White Clouds	35,200 158,900	52,300 43,900	51,800 84,500	0 700	0 34,700
Challis/ Sawtooth	Loon Creek	0 0	0 0	106,400 3,200	0 0	0 0
Clearwater	Bighorn - Weitas	0	5,200	241,800	7,400	400
Clearwater	Hoodoo	111,300	100	26,400	16,100	0
Clearwater	Lochsa Face	0	27,400	40,500	0	8,100
Clearwater	North Lochsa Slope	0	29,800	75,500	6,600	5,800
Clearwater	Weir - Post Office Creek	0	0	6,600	14,900	500
Clearwater/ Idaho	Mallard-Larkins	65,500 76,100	18,700 4,000	20,600 36,600	21,500 1,200	0 11,500

Forest	Idaho Roadless Area	WLR	Primitive	BCR	GFRG	FPSA
Panhandle						
Clearwater/ Idaho Panhandle	Meadow Creek - Upper North Fork	0 0	0 4,100	42,800 0	400 400	0 1,500
Clearwater/ Nez Perce	Rackliff - Gedney	0	5,700 0	26,800 51,900	0	3,900 1,700
Idaho Panhandle/ Kootenai	Mt. Willard-Lake Estelle	0 0	8,100 19,600	25,500 2,800	0 800	1,400 200
Nez Perce/ Payette	Rapid River	0 0	14,000 6,000	2,400 45,700	300 0	4,300 6,000
Payette	Cottontail Point/ Pilot Peak	0	36,700	54,500	0	1,700
Payette	Cuddy Mountain	0	36,500	0	2,700	1,800
Payette	French Creek	0	12,000	76,000	100	700
Payette	Patrick Butte	0	20,800	47,900	0	12,000
Payette	Secesh	110,300	7,700	118,500	0	11,600
Sawtooth	Buttercup Mountain	0	56,300	0	0	400
TOTAL (acres)		**813,200**	**1,078,500**	**1,942,200**	**131,700**	**147,700**

Table A-4. Proposed Idaho Roadless Rule –Idaho Roadless Areas that provide important aquatic TES habitat, distribution by theme, in acres

Forest	Idaho Roadless Area	WLR	Primitive	BCR	GFRG	FPSA	SAHTS
Idaho Roadless Areas overlapping the range of four or five threatened or endangered fish species							
Boise/ Challis/ Sawtooth	Hanson Lakes	13,600 0 15,100	3,800 0 2,500	0 13,500 13,700	0 0 0	200 0 8,600	0 0 0
Boise/ Sawtooth	Smoky Mountains	0 0	41,800 191,900	0 102,600	0 0	1,100 9,600	0 0
Challis	Grouse Peak	0	0	9,000	0	0	0
Challis	Red Hill	0	0	15,000	0	0	0
Challis	Squaw Creek	0	0	99,600	0	0	0
Challis/ Salmon	Camas Creek	0 0	0 0	68,500 35,400	0 0	0 0	0 0
Challis/ Salmon	Lemhi Range	0 0	0 0	154,500 150,700	0 0	500 2,800	0 0
Challis/ Salmon	Taylor Mountain	0 0	0 0	16,800 46,600	0	0 0	0 0
Challis/ Sawtooth	Boulder-White Clouds	115,800 115,500	0 87,300	23,500 84,500	0 700	0 34,700	0 0
Challis/ Sawtooth	Loon Creek	0 0	0 0	106,400 3,200	0 0	0 0	0 0
Challis/ Sawtooth	Railroad Ridge	0	0	7,900	0	0	0

Forest	Idaho Roadless Area	WLR	Primitive	BCR	GFRG	FPSA	SAHTS
		0	0	41,900	0	1,000	0
Nez Perce	Adj to Gospel Hump	0	0	2,400	0	0	0
Nez Perce	Gospel Hump	0	0	46,300	0	0	0
Nez Perce	John Day	0	0	10,300	0	0	0
Nez Perce	Mallard	0	0	19,600	0	0	0
Nez Perce	North Fork Slate Creek	0	0	10,400	0	0	0
Payette	Cottontail Point/ Pilot Peak	0	36,700	54,500	0	1,700	0
Payette	Hells Canyon/ 7 Devils Scenic	0	29,200	0	0	500	0
Payette	Patrick Butte	0	20,800	47,900	0	12,000	0
Salmon	Goldbug Ridge	0	0	12,800	0	0	0
Salmon	Haystack Mountain	0	0	12,100	0	0	0
Salmon	Jesse Creek	0	0	14,000	0	0	0
Salmon	Long Tom	0	0	18,500	0	1,900	0
Salmon	Napais	0	0	9,300	0	0	0
Salmon	Napoleon Ridge	0	0	0	48,300	3,100	0
Salmon	Perreau Creek	0	0	0	8,200	0	0
Salmon	Phelan	0	0	13,000	0	0	0
Salmon	Sal Mountain	0	0	14,000	0	0	0
Salmon	Sheepeater	0	0	33,500	0	1,900	0
Salmon	West Big Hole	0	20,500	61,000	0	2,900	0
Sawtooth	Huckleberry	0	0	5,200	0	2,500	0
Sawtooth	Pettit	0	0	2,100	0	1,000	0
Wallowa-Whitman	Big Canyon, Idaho	0	0	14,100	0	0	0
Wallowa-Whitman	Klopton Creek - Corral Creek, Idaho	0	0	21,300	0	0	0
TOTAL (acres)		**260,000**	**434,500**	**1,415,600**	**57,200**	**86,000**	**0**
Idaho Roadless Areas overlapping priority watersheds for steelhead trout, Chinook salmon, and bull trout							
Challis	Challis Creek	0	0	44,300	0	0	0
Challis/ Salmon	Camas Creek	0 0	0 0	68,500 35,400	0 0	0 0	0 0
Challis/ Salmon	Lemhi Range	0 0	0 0	154,500 150,700	0 0	500 2,800	0 0
Challis/ Salmon	Taylor Mountain	0 0	0 0	16,800 46,600	0 0	0 0	0 0
Challis/ Sawtooth	Loon Creek	0 0	0 0	106,400 3,200	0 0	0 0	0 0
Nez Perce	Dixie Summit - Nut Hill	0	0	12,000	0	1,000	0
Nez Perce	East Meadow Creek	0	96,300	0	0	500	0
Nez Perce	John Day	0	0	10,300	0	0	0
Nez Perce	Little Slate Creek	0	0	12,200	0	0	0

Forest	Idaho Roadless Area	WLR	Primitive	BCR	GFRG	FPSA	SAHTS
Nez Perce	Mallard	0	0	19,600	0	0	0
Nez Perce	North Fork Slate Creek	0	0	10,400	0	0	0
Nez Perce	Salmon Face	0	0	9,200	0	0	0
Nez Perce	West Meadow Creek	0	0	115,600	0	300	0
Nez Perce/ Payette	Rapid River	0 0	16,700 51,700	0 0	0 0	4,300 6,000	0 0
TOTAL (acres)		**0**	**164,700**	**815,700**	**0**	**15,400**	**0**
Idaho Roadless Areas that overlap large stronghold or strongholds for multiple species							
Boise	Deadwood	0	29,100	18,300	0	5,100	0
Boise	Peace Rock	0	137,400	47,200	0	7,100	0
Boise	Sheep Creek	0	67,400	0	0	3,000	0
Boise	Ten Mile/Black Warrior	76,500	37,000	0	1,100	4,200	0
Boise/ Challis	Red Mountain 916	85,900 0	11,800 0	11,400 4,900	600 0	700 0	0 0
Boise/ Payette	Needles	3,300 90,200	5,800 7,100	19,500 31,500	100 0	1,200 2,500	0
Boise/ Payette	Snowbank	0 0	34,200 1,500	0 0	0 0	0 0	0 0
Boise/ Sawtooth	Lime Creek	0 0	13,500 81,900	0 0	0 0	0 1,700	0 0
Boise/ Sawtooth	Smoky Mountains	0	41,800 191,900	0 102,600	0	1,100 9,600	0
Challis	Challis Creek	0	0	44,300	0	0	0
Challis	Seafoam	0	0	31,100	0	0	0
Challis	Squaw Creek	0	0	99,600	0	0	0
Challis/ Salmon	Camas Creek	0 0	0 0	68,500 35,400	0 0	0 0	0 0
Challis/ Salmon	Lemhi Range	0 0	0 0	154,500 150,700	0 0	500 2,800	0 0
Challis/ Sawtooth	Boulder-White Clouds	115,800 115,500	0 87,300	23,500 84,500	0 700	0 34,700	0 0
Challis/ Sawtooth	Loon Creek	0 0	0 0	106,400 3,200	0 0	0 0	0 0
Clearwater	Bighorn - Weitas	0	0	246,400	0	400	8,000
Clearwater	Hoodoo	151,900	0	0	0	0	2,000
Clearwater	Lochsa Face	0	27,400	40,400	0	8,100	100
Clearwater	North Lochsa Slope	0	27,300	70,300	0	5,800	14,300
Clearwater	Weir - Post Office Creek	0	0	19,600	0	500	1,900
Clearwater/ Idaho Panhandle	Mallard-Larkins	59,100 49,500	0 0	67,200 46,200	0 100	0 11,500	0 22,100
Clearwater/ Idaho	Meadow Creek - Upper North Fork	0 0	0 0	43,200 4,500	0 0	0 1,500	0 0

Forest	Idaho Roadless Area	WLR	Primitive	BCR	GFRG	FPSA	SAHTS
Panhandle							
Clearwater/ Nez Perce	Rackliff - Gedney	0 0	0 0	32,500 51,900	0 0	3,900 1,700	0 0
Idaho Panhandle/ Kootenai	Mt. Willard-Lake Estelle	0 0	0 0	33,600 23,200	0 0	1,400 200	0 0
Nez Perce/ Payette	Rapid River	0	16,700 51,700	0	0	4,300 6,000	0
Payette	Cottontail Point/ Pilot Peak	0	36,700	54,500	0	1,700	0
Payette	Cuddy Mountain	0	36,500	0	2,700	1,800	0
Payette	French Creek	0	12,000	76,000	100	700	0
Payette	Patrick Butte	0	20,800	47,900	0	12,000	0
Payette	Secesh	110,300	7,700	118,500	0	11,600	0
Sawtooth	Buttercup Mountain	0	56,300	0	0	400	0
TOTAL (acres)		**858,000**	**1,040,800**	**2,013,000**	**5,400**	**147,700**	**48,400**

Table A-5. Modified Idaho Roadless Rule –Idaho Roadless Areas that provide important aquatic TES habitat, distribution by theme, in acres

Forest	Idaho Roadless Area	WLR	Primitive	BCR	BCR CPZ	GFRG	FPSA	SAHTS
Idaho Roadless Areas overlapping the range of four or five threatened or endangered fish species								
Boise/ Challis/ Sawtooth	Hanson Lakes	13,600 0 15,100	3,800 0 2,500	0 13,000 9,500	0 500 4,200	0 0 0	200 0 8,600	0 0 0
Boise/ Sawtooth	Smoky Mountains	0 0	41,800 191,900	0 76,800	0 25,800	0 0	0 9,600	0 0
Challis	Grouse Peak	0	0	9,000	0	0	0	0
Challis	Red Hill	0	0	15,000	0	0	0	0
Challis	Squaw Creek	0	0	83,900	15,700	0	0	0
Challis/ Salmon	Camas Creek	0 0	0 0	58,000 35,400	10,500 0	0 0	0 0	0 0
Challis/ Salmon	Lemhi Range	0 0	0 0	154,200 150,500	300 200	0 0	500 2,800	0 0
Challis/ Salmon	Taylor Mountain	0 0	0 0	13,500 46,600	3,300	0 0	0 0	0 0
Challis/ Sawtooth	Boulder-White Clouds	115,800 115,500	0 87,300	22,600 57,200	900 28,000	0 0	0 34,700	0 0
Challis/ Sawtooth	Loon Creek	0 0	0 0	99,400 2,700	7,000 500	0 0	0 0	0 0
Challis/ Sawtooth	Railroad Ridge	0 0	0 0	7,600 29,500	300 12,400	0 0	0 1,000	0 0
Nez Perce	Adj to Gospel Hump	0	0	2,400	0	0	0	0
Nez Perce	Gospel Hump	0	0	29,700	16,600	0	0	0

Forest	Idaho Roadless Area	WLR	Primitive	BCR	BCR CPZ	GFRG	FPSA	SAHTS
Nez Perce	John Day	0	0	10,300	0	0	0	0
Nez Perce	Mallard	0	0	16,000	3,600			
Nez Perce	North Fork Slate Creek	0	0	10,400	0	0	0	0
Payette	Cottontail Point/ Pilot Peak	0	36,700	45,200	9,300	0	1,700	0
Payette	Hells Canyon/ 7 Devils Scenic	0	29,200	0	0	0	500	0
Payette	Patrick Butte	0	20,800	43,700	4,200	0	12,000	0
Salmon	Goldbug Ridge	0	0	10,500	2,300	0	0	0
Salmon	Haystack Mountain	0	0	9,700	0	2,400	0	0
Salmon	Jesse Creek	0	0	11,400	2,600	0	0	0
Salmon	Long Tom	0	0	18,200	300	0	1,900	0
Salmon	Napais	0	0	0	0	9,300	0	0
Salmon	Napoleon Ridge	0	0	10,300	6,600	31,400	3,100	0
Salmon	Perreau Creek	0	0	0		8,200	0	0
Salmon	Phelan	0	0	0	0	13,000	0	0
Salmon	Sal Mountain	0	0	11,800	2,200	0	0	0
Salmon	Sheepeater	0	0	16,500	7,900	9,100	1,900	0
Salmon	West Big Hole	0	20,500	42,500	8,900	9,600	2,900	0
Sawtooth	Huckleberry	0	0	2,600	2,600	0	2,500	0
Sawtooth	Pettit	0	0	900	1,200	0	1,000	0
Wallowa-Whitman	Big Canyon, Idaho	0	0	9,500	4,600	0	0	0
Wallowa-Whitman	Klopton Creek - Corral Creek, Idaho	0	0	14,200	7,100	0	0	0
TOTAL (acres)		**260,000**	**434,500**	**1,200,200**	**189,600**	**83,000**	**84,900**	**0**
Idaho Roadless Areas overlapping priority watersheds for steelhead trout, Chinook salmon, and bull trout								
Challis	Challis Creek	0	0	43,200	1,100	0	0	0
Challis/ Salmon	Camas Creek	0 0	0 0	58,000 35,400	10,500 0	0 0	0 0	0 0
Challis/ Salmon	Lemhi Range	0 0	0 0	154,200 150,500	300 200	0 0	500 2,800	0 0
Challis/ Salmon	Taylor Mountain	0 0	0 0	13,500 46,600	3,300 0	0 0	0 0	0 0
Challis/ Sawtooth	Loon Creek	0 0	0 0	99,400 2,700	7,000 500	0 0	0 0	0 0
Nez Perce	Dixie Summit - Nut Hill	0	0	11,500	500	0	1,000	0
Nez Perce	East Meadow Creek	0	96,300	0	0	0	500	0
Nez Perce	John Day	0	0	10,300	0	0	0	0

Forest	Idaho Roadless Area	WLR	Primitive	BCR	BCR CPZ	GFRG	FPSA	SAHTS
Nez Perce	Little Slate Creek	0	0	12,200	0	0	0	0
Nez Perce	Mallard	0	0	16,000	3,600	0	0	0
Nez Perce	North Fork Slate Creek	0	0	10,400	0	0	0	0
Nez Perce	Salmon Face	0	0	9,200	0	0	0	0
Nez Perce	West Meadow Creek	0	0	112,500	3,100	0	300	0
Nez Perce/ Payette	Rapid River	16,700 51,700	0 0	0 0	0 0	0 0	4,300 6,000	0 0
TOTAL (acres)		**68,400**	**96,300**	**785,600**	**30,100**	**0**	**15,400**	**0**
Idaho Roadless Areas that overlap large stronghold or strongholds for multiple species								
Boise	Deadwood	0	29,100	17,800	500	0	5,100	0
Boise	Peace Rock	0	137,400	44,700	2,500	0	7,100	0
Boise	Sheep Creek	0	67,400	0	0	0	3,000	0
Boise	Ten Mile/Black Warrior	76,500	37,000	0	0	1,100	4,200	0
Boise/ Challis	Red Mountain 916	85,900 0	11,800 0	11,400 4,900	0 0	600 0	700 0	0 0
Boise/ Payette	Needles	3,300 90,200	5,800 7,100	19,500 31,500	0 0	100 0	1,200 2,500	0
Boise/ Payette	Snowbank	0 0	34,200 1,500	0 0	0 0	0 0	0 0	0 0
Boise/ Sawtooth	Lime Creek	0 0	13,500 81,900	0 0	0 0	0 0	0 1,700	0 0
Boise/ Sawtooth	Smoky Mountains	0 0	41,800 191,900	0 76,800	0 25,800	0 0	1,100 9,600	0
Challis	Challis Creek	0	0	43,200	1,100	0	0	0
Challis	Seafoam	0	0	20,500	10,600	0	0	0
Challis	Squaw Creek	0	0	83,900	15,700	0	0	0
Challis/ Salmon	Camas Creek	0 0	0 0	58,000 35,400	10,500 0	0 0	0 0	0 0
Challis/ Salmon	Lemhi Range	0 0	0 0	154,200 150,500	300 200	0 0	500 2,800	0 0
Challis/ Sawtooth	Boulder-White Clouds	115,800 115,500	0 87,300	22,600 57,200	900 28,000	0 0	0 34,700	0 0
Challis/ Sawtooth	Loon Creek	0 0	0 0	99,400 2,700	7,000 500	0 0	0 0	0 0
Clearwater	Bighorn - Weitas	0	0	246,400	0	0	400	8,000
Clearwater	Hoodoo	151,900	0	0	0	0	0	2,000
Clearwater	Lochsa Face	0	27,400	39,300	1,100	0	8,100	100
Clearwater	North Lochsa Slope	0	82,500	15,100	0	0	5,800	14,300
Clearwater	Weir - Post Office	0	0	19,600	0	0	500	1,900

Forest	Idaho Roadless Area	WLR	Primitive	BCR	BCR CPZ	GFRG	FPSA	SAHTS
	Creek							
Clearwater/ Idaho Panhandle	Mallard-Larkins	59,100 72,100	31,600 0	35,600 45,800	0 0	0 0	0 11,500	0 0
Clearwater/ Idaho Panhandle	Meadow Creek - Upper North Fork	0 0	42,800 0	400 4,500	0 0	0 0	0 1,500	0 0
Clearwater/ Nez Perce	Rackliff - Gedney	0 0	0 0	32,500 51,900	0 0	0 0	3,900 1,700	0 0
Idaho Panhandle/ Kootenai	Mt. Willard-Lake Estelle	0 0	0 0	32,000 23,200	1,600 0	0 0	1,400 200	0 0
Nez Perce/ Payette	Rapid River	16,700 51,700	0 0	0 0	0 0	0 0	4,300 6,000	0
Payette	Cottontail Point/ Pilot Peak	0	36,700	45,200	9,300	0	1,700	0
Payette	Cuddy Mountain	0	36,500	0	0	2,700	1,800	0
Payette	French Creek	0	12,000	72,100	3,900	100	700	0
Payette	Patrick Butte	0	20,800	43,700	4,200	0	12,000	0
Payette	Secesh	110,300	7,700	106,100	12,400	0	11,600	0
Sawtooth	Buttercup Mountain	0	56,300	0	0	0	400	0
TOTAL (acres)		**949,900**	**1,102,000**	**1,747,600**	**136,100**	**4,600**	**147,700**	**26,300**

Table A-6. 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	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)

Species (Range acres in Idaho)	Alternative	WLR	Primitive	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Chinook (10,512,900)	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)
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)
Sensitive - Fish								
Bonneville Cutthroat trout (1,162,780)	2001 Rule	0 (0.00)	0 (0.00)	269,400 (23.17)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	12,170 (1.05)	5,950 (0.51)	121,000 (10.41)	15,730 (1.35)	108,420 (9.32)	0 (0.00)	6,140 (0.53)
	Proposed Rule	12,170 (1.05)	5,950 (0.51)	121,140 (10.42)	15,730 (1.35)	108,290 (9.31)	0 (0.00)	6,140 (0.53)
	Modified Rule	12,170 (1.05)	5,950 (0.15)	154,860 (13.32)	16,700 (1.44)	73,600 (6.33)	0 (0.00)	6,140 (0.53)
Burbot (262,680)	2001 Rule	0 (0.00)	0 (0.00)	32,500 12.38)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

Species (Range acres in Idaho)	Alternative	WLR	Primitive	BCR	BCR CPZ	GFRG	SAHTS	FPSA
	Existing Plan	5,000 (1.90)	5,390 (2.05)	18,420 (7.01)	2,290 (0.87)	190 (0.07)	0 (0.00)	1,230 (0.47)
	Proposed Rule	870 (0.33)	0 (0.00)	23,100 (8.80)	290 (0.11)	7,025 (2.67)	0 (0.00)	1,230 (0.47)
	Modified Rule	880 (0.33)	0 (0.00)	24,250 (9.23)	330 (0.13)	5,840 (2.22)	0 (0.00)	1,230 (0.47)
Inland Redband Trout (9,306,100)	2001 Rule	0 (0.00)	0 (0.00)	3,976,300 (42.73)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	468,510 (5.03)	1,025,640 (11.02)	1,566,580 (16.83)	171,790 (1.85)	502,550 (5.40)	0 (0.00)	164,250 (1.77)
	Proposed Rule	488,240 (5.25)	975,040 (10.48)	1,957,290 (21.03)	194,880 (2.09)	110,680 (1.19)	12,830 (0.14)	164,250 (1.77)
	Modified Rule	560,410 (6.02)	1,031,160 (11.08)	1,806,730 (19.41)	193,360 (2.08)	147,460 (1.58)	8,830 (0.09)	164,250 (1.77)
Pacific Lamprey (1,875,000)	2001 Rule	0 (0.00)	0 (0.00)	304,500 (16.24)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	0 (0.00)	80,420 (4.29)	111,840 (5.96)	4,600 (0.25)	80,070 (4.27)	0 (0.00)	27,220 (1.45)
	Proposed Rule	0 (0.00)	63,110 (3.37)	165,970 (8.85)	8,770 (0.47)	33,360 (1.78)	5,720 (0.30)	27,220 (1.45)
	Modified Rule	0 (0.00)	85,070 (4.54)	146,360 (7.81)	10,510 (0.56)	29,260 (1.56)	5,720 (0.30)	27,220 (1.45)
Chinook Naturalized (3,589,700)	2001 Rule	0 (0.00)	0 (0.00)	656,800 (18.30)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	41,500 (1.16)	141,930 (3.95)	345,230 (9.62)	12,730 (0.35)	78,390 (2.18)	0 (0.00)	32,000 (0.89)
	Proposed Rule	46,570 (1.30)	138,820 (3.87)	394,230 (10.98)	14,015 (0.39)	0 (0.00)	26,100 (0.73)	32,000 (0.89)
	Modified Rule	46,570 (1.30)	193,980 (5.50)	339,080 (9.45)	14,015 (0.39)	0 (0.00)	26,115 (0.73)	32,030 (0.89)
Yellowstone Cutthroat	2001 Rule	0 (0.00)	0 (0.00)	929,540 (22.75)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

Species (Range acres in Idaho)	Alternative	WLR	Primitive	BCR	BCR CPZ	GFRG	SAHTS	FPSA
(4,089,770)	Existing Plan	130,020 (3.19)	74,910 (1.83)	391,660 (9.58)	52,630 (1.29)	221,370 (5.41)	0 (0.00)	51,710 (1.26)
	Proposed Rule	127,680 (3.12)	77,350 (1.89)	391,860 (9.58)	52,650 (1.29)	221,340 (5.41)	0 (0.00)	51,710 (1.26)
	Modified Rule	127,680 (3.12)	77,355 (1.89)	523,430 (12.80)	53,440 (1.31)	88,930 (2.17)	0 (0.00)	51,710 (1.26)
Westslope Cutthroat (17,742,260)	2001 Rule	0 (0.00)	0 (0.00)	4,951,700 (27.91)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	658,960 (3.71)	579,400 (3.27)	2,529,940 (14.26)	230,090 (1.30)	732,400 (4.13)	0 (0.00)	190,920 (1.08)
	Proposed Rule	702,310 (3.96)	337,910 (1.90)	3,258,290 (18.36)	287,740 (1.62)	97,910 (0.55)	59,200 (0.33)	190,920 (1.08)
	Modified Rule	788,710 (4.45)	431,860 (2.43)	3,069,140 (17.30)	286,800 (1.62)	138,880 (0.78)	37,080 (0.21)	190,920 (1.08)
Wood River Sculpin (1,083,380)	2001 Rule	0 (0.00)	0 (0.00)	359,900 (33.22)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	80,600 (7.44)	164,220 (15.16)	6,810 (0.63)	1,550 (0.14)	22,910 (2.11)	0 (0.00)	12,560 1.16)
	Proposed Rule	68,440 (6.32)	175,810 (16.23)	6,800 (0.63)	1,550 (0.14)	22,910 (2.11)	0 (0.00)	12,600 (1.16)
	Modified Rule	68,440 (6.32)	175,810 (16.23)	27,410 (2.53)	1,940 (0.18)	1,920 (0.18)	0 (0.00)	12,560 (1.16)
Sensitive - Amphibians								
Coeur d'Alene Salamander (8,479,500)	2001 Rule	0 (0.00)	0 (0.00)	1,953,500 (23.04)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	286,500 (3.38)	326,170 (3.85)	1,021,000 (12.04)	32,430 (0.38)	211,410 (2.49)	0 (0.00)	64,440 (0.76)
	Proposed Rule	313,080 (3.69)	111,630 (1.32)	13,370,180 (15.77)	52,090 (0.61)	20,190 (0.24)	55,060 (0.65)	64,440 (0.76)
	Modified Rule	335,820 (3.96)	259,980 (3.07)	1,190,380 (14.04)	52,270 (0.62)	17,570 (0.21)	32,940 (0.39)	64,440 (0.76)
Columbia Spotted Frog (36,864,500)	2001 Rule	0 (0.00)	0 (0.00)	8,209,700 (22.27)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)

Species (Range acres in Idaho)	Alternative	WLR	Primitive	BCR	BCR CPZ	GFRG	SAHTS	FPSA
	Existing Plan	1,274,760 (3.46)	1,597,080 (4.33)	3,687,640 (10.00)	322,400 (0.87)	872,070 (2.37)	0 (0.00)	292,030 (0.79)
	Proposed Rule	1,332,440 (3.61)	1,362,400 (3.70)	4,399,480 (11.93)	387,050 (1.05)	218,510 (0.59)	70,700 (0.19)	292,030 (0.79)
	Modified Rule	1,428,760 (3.88)	1,446,690 (3.92)	4,300,360 (11.67)	385,340 (1.05)	169,910 (0.46)	48,580 (0.13)	292,030 (0.83)
Western Toad (46,734,520)	2001 Rule	0 (0.00)	0 (0.00)	8,867,800 (18.97)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	1,256,800 (2.69)	1,707,210 (3.65)	3,805,660 (8.41)	370,850 (0.79)	1,223,760 (2.62)	0 (0.00)	326,830 (0.73)
	Proposed Rule	1,314,490 (2.81)	1,472,700 (3.15)	4,517,390 (9.67)	435,500 (0.93)	570,150 (1.22)	70,700 (0.15)	326,830 (0.70)
	Modified Rule	1,416,250 (3.03)	1,551,660 (3.32)	4,542,590 (9.72)	439,090 (0.94)	391,910 (0.84)	48,580 (0.10)	326,830 (0.70)
Management Indicator Species – not covered above								
Rainbow Trout (32,003,360)	2001 Rule	0 (0.00)	0 (0.00)	6,857,000 (21.43)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	988,480 (3.09)	1,322,100 (4.13)	2,877,660 (8.99)	318,320 (0.99)	925,810 (2.89)	0 (0.00)	273,570 (0.85)
	Proposed Rule	1,008,090 (3.15)	1,150,240 (3.59)	3,492,990 (10.91)	365,270 (1.14)	405,870 (1.27)	23,600 (0.07)	273,570 (0.85)
	Modified Rule	1,089,270 (3.40)	1,211,890 (3.79)	3,475,440 (10.86)	369,260 (1.15)	289,970 (0.91)	19,600 (0.06)	273,570 (0.85)

- *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 area*

Table A-7. Terrestrial threatened, endangered, candidate, and sensitive (TECS) species; management indicator species (MIS); and State status species with modeled habitat overlapping Idaho Roadless Areas

Species	Status [1]	Idaho Status [2]	Boise	Caribou	Challis	Clearwater	ID Panhandle	Nez Perce	Payette	Salmon	Sawtooth	Targhee	Wallow
Mammals													
Woodland caribou *(Rangifer tarandus)*	E	S1					M						
Gray wolf *(Canis lupus)*[3]	E/EN	S3	X	X	X	M	M	M	X	X	X	M	X
Canada lynx *(Lynx canadensis)*	T	S1	X		X	X	X	X	X	X	X	X	X
Grizzly bear *(Ursus arctos horribilis)*	T	S1				M	M	M				M	
Northern Idaho ground squirrel *(Spermophilius brunneus brunneus)*	T	S1	X					X	X				
Southern Idaho ground squirrel (*Spermophilus brunneus endemicus*) [4]	C	S1	X					X	X				
Fisher *(Martes pennanti)*	S	S1	X		X	X	X	M	X	X	X	M	X
Fringed myotis *(Myotis thysanodes)*	S	S2	X	X			X	X					X
Gray wolf *(Canis lupus)*	S	S3					M						
Grizzly bear, Yellowstone *(Ursus arctos horribilis)*	S	S3				X							
Northern bog lemming *(Synaptomys borealis)*	S	S1					X						
Pygmy rabbit *(Brachylagus idahoensis)*	S	S2	X	X	X					X	X	X	
Spotted bat *(Euderma maculatum)*	S	S3	X								X		
Townsend's big-eared bat *(Corynorhinus townsendii)*	S	S3	X				X	X				M	X
Wolverine *(Gulo gulo)*	S	S2	X	X	X	X	X	X	X	X	X	M	X
Elk *(Cervus canadensis)*	M		X	X	X	M	M	M	X	X	X	M	X
Pine Marten *(Martes americana)*	M		X	X	X	M	M	M	X	X	X	M	X
Moose *(Alces alces)*	M		X	X	X	M	M	M	X	X	X	X	X
Red squirrel *(Sciurus spp.)*	M		X	X	X	X	X	X	X	X	X	M	X
White-tailed deer *(Odocoileus virginianus)*	M		X	X	X	M	M	X	X	X	X	X	X
Birds													
Yellow billed cuckoo (*Coccyzus americanus occidentalis*) [5]	C	S2B	X										
American peregrine falcon *(Falco peregrinus anatum)*	S	S2B	X	X	X	M	X	M	X	X	X	M	X
Bald eagle *(Haliaeetus leucocephalus)*	S	S3, S4	X	X	X	M	M	M	X	X	X	M	X
Black-backed woodpecker *(Picoides arcticus)*	S	S3	X		X	X	X	X	X	X	X	M	X
Black swift *(Cypseloides niger)*	S	S1B	X		X	X	X	X	X	X	X		X
Boreal owl *(Aegolius funereus)*	S	S1	X	X	X	X	X	X	X	X	X	M	X
Columbian sharp-tailed grouse *(Tympanuchus phasianellus)*	S	S1	X	X			X		X		X	X	
Common loon *(Gavia immer)*	S	S1B S2N	X	X	X		X		X	X	X	M	

Species	Status [1]	Idaho Status [2]	Boise	Caribou	Challis	Clearwater	ID Panhandle	Nez Perce	Payette	Salmon	Sawtooth	Targhee	Wallow
Flammulated owl *(Otus flammeoulus)*	S	S3B	X	X	X	X	X	X	X	X	X	M	X
Great gray owl *(Strix nebulosa)*	S	S3	X	X	X	X	X	X	X	X	X	M	X
Greater sage grouse *(Centrocercus urophasianus)*	S	S2		M	M					M	M		
Harlequin duck *(Histrionicus histrionicus)*	S	S1B		X		X	X	X		X	X	M	
Mountain plover *(Charadrius montanus)*	S	SNA											
Mountain quail *(Oreortyx pictus)*	S	S1	X		X	X	X	X	X	X	X		X
Northern goshawk *(Accipiter gentiles)*	S	S3	X	M	X	M	M	M	X	X	X	M	X
Pygmy nuthatch *(Sitta pygmaea)*	S	S1	X		X	X	X	X	X	X	X		X
Three-toed woodpecker *(Picoides tridactylus)*	S	S2	X		X	X	X	X	X	X	X	M	X
Trumpeter swan *(Cygnus buccinator)*	S	S1B S2		X								M	
White-headed woodpecker *(Picoides alborlarvatus)*	S	S2	M		X	X	X	X	X	X	X		X
Belted kingfisher *(Megaceryle alcyon)*	M		X	X	X	M	X	X	M	X	X	X	X
Downy woodpecker *(Picoides pubescens)*	M		X	X	X	X	X	X	X	X	X	M	
Hairy woodpecker *(Picoides villosus)*	M		X	X	X	X	X	X	X	X	X	M	X
Northern flicker *(Colaptes auratus)*	M		X	X	X	X	X	X	X	X	X	M	X
Pileated woodpecker *(Dryocopus pileatus)*	M		M		M	M	M	M	M	M	M	X	X
Red-napped sapsucker *(Sphyrapicus nuchalis)*	M		X	X	X	X	X	X	X	X	X	M	X
Williamson's sapsucker (*Sphyrapicus thyroideus*)	M		X	X	X	X	X	X	X	X	X	M	X
Reptiles													
Ringneck Snake *(Diadophis punctatus)*	S	S2	X	X				X					X

- *[1] Status*
- *[2] State Status*
- *[3] The gray wolf is listed as endangered north of Interstate 90 and a non-essential, experimental population south of Interstate 90.*
- *[4] Currently there no known populations or occurrences on National Forest System lands in Idaho (personal communication, August 8, 2008).*
- *[5] Only includes occurrences for yellow-billed cuckoo.*
- ***E** = Federal endangered; **EN** = experimental, nonessential population; **T** = Federal threatened; **S** = Forest Service sensitive; **X** = known occurrences and/or range overlaps Idaho Roadless Area; **M** = known occurrences and/or range overlaps Idaho Roadless Area and is also a MIS on that forest.*
- ***S1**=State critically imperiled: at high risk because of extreme rarity, rapidly declining numbers, or other factors that make it particularly vulnerable to extirpation in the State.*
- ***S1B**=breeding: conservation status refers to the breeding population of the species.*
- ***S2B**=non-breeding: conservation status refers to the non-breeding population of the species.*
- ***S2**=State imperiled: at risk because of restricted range, few populations, rapidly declining numbers, or other factors that make it vulnerable to range-wide extinction or extirpation.*
- ***S3**=State vulnerable: at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to range-wide extinction or extirpation. SNA=not applicable: a conservation status rank is not applicable because the species is not a suitable target for conservation.*

Table A-8. Predicted distribution and occurrences of endangered, threatened, and candidate terrestrial wildlife species in Idaho Roadless Areas

Species	State ranking/ species of greatest conservation need	Habitat description	Acres of predicted distribution[1]		Percent of predicted distribution within Idaho Roadless Areas	Known occurrences of species in Idaho Roadless Areas
			In Idaho	In Idaho Roadless Areas		
Endangered						
Gray wolf (Canis lupus)	S3-Yes	Variety of habitats at various elevations with abundant ungulate prey	231,520 north of I-90	13,400	6	Two documented wolf activity/packs roadless areas north of I-90.
Woodland caribou *(Rangifer tarandus)*	S1-Yes	Mature forests dominated by subalpine fir and Engelmann spruce	446,300	128,500	29	One known occurrence in one roadless area of the Idaho Panhandle National Forest
Threatened						
Canada lynx *(Lynx canadensis)*	S1-Yes	Montane and subalpine mixed coniferous forests of lodgepole, typically above 4,000 feet with deep snow and abundant snowshoe hares	12,364,800	3,741,000	30	39 Idaho Roadless Areas with known lynx occurrences on 10 national forests
Grizzly bear *(Ursus arctos horribilis)*[2]	S1-Yes	Variety of habitats at various elevations at different times of the year	1,369,078	276,200	20	Known occurrences in four roadless areas on the Idaho Panhandle National Forest
Northern Idaho ground squirrel *(Spermophilius brunneus brunneus)*	S1-Yes	Dry mountain meadows of grasses and forbs surrounded by Ponderosa pine or Douglas-fir at elevations between 3,280 and 5,600 feet	847,300	220,900	26	Occurs on the Payette National Forest. Known locations are not in Idaho Roadless Areas.
Gray wolf (Canis lupus) 10j experimental, nonessential population	S3-Yes	Variety of habitats at various elevations with abundant ungulate prey	16,423,400 south of I-90	5,655,700	34	80 documented wolf activity/packs in roadless areas south of I-90.

Species	State ranking/ species of greatest conservation need	Habitat description	Acres of predicted distribution[1]		Percent of predicted distribution within Idaho Roadless Areas	Known occurrences of species in Idaho Roadless Areas
			In Idaho	In Idaho Roadless Areas		
Candidates						
Yellow-billed cuckoo *(Coccyzus americanus)*	S1-Yes	Riparian habitats, willow and cottonwood forests with dense understory	488,400	128,900	26	One known occurrence in the Oxford Mountain Roadless Area on the Caribou National Forest.
Southern Idaho ground squirrel *(Speermophilus burnneus endemicus)*	S1-Yes	Rolling foothills and valleys in low-elevation shrub-steppe composed ideally of native shrubs and forms	Not Available	Not Available	NA	None[3]

- *[1]Predicted Distribution information is approximate and derived from the Wildlife Habitat Relationships Models, A Gap Analysis of Idaho: Final Report. Idaho Cooperative Fish and Wildlife Research Unit, Moscow, ID (Scott et al. 2002).*
- *[2]Only reports acres for the federally-listed northern population of grizzly bears; does not include the Yellowstone DPS.*
- *[3]Based on Wolmack (personal communication, August 8, 2008).*
- *S1=State Critically imperiled: at high risk because of extreme rarity, rapidly declining numbers, or other factors that make it particularly vulnerable extirpation in the state.*
- *S1B=Breeding: conservation status refers to the breeding population of the species.*
- *S2B=Nonbreeding: conservation status refers to the non-breeding population of the species.*
- *S2=State Imperiled: at risk because of restricted range, few populations, rapidly declining numbers or other factors that make it vulnerable to rangewide extinction or extirpation.*
- *S3=State Vulnerable: at moderate risk because of restricted range, relatively few populations, recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation.*
- *SNA=Not Applicable: a conservation status rank is not applicable because the species is not a suitable target for conservation activities*

Table A-9. 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

Wolf pack	Type	MIRR theme						
		WLR	Prim.	BCR	BCR CPZ	GFRG	SAHTS	FPSA
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
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

Wolf pack	Type	MIRR theme						
		WLR	Prim.	BCR	BCR CPZ	GFRG	SAHTS	FPSA
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
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

Wolf pack	Type	MIRR theme						
		WLR	Prim.	BCR	BCR CPZ	GFRG	SAHTS	FPSA
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*

Table A-10. Caribou seasonal habitats[1] within the South Selkirk Ecosystem caribou recovery area

	Total in recovery area	Overlap with IRA (acres)	% of total habitat in IRA
Calving			
High	78,791	12,729	16.16%
Moderate	324,559	56,203	17.32%
Low[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	11,883	16.02%
Moderate	210,488	39,412	18.72%
Low	524,486	67,181	12.81%
Total	***809,132***	***118,477***	***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'.*

Table A-11. 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.*

Table A-12. Species-specific habitat or recovery areas for woodland caribou, gray wolf, grizzly bear, Canada lynx, northern Idaho ground squirrel, and yellow-billed cuckoo by alternative. Figures are rounded to nearest 100.

Species (status) (total acres)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
		----------Acres (percent of total acres)----------						
Woodland Caribou (E) Recovery Area (959,900 ac)[1]	2001 Rule	0 (0.0)	0 (0.0)	131,900 (13.7)	0 (0.0)	0 (0.0)	0 (0.0)	0
	Existing Plan	38,800 (4.1)	26,700 (2.8)	51,600 (5.4)	0 (0.0)	500 (0.05)	0 (0.0)	14,300 (1.5)
	Proposed Rule	43,800 (4.6)	10,700 (1.1)	58,400 (6.1)	0 (0.0)	4,700 (0.5)	0 (0.0)	14,300 (1.5)
	Modified Rule	54,500 (5.7)	0 (0.00)	58,500 (6.1)	0 (0.0)	4,600 (0.5)	0 (0.0)	14,300 (1.5)
Gray wolf[2] (E) north of I-90	2001 Rule	0 (0.0)	0 (0.0)	13,400 (5.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	0 (0.0)	0 (0.0)	3,000 (1.3)	700(.31)	9,500 (4.1)	0 (0.0)	70 (.03)
	Proposed Rule	0 (0.0)	0 (0.0)	9,700 (4.2)	3,600 (1.6)	0 (0.0)	0 (0.0)	70 (.03)
	Modified Rule	0 (0.0)	0 (0.0)	9,700 (4.2)	3,600 (1.6)	0 (0.0)	0 (0.0)	70 (.03)
Gray wolf[2] (EN) south of I-90	2001 Rule	0 (0.0)	0 (0.0)	5,655,700 (34)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	860,700 (5.2)	1,288,700 (7.9)	2,494,700 (15.2)	211,800 (1.3)	605,700 (3.7)	0 (0.0)	194,100 (1.2)
	Proposed Rule	887,200 (5.4)	1,156,900 (7.0)	3,007,100 (18.3)	253,100 (1.5)	87,800 (.5)	69,500 (0.5)	194,100 (1.2)
	Modified Rule	969,500 (5.9)	1,243,800 (7.6)	2,831,800 (17.2)	251,200 (1.5)	117,100 (.71)	48,300 (.29)	194,100 (1.2)
Grizzly bear[3] core habitat in the Cabinet-Yaak (T) (929,600 ac)	2001 Rule	0 (0.0)	0 (0.0)	108,900 (11.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	9,400 (1.0)	45,500 (4.9)	49,600 (5.3)	0 (0.0)	1,400 (0.2)	0 (0.0)	2,900 (0.3)
	Proposed Rule	10,300 (1.1)	0 (0.0)	93,200 (10.0)	0 (0.0)	2,400 (0.3)	0 (0.0)	2,900 (0.3)
	Modified Rule	10,300 (1.1)	0 (0.0)	83,000 (9.0)	11,700 (1.3)	1,000 (0.1)	0 (0.0)	2,900 (0.3)
Grizzly bear[3] core habitat in the Selkirk (T)	2001 Rule	0 (0.0)	0 (0.0)	136,900 (42.1)	0 (0.0)	0 (0.00)	0 (0.0)	0 (0.0)
	Existing Plan	37,400 (11.0)	29,300 (9.0)	51,300 (15.8)	0 (0.0)	4,500 (1.4)	0 (0.0)	14,400 (4.4)

Species (status) (total acres)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
(325,500 ac)	Proposed Rule	44,200 (13.6)	9,900 (3.1)	60,400 (18.60)	0 (0.0)	8,000 (2.5)	0 (0.0)	14,400 (4.4)
	Modified Rule	54,100 (16.6)	0 (0.0)	59,900 (18.4)	500 (0.1)	8,000 (2.4)	0 (0.0)	14,400 (4.4)
Mapped lynx habitat (T) (7,354,800 ac)[4]	2001 Rule	0 (0.0)	0 (0.0)	3,503,400 (47.6)	0 (0.0)	0	0 (0.0)	0
	Existing Plan	504,000 (6.9)	677,000 (9.2)	1,710,300 (23.2)	0 (0.0)	496,700 (6.8)	0 (0.0)	115,300 (1.6)
	Proposed Rule	516,100 (7.0)	588,500 (8.0)	2,113,000 (28.7)	0 (0.0)	125,900 (1.7)	44,400 (0.6)	115,300 (1.6)
	Modified Rule	549,100 (7.5)	649,000 (8.8)	1,885,000 (25.6)	152,400 (2.1)	115,800 (1.6)	36,500 (0.5)	115,300 (1.6)
Northern Idaho ground squirrel (T) probable historic distribution (843,400)	2001 Rule	0 (0.0)	0 (0.0)	47,300 (5.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.00)
	Existing Plan	0 (0.0)	42,800 (5.0)	0 (0.0)	0 (0.0)	2,700 (0.3)	0 (0.0)	1,800 (0.2)
	Proposed Rule	0(0.0)	42,800 (5.1)	1.5 (0.0)	0 (0.0)	2,700 (0.3)	0 (0.0)	1,800 (0.2)
	Modified Rule	30 (0.0)	42,800 (5.1)	0 (0.0)	1.5 (0.0)	2,700 (0.3)	0 (0.0)	1,800 (0.2)
Yellow-billed cuckoo (C) predicted habitat (488,400)	2001 Rule	0 (0.00)	0 (0.00)	128,900 (26.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	6,700 (1.4)	12,500 (2.6)	68,000 (13.9)	0 (0.0)	33,800 (6.9)	0 (0.0)	7,900 (1.6)
	Proposed Rule	6,700 (1.4)	12,500 (2.6)	68,000 (13.9)	0 (0.0)	33,800 (6.9)	0 (0.0)	7,900 (1.6)
	Modified Rule	6,700 (1.4)	12,500 (2.6)	78,200 (16.0)	9,600 (2.0)	14,000 (2.9)	0 (0.0)	7,900 (1.6)

- *[1]Total area encompassed by the South Selkirk Recovery Area for woodland caribou, including Canada.*
- *[2] For gray wolves, percentages are those of the total acres occurring either north or south of I-90 rather than of the Statewide total.*
- *[3]Totals for core habitat, encompass all core within the entire recovery ecosystems (i.e., Cabinet-Yaak and Selkirk) in the U.S. portion of the range.*
- *[4]Total mapped lynx habitat in Idaho.*
- *WLR – Wild Land Recreation; PRIM – Primitive; 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.*
- *E – endangered; EN – non-essential experimental; T – threatened; C – candidate species under the Endangered Species Act.*

Table A-13. Acres and percentage of each sensitive and MIS species' predicted distributions that overlap with Idaho Roadless Areas for each theme and alternative*. Figures are rounded to nearest 100.

Species (NFS acres in Idaho)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Sensitive species								
American peregrine falcon (34,165,500)	2001 Rule	0 (0.0)	0 (0.0)	7,716,500 (22.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	1,007,400 (3.0)	1,661,800 (4.9)	3,692,300 (10.8)	0 (0.0)	1,076,200 (3.2)	0 (0.00)	278,800 (0.8)
	Proposed Rule	1,044,000 (3.0)	1,565,900 (4.6)	4,225,400 (12.3)	0 (0.0)	581,400 (1.7)	21,000(0.1)	278,800 (0.8)
	Modified Rule	1,112,400 (3.3)	1,507,200 (4.4)	3,996,400 (11.7)	414,000 (1.2)	386,600 (1.1)	21,000 (0.1)	278,800 (0.8)
Bald eagle (9,067,100)	2001 Rule	0 (0.00)	0 (0.00)	2,704,900 (29.8)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	351,600 (3.9)	567,600 (6.7)	1,268,100 (14.0)	0 (0.00)	343,500 (3.8)	0 (0.00)	174,200 (1.9)
	Proposed Rule	357,900 (4.0)	472,500 (5.2)	1,572,600 (17.3)	0 (0.00)	105,000 (1.2)	22,600 (0.3)	174,200 (1.9)
	Modified Rule	391,600 (4.3)	499,000 (5.5)	1,396,000 (15.0)	144,000 (1.6)	87,000 (1.0)	13,000 (0.1)	174,200 (1.9)
Black swift (11,371,600)	2001 Rule	0 (0.00)	0 (0.00)	3,280,600 (28.9)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)
	Existing Plan	468,800 (4.1)	468,300 (4.1)	1,828,000 (16.1)	0 (0.00)	391,200 (3.4)	0 (0.00)	124,400 (1.1)
	Proposed Rule	508,000 (4.5)	297,500 (2.6)	2,268,400 (20.0)	0 (0.00)	19,700 (0. 2)	63,000 (0.6)	124,400 (1.1)
	Modified Rule	587,900 (5.2)	353,600 (3.1)	1,960,000 (17.2)	184,800 (1.6)	25,100 (0.2)	44,900 (0.4)	124,400 (1.1)
Black-backed woodpecker (16,780,100)	2001 Rule	0 (0.0)	0 (0.0)	5,223,900 (31.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	716,600 (4.3)	1,107,100 (6.6)	2,577,200 (15.4)	0 (0.0)	643,700 (3.8)	0 (0.0)	179,300 (1.1)
	Proposed Rule	743,200 (4.4)	925,700 (5.5)	3,228,200 (19.2)	0 (0.0)	84,200 (0.5)	63,200 (0.4)	179,300 (1.1)
	Modified Rule	824,400 (4.9)	977,800 (5.8)	2,813,300 (16.8)	259,200 (1.5)	125,900 (0.8)	44,000 (0.3)	179,300 (1.1)

Species (NFS acres in Idaho)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Boreal owl (18,584,500)	2001 Rule	0 (0.0)	0 (0.0)	6,111,900 (32.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	841,900 (4.5)	1,196,500 (6.4)	3,012,000 (16.2)	0 (0.0)	840,200 (4.5)	0 (0.0)	221,300 (1.2)
	Proposed Rule	871,200 (4.7)	1,005,300 (5.4)	3,679,900 (19.8)	0 (0.0)	270,000 (1.5)	64,200 (0.4)	221,300 (1.2)
	Modified Rule	952,700 (5.1)	1,060,000 (5.7)	3,305,800 (17.8)	302,000 (1.6)	225,400 (1.2)	44,700 (0.3)	221,300 (1.2)
Columbian sharp-tailed grouse (8,771,700)	2001 Rule	0 (0.0)	0 (0.0)	531,900 (6.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	7,700 (0.1)	39,600 (0.5)	286,000 (3.3)	0 (0.0)	179,100 (2.0)	0 (0.0)	19,500 (0.2)
	Proposed Rule	7,600 (0.1)	38,700 (0.5)	287,800 (3.3)	0 (0.0)	178,300 (2.0)	0 (0.0)	19,500 (0.2)
	Modified Rule	7,700 (0.1)	38,600 (0.5)	310,600 (3.5)	37,500 (0.4)	118,000 (1.4)	0 (0. 0)	19,500 (0.2)
Common loon (566,700)	2001 Rule	0 (0.0)	0 (0.0)	13,800 (2.4)	0 (0.0)	0 (0.00)	0 (0.0)	0 (0.0)
	Existing Plan	5,100 (0.9)	2,500 (0.4)	4,800 (1.0)	0 (0.0)	100 (0.01)	0 (0.0)	1,400 (0.2)
	Proposed Rule	4,900 (0.9)	2,000 (0.4)	5,500 (1.0)	0 (0.0)	100 (0.01)	0 (0.0)	1,400 (0.2)
	Modified Rule	5,100 (0.9)	1,800 (0.3)	5,200 (0.9)	300 (0.1)	100 (0.01)	0 (0. 0)	1,400 (0.2)
Fisher (11,889,600)	2001 Rule	0 (0.0)	0 (0.0)	3,601,600 (30.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	484,400 (4.1)	840,000 (7.1)	1,726,900 (14.5)	0 (0.0)	417,000 (3.5)	0 (0.0)	133,300 (1.1)
	Proposed Rule	486,300 (4.1)	671,800 (5.6)	2,173,900(18.3)	0 (0.0)	72,500 (0.6)	63,800 (0.5)	133,300 (1.1)
	Modified Rule	546,200 (4.6)	745,500 (6.3)	1,851,700 (15.6)	187,300 (1.6)	93,300 (0.8)	44,200 (0.4)	133,300 (1.1)
Flammulated owl (9,136,900)	2001 Rule	0 (0.0)	0 (0.0)	2,395,300 (26.2)	0 (0.0)	0 (0.00)	0 (0.0)	0 (0.0)
	Existing Plan	233,800 (2. 6)	527,800 (5.8)	1,091,900 (12.0)	0 (0.0)	435,600 (4.8)	0 (0.0)	106,200 (1.2)
	Proposed Rule	242,600 (2.7)	477,000 (5.2)	1,351,600 (14.87	0 (0.0)	201,800 (2.2)	16,000 (0.2)	106,200 (1.2)
	Modified Rule	276,300 (3.0)	490,900 (5.4)	1,235,700 (13.5)	150,000 (1.6)	123,800 (1.4)	12,500 (0.1)	106,200 (1.2)

Species (NFS acres in Idaho)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Fringed myotis (3,621,800)	2001 Rule	0 (0.0)	0 (0.0)	122,900 (3.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	0 (0.0)	57,800 (1.6)	51,500 (1.4)	0 (0.0)	6,300 (0.2)	0 (0.0)	7,300 (0.2)
	Proposed Rule	0 (0.0)	49,900 (1.4)	65,700 (1.8)	0 (0.0)	0 (0.00)	0 (0.0)	7,300 (0.2)
	Modified Rule	0 (0.0)	49,900 (1.4)	50,800 (1.4)	14,900 (0.4)	0 (0.0)	0 (0.0)	7,300 (0.2)
Great gray owl (18,909,400)	2001 Rule	0 (0.00)	0 (0.0)	5,940,700 (31.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	856,800 (4.5)	1,025,700 (5.4)	2,954,700 (15.6)	0 (0.0)	876,400 (4.6)	0 (0. 0)	227,200 (1.2)
	Proposed Rule	885,300 (4.6)	834,000 (4.4)	3,602,500 (19.0)	0 (0.0)	326,100 (1.7)	65,600 (0.35)	227,200 (1.2)
	Modified Rule	972,100 (5.1)	887,600 (4.7)	3,250,100 (17.2)	305,600 (1.6)	252,500 (1.3)	45,600 (0.2)	227,200 (1.2)
Greater sage grouse (21,424,200)	2001 Rule	0 (0.0)	0 (0.0)	1,294,900 (6.0)	0 (0.0)	0 (0.00)	0 (0.0)	0 (0.0)
	Existing Plan	104,600 (0.5)	284,000 (1.3)	636,200 (3.0)	0 (0.0)	237,400 (1.1)	0 (0.0)	32,700 (0.2)
	Proposed Rule	132,400 (0.6)	261,100 (1.2)	665,800 (3.1)	0 (0.0)	202,900 (1.0)	0 (0.0)	32,700 (0.2)
	Modified Rule	133,800 (0.6)	259,800 (1.2)	675,200 (3.2)	78,300 (0.4)	115,200 (0.5)	0 (0. 0)	32,700 (0.2)
Grizzly bear, Yellowstone (640,400)	2001 Rule	0 (0.0)	0 (0.0)	61,200 (9.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	13,200 (2.1)	28,500 (4.4)	14,000 (2.2)	0 (0.0)	0 (0.0)	0 (0.0)	5,500 (0.9)
	Proposed Rule	10,700 (1.7)	30,800 (4.8)	14,200 (2.2)	0 (0.0)	0 (0.0)	0 (0.0)	5,500 (0.9)
	Modified Rule	10,700 (1.7)	31,000 (4.8)	5,300 (0.8)	6,500(1.0)	2,200 (0.4)	0 (0. 0)	5,500 (0.9)
Harlequin duck (1,560,100)	2001 Rule	0 (0.0)	0 (0.0)	420,800 (27.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	53,600 (3.4)	60,600 (3.9)	222,600 (14.3)	0 (0.0)	54,200 (3.5)	0 (0.0)	29,700 (1.9)
	Proposed Rule	55,700 (3.6)	30,500 (2.0)	273,200 (17.5)	0 (0.0)	19,100 (1.2)	12,500 (0.8)	29,700 (1.9)
	Modified Rule	60,100 (3.9)	52,700 (3.4)	246,600 (15.8)	15,100 (1.0)	7,600 (0.5)	8,800 (0.6)	29,700 (1.9)

Species (NFS acres in Idaho)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Mountain quail (6,654,300)	2001 Rule	0 (0.0)	0 (0.0)	697,200 (10.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	114,600 (1.8)	335,300 (5.0)	187,600 (2.8)	0 (0.0)	17,500 (0.3)	0 (0.0)	42,200 (0.6)
	Proposed Rule	116,600 (1.8)	360,700 (5.4)	172,900 (2.6)	0 (0.0)	4,700 (0.0)	0 (0.0)	42,200 (0.6)
	Modified Rule	156,700 (2.4)	321,800 (4.8)	150,100 (2.3)	21,700 (0.3)	4,700 (0.0)	0 (0. 0)	42,200 (0.6)
Northern bog lemming (547,900)	2001 Rule	0 (0.0)	0 (0.0)	132,200 (24.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	28,200 (5.2)	23,700 (4.3)	57,700 (10.5)	(0.0)	8,800 (1.6)	0 (0.0)	13,700 (2.5)
	Proposed Rule	36,800 (6.7)	6,000 (1.1)	63,700 (11.6)	0 (0.0)	12,100 (2.2)	0 (0.0)	13,700 (2.5)
	Modified Rule	42,700 (7.8)	0 (0.0)	62,700 (11.4)	2,100 (0.4)	11,000 (2.0)	0 (0.0)	13,700 (2.5)
Northern goshawk (19,822,600)	2001 Rule	0 (0.0)	0 (0.0)	6,436,900 (32.5)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	876,900 (4.4)	1,229,400 (6.2)	3,180,200 (16.0)	0 (0.0)	917,500 (4.6)	0 (0.0)	232,800 (1.2)
	Proposed Rule	905,100 (4.6)	1,037,800 (5.2)	3,850,600 (19.4)	0 (0.0)	346,200 (1.8)	64,400 (0.3)	232,800 (1.2)
	Modified Rule	986,800 (5.0)	1,094,000 (5.5)	3,511,800 (17.7)	310,900 (1.6)	255,700 (1.3)	44,800 (0.2)	232,800 (1.2)
Pygmy nuthatch (5,018,652)	2001 Rule	0 (0.0)	0 (0.0)	1,107,800 (22.1)	0 (0.0)	0 (0.0)	0 (0.00)	0 (0.0)
	Existing Plan	99,200 (2.0)	308,900 (6.2)	464,200 (9.3)	0 (0.0)	176,600 (3.5)	0 (0.00)	58,900 (1.2)
	Proposed Rule	103,600 (2.1)	281,100 (5.6)	627,600 (12.5)	0 (0.0)	35,600 (0.7)	1,000 (0.02)	58,900 (1.2)
	Modified Rule	127,400 (2.5)	259,700 (5.2)	526,800 (10.5)	92,600 (1.9)	41,600 (0.8)	900 (0.02)	58,900 (1.2)
Pygmy rabbit (13,948,900)	2001 Rule	0 (0.0)	0 (0.0)	961,500 (6.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	40,000 (0.3)	182,300 (1.3)	526,400 (3.8)	0 (0.0)	201,500 (1.4)	0 (0.0)	11,200 (0.1)
	Proposed Rule	71,100 (0.5)	158,200 (1.1)	550,400 (4.0)	0 (0.0)	170,700 (1.2)	0 (0.0)	11,200 (0.1)
	Modified Rule	71,100 (0.5)	158,200 (1.1)	590,000 (4.2)	41,000 (0.3)	90,000 (0.7)	0 (0.0)	11,200 (0.1)

Species (NFS acres in Idaho)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Ringneck snake (1,533,200)	2001 Rule	0 (0.0)	0 (0.0)	97,800 (6.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	1,200 (0.1)	4,600 (0.3)	52,600 (3.4)	0 (0.0)	35,800 (2.3)	0 (0.0)	3,600 (0.2)
	Proposed Rule	1,200 (0.1)	4,700 (0.3)	54,000 (3.5)	0 (0.0)	34,400 (2.2)	0 (0.0)	3,600 (0.2)
	Modified Rule	1,200 (0.1)	4,600 (0.3)	49,400 (3.2)	16,600 (1.1)	22,400 (1.5)	0 (0.0)	3,600 (0.2)
Spotted bat (5,755,800)	2001 Rule	0 (0.0)	0 (0.0)	109,600 (1.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	0 (0.0)	52,200 (0.9)	16,300 (0.3)	0 (0.0)	40,800 (0.7)	0 (0.0)	400 (0.0)
	Proposed Rule	0 (0.0)	52,200 (0.9)	16,300 (0.3)	0 (0.0)	40,800 (0.7)	0 (0.0)	400 (0.0)
	Modified Rule	0 (0.0)	52,200 (0.9)	16,300 (0.3)	0 (0.0)	40,800 (0.7)	0 (0.0)	400 (0.0)
Three-toed woodpecker (7,596,100)	2001 Rule	0 (0.0)	0 (0.0)	2,639,600 (34.8)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	368,100 (4.8)	612,300 (8.0)	1,269,000 (16.7)	0 (0.0)	306,900 (4.0)	0 (0.0)	83,500 (1.1)
	Proposed Rule	379,200 (5.0)	538,900 (7.0)	1,547,800 (20.4)	0 (0.0)	53,800 (0.7)	36,400 (0.5)	83,500 (1.1)
	Modified Rule	422,700 (5.6)	538,700 (7.0)	1,362,600 (17.9)	127,500 (1.7)	75,100 (1.0)	29,600 (0.4)	83,500 (1.1)
Townsend's big-eared bat (3,604,100)	2001 Rule	0 (0.0)	0 (0.0)	120,400 (3.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	0 (0.0)	56,400 (1.6)	50,900 (1.4)	0 (0.0)	5,900 (0.2)	0 (0.0)	7,200 (0.2)
	Proposed Rule	0 (0.0)	49,000 (1.4)	64,100 (1.8)	0 (0.0)	0 (0.0)	0 (0.0)	7,200 (0.2)
	Modified Rule	0 (0.0)	49,000 (1.4)	49,300 (1.4)	14,800 (0.4)	0 (0.0)	0 (0.0)	7,200 (0.2)
Trumpeter swan[1] (202,300)	2001 Rule	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Proposed Rule	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Modified Rule	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

[1] All estimates of overlap for the trumpeter swan were less than 50 acres.

Species (NFS acres in Idaho)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
White-headed woodpecker (4,772,000)	2001 Rule	0 (0.00)	0 (0.00)	1,067,500 (22.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.00)
	Existing Plan	109,100 (2.3)	360,600 (7.6)	467,200 (9.8)	0 (0.0)	72,900 (1.5)	0 (0.0)	57,800 (1.2)
	Proposed Rule	108,600 (2.3)	355,400 (7.5)	520,900 (10.9)	0 (0.0)	18,400 (0.4)	6,300 (0.1)	57,800 (1.2)
	Modified Rule	133,000 (2.8)	333,500 (7.0)	447,800 (9.4)	71,300 (1.5)	17,800 (0.4)	6,200 (0.1)	57,800 (1.2)
Wolverine (13,746,000)	2001 Rule	0 (0.0)	0 (0.0)	5,755,400 (41.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	996,900 (7.3)	1,131,000 (8.2)	2,762,900 (20.1)	0 (0.0)	692,400 (5.0)	0 (0.0)	172,200 (1.3)
	Proposed Rule	1,020,800 (7.4)	984,400 (7.2)	3,339,600 (24.3)	0 (0.0)	179,400 (1.3)	59,000 (0.4)	172,200 (1.3)
	Modified Rule	1,103,300 (8.0)	1,007,300 (7.3)	3,034,300 (22.0)	236,400 (1.7)	159,700 (1.2)	42,200 (0.3)	172,200 (1.3)
Management indicator species that are not threatened, endangered, or sensitive								
Belted kingfisher (303,300)	2001 Rule	0 (0.0)	0 (0.0)	36,100 (11.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	3,600 (1.2)	6,700 (2.2)	14,500 (4.8)	0 (0.0)	3,300 (1.1)	0 (0.0)	8,000 (2.7)
	Proposed Rule	3,700 (1.2)	6,100 (2.0)	16,200 (5.4)	0 (0.0)	2,000 (0.7)	0 (0.0)	8,000 (2.7)
	Modified Rule	3,700 (1.2)	6,200 (2.0)	15,500 (5.1)	1,600 (0.5)	1,100 (0.4)	0 (0.0)	8,000 (2.7)
Downy woodpecker (19,569,100)	2001 Rule	0 (0.0)	0 (0.0)	5,784,400 (29.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	760,000 (3.9)	1,205,900 (6.2)	2,782,400 (14.2)	0 (0.0)	819,200 (4.2)	0 (0.0)	216,900 (1.1)
	Proposed Rule	790,300 (4.0)	1,020,600 (5.2)	3,416,500 (17.5)	0 (0.0)	277,200 (1.4)	62,900 (0.3)	216,900 (1.1)
	Modified Rule	870,200 (4.5)	1,077,600 (5.5)	3,037,500 (15.5)	298,400 (1.5)	238,900 (1.2)	44,900 (0.2)	216,900 (1.1)
Elk (36,990,600)	2001 Rule	0 (0.0)	0 (0.0)	8,869,200 (24.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	1,171,200 (3.2)	1,853,700 (5.0)	4,332,900 (11.7)	0 (0.0)	1,192,200 (3.2)	0 (0.0)	319,200 (0.9)
	Proposed Rule	1,235,900 (3.3)	1,604,200 (4.3)	5,090,800 (13.7)	0 (0.0)	549,600 (1.5)	69,500 (0.2)	319,200 (0.9)
	Modified Rule	1,332,900 (3.6)	1,676,500 (4.5)	4,680,800 (12.7)	432,000 (1.7)	379,400 (1.0)	48,300 (0.1)	319,200 (0.9)

Species (NFS acres in Idaho)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Hairy woodpecker (20,243,500)	2001 Rule	0 (0.0)	0 (0.0)	6,461,100 (31.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	880,100 (4.4)	1,233,400 (6.1)	3,193,700 (15.8)	0 (0.0)	920,700 (4.6)	0 (0.0)	233,100 (1.2)
	Proposed Rule	907,900 (4.5)	1,041,100 (5.1)	3,867,300 (19.1)	0 (0.0)	346,800 (1.7)	64,700 (0.3)	233,100 (1.2)
	Modified Rule	989,800 (4.9)	1,097,700 (5.4)	3,526,200 (17.4)	312,000 (1.5)	257,100 (1.3)	45,000 (0.2)	233,100 (1.2)
Moose (19,657,700)	2001 Rule	0 (0.0)	0 (0.0)	6,466,200 (32.9)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	891,600 (4.5)	1,228,200 (6.3)	3,199,700 (16.3)	0 (0.0)	904,800 (4.6)	0 (0.0)	241,900 (1.2)
	Proposed Rule	920,400 (4.7)	1,035,100 (5.3)	3,873,800 (19.7)	0 (0.00)	330,500 (1.7)	64,500 (0.3)	241,900 (1.2)
	Modified Rule	1,002,100 (5.1)	1,091,900 (5.6)	3,523,800 (17.9)	313,500 (1.6)	248,000 (1.3)	44,900 (0.2)	241,900 (1.2)
Northern flicker (51,744,300)	2001 Rule	0 (0.0)	0 (0.0)	8,955,000 (17.3)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	1,160,800 (2.2)	1,874,900 (3.6)	4,354,000 (8.4)	0 (0.0)	1,247,200 (2.4)	0 (0.0)	318,100 (0.6)
	Proposed Rule	1,225,000 (2.4)	1,626,200 (3.1)	5,111,500 (9.9)	0 (0.0)	604,600 (1.2)	69,500 (0.1)	318,100 (0.6)
	Modified Rule	1,322,000 (2.6)	1,698,600 (3.3)	4,726,700 (9.1)	436,400 (0.9)	404,900 (0.8)	48,400 (0.1)	318,100 (0.6)
Pileated woodpecker (17,266,400)	2001 Rule	0 (0.0)	0 (0.0)	5,535,400 (32.1)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	793,900 (4.6)	1,145,500 (6.3)	2,704,000 (15.7)	0 (0.0)	699,500 (4.0)	0 (0.0)	192,500 (1.1)
	Proposed Rule	823,900 (4.8)	952,300 (5.5)	3,373,700 (19.5)	0 (0.0)	128,600 (0.7)	64,400 (0.4)	192,500 (1.1)
	Modified Rule	905,600 (5.2)	1,008,000 (5.9)	2,991,400 (17.3)	262,100 (1.5)	131,000 (0.8)	44,800 (0.3)	192,500 (1.1)
Pine marten (18,361,800)	2001 Rule	0 (0.0)	0 (0.0)	6,098,500 (33.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	868,800 (4.7)	1,206,000 (6.6)	3,018,700 (16.4)	0 (0.0)	779,600 (4.3)	0 (0.0)	225,500 (1.2)
	Proposed Rule	896,900 (4.9)	1,014,600 (5.5)	3,688,600 (20.1)	0 (0.0)	208,700 (1.1)	64,400 (0.4)	225,500 (1.2)
	Modified Rule	978,500 (5.3)	1,070,600 (5.8)	3,323,200 (18.1)	294,300 (1.6)	161,600 (0.9)	44,800 (0.2)	225,500 (1.2)

Species (NFS acres in Idaho)	Alternative	WLR	PRIM	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Red squirrel (19,001,700)	2001 Rule	0 (0.0)	0 (0.0)	6,302,400 (33.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.00)
	Existing Plan	868,200 (4.6)	1,209,400 (6.4)	3,115,200 (16.4)	0 (0.00)	882,800 (4.6)	0 (0.00)	226,800 (1.2)
	Proposed Rule	897,500 (4.7)	1,017,800 (5.4)	3,783,900 (19.9)	0 (0.00)	312,100 (1.6)	64,400 (0.3)	226,800 (1.2)
	Modified Rule	979,100 (5.2)	1,072,800 (5.7)	3,439,600 (18.1)	302,600 (1.6)	236,700 (1.2)	44,800 (0.2)	226,800 (1.2)
Red-napped sapsucker (20,152,400)	2001 Rule	0 (0.0)	0 (0.0)	6,442,100 (32.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	876,900 (4.4)	1,229,800 (6.1)	3,181,600 (15.8)	0 (0.0)	920,900 (4.6)	0 (0.0)	232,800 (1.2)
	Proposed Rule	905,100 (4.5)	1,038,200 (5.2)	3,854,400 (19.1)	0 (0.0)	347,200 (1.7)	64,400 (0.3)	232,800 (1.2)
	Modified Rule	986,800 (4.9)	1,094,400 (5.4)	3,513,500 (17.4)	310,900 (1.5)	259,000 (1.3)	44,800 (0.2)	232,800 (1.2)
White-tailed deer (23,210,600)	2001 Rule	0 (0.0)	0 (0.0)	5,842,400 (25.2)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	843,800 (3.6)	1,176,500 (5.1)	2,888,100 (12.4)	0 (0.0)	698,600 (3.0)	0 (0.0)	235,500 (1.0)
	Proposed Rule	868,700 (3.7)	958,200 (4.1)	3,552,700 (15.3)	0 (0.0)	157,800 (0.7)	69,500 (0.3)	235,500 (1.0)
	Modified Rule	960,600 (4.1)	1,034,900 (4.5)	3,115,600 (13.4)	293,000 (1.3)	154,500 (0.7)	48,300 (0.2)	235,500 (1.0)
Williamson's sapsucker (15,595,900)	2001 Rule	0 (0.0)	0 (0.0)	4,888,800 (31.4)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
	Existing Plan	593,600 (3.8)	1,065,700 (6.8)	2,275,700 (14.6)	0 (0.0)	775,000 (5.0)	0 (0.00)	178,700 (1.2)
	Proposed Rule	599,200 (3.8)	975,200 (6.3)	2,789,100 (17.9)	0 (0.0)	322,200 (2.1)	24,400 (0.2)	178,700 (1.2)
	Modified Rule	658,300 (4.2)	931,800 (6.0)	2,565,800 (16.5)	295,400 (1.9)	238,100 (1.5)	20,800 (0.1)	178,700 (1.2)

- ** Figures for the mountain plover were not available.*
- *WLR – Wild Land Recreation*
- *PRIM – Primitive*
- *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*

Table A-14. Management themes across alternatives for Idaho Roadless Areas that overlap or contain breeding bird survey routes

Alternative[2]	Roadless name	#	Roadless area acres	WLR	Primitive	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Existing Plan	Horse Heaven	925	4,300	0	0	2,200	0	2,100	0	0
Proposed Rule			4,300	0	0	2,200	0	2,100	0	0
Modified Rule			4,300	0	0	1,000	1,200	2,100	0	0
Existing Plan	Squaw Creek	005	99,600	0	0	99,600	0	0	0	0
Proposed Rule			99,600	0	0	99,600	0	0	0	0
Modified Rule			99,600	0	0	83,900	15,700	0	0	0
Existing Plan	Smoky Mountains	914	304,100	0	191,900	102,600	0	0	0	9,600
Proposed Rule			304,100	0	191,900	102,600	0	0	0	9,600
Modified Rule			304,100	0	191,900	76,800	25,800	0	0	9,600
Existing Plan	Bighorn - Weitas	306	254,800	0	5,200	241,800	0	7,400	0	400
Proposed Rule			254,800	0	0	246,400	0	0	8,000	400
Modified Rule			254,800	0	0	246,400	0	0	8,000	400
Existing Plan	Siwash	303	9,000	0	0	4,000	0	5,000	0	0
Proposed Rule			9,000	0	0	9,000	0	0	0	0
Modified Rule			9,000	0	0	9,000	0	0	0	0
Existing Plan	Grandmother Mountain	148	24,400	0	10,600	9,200	0	4,200	0	400
Proposed Rule			24,400	6,800	0	17,100	0	100	0	400
Modified Rule			24,400	6,800	0	17,100	0	100	0	400
Existing Plan	Spion Kop	136	22,400	0	2,700	13,900	0	3,000	0	2,800
Proposed Rule			22,400	0	0	19,600	0	0	0	2,800
Modified Rule			22,400	0	0	16,300	3,300	0	0	2,800
Existing Plan	Gospel Hump	921	46,300	0	0	9,800	0	36,500	0	0
Proposed Rule			46,300	0	0	46,300	0	0	0	0
Modified Rule			46,300	0	0	29,700	16,600	0	0	0
Existing Plan	Mallard	847	19,600	0	0	12,700	0	6,900	0	0

[2] 2001 Roadless Rule alternative is not included as all acreages would fall in BCR.

Alternative2	Roadless name	#	Roadless area acres	WLR	Primitive	BCR	BCR CPZ	GFRG	SAHTS	FPSA
Proposed Rule			19,600	0	0	19,600	0	0	0	0
Modified Rule			19,600	0	0	16,000	3,600	0	0	0
Existing Plan	O'Hara-Falls Creek	226	33,200	0	0	20,300	0	3,500	0	9,400
Proposed Rule			33,200	0	0	23,800	0	0	0	9,400
Modified Rule			33,200	0	0	23,800	0	0	0	9,400
Existing Plan	Rackliff - Gedney	841	53,600	0	0	51,900	0	0	0	1,700
Proposed Rule			53,600	0	0	51,900	0	0	0	1,700
Modified Rule			53,600	0	0	51,900	0	0	0	1,700
Existing Plan	Deep Creek	509	7,100	0	0	1,000	0	6,100	0	0
Proposed Rule			7,100	0	0	4,200	2,900	0	0	0
Modified Rule			7,100	0	0	0	0	7,100	0	0
Existing Plan	Goat Mountain	944	35,700	0	0	34,700	0	1,000	0	0
Proposed Rule			35,700	0	0	35,700	0	0	0	0
Modified Rule			35,700	0	0	35,300	400	0	0	0
Existing Plan	Perreau Creek	511	8,200	0	0	0		8,200	0	0
Proposed Rule			8,200	0	0	0	0	8,200	0	0
Modified Rule			8,200	0	0	0	0	8,200	0	0
Existing Plan	Taylor Mountain	902	46,600	0	0	21,600	0	25,000	0	0
Proposed Rule			46,600	0	0	46,600	0	0	0	0
Modified Rule			46,600	0	0	46,600	0	0	0	0
Existing Plan	Fifth Fork Rock Creek	023	16,600	0	8,600	0	0	8,000	0	0
Proposed Rule			16,600	0	8,600	0	0	8,000	0	0
Modified Rule			16,600	0	8,600	0	0	8,000	0	0
Existing Plan	Third Fork Rock Creek	009	14,300	0	7,900	0	0	6,400	0	0
Proposed Rule			14,300	0	7,900	0	0	6,400	0	0
Modified Rule			14,300	0	7,900	0	0	6,400	0	0

Appendix B: Supplemental Figures: Aquatic and Terrestrial Analyses

Figure B-1 Bonneville Cutthroat Range Within and Outside of Idaho Roadless Areas
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Appendix C: Application of Analytical Filters on Federally listed, Forest Sensitive, and MIS species.

In this appendix, we evaluated the risk of the selected management activities – road construction/reconstruction, timber cutting, and discretionary mining – to TECS and MIS terrestrial wildlife species in Idaho. A summary of this Appendix is included in the Specialist Report and Biological Evaluation for Aquatic and Terrestrial Habitats and Species. This evaluation consisted of the applying several analytical filters to each species and its habitat as outlined below.

1. EXPOSURE – We estimated the degree to the species might be exposed to the selected management activities (improbable, probable[3]). Exposure is a function of species overlap with IRAs and where (e.g., IRA theme, habitat types) management activities might be expected to occur relative to species distributions and habitat needs. Granted, we can not predict exactly where particular management will take place. However, exposure could be probable if the species overlaps IRA themes where management activities are permitted; and/or if the species is relatively ubiquitous, highly mobile, and/or a habitat generalist. Conversely, exposure may be improbable if a species distribution is limited in IRAs, particularly those where management activities are permitted, if it is highly endemic, and/or if it occurs in habitats that are unlikely to be managed.
2. RESPONSE – We considered the severity (low, moderate, high) and likelihood (improbable, probable) of each species response (at the scale of individuals) to management activities assuming exposure occurs. This filter incorporates the nature of the impact on the species (e.g., direct injury or mortality, habitat alteration, disturbance) and the probability that such an effect could occur given there was exposure. As an example, road construction can contribute to mortality of some individuals of a species due to collisions with vehicles. Direct mortality would be considered a high severity response. The probability of a collision, and thus direct mortality, may be high or low depending on the level of road constructed, where it's constructed, and the level of use expected. Although different management activities can contribute to a host of wide range of possible effects on terrestrial species, we focused on the primary or most important effect(s) to each species.
3. RISK – Lastly, we provide an estimate of the risk (low, moderate, high) to the species based on exposure and response. Here we consider, based on the response of individuals and populations, what risk various activities will pose to the species as a whole. For species that are likely to be both exposed and experience a negative response to roads, timber cutting or discretionary mining, the risk to the species may be considered moderate to high. Determinations of risk do not take into account existing conservation measures, standards and guidelines, best management practices and/or mitigations that are currently in place to minimize risks to species.

Determinations made at each juncture were based on current scientific information and analyses conducted as part of the Interior Columbia Basin Ecosystem Management Project

[3] We define probable as "likely to occur or prove true; supported generally but not conclusively by the evidence."

(Wisdom et al. 2000), the Idaho Comprehensive Wildlife Conservation Strategy (IDFG 2005), and the Smoky Canyon Mine DEIS (USDI Bureau of Land Management and USDA Forest Service 2006). Where information was lacking on particular species, we estimated possible effects based on responses of similar species or taxa.

WHERE MANAGEMENT ACTIVITIES COULD OCCUR

Construction of roads is typically an interrelated activity that is needed to facilitate other activities, such as timber cutting and discretionary mining. Timber cutting, which includes timber harvest, may be proposed to reduce fuels, improve forested conditions and/or to remove a merchantable product. Based on an evaluation of the condition of forested communities within Idaho, silvicultural treatments to improve stand conditions might target the following forest cover types (see Martin 2007): Douglas-fir (root disease, bark beetle, spruce budworm), lodgepole pine (mountain pine beetle), whitebark pine (white pine blister rust, mountain pine beetle), grand fir (bark beetle, spruce budworm), subalpine fir (spruce budworm, bark beetle). Most forest cover types could be the target of timber harvest activities due to their commercial value, however it is not possible to estimate exactly where these activities would occur across the state.

Approximately 50% of acres overlapping IRAs have high geothermal potential. At this time it is difficult to estimate exactly where development of geothermal energy might take place although specific locations would be restricted to sites with less than a 40% slope (Abing 2008). Oil and gas prospects appear very limited, likely to occur only on the Caribou-Targhee NF. Known phosphate lease areas (KPLAs) – those areas known to contain phosphate deposits but are currently unleased – are also restricted to the Caribou-Targhee NF. KPLAs overlap 13,440 acres on 9 IRAs on the Caribou-Targhee NF, most of which are within the Huckleberry Basin (1,400 acres), Meade Peak (2,500 acres) and Sage Creek (1,700 acres), Bald Mountain (1,400 acres), and Bear Creek (5,100 acres) IRAS. Based on the locations of existing phosphate leases, KPLAS are likely to include the following habitat types on the Caribou NF (USDI and USDA 2006): mixed conifer (e.g., Douglas-fir, subalpine fir) and aspen forests, mixed forest/brush, sagebrush habitat, and riparian/wet meadow habitats.

Tables C1, C2, and C3, report the findings of our analysis for Federally Threatened, Endangered, and Candidate Species, Forest Sensitive Species, and Management Indicator species, respectively. These findings do not indicate levels of risk to the species under any given alternative. Rather, they provide a qualitative assessment of risk to the species that various management activities could have based on the species exposure and response to such activities.

Table C-1. Federally Endangered, Threatened, and Candidate Species - Likelihood of species exposure to management activities and the vulnerability of those species and/or their habitats to any effects.

Species	Exposure	Potential response to selected management activities[1]	Level of risk
Canada lynx	Probable High overlap with IRAs, timber harvest activities, and discretionary mining	Severity – Moderate, Likelihood - Probable Adverse effects due to habitat loss, degradation, and fragmentation. Increased mortality from incidental trapping facilitated by roads. Could benefit from some timber cutting regimes that create early successional habitats that support snowshoe hares but be adversely affected by practices that reduce snowshoe hare habitat.	Moderate
Grizzly bear	Probable High overlap with IRAs where they occur	Severity – High, Likelihood - Probable Increased mortality due to human-bear encounters facilitated by roads. Habitat loss, degradation, and fragmentation via behavioral avoidance of human activities. Can benefit from some vegetation treatments that can increase production of soft mast or restore white-bark pine stands.	High
Gray Wolf	Probable High overlap with IRAs and timber harvest activities.	Severity – Moderate, Likelihood – improbable Increased mortality due to collisions with cars and increased encounters with people facilitated by roads. Human disturbance can contribute to habitat degradation and fragmentation. However, vegetation management activities, unless they result in decreased prey availability, are not likely to directly impact the gray wolf.	Low
Northern Idaho ground squirrel	Improbable Although 26% of predicted distribution overlaps IRA, only 1 known colony in IRA. NIDGS unlikely to be found in habitats subject to management.	Severity – Low-Moderate, Likelihood - Improbable Small potential for habitat loss/degradation or mortality due to roads. Vegetation treatments designed to restore meadows and open forest stands could benefit this species. Mortality due to recreational shooting could be facilitated by roads, but probability of such an effect on individuals is low.	Low
Woodland Caribou	Probable 28% of predicted distribution in IRAs. Likely overlap with timber cutting.	Severity – Moderate-High, Likelihood - Probable Habitat loss, fragmentation due to timber cutting and human disturbance. Increased mortality due to collisions with cars, increased poaching facilitate by roads.	Moderate-High
Western yellow-billed cuckoo	Improbable Although 26% of predicted distribution in IRAs, habitat not likely to overlap select management activities.	Severity – Low, Likelihood – Improbable Very small potential for habitat degradation due to fuels reduction or mining activities. Again the likelihood of such an effect occurring is low due to limited overlap.	Low
Southern Idaho ground squirrel	Improbable No overlap of SIDGS with NFS lands, including IRAs.	Severity – Low, Likelihood – Improbable	None

[1] *Based on Wisdom et al. 2000 and other supporting literature.*

Table C-2. Forest Sensitive Species – Likelihood of species exposure to management activities and the vulnerability of those species and/or their habitats to any effects.

Species	Exposure	Potential response to selected management activities[1]	Level of risk
American peregrine falcon	Probable High overlap with IRAs (23%). Broad habitat associations	Severity – low, Likelihood - improbable May be sensitive to human disturbance in more remote areas. Roads facilitate human access which could lead to targeted shooting, however this is likely to be extremely infrequent.	Low
Bald eagle	Probable Broadly distributed and high overlap with IRAs. Possible overlap w/ timber cutting activities (particularly fuels work)	Severity – low, Likelihood – probable Habitat could be altered (removal of nest/roost trees and snags) and management can disturb nesting and foraging activities of some individuals. Avoidance of nest trees, snag retention measures, and limited operating procedures near known eagle nests can reduce likelihood of these effects.	Low
Black swift	Improbable Generally, habitat is unlikely to overlap with timber cutting, roads, or mining.	Severity – low, likelihood - improbable May be sensitive to human recreation (rock climbing) that could be facilitated by roads, but few observations supporting this.	Low
Black-backed woodpecker	Probable High overlap with IRAs. Habitat likely to overlap w/ timber cutting.	Severity – moderate, likelihood - probable Habitat loss, degradation, and fragmentation, removal of snags, particularly smaller diameter trees where they nest.	Moderate
Boreal owl	Probable High overlap with IRAs. Likely to overlap with timber cutting activities.	Severity – moderate, likelihood - probable Habitat loss, degradation, and fragmentation contributing to changes to prey base due to timber cutting, removal of snags due to firewood collecting (cavity nester).	Moderate
Columbian sharp-tailed grouse	Probable Potential for overlap on phosphate areas on the Caribou	Severity – moderate, likelihood - probable Habitat loss and degradation. Also, sensitive to human disturbances from roads and associated developments particularly during lekking.	Moderate
Common loon	Improbable Very low overlap with IRAs (2.4%). Habitat will not likely overlap with timber cutting, roads or mining.	Severity – low, likelihood - improbable Could be impacted by increased recreation around lake environments that might be facilitated by roads.	Low
Fisher	Probable	Severity – moderate, likelihood - probable	Moderate

Species	Exposure	Potential response to selected management activities[1]	Level of risk
	High overlap with IRAs. Found in habitats likely to be impacted by timber cutting.	Habitat loss, degradation and fragmentation due to timber cutting, increased trapping and removal of snags and downed logs for firewood.	
Flammulated owl	Probable High overlap with IRAs (26%) and overlap with timber cutting activities and discretionary mining.	Severity – moderate, likelihood - probable Habitat loss, degradation (including changes to prey base), and fragmentation due to timber cutting, removal of snags due to firewood collecting (cavity nester).	Moderate
Fringed myotis	Improbable limited overlap with IRAs and management activities	Severity – moderate, likelihood - improbable Habitat loss and degradation due to timber cutting and loss of snags affecting roost availability. Human disturbance facilitated by roads.	Low
Great gray owl	Probable High olveroap with IRAs and likely habitat overlap with timber cutting activities.	Severity – moderate, Likelihood - probable Habitat loss, degradation and fragmentation due to timber cutting, loss of snags. Timber cutting could be beneficial to maintaining/restoring meadow habitats where conifers are encroaching.	Moderate
Greater Sage grouse	Probable 6% overlap of distribution with IRAs. Likely overlap with phosphate development	Severity – moderate, likelihood - probable Habitat loss, degradation, and fragmentation due to roads and invasion of cheatgrass. Timber cutting might be more limited. Sensitive to human disturbance particularly during lekking.	Moderate
Grizzly bear	Probable Only 10% overlap with IRAs but relatively mobile species.	Severity – high, Likelihood - probable Increased mortality due to human-bear encounters facilitated by roads and collisions. Habitat loss, degradation, and fragmentation via behavioral avoidance of human activities. Can benefit from some vegetation treatments that can increase production of soft mast or restore white-bark pine stands..	High
Harlequin duck	Improbable Habitat not likely to overlap activities.	Severity – low, likelihood - improbable	Low
American Marten	Probable 33% overlap with IRAs	Severity – moderate, likelihood - probable Habitat loss, degradation and fragmentation due to timber cutting, roads facilitate increased trapping and removal of snags and downed logs for firewood.	Moderate
Mountain plover	Undetermined	Severity - moderate, Likelihood – improbable Habitat degradation, increased mortality facilitated by roads.	Low
Mountain quail	Improbable Only 10% of predicted	Severity – moderate, likelihood – improbable Habitat degradation, increased mortality facilitated by roads.	Low

Species	Exposure	Potential response to selected management activities[1]	Level of risk
	distribution overlaps IRAs,		
Northern bog lemming	Improbable 26% of distribution overlaps IRA, however rare and habitats unlikely to intersect activities.	Severity – moderate, likelihood - improbable Habitat disturbance from timber harvest and roads. Again, exposure is unlikely.	Low
Northern Goshawk	Probable Occur throughout forested areas. 32% of species distribution in Idaho overlaps IRAs so management is important.	Severity – moderate, likelihood - probable Habitat loss, degradation, and fragmentation due to timber cutting. Existing conservation measures should protect nesting habitat, but degradation and loss of foraging habitat, as well as fragmentation still possible.	Moderate
Pygmy nuthatch	Probable 22% overlap with IRAs and likely overlap with timber cutting.	Severity – moderate, likelihood – probable Habitat loss, degradation, and fragmentation due to timber cutting	Moderate
Ring-necked snake	Improbable Low overlap with IRAs	Severity - High, likelihood – improbable Increased mortality due to crushing on roads.	Low
Pygmy rabbit	Improbable Somewhat low overlap with IRAs	Severity – moderate, likelihood - probable Habitat loss, degradation, and fragmentation due to roads and invasion of cheatgrass. Roads could facilitate coyote movement and increase predation rates.	Low-moderate
Spotted bat	Improbable Very limited overlap with IRAs (2%) and thus exposure not likely.	Severity – unknown, likelihood - improbable	Low
Three-toed woodpecker	Probable High (35%) overlap withIRAs and likely overlap with management activities, especially timber cutting..	Severity – moderate, likelihood - probable Habitat loss, degradation, and fragmentation. In particular, loss of snags due to timber cutting, salvage, fuels reduction firewood collection, may negatively impact.	Moderate
Townsend's big-eared bat	Improbable Very limited overlap with IRAs (3.3%)	Severity – low, likelihood - improbable Human disturbance from roads, mining, or timber cutting nears roost sites and nursery colonies.	Low
Trumpeter swan	Improbable Habitat not likely to overlap with management activities	Severity – low, likelihood – improbable	Low

Species	Exposure	Potential response to selected management activities[1]	Level of risk
White-headed woodpecker	Probable occurs in pp and mixed conifer where timber cutting and roads likely	Severity – Moderate, likelihood - probable Loss of snags due to timber cutting, firewood collection, facilitated by roads. However, some veg. trt to reduce stand-replacing fires in old pp and to enhance devt of pp could improve conditions for this species.	Moderate
Wolverine	Probable High overlap (42%) with IRAs and management activities	Severity – moderate, Likelihood - probable Loss of snags, and logs due to timber cutting, salvage, etc, incidental trapping (facilitated by roads) and sensitive to human disturbance.	Moderate

[1] *Based on Wisdom et al. 2000 and other supporting literature.*

Table C-3. MIS SPECIES - Likelihood of species exposure to management activities and the vulnerability of those species and/or their habitats to any effects. MIS species addressed under TES are not included below.

Species	Exposure	Potential response to selected management activities[1]	Risk to species
Belted kingfisher	Improbable Habitat not likely to overlap with activities	Severity – low, likelihood - improbable	Low
Downy woodpecker	Probable High overlap with IRAs and management activities, particularly timber cutting.	Severity - moderate , Likelihood – improbable Habitat loss, degradation, and fragmentation, removal of snags,	Moderate
Elk	Probable Very broadly distributed and relatively ubiquitous. High overlap with IRAs and management activities	Severity – moderate, likelihood – improbable. Habitat loss, degradation, increased mortality facilitated by roads. This species can also benefit from timber cutting activities.	Moderate
Hairy woodpecker	Probable High overlap with IRAs and management activities, particularly timber cutting.	Severity - moderate, Likelihood – improbable Habitat loss, degradation, and fragmentation, removal of snags	Moderate
Moose	Probable Species considered relatively ubiquitous, habitat could overlap management activities	Severity - moderate , likelihood – improbable Habitat degradation, disturbance, increased mortality facilitated by roads.	Moderate

Species	Exposure	Potential response to selected management activities[1]	Risk to species
Northern Flicker	Probable Species considered relatively ubiquitous, habitat could overlap management activities	Severity - low, Likelihood – improbable Habitat degradation via timber cutting and vegetation management. But habitat generalist so unlikely that impact will be significant to individuals.	Low
Red Squirrel	Probable Species considered relatively ubiquitous, habitat could overlap management activities	Severity - low , Likelihood – improbable Habitat degradation via timber cutting. But habitat generalist so unlikely that impact will be significant to individuals.	Low
Red-naped sapsucker	Probable Species considered relatively ubiquitous, habitat could overlap management activities	Severity - moderate, Likelihood – probable Habitat loss, degradation, and fragmentation, removal of snags	Moderate
White-tailed deer	Probable Species considered relatively ubiquitous, habitat could overlap management activities	Severity – low-moderate, Likelihood – probable Habitat loss, degradation, and fragmentation, disturbance, increased mortality facilitated by roads. But habitat generalist so unlikely impact will be significant to individuals.	Low-moderate

◦ [1] Based on Wisdom et al. 2000 and other supporting literature.

Appendix D. Description of Current[4] 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.

[4] 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 (SWIEG) 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 SWIEG Forest Plans have an ACS that is very similar to the PACFISH and INFISH ACS. The SWIEG ACS provides direction to maintain and restore characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. The eight components of the SWIEG 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 D-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 D-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.
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.

Scale	Level	Pg	Measure
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 D-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 D-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).

Scale	Level	Pg	Measure
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 D-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 D-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 D-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. ▪ Silvicultural treatments will be used to improve grizzly habitat and aid in achieving bear

Scale	Level	Pg	Measure
			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 intensity and caribou habitat. Facilities

Scale	Level	Pg	Measure
			▪ 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 boundaries of these areas will be managed, maintained, and modified as necessary to meet overall transportation objectives in an environmentally sound manner.
Management	Goals	III-52	Manage the rivers and their immediate environments to preserve their free flowing

Scale	Level	Pg	Measure
Area 12			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…
	Standards	III-52 to 54	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
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).			
Guidelines- SEASONAL HABITATS			
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.			
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 ▪ 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.			

Scale	Level	Pg	Measure
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 ▪ 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 as spring range			

Scale	Level	Pg	Measure
(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 D-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 D-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.

Scale	Level	Pg	Measure
			▪ 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.