



**United States Department of Agriculture**

Forest Service

# **Transitional Special Uses Permit Project Environmental Assessment**

**Washakie and Wind River Ranger Districts, Shoshone National Forest, Fremont County,  
Wyoming**

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## Chapter 1: Introduction and Purpose and Need

**We are proposing to convert 15 transitional Special Use Outfitting and Guiding permits into Priority Special Use Outfitting and Guiding Permits. These actions are proposed to be implemented on the Washakie (WK) and Wind River Ranger (WR) Districts of the Shoshone National Forest (SNF).**

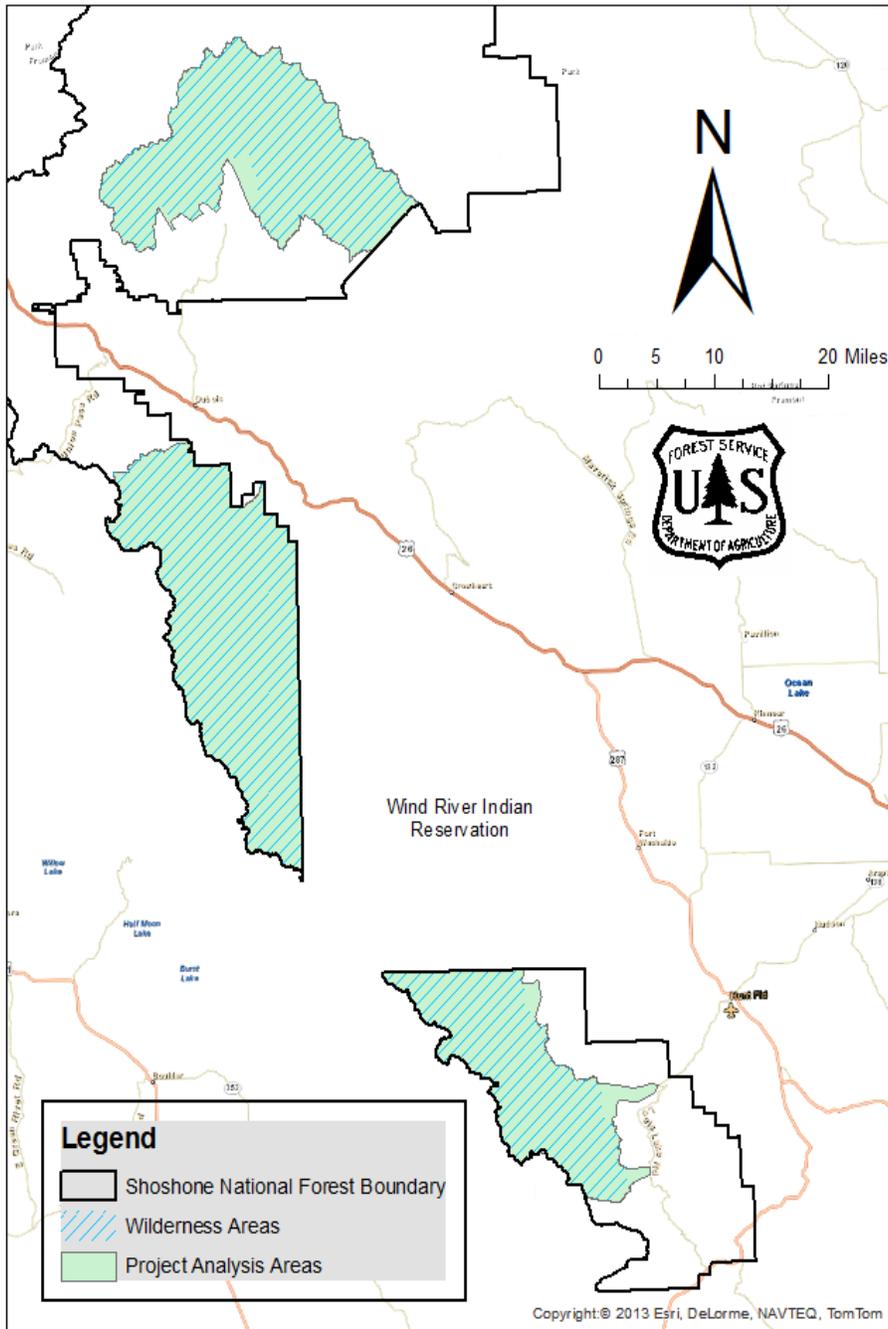
We prepared this environmental assessment (EA) to determine whether the authorization of 15 Priority Special Use Permits may significantly affect the quality of the human environment and thereby require the preparation of an environmental impact statement. By preparing this EA, we are fulfilling agency policy and direction to comply with the National Environmental Policy Act (NEPA). For more details of the proposed action, see the Proposed Action and Alternatives section of this document.

### Proposed Project Location

The proposed action would be implemented on the Washakie (WK) and the Wind River (WR) Ranger Districts of the Shoshone National Forest. More specifically the permitted activities would occur primarily within the Popo Agie Wilderness located within the Washakie Ranger District and the Fitzpatrick and Washakie Wilderness areas within the Wind River Ranger District. The proposed action below provides more specific information about each outfitter and the permitted uses and areas. The map on the following page shows the wilderness areas and the analysis areas for the proposed action (Figure 1). Use associated with the Transitional Priority Use Permits will occur within the analysis area identified on the map.

Figure 1. Vicinity map

### Locality Map of Transitional Special Uses Project



## Background

After the revision of the Forest Service's Special Uses program that provided for a way to convert recurrent temporary permits into priority use through transitional permits, the Forest Service developed criteria to assess who would be eligible for a transitional permit. Holders of temporary use permits are eligible for reclassification of their use as transitional priority permits if the use is active and recurring, performance has been satisfactory, the permit holder requested reclassification of their permit, and agree to meet the application requirements for reclassification of their use as priority use within 5-years of the date of that request (FSH 2709.14\_53.1q). A total of 15 such permits met the requirements and were eligible for reclassification of their use from temporary to transitional priority and permits (for up to 3,419 service days) were issued across the two Districts. There were no new camps developed, no new trails constructed, no new areas developed in conjunction with the transitional permits; these permits simply authorized activities that had been undertaken for multiple years but under the auspices of a temporary permits. The primary activities covered under these permits (temporary and transitional) were backpacking, camping, and trail rides.

## Purpose and Need

Transitional permits are a result of the 2008 revision to the Forest Service's Special Uses program. They were developed to enable users that had recurrent temporary use permits (issued on an annual or as needed basis) a way to convert that use to priority use. The regulations allowed for a 5 year window before the transitional permits could be considered for conversion into priority use permits. Priority use permits authorize long term (up to 10 years) use. Because the five year window expires at the end of 2013, there is a need to analyze the potential conversion to the longer term permits. The regulations also direct the Forest Service to conduct a use review to determine how much use could be converted. In addition, the Forest can determine what should be done with any service days which would not be eligible for the conversion.

The Forest Plan establishes management direction for the Shoshone National Forest. Designing and implementation of projects consistent with this direction is the means to move the Forest toward the desired future conditions as described in the Forest Plan.

The relevant direction in the Plan can be found on pages:

III-7 "Provide a broad spectrum of dispersed and developed recreation opportunities in accordance with identified needs and use trends."

III-10 "Provide the opportunity for economic growth of industries and communities dependent upon Forest outputs."

The purpose of this project is to analyze the effects of authorizing the conversion of 15 transitional Special Use Outfitting and Guiding permits to Priority Special Use Permits for a 10 year term. There is a need to determine whether the conversion of the transitional Special Use Permits to Priority Special Use Permits is consistent with the goals, objectives, standards, and guidelines for the Shoshone National Forest Land and Resource Management Plan (Forest Plan), as amended.

## Public Involvement and Tribal Consultation

The proposal was listed in the schedule of Proposed Actions since March 1, 2013. The Forest sent out a Scoping Notice seeking comments on the proposal for a 30-day period which was initiated February 28, 2013. Three comment letters were received and all of them were supportive of the conversion of the transitional permits.

The Proposed Action was also made available for a 30 day Comment period beginning with the publication of a legal ad on January 16, 2014 in the Dubois Frontier, the newspaper of record. No comments were received during the 30 day comment period. Individuals and entities (non-governmental organizations, businesses, partnerships, state and local governments, Alaska Native Corporations, and Indian Tribes) who have submitted timely, specific written comments regarding a proposed project or activity during any designated opportunity for public comment may file an objection. Instructions concerning the formal objection process will be provided in the Draft Decision Notice which will be made available along with the EA.

## Issues

Comments from the IDT, public, other agencies, and industry, were used to develop a list of issues. Issues are generally points of dispute or contention, or areas of uncertainty relative to the potential effects of a proposal. They also define conflicts or problems to be addressed or resolved by the analysis. Public and agency input helped determine the issues relative to the physical, biological, and economic resources, and project design for this proposal.

Issues identified are further divided into two categories: key and non-key issues. Key issues are those that identify a cause and effect relationship to the proposal. These key issues are used to analyze environmental effects, develop project design features, and develop alternatives.

Non-key issues are those that are already decided by law, the Forest Plan or other regulation; are not supported by scientific evidence; are opinions or positions; or do not have a cause and effect relationship to the proposal (outside the scope).

## Key Issues

### ***Issue statement 1- What effects will the proposed activities have on Threatened, Endangered, and Sensitive Species?***

The specific concerns addressed in the analysis are:

- The degree of human activity associated with the project will cause a displacement of threatened, endangered, and sensitive (TES) species.
- The human activity will cause an increased risk of human-bear conflicts.
- The human activity will cause a reduction in the amount of secure habitat for bears and lynx.

To analyze the potential effects the following indicators were used:

- The increase of human activity in the area.

***Issue statement 2- What effect will the proposed activities have on wetlands and riparian areas?***

The specific concern addressed in the analysis is:

- The camping activities could result in the displacement of soil into the areas.

To analyze the potential effects the following indicators will be used:

- Connectivity of the camp sites to the wetlands and/or riparian areas and how well project design features provide mitigation.

***Issue statement 3- What effect will the proposed activities have on the economics of the permit holders?***

The specific concern addressed in the analysis is:

- The ability to offer service days to the public provides income to the permit holders

To analyze the potential effects the following indicators were used:

- The potential income generated by service day.

***Transitional Permits: Areas and Uses***

**Area:** Areas for transitional permits are not standardized. They are based on the historical use authorized on previous permits and they can range from district boundaries to wilderness areas to watershed “units” as defined by the district. This makes it difficult to pinpoint exact locations for many activities and specific Forest Plan management area direction requires professional judgment for much of the authorized use.

**Progressive Use:** Progressive use is the most common type of use for transitional permits. It is intended to keep a group of forest users moving to minimize impact to the land and allow other users the opportunity to enjoy dispersed camping areas. There are no permanent structures and the party is expected to move all equipment and supplies every 2-3 days. The progressive use authorized by these transitional permits consists mostly of backpacking groups. For extended treks through wilderness areas, these outfitters will utilize other currently permitted horse outfitters for supply drops. Because the supply drops are authorized services provided by other permitted outfitters, they are not addressed in progressive backpacking authorizations.

**Day Use:** Day use indicates that the outfitted activity will begin and end each day off public lands. This can include activities ranging from educational hikes to horse trail rides. This use frequently occurs on system trails or within 5 miles of an access area to the forest.

**Base Camp Use:** Some traditional base camp outfitters qualified for transitional use. Base camps are intended to consolidate overnight horse use by one outfitter into a specific location. The season of use varies for each outfitter, but is generally summer/fall or fall only. Base camps often have permitted structures such as meat poles, hitching rails, corrals and latrines. Each of the base camps identified in this document are within wilderness areas; therefore, the permit holder is required to disassemble all structures between seasons. Meat and food poles are an exception to this requirement for the safety of forest users and wildlife.

## *Transitional Outfitter Information*

The table below identifies each transitional permit holder, the areas they are authorized to occupy, the volume of days authorized, and the type of use. Descriptions of the nature of each permit holders' use and background is described in the section below the table.

**Table 1: Transitional Permits for the South Zone SNF**

Name	Area Permitted	Days Authorized	Type of Use
Washakie Ranger District (WK)			
Camp Koochiching	PA & Fitz. Wilderness*	300	Progressive Backpacking
Camp Thunderbird	Popo Agie Wilderness	210	Progressive Backpacking
Camp Widgiwagan	Popo Agie Wilderness	360	Progressive Backpacking
Camp Chief Ouray	Popo Agie Wilderness	200	Progressive Backpacking
Camp Manitowish	Popo Agie Wilderness	270	Progressive Backpacking
Central Wyoming College	WK and WR Districts	205	Various Educational Uses
Lander Llama	WK District	95	Llama Packing
Wind River Ranger District (WR)			
Teton Valley Ranch Camp	WR District	200	Progressive Backpacking & Progressive Horse Packing
Chamley	Hays Park Base (Fitzpatrick)	33	Base Camp
Coalition for Christian Outreach	Fitzpatrick Wilderness	540	Progressive Backpacking

Name	Area Permitted	Days Authorized	Type of Use
Colorado Mountain College	Middle Mountain (Fitzpatrick)	312	Progressive Backpacking
Exum Mountain Guides	PA & Fitz. Wilderness*	79	Backpacking, Climbing, & Mountaineering
Miami University	Middle Mtn. (Fitz.) or PA Wilderness	103	Progressive Backpacking
Paintrock Outfitters	East Fork Base	133	Base
Wind River Mountain Outfitters	Middle Mtn. Base (Fitzpatrick); 3 Drop Camps; Dunoir, Washakie, & Simpson Lake	379	Base Camp; Drop Camps; Progressive Horse Packing
	<b>Total Days</b>	<b>3,419</b>	

\*PA = Popo Agie & Fitz. = Fitzpatrick Wilderness Areas.

## Groups

Camp Koochiching is a YMCA group. Their use consists of multiple groups taking 5-7 day progressive backpacking trips into the Popo Agie Wilderness.

Camp Thunderbird is a YMCA group. They are authorized for progressive backpacking in the Popo Agie Wilderness Area.

Camp Widgiwagen is a YMCA organization. They are authorized for progressive backpacking in the Popo Agie Wilderness Area.

Camp Chief Ouray is a YMCA group. They are authorized for progressive backpacking in the Popo Agie Wilderness Area.

Camp Manitowish is a YMCA group. They are authorized for progressive backpacking in the Popo Agie Wilderness Area.

Coalition for Christian Outreach is a Christian organization located on college campuses. They are authorized for progressive backpacking in the Popo Agie and Fitzpatrick Wildernesses

### Educational Institutions

Central Wyoming College (CWC) is the local community college for Fremont County. Historically they have provided a wide range of educational trips available to both the public and

their students. The Washakie District often sees progressive backpacking or mountaineering trips for students. The Wind River District is the location for classes such as avalanche education, summer day hikes, youth snowshoeing, and cross country skiing.

Colorado Mountain College (CMC) Historically the school has utilized the Fitzpatrick Wilderness for progressive backpacking trips.

**Stock Use Outfitters: Progressive and Day Use Outfitters**

Lander Llama is a traditional stock outfitter that provides llama packing services to progressive backpacking forest users. Equipment and supplies are packed by stock and a guide is provided for education and expertise.

Teton Valley Ranch Camp is located on private land adjacent to the Forest. The authorization allows for Progressive Backpacking and day use trail rides from the ranch and from trailheads throughout the Wind River District. Participants consist of instructors and youth enrolled at the camp.

**Stock Use Outfitters: Base Camp Outfitters**

Chamley Outfitting is a traditional horse outfitter with authorization for the Hays Park Base Camp. The “transitional” days have been used for fall hunting activities in excess of those days authorized on his priority use permit. All temporary or permanent structures authorized with the use are depicted below in Table 2. The outfitter accesses the camp via 27 miles of system trails through the Fitzpatrick Wilderness. A layover camp is authorized approximately 12-13 miles from the trailhead for a one night stay en route to the base camp.

Wind River Mountain Outfitters is a traditional horse use outfitter that operates in the Fitzpatrick Wilderness. They have summer progressive, hunting, and drop camp authorization. The base camp, used for summer and fall hunting, is located along Wasson Creek. The camp is accessed via approximately 6 miles of wilderness system trails from Whiskey Creek Trailhead. The camp was moved in the past to this location to improve or alleviate resource concerns.

Paintrock Adventures is authorized for the East Fork base camp. It is permitted for Fall Hunting use only. The camp is accessed via approximately 4 miles of wilderness system trails from the East Fork Trailhead.

## Decision Framework

An EA is not a decision document. The purpose of this EA is to disclose the effects and consequences of the Proposed Action and alternatives and to solicit public input. The responsible line officer would make a decision based on consideration of the purpose and need for the project, the effects of the alternatives, and public involvement. The responsible official must decide:

- Which alternative to implement. The decision would be documented in a decision notice that would be issued no sooner than 30 days after the EA is distributed for public review and comment.
- Whether to prepare an environmental impact statement. If the environmental analysis indicates to the decision maker that impacts associated with the alternatives are not major, then the responsible official would make a finding (Finding of No Major Impact,

40 CFR 1508.13) that allows the action to proceed without performing an environmental impact statement. Also, whether site-specific Forest Plan amendment(s) are required for implementation, the nature of the amendment(s), and whether the amendment(s) would be a major change to the Forest Plan.

## Chapter 2: Alternatives

The National Environmental Policy Act (NEPA) requires that the agency study, develop, and describe appropriate alternatives to recommend courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources. No specific number of alternatives is required or prescribed (36 CFR 220.7(b)(2)). If no unresolved conflicts exist, the EA need only analyze the proposed action and proceed without consideration of additional topics (36 CFR 220.7(b)(2)(i)).

A stand-alone no-action alternative is not required. However, the effect of taking no action will be analyzed fully as a way of comparing the proposed action to not taking action.

The FS considered two alternatives during the analysis process, the proposed action and the no action alternative. The following elements were considered by the IDT when developing the range of alternatives.

- The purpose of and need for this project.
- The goals, objectives, standards, guidelines, and desired conditions for the project area as described in the Forest Plan.
- Comments made by the public, the State of Wyoming, and other federal agencies during the scoping process.
- The laws, regulations, and policies that govern land management on National Forest System (NFS) lands.

## Proposed Action

The action proposed by the Shoshone National Forest to meet the purpose and need is to convert 15 transitional special use permits into priority use permits. There would be up to 3266 service days converted. The permits will include all of the mandatory requirements for all the Forest's priority use permits and be subject to all applicable requirements of the Forest Plan's Standards and Guides. The project Design Features below are part of the Proposed Action and are used in the analysis of the effects documented by resource in Chapter 3 of this document.

### Design Features

- All nightly campsite locations should be at least 100 feet from streams, wetlands, and lakes.
- Outfitter and guide livestock use will follow the same utilization standards as general livestock grazing.
- Livestock use will be discouraged in sensitive riparian/wetland areas.
- Livestock will be restrained at least 100 feet from water sources and in a manner that does not damage trees, tree roots, and fragile vegetation.
- No permit will be allowed to use electric fences as a means for primary food storage.
- All permits will include:
  - "Grizzly Bear Protection" clauses (SH- X2)
  - "Grizzly Bear Management and Protection Plan"

- All permits will be required to follow the Food Storage Sanitation Order (#04-00-104).
- All permits will comply with the Reasonable and Prudent Measures, Terms and Conditions, the Conservation Recommendations listed in the 2012 USFWS Biological Opinion.
  - Reasonable and Prudent Measures
    - Minimize grizzly bear conflicts associated with all outfitter and guide permitted activities and their user clients.
    - Minimize habituation and food conditioning related to outfitter and guide permitted facilities and activities.
  - Terms and Conditions
    - The Forest will inspect all outfitter and guide permitted facilities at least once every 5 years.
    - The Forest will document all inspections, including any violations of food storage regulations or other bear-related incidents associated with outfitter and guide permits, their employees, facilities and clients.
    - If 2 grizzly bears are killed related to outfitter and guide permits associated with attractants at permitted facilities in the action area (as described in the Incidental take Statement), the Forest will coordinate with the Service regarding the adequacy of existing mechanisms to minimize additional take.
  - Conservation Recommendations
    - Educate outfitter and guide permittees about their responsibilities relating to laws and regulations concerning the protected status, taking, and conservation of grizzly bears (1986 Interagency Grizzly Bear Management Guidelines, 1993 Grizzly Bear Recovery Plan, 2007 Final Conservation Strategy for the Grizzly Bear in the GYA), the potential for occurrence of grizzly bears near or in permitted facilities (especially overnight camps or those associated with hunting), the risks of working in bear country and the need for heightened awareness of bears, appropriate personal safety measures, and proper behavior in bear country.
    - Permittees should make bear pepper spray and proper training on its use available to field-going employees in areas of bear occurrence
    - Identify any areas with grizzly bear conflicts that would prompt temporary or permanent changes to outfitter and guide activities, such as trail riding or camp relocations.

## No Action Alternative

This alternative would not convert the transitional Special Use Outfitting and Guiding permits into Priority Use permits. Previously temporary permits were issued annually to applicants. This practice has been changed by direction of the Forest Service at a National level. New guidelines state that temporary permits may only be issued once every two years to an applicant on a given Ranger District and season of use. The 15 holders of transitional Special Use Outfitting and Guiding permits would no longer possess the transitional permits and would again have to apply every other year or on an as needed basis for temporary permits. Holders of permits that cover both the Washakie and Wind River Districts would have the ability to apply for temporary days on one District each year and still operate every year.

## Chapter 3: Environmental Impacts

This section summarizes the potential impacts of the proposed action and alternatives for each impacted resource. The following results of the analysis are summarized based upon the Key Issues identified in Chapter 1 of this document. Affected resources that directly correlate to the Key Issues will be discussed under each Issue Statement.

### ***Issue statement 1- What effects will the proposed activities have on Threatened, Endangered, and Sensitive Species?***

#### Wildlife and Wildlife Habitat

##### Threatened, Endangered, Candidate and Sensitive Species

A biological assessment (BA) was prepared to document the effects of the proposed action on federally listed endangered, threatened, or candidate species and Forest Service Sensitive Species for the purpose of consultation with the U.S. Fish and Wildlife Service. The BA is a part of the project record and is incorporated by reference here. The table below summarizes the effects determinations for each species.

**Table 3-1: Summary of impact analysis determinations made for Federally listed endangered, threatened, or candidate species and Forest Service Sensitive Species**

Species	Status	Determination
<i>Federally Endangered, Threatened, or Candidate Species</i>		
Canada lynx ( <i>Lynx canadensis</i> )	ESA Threatened	No Effect
Canada lynx Critical Habitat		No Effect
Grizzly bear ( <i>Ursus arctos horribilis</i> )	ESA Threatened	May affect, likely to adversely affect
North American wolverine ( <i>Gulo gulo luscus</i> )	ESA Proposed	Not likely to jeopardize continued existence
Greater Sage-Grouse* ( <i>Centrocercus urophasianus</i> )	ESA Candidate	No Impact
<i>Forest Service Region 2 Sensitive Species</i>		
American marten ( <i>Martes americana</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Fringed myotis ( <i>Myotis thysanodes</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
River otter ( <i>Lontra canadensis</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Rocky Mountain bighorn sheep* ( <i>Ovis canadensis canadensis</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Rocky Mountain gray wolf ( <i>Canis lupus</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Spotted bat* ( <i>Euderma maculatum</i> )	USFS R2 Sensitive	No Impact
Townsend's big-eared bat* ( <i>Corynorhinus townsendii</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward

Species	Status	Determination
<i>pallescens</i> )		federal listing.
Hoary bat ( <i>Lasiurus cinereus</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Water vole* ( <i>Microtus richardsoni</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
White-tailed prairie dog* ( <i>Cynomys leucurus</i> )	USFS R2 Sensitive	No Impact
American peregrine falcon* ( <i>Falco peregrinus anatum</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Bald eagle* ( <i>Haliaeetus leucocephalus</i> )	USFS R2 Sensitive	No Impact
Black Tern* ( <i>Chlidonias niger</i> )	USFS R2 Sensitive	No Impact
Boreal owl ( <i>Aegolius funereus</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Brewer's sparrow ( <i>Spizella breweri</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Ferruginous hawk* ( <i>Buteo regalis</i> )	USFS R2 Sensitive	No Impact
Grasshopper sparrow* ( <i>Ammodramus savannarum</i> )	USFS R2 Sensitive	No Impact
Harlequin duck ( <i>Histrionicus histrionicus</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Lewis' Woodpecker* ( <i>Melanerpes lewis</i> )	USFS R2 Sensitive	No Impact
Loggerhead shrike* ( <i>Lanius ludovicianus</i> )	USFS R2 Sensitive	No Impact
Long-billed Curlew* ( <i>Numenius americanus</i> )	USFS R2 Sensitive	No Impact
Mountain Plover* ( <i>Charadrius montanus</i> )	USFS R2 Sensitive	No Impact
Northern Harrier* ( <i>Circus cyaneus</i> )	USFS R2 Sensitive	No Impact
Northern Goshawk ( <i>Accipiter gentilis atricapillus</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Olive-sided Flycatcher ( <i>Contopus cooperi</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Short-eared Owl* ( <i>Asio flammeus</i> )	USFS R2 Sensitive	No Impact
Trumpeter Swan ( <i>Cygnus buccinator</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Western Burrowing Owl* ( <i>Athene cucularia</i> )	USFS R2 Sensitive	No Impact
Boreal toad ( <i>Bufo boreas boreas</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Columbia spotted frog ( <i>Rana luteiventris</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Northern leopard frog ( <i>Rana pipiens</i> )	USFS R2 Sensitive	May impact individuals but will not lead toward federal listing.
Hudsonian emerald* ( <i>Somatochlora hudsonica</i> )	USFS R2 Sensitive	No Impact
*Animal species not covered in this BA/BE.		

Regional wildlife sensitive species were analyzed in relationship to habitat types and included in a biological evaluation (BE) which is available in the project record. Effects documented in the BE are summarized below by habitat type. A complete discussion is available in the BE located in the project record.

## Grizzly Bear

### *No Action Alternative*

Effects of the action are the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action. The no action alternative would have beneficial effects to the grizzly bears. All fifteen permits have been operating on the Forest since 2008 or before. With the no action alternative the permits would not be reissued as priority use. That means then that permit, if not reissued as temporary, would not be operating in grizzly bear habitat, displacing, or habituating grizzly bears due to human activity. This would have a positive effect on grizzly bears from a reduction in habituation to human activity. However there would still be human disturbance from other outfitters & guides as well as the public, which may limit the beneficial effects.

### *Proposed Action*

Effects of the action are the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action. Direct effects to grizzly bears are those effects on individual bears that are caused by the action and occur at the same time and place as the action. Indirect effects to grizzly bear habitat are those effects that are caused by the action and are later in time, but are still reasonable to occur.

Grizzly bears met the recovery goals and were delisted in 2007, but a court order relisted the bear in 2009. Over the years, the recovery criterion that is proving most problematic for bear recovery is the mortality criterion. This is due, in part, to the fact that the population is growing, and bears are appearing in areas they have not been for years. The more bears there are, the more likely they are to run into a human conflict situation leading to mortality (USGS 2000). This mortality seems to be more related to hunting than other activities. Other factors that can affect the grizzly bear include: human development in and around grizzly bear habitat, human tolerance for grizzly bears, and proper sanitation to prevent bears from habituation to human foods and human development. Human tolerance may be the most critical factor influencing the recovery of the grizzly bear as the bear population expands into areas where they have not been in recent years (USDA 2002). All of these permitted activities have been occurring in this BMU and BAU for years.

Potential effects to grizzly bears arise from client use days on the Forest as well as the associated facilities. While bear numbers have increased with this current level of outfitter/guide use, recent increases in conflicts show cause for concern. It may be that with the decrease in certain food sources (ie. whitebark pine), the number of people utilizing the Forest may indeed be causing an increase in conflicts.

A major consideration in determining effect of Outfitter/Guide program is the permitted facilities. As described earlier, grizzly bears are opportunistic feeders and will prey or scavenge on almost any available food. This behavior can place grizzly bears in direct conflict with humans. Outfitter/Guide facilities consist of base, progressive, and spike camps, which include tents, supplies, livestock, and human and livestock food. Outfitters providing mostly overnight hunting activities will also have meat poles and big game carcasses. Big game carcasses and gut piles are

known major attractants for grizzly bears during the fall hunting season. The effect of this infrastructure is that it attracts and may condition bears to these food reward sites; even clean and well cared for camps will attract bears. If bears do not get food rewards, the camp operations are not likely to have any real negative effect. If camps are routinely unclean and bears are getting rewards, this becomes a dangerous situation for bears and for people, and drastically increases the chances of conflicts in the future. Day use only permits have much less likelihood for conflict as there is little stockpile of human and livestock foods.

Because outfitter/guides must comply with standards and guidelines required by the Forest Service, both while operating within and outside of the Primary Conservation Area, there is a tendency for positive or neutral rather than negative effects on grizzly bears. All permits on the Shoshone must follow the Shoshone National Forest Food Storage Order, the Grizzly Bear Protection provisions, and the Grizzly Bear Management and Protection Plan found in the Operating plans of each permit. None of these 15 permits are allowed to use electric fences as primary food storage, which keeps the permits in compliance with the 2011 BA and the 2012 BO.

Conflicts could still occur even when all the proper procedures are followed. There are approximately 10 records of property damage and 7 instances of bears getting food rewards in outfitter camps on the Shoshone from 1995 to 2013. However reporting is only somewhat accurate. It does represent a small percentage of the total conflicts on the Forest.

None of these 15 permits being analyzed have had any associated bear mortalities; however, by the very nature of Outfitter and Guide operations, their camps and other permitted structures can lead to bear mortality, connected to food conditioning and bear habituation (SNF 2011). Not all the permits have good inspection histories and many of the permits out of the Washakie Ranger District did not have food storage or the bear management and protection plans associated with their permits. As part of the renewal, all permits will have protection plans in their operating plans, and all will be required to follow the food storage order. This will help reduce the potential for bear conflicts. Therefore, even though the effects to grizzly bears associated with the 15 permits in question, due to the possibility of human conflict leading to mortality associated with the proposed action, the proposed action “**may affect, likely to adversely affect**” grizzly bears.

### *Cumulative Effects*

Cumulative effects are those effects of future state or private activities, not involving federal activities that are reasonably certain to occur within the action area of the federal action.

Cumulative effects are effects that increase by successive addition, or incrementally by a series of actions.

Additional activities that will likely occur in and adjacent to the analysis area include actions on state and private lands adjacent to the Forest. On state lands immediately adjacent to the Forest in grizzly bear habitat, these activities could include timber harvest, livestock grazing, and increased recreation. Activities on private lands within and immediately adjacent to the Forest that may impact grizzly bears and their habitat could also include timber harvest, grazing, increased recreation, further residential development, and wildfires. Habitat modification or conversion through development could reduce or fragment and isolate available habitat on the Forest, and reduce its effectiveness due to human disturbance. Bears are expanding on to private lands, especially north of Dubois.

As stated in the 2011 BA, hunting activities associated with outfitter and guides are regulated and permitted by the state of Wyoming. Wyoming state law requires that non-residents use outfitter and guides services when hunting in the Wilderness Areas. Hunter conflicts tend to peak in October, and a large proportion of known grizzly bear mortalities are hunter related.

Cumulative effects defined for NEPA are the effects that result from the incremental impact of the planned action when added to past, present, and reasonably foreseeable actions.

The analysis area has expanding recreation of various forms, including cross-country and backcountry skiing, snowshoeing, snowboarding, hiking, backpacking, dogsledding, and other activities that may affect grizzly bears. Fall activities include ATV use and hunting, especially late season hunts that occur in November or later (Swenson et al. 1997). Early spring activities, other than snowmobiling, might include skiing or snowshoeing. Many forms of outdoor recreation occur in the summer, most of which are very similar to those activities included in these permits.

There are special use permits in this area for various winter activities such as the National Outdoor Leadership School, resort activities, recreational residences, outfitting & guiding, dogsledding, cross-country ski races, etc. These activities have the potential to affect grizzly bears.

Past, summer sources of impact in the cumulative effects areas of concern included domestic livestock grazing, commercial timber harvest, tie hacking, hunting, oil and gas exploration, horseback riding, fishing, personal use firewood gathering, camping, and general developed and dispersed recreation. Some of these past activities have occurred over a long period of time and many presently occur. Past modifications to wildlife habitat have come primarily from the establishment of roads, harvest of timber, fuels reduction activities, grazing of livestock, residential development adjacent to National Forest System lands, and suppression of wildfire.

Besides the proposed project, additional sources of impact (past and present) include NOLS permit reauthorization and increase in user days, constructed and maintained roads, off-road trails, primitive roads, several developed camp grounds, highway construction, active and proposed timber harvest, fuels reduction activities, dispersed and developed recreation sites, multiple recreational residence groups, snowmobile trails, residential or guest ranches, outfitter camps and the associated fall hunting, summer pack trips, and dispersed summer, fall, and winter use in these areas. Additional sources of impacts within Wilderness Areas are associated with other outfitter and guide activities as well as dispersed recreation. These activities would be similar to those being analyzed with these permits.

The direct and indirect effects of the proposed action are disclosed in this document as being insignificant and short-term negative impacts. Considering existing and foreseeable impacts to grizzly bears over the area of concern, the proposed actions would not significantly add to the cumulative effects on grizzly bears or their habitat in the long-term.

## Forested Species

### *No Action Alternative*

Sensitive species that utilize forested habitats are fringed myotis, Townsend's big-eared bat, hoary bat, American marten, Rocky Mountain gray wolf, Northern Goshawk, Boreal Owl, Black-backed Woodpecker, and Olive-sided Flycatcher. These species generally inhabit mature conifer or mixed conifer forests.

Under the No Action alternative, there would be no priority use permits issued to these permittees. They may still apply and receive temporary use permits similar to the current condition. If there were no permits used then there may be a beneficial impact to these animals, with a decrease in human use in the forested areas. However, there would still be similar use by other outfitter & guides as well as the public. There for there would be no measurable direct or

indirect effects on the forested environment. Therefore, the No Action alternative would be a “**no impact**” to these nine sensitive species: fringed myotis, Townsend’s big-eared bat, hoary bat, American marten, Rocky Mountain gray wolf, Northern Goshawk, Boreal Owl, Black-backed Woodpeckers, and Olive-sided Flycatcher.

#### *Proposed Action*

While these species may be present in forested portions within the analysis area, there are no measurable direct or indirect impacts to forested habitats from recreational use. Most of the human development type activities affect wildlife habitat by changing or eliminating the native vegetation, and the increase of human activities/disturbance. There is no ground disturbing activity or permanent structures authorized under these permits, so all effect would be from human activities/disturbance. Any effects would be from a temporary displacement of individuals. This displacement may occur during the duration that a camp is in habitat that was occupied by one of the species or it may be as short as the time that it takes a group to walk or ride by occupied habitat. Depending on the time of year the effect could be larger if the human disturbance is near a nest or roost. Therefore, the proposed action “**may adversely impact individuals, but not likely to result in a loss of viability on the planning area, nor cause a trend to federal listing or a loss of species viability rangewide,**” to these nine forested sensitive species.

### Grassland/Sagebrush Species

#### *No Action Alternative*

The effects under the No Action alternative would be similar to the effects analyzed for the forested species above. If there were no permits used then there may be a beneficial impact to these animals, with a decrease in human use in the sagebrush and grassland areas. However, there would still be similar use by other outfitter & guides as well as the public. There for there would be no measurable direct or indirect effects on the sagebrush and grassland environments. Therefore, the No Action alternative would be a “no impact” to these four sensitive species: Rocky Mountain bighorn sheep, Ferruginous Hawk, Brewer’s Sparrow, and Greater Sage-grouse.

#### *Proposed Action*

Generally impacts to this habitat from recreational activities are from disturbance rather than habitat alterations. Big horn sheep are known to occur within the analysis area, along with Brewer’s Sparrows. Greater Sage-grouse may utilizes some of the lower portions of the districts for summer habitat, but there are no known leks on either of the two districts. Ferruginous Hawks may also use some portions of the two districts, but there presents within the analysis area would be incidental.

There are most likely some direct impacts from recreational permits on Brewer’s Sparrows in terms of direct disturbing or destroying of nests. The disturbance impacts of recreational activities along trails may be greater in grassland/shrub habitat as opposed to forested habitats (Haman et al. 1999). In some studies it has been found great distance to nests and depressed densities of grassland birds adjacent to trails and roadways (Haman et. Al. 1999). With the use spread out over different parts of the analysis area, permits occur throughout the year and most of the use occurring on system trails, there should be less of an overall impact to Brewer’s Sparrows.

There are four bighorn sheep hunt areas within the analysis area. These are Yount’s Peak, Whiskey Mountain, Franc’s Peak, and Temple Peak. Impacts to bighorn sheep from recreational activities would be mainly from displacement. This would be from direct displacement or from disrupting access to forage resources. Energetic costs of displacement have been studied and are

well understood for the winter months; however, it is not well understood for the summer. Studies have shown an increase in bighorn sheep heart rates in response to human disturbance (Canfield et. Al. 1999). An occasional disturbance may not be a significant energetic cost, the cost of repeated events could be considerable (Canfield et. Al. 1999). These impacts should be temporary and with available forage in the summer the energetic costs of disturbance and displacement should be minor.

With minor available habitat within the analysis areas for Greater Sage-grouse and Ferruginous Hawks there would be “No Impact” to these two species. Due to displacement and disturbance from recreational activities outlined in the permits there would be a **“may impact individuals, but not likely to result in a loss of viability on the planning area nor cause a trend toward federal listing”** for these two species.

## Riparian Species

### *No Action Alternative*

Under the No Action alternative, there would be no priority use permits issued to these permittees. They may still apply and receive temporary use permits similar to the current condition. If there were no permits used then there may be a beneficial impact to these animals, with a decrease in human use in riparian areas. However, there would still be similar use by other outfitter & guides as well as the public. Several places that show not functioning or functioning at risk stream reaches may not be the result of these permits, so by not issuing these it may or may not help the riparian dependent wildlife species. The reduction may help to reduce the effects at several of these high use public recreated spots. There for there would be no measurable direct or indirect effects on the riparian areas. Therefore, the No Action alternative would be a “no impact” to these seven sensitive species: water vole, river otter, trumpeter swan, harlequin duck, boreal toad, Columbia spotted frog, and northern leopard frog.

### *Proposed Action*

Many studies have shown impacts from recreational activities, such as hiking and backpacking, to small riparian species due to displacement, energy expenditure due to disturbance, habitat modification, forage removal, and cover removal (Hickman et. Al. 1999). Most of the analysis area has streams and riparian area that are in properly functioning condition. However there are some areas that have functioning at risk or not function streams and riparian areas. See Hydrology and Fisheries reports for discussion of riparian conditions. These areas of higher use, both public and permitted, can impact the riparian soils and cause localized habitat impacts for riparian species. Bird species, such as the harlequin duck, may be displaced from nests or water ways due to disturbance from recreational activities such as hiking and camping along shorelines. This type of disturbance could be very minor with birds moving to new areas or coming back after a short while or it could have longer impacts with possibility of nest abandonment if disturbance persists. Due to these potential types of impacts to the riparian habitat and disturbance to the species the proposed action determination would be a **“may impact individuals, but not likely to result in a loss of viability on the planning area nor cause a trend toward federal listing”** for these seven species.

## Cliff Species

### *No Action Alternative*

Under the No Action alternative, there would be no priority use permits issued to these permittees. They may still apply and receive temporary use permits similar to the current condition. If there were no permits used then there may be a beneficial impact to these animals,

with a decrease in human use in cliff areas. However, there would still be similar use by other outfitter & guides as well as the public. There for there would be no measurable direct or indirect effects on the riparian areas. Therefore, the No Action alternative would be a “no impact” to the Peregrine Falcon.

### *Proposed Action*

Human activities, including recreation, are known to impact raptors in at least 3 ways: (1) by physically harming or killing eggs, young, or adults; (2) by altering habitats; and (3) by disrupting normal behavior (Hamann et. Al. 1999). During courtship and nest building raptors may be extremely sensitive to disturbance and may desert the nest site. Recreational or research disturbance of a nesting area or nest site may cause any of the following problems: (1) the parent birds may become so disturbed that they desert their eggs or young completely; (2) the incidence of egg breakage or trampling of young by parent birds may be increased, as may the chances of cooling, overheating, loss of humidity, and avian predation of eggs; (3) newly hatched birds may be chilled or overheated and may die in the absence of brooding; (4) older nestlings may leave the nest prematurely, damaging still growing feathers and breaking bones at the end of futile first flights, or may be forced to spend one night or several on the ground where they may be highly vulnerable to predation; (5) mammalian predators may follow human scent trails directly to the eggs and young; (6) the attention of other people may be attracted by the visitor’s activities; (7) mishandling a nestling may damage feathers, bones, and claws; and (8) on cliffs, the visitor may inadvertently knock rocks and other debris onto eggs or young birds” (Hamann et. Al. 1999).

For cliff species, like the peregrines, disturbance from these permits would come from climbing/mountaining in or near eyries. Depending on the timing of the disturbance this could be of little impact to the bird or cause impacts to the nest. Other impact would to habitat and displacement of prey species. This would be similar impacts to what has been occurring with these permits, but also from public recreational activities. Therefore, the Proposed Action, “may impact individuals, but not likely to result in a loss of viability on the planning area nor cause a trend toward federal listing” for the Peregrine Falcon.

### **Cumulative Effects to Forest Service Sensitive Species**

Cumulative effects relative to NEPA are those effects of past, present, and reasonably foreseeable activities, regardless of jurisdiction, within the action area of the federal action. Sources of impacts or change are those activities, developments, or events that cumulatively have the potential to change biological or physical character of a given area.

Past sources of impact in the cumulative effects areas of concern included domestic livestock grazing, commercial timber harvest (outside Wilderness Areas), tie hacking, hunting, oil and gas exploration, horseback riding, fishing, personal use firewood gathering, camping, and general developed and dispersed recreation. Some of these past activities have occurred over a long period of time and many presently occur. Past modifications to wildlife habitat have come primarily from the establishment of roads, harvest of timber, fuels reduction activities, grazing of livestock, residential development adjacent to National Forest System lands, and suppression of wildfire.

Besides the proposed project, additional sources of impact (past and present) include NOLS permit reauthorization and increase in user days, constructed and maintained roads, off-road trails, primitive roads, several developed camp grounds, highway construction, active and proposed timber harvest, fuels reduction activities, dispersed and developed recreation sites, multiple recreational residence groups, snowmobile trails, residential or guest ranches, outfitter camps and the associated fall hunting, summer pack trips, and dispersed summer, fall, and winter use in these areas. Additional sources of impacts within Wilderness Areas are associated with

other outfitter and guide activities as well as dispersed recreation. These activities would be similar to those being analyzed with these permits.

With these permits and the other proposed or ongoing activities, there would be displacement of some species to surrounding habitats. This could be minor and short in duration if the surrounding habitats are available and not already occupied or if the activity associated with the displacement is very short in duration, such as hiking on system trails.

The direct and indirect effects of the proposed action are disclosed in this document as being insignificant and short-term negative impacts. Considering existing and foreseeable impacts to Forest Service Sensitive Species over the area of concern, the proposed actions would not significantly add to the cumulative effects on those species or their habitat in the long-term.

***Issue statement 2- What effect will the proposed activities have on wetlands and riparian areas?***

## Wetlands and Riparian Areas

The following summary of effects is compiled from the Soils, Hydrology, Fisheries, and Range Resources reports located in the project record for this project. They are incorporated here by reference.

### *No Action Alternative*

The transitional permits would not be converted to Priority Use permits for a 10 year period. This would potentially reduce the number of users along trails and campsites as well as the number of recreational livestock within the analysis area. This may facilitate some reduction of effects of recreational use as well as effects of livestock use in localized areas. The reduction in use may facilitate some recovery in sensitive areas to soil and vegetative resources. Trails and campsites would continue to be used by the general public and other outfitting and guiding businesses so while there is a chance that some recovery of these areas may occur, it is unlikely that a measurable benefit to soils, riparian vegetation, and hydrologic function would occur. Even with the potential reduction of use, the holders of transitional permits would still be able to apply for temporary use every other year following the Forest's temporary use permit requirements. In addition the days would be available for other organizations to apply for so the possibility exists of there being no reduction in current effects as a result of this alternative. Due to the fact that not issuing the permits would likely not result in measurable effects there would be no cumulative effects to wetland and riparian areas.

### *Proposed Action*

This alternative would convert the Transitional Special Use permits to Priority Use permits with the existing permitted days. All existing use related to the Transitional Special Use permits would continue at or very near current levels. Additional impacts associated with the conversion to Priority Special Use permits are not expected.

Progressive backpacking and associated use of trails and campsites with the proposed action has the potential to contribute negative effects to wetland and riparian areas. Activities that area associated with the permits that may affect wetland and riparian areas are hiking, camping, off trail exploration, and fishing. Effects associated with off trail exploration and fishing are expected to be occasional, localized, and with minimal or even benign impacts to the resource. Trails and campsites provide areas devoid of vegetation and increase the potential for erosion.

Where trails ascend or descend steep slopes increased opportunity for excessive erosion exists during runoff events. When these conditions on trails are along or cross water sources sediment delivery to streams may occur. However, use associated with the permits in question would contribute an insignificant amount of effect to existing conditions and are not expected to change the condition of any trails utilized. Overuse of dispersed campsites can cause soil compaction and deterioration of vegetation and can lead to increased surface water runoff and movement of sediment. When these areas are within 100 feet of water sources they can deliver sediment to streams during runoff events. Wilderness campsite data collected in 2013 indicated that there are areas devoid of vegetation and less than 100 feet from streams in several watersheds where permitted activities would occur. These sites have potential to deliver sediment to the adjacent streams, water bodies, or wetlands with continued use. However, Forest Service policy associated with permitted progressive backpacking restrict camping within 100 feet of water. Therefore if permit requirements and BMPs are followed and practiced by the permittees it is not expected that additional impacts to water resources will occur as a result of the permits being converted and there is no significant effects to wetlands and riparian areas anticipated from the conversion of these permits.

Livestock use associated with 4 of the 15 permits being analyzed have the potential to impact wetlands and riparian areas. Reduction in riparian vegetative cover, sediment delivery, bed/bank stability, flow regimes, and water quality may occur in localized areas with the permitted livestock use (see Hydrology Specialist Report). These impacts would be very similar to what is occurring currently and are not expected to increase due to the conversion of the permits. Overall riparian habitat conditions on the Forest are improving or remaining stable and mostly are meeting desired conditions. However, there are localized areas that have received heavy use by recreational livestock (outfitting and general public) and do have issues related to high use and limited suitable grazing. Design Features associated with this project would limit impacts associated with the current use permitted under the transitional permits that would continue under a Priority Special Use permit. Following the design features regarding utilization standards, discouraging livestock use in sensitive riparian/wetland areas, and restraining livestock at least 100 feet from water sources will minimize impacts associated with activities that would be authorized and the effects of the action are not expected to be significant.

### *Cumulative Effects*

The vast majority of the use analyzed in the issuance of the 15 permits is within wilderness areas. Past sources of impact in the cumulative effects areas of concern in wetland and riparian areas included domestic livestock grazing, hunting, horseback riding, fishing, and dispersed recreation. Some of these past activities have occurred over a long period of time and many presently occur. A reasonably foreseeable future activity is the potential increase in permitted days to be analyzed under the National Outdoor Leadership School (NOLS) permit reissuance and increase in days.

The direct and indirect effects of use associated with the permits in question would add an insignificant amount of effect when added to other recreational use by other permitted outfitters and the general public. Grazing associated with recreational outfitter livestock would add cumulatively to commercial livestock use in areas that overlap. However, most of these areas of overlap are concentrated near trailheads and most recreational livestock would be travelling through these areas and would contribute very little to overall utilization in those areas. Utilization by livestock associated with the permits in question would add cumulatively to utilization by private recreational livestock as well as other permitted outfitter livestock in localized areas. This may cause utilization in these areas to exceed Forest plan standards in meadows and around high mountain lakes. However, by following the Design Features

associated with the proposed action livestock use associated with the permits is not expected to have a significant negative effect.

***Issue statement 3- What effect will the proposed activities have on the economics of the permit holders?***

## Economics

In 2010, recreation visitor use on the Shoshone National Forest provides a total of approximately 6.5 million dollars of direct income and 2.5 million dollars of indirect income to the counties surrounding the Forest in Wyoming and Montana according to the Estimated Economic Contribution of National Forests and Grasslands web site located at the following location.

[http://fsweb.wo.fs.fed.us/economic\\_contribution/index.shtml](http://fsweb.wo.fs.fed.us/economic_contribution/index.shtml)

Some of the income generated by recreation visitor use on the Forest directly benefits outfitters and guides possessing Priority Use permits to conduct business on National Forest System lands. The 15 Transitional Special Use permit holders charge an average \$200.00 per service day with individual daily cost to the consumer ranging from approximately \$35.00 to \$750.00 per service day depending on the organization and the type of activity outfitted.

### *No Action Alternative*

This alternative would not convert the transitional Special Use Outfitting and Guiding permits into Priority Use permits. The transitional permitting process would end and the permit holders would no longer have a priority permit to conduct business on the Shoshone National Forest. The individuals and organizations would be able to apply for temporary permits. Previously temporary permits were issued annually to applicants. This practice has been changed by direction of the Forest Service at a National level. New guidelines state that temporary permits may only be issued once every two years to an applicant on a given Ranger District and season of use. Without Priority Use permits it is possible that income loss to the individual permit holders would occur, however, if the groups applied annually on different Ranger Districts it is possible that they would be able to continue to operate under the temporary permitting system. There would however, be no guarantee that they would be successful in obtaining temporary days. Any loss of direct income as a result of not having the guaranteed service days associated with a Priority Use permit would potentially reduce the amount of economic contribution of the Forest to the surrounding communities. Visitors using outfitters and guides often stay a night or two in the communities surrounding the Forest and contribute to the economy of those communities. While a loss of income to the outfitter and may be realized and may even be significant to the individual, this would not be a significant decrease in the overall economic contribution of the Shoshone National Forest to surrounding counties.

### *Proposed Action*

This alternative would convert the permits to Priority Use permits which would provide a guaranteed number of service days to the permittees which would potentially provide a consistent economic benefit to the permit holders. The indirect income that would be incorporated into local economies is hard to estimate, but it is reasonable to assume that visitors would stay a day or two in the local communities and contribute to the economy. However, as with the no action alternative, while direct income to the outfitter and may be realized and may even be significant to the individual, this would not be a significant increase in the overall economic contribution of the Shoshone National Forest to surrounding counties.

### *Cumulative Effects*

Any addition or loss of income as a result of issuing or not issuing the permits would add cumulatively to the economic factors in local communities. This cumulative effect is hard to predict and without extensive surveys and analysis. It is reasonable when comparing the number of days issued and the average cost of a service day associated with the permits in question that any economic gain or loss when added or subtracted to the overall economic contribution of the Shoshone National Forest to surrounding counties would be insignificant.

## Other Resources

### Recreation

The majority of recreational activities associated with the Transitional Special Use permits occur on or near trails within the Fitzpatrick, Popo Agie, and Washakie Wilderness areas. One of the measurements of a wilderness experience is solitude. One of the ways the Forest measures this aspect of the wilderness experience is through counting the number of parties encountered by Forest Service personnel on a daily basis documented through Wilderness Ranger hitch reports. Capacity is a term used by the Forest Service to describe the number visitor use days an area can sustain on any given day and maintain the Wilderness resource. The current Forest Plan standard for capacity for pristine Wilderness Opportunities is no more than two encounters with other groups per day, for Primitive Wilderness Opportunities no more than 6 encounters with other groups per day, and for Semi-Primitive Wilderness Opportunities no more than 10 encounters with other groups per day.

Based on 2013 Wilderness Ranger hitch reports Forest Service personnel encountered an average 1.5 groups per day in the Washakie Wilderness and an average of 3.6 groups per day in the Wind River Mountains (Popo Agie and Fitzpatrick Wilderness areas).

### *No Action Alternative*

This alternative would not convert the transitional Special Use Outfitting and Guiding permits into Priority Use permits. The transitional permitting process would end and the permit holders would no longer have a priority permit to conduct business on the Shoshone National Forest. Currently capacity is within Forest Plan standards and would remain so with this alternative. There would be the possibility that not issuing priority permits would slightly decrease outfitting and guiding use in the three Wilderness Areas. However, the individuals and organizations would be able to apply for temporary permits. Previously temporary permits were issued annually to applicants. This practice has been changed by direction of the Forest Service at a National level. New guidelines state that temporary permits may only be issued once every two years to an applicant on a given Ranger District and season of use. The current holders of Transitional Priority Use permits would potentially be able to again apply for temporary permits each year on different Districts which would simply shift use between areas, but not necessarily reduce use on the two Districts. Therefore, it is impossible to state definitively that the number of group encounters per day would be decreased as a result of not issuing Priority Use permits. Since it is likely there would be no measurable affect to capacity within the analysis area there would be no cumulative effects of this alternative.

### *Proposed Action*

This alternative would convert the Transitional Special Use permits to Priority Use permits with the existing permitted days. All existing use related to the Transitional Special Use permits would continue at or very near current levels. Additional impacts associated with the conversion to Priority Special Use permits to capacity are not expected since use levels would remain the same. Currently the capacity in the analysis area is within Forest Plan standards and since no change in the current use due to the conversion of the permits there would be no effects and therefore no cumulative effects associated with this alternative.

## Sensitive Plants

There are 15 Region 2 sensitive plants that occur on the Shoshone National Forest that do not occur within the analysis area of the project. Over the last 40 years extensive surveys have occurred and no specimens have been identified so these 15 species have been excluded from this analysis (see Sensitive Plants BE in project record).

The following species are known to occur within the project area and were analyzed: triangle lobed moonwort (*Botrychium ascendens*); livid sedge (*Carex livida*); Wyoming tansymustard (*Eescurainia chamissonis*); Chamisso's bristlegrass (*Eriophorum chamissionis*); Fremont's bladderpod (*Lesquerella fremontii*); Kotzebue's grass-of-Parnassus (*Parnassia kotzebuei*); whitebark pine (*Pinus albicaulis*); entire-leaf goldenweed (*Pyrrcoma integrifolia*); sageleaf willow (*Salix candida*); peat moss (*Sphagnum angustifolium*); and lesser bladderwort (*Utricularia minor*).

Potential threats are defined as activities (Forest Service or otherwise) or natural conditions that currently or potentially have negative effects on rare plant populations or their habitats. Threats due to the current project can be divided into the following types:

- Direct effects from recreational activities (e.g., off-trail hiking, rock climbing, camping), livestock/horsepacking (e.g., herbivory, trampling), or maintenance activities (e.g., trails, campsites, associated structures)
- Indirect effects from alteration of ecological factors (e.g. invasive species introduction or treatment, change in community structure, change in hydrologic or edaphic conditions) or habitat loss (e.g., construction of new trails, campsites, and associated structures)

All R2 sensitive species may be impacted by the above threats. A summary of effects determination for sensitive species is presented below. For a more detailed account of the species analyzed the effects of the proposed action see the Biological Evaluation for sensitive plants prepared by the Forest Botanist located in the project record.

### *No Action Alternative*

The overall determination for species considered under Alternative 1 (No Action) is “**No impact**” based on the following rationale. Transitional use permits would not be converted to priority use, therefore current transitional permit uses would cease on the Forest and there would be no activities that would impact sensitive plants associated with the conversion to Priority Special Use permits. Since there are no direct or indirect impacts associated with this alternative there would be no cumulative effects to sensitive plants.

### *Proposed Action*

The overall determination for species considered under Alternative 2 (Proposed Action) is “**May adversely impact individuals, but not likely to result in a loss of viability in the planning area, nor cause a trend toward federal listing**” based on the following rationale:

- Current levels of use will be unchanged.
- Impacts (if any) are likely to be light and dispersed. Effects will be minimized through best management practices and project design criteria.
- The broad scale and dispersed nature of this project means that impacts to individual plants cannot be wholly predicted or prevented, but these impacts are likely to be localized and are not likely to affect the viability of sensitive species across the Forest.

## Wildlife

### Management Indicator Species

Potential effects of this proposal were considered for all MIS whose habitat is present and that occur in the analysis area, and that may be affected by the permitted activities. For this analysis, habitat exists for 15 species that could potentially be affected by the activities in the analyzed area. Eight of these species have already been analyzed in the sensitive species or Threatened or Endangered species section, leaving seven MIS to analyze here.

MIS analysis includes how this proposal affects the amount and quality of habitat in the analysis area, habitat distribution and trends within the area and Forest wide, and any changes the proposal may have on population trends.

### Elk/Mule Deer

#### *No Action Alternative*

Under the No Action alternative, there would be no priority use permits issued to these permittees. They may still apply and receive temporary use permits similar to the current condition. If there were no permits used then there may be a beneficial impact to these animals, with a decrease in human use in the forested areas. However, there would still be similar use by other outfitter & guides as well as the public. There for there would be no measurable direct or indirect effects on the forested environment.

The lack of livestock grazing would improve forage quantity in some high use sites as the livestock would not be utilizing summer forage, and therefore more forage would be available for wild ungulates. This would be very localized in effects and would depend on how much other public use would occur in those sites in any given year. The effects of not having these 15 permits operating on the Forest would be very minor and not measurable Forest wide for the elk and deer populations.

#### *Proposed Action*

Most of the permits analyzed here operate outside of winter range and operate critical times for elk and deer. Only two of the permits are primarily hunting outfitter and guides, which operate under state license for hunting. Some of the late season hunts would overlap with winter range, but timing would be before the winter range timing. There may be some displacement of elk and deer when these permits are operating, but it should not cause impacts to the overall populations.

In some high use camping areas, there will still be competition for forage between horses and elk. This would be at a very localized scale and would depend on how much other public use is also occurring in those areas in any given year. Habitat Forest wide would not be affected by these permits, and population trends would be likely remain stable, although elk and deer numbers would continue to be heavily influenced by hunting seasons and regulations, increased predation, and weather.

## Moose

### *No Action Alternative*

Under the No Action alternative, there would be no priority use permits issued to these permittees. They may still apply and receive temporary use permits similar to the current condition. If there were no permits used then there may be a beneficial impact to these animals, with a decrease in human use in riparian areas. However, there would still be similar use by other outfitter & guides as well as the public. Several places that show not functioning or functioning at risk stream reaches may not be the result of these permits, so by not issuing these it may or may not help the riparian dependent wildlife species. The reduction may help to reduce the effects at several of these high use public recreated spots. There for there would be no measurable direct or indirect effects on the riparian areas. This would result in improved habitat for moose on a very limited scale and many not or may not be detectable Forest wide.

### *Proposed Action*

As discussed in the Sensitive species section for riparian species, there are areas of high use within the stream corridors and riparian areas. These areas of higher use, both public and permitted, can impact the riparian soils and cause localized habitat impacts for riparian species. As with the No action alternative, the proposed actions impact to riparian areas and deciduous vegetation would not be enough to contribute to an upward trend in Forest wide moose population.

## Hairy Woodpecker

### *No Action Alternative*

Under the No Action alternative, there would be no priority use permits issued to these permittees. They may still apply and receive temporary use permits similar to the current condition. If there were no permits used then there may be a beneficial impact to these animals, with a decrease in human use in aspen understory and no disturbance to snags. There would be no direct effects to nesting being disturbed or destroyed by cutting of snags to increase safety for camping or trampling of the understory. However, habitat and population trends Forest wide would not likely see any effects.

### *Proposed Action*

This alternative may result in some browse on aspen from horse and llama use in localized areas, thereby maintaining less potential woodpecker habitat than would be possible without this grazing. There would also be a reduction in snags due to tree cutting for firewood and to increase safety at campsites. However, this would be very localized and would not be much more than what would occur from the public or other outfitting & guiding operations. In the permitted camps grazing would be monitored to limited effects to the ground cover. Also, there is the potential to nesting woodpeckers being disturbed or destroyed by cutting of snags to increase safety for camping or trampling of the understory. However, habitat and population trends Forest wide would not likely see any effects.

## Beaver

### *No Action Alternative*

Under the No Action alternative, there would be no priority use permits issued to these permittees. They may still apply and receive temporary use permits similar to the current condition. If there were no permits used then there may be a beneficial impact to these animals, with a decrease in human use in riparian areas. Willow communities and other deciduous vegetation favored by beavers may increase. However, there would still be similar use by other outfitter & guides as well as the public. Several places that show not functioning or functioning at risk stream reaches may not be the result of these permits, so by not issuing these it may or may not help the riparian dependent wildlife species. The reduction may help to reduce the effects at several of these high use public recreated spots. This would result in improved habitat for beavers on a very limited scale and many not or may not be detectable Forest wide.

### *Proposed Action*

As discussed in the Sensitive species section for riparian species, there are areas of high use within the stream corridors and riparian areas. These areas of higher use, both public and permitted, can impact the riparian soils and cause localized habitat impacts for riparian species. As with the No action alternative, the proposed actions impact to riparian areas and deciduous vegetation would not be enough to contribute to an upward trend in Forest wide beaver population.

## Ruffed Grouse

### *No Action Alternative*

Under the No Action alternative, there would be no priority use permits issued to these permittees. They may still apply and receive temporary use permits similar to the current condition. If there were no permits used then there may be a beneficial impact to these animals, with a decrease in human use in aspen understory. There would be no direct effects from grouse nesting being disturbed or destroyed by camping or trampling. However, habitat and population trends Forest wide would not likely see any effects.

### *Proposed Action*

This alternative may result in some browse on aspen from horse and llama use in localized areas, thereby maintaining less potential grouse habitat than would be possible without this grazing. However, this would be very localized and would not be much more than what would occur from the public or other outfitting & guiding operations. In the permitted camps grazing would be monitored to limit effects to the ground cover. Also, there is the potential to grouse nesting being disturbed or destroyed by camping or trampling. However, habitat and population trends Forest wide would not likely see any effects.

## Blue Grouse

### *No Action Alternative*

Under the No Action alternative, there would be no priority use permits issued to these permittees. They may still apply and receive temporary use permits similar to the current condition. If there were no permits used then there may be a beneficial impact to these animals, there would be no direct effects from grouse nesting being disturbed or destroyed by camping or trampling. However, habitat and population trends Forest wide would not likely see any effects.

*Proposed Action*

Effects to blue grouse would be very localized and would not be much more than what would occur from the public or other outfitting & guiding operations. In the permitted camps grazing would be monitored to limit effects to the ground cover. Also, there is the potential to grouse nesting being disturbed or destroyed by camping or trampling. However, habitat and population trends Forest wide would not likely see any effects.

**Cumulative Effects to Management Indicator Species**

The cumulative effects to MIS Species would mirror the cumulative effects discussed above for Forest Service Sensitive Species and therefore the reader is directed to the previous section and the discussion will not be repeated here.

## Chapter 4: Finding of No Significant Impact (FONSI)

As the responsible official, I am responsible for evaluating the effects of the project relative to the definition of significance established by the CEQ Regulations (40 CFR 1508.13). I have reviewed and considered the EA and documentation included in the Project Record, and I have determined that Transitional Special Uses Permit Project will not have a significant effect on the quality of the human environment. As a result, no environmental impact statement will be prepared. My rationale for this finding is as follows, organized by sub-section of the CEQ definition of significance cited above.

### Context

For the proposed action and alternatives the context of the environmental effects is based on the environmental analysis in this EA. This discussion of the project's context provides meaning to the intensity of effects described below to support the rationale for a finding of no significant impact related to each factor.

Activities have been taken place for multiple years and as evidenced by the analysis there have been no resource concerns have arisen. The increase in Priority Use days within the analysis area would not mean an increase in the current ongoing activities. The proposed action would simply convert the ongoing Transitional Priority Use permits into Priority Special Use permits.

### Intensity

Intensity is a measure of the severity, extent, or quantity of effects, and is based on information from the effects analysis of this EA and the references in the project record. The effects of this project have been appropriately and thoroughly considered with an analysis that is responsive to concerns and issues raised by the public. The agency has taken a hard look at the environmental effects using relevant scientific information and knowledge of site-specific conditions gained from field visits. My finding of no significant impact is based on the context of the project and intensity of effects using the ten factors identified in 40 CFR 1508.27(b).

1. *Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.*

Beneficial and adverse impacts of implementing the proposed action have been fully considered in the EA (Chapter 3; pages 11-27). While there will be beneficial effects, this action does not rely on those effects to balance any adverse effects of the action. Detailed specialist reports included in the EA and the Project Record contain comprehensive effects analysis. The findings of the resource specific reports summarized in the EA form the basis for my decision. Adverse effects of the project are minimized by the Design Features and are intermittent and short lived. I find that the proposed action would have neither a significant beneficial or adverse impact.

2. *The degree to which the proposed action affects public health or safety.*

There are limited health and safety hazards to the public, permittees, and Forest Service personnel as a result of the Proposed Action. Outfitting and guiding activities often have a

certain level of risk associated with them depending on the activity. Other than the normal hazards associated with hiking, camping, rock climbing, etc. there exists the potential for human bear conflicts. However, because outfitter/guides must comply with standards and guidelines required by the Forest Service, both while operating within and outside of the Primary Conservation Area the potential for conflicts are not significant. It is my conclusion that this action would not have any adverse effect to public health or safety.

3. *Unique characteristics of the geographic area such as the proximity to historical or cultural resources, parklands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.*

There are no parklands, prime farmlands or wild and scenic rivers within the analysis area. Activities associated with the permits can occur near historical or cultural resources, in or near wetlands, and ecologically critical areas (Resource Natural Areas). Design Features associated with the proposed action minimized effects to historical or cultural resources and protects wetlands and ecologically sensitive areas. After considering the effects recorded in the EA and specialist reports that there are no significant effects associated with the proposed action to any unique resources.

4. *The degree to which the effects on the quality of the human environment are likely to be highly controversial.*

The effects on the quality of the human environment are not likely to be highly controversial. During scoping and other opportunities for public comment, there was no information presented that would indicate substantial controversy about the effects of the project. The activities associated with the conversion of the Transitional Priority Use permits to Priority Special Use permits have been occurring for an extended period of time. Up to date no conflicts have been reported by the general public, other permitted outfitter and guide permit holders, or Forest Service personnel. Based upon my review of comments received, the analysis in the EA and the Project Record, I find that the effects of the proposed action are not controversial.

5. *The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.*

Comments received during scoping, the EA, and Project Record did not reveal any highly uncertain, unique, or unknown risks associated with the effects of the project. The Forest Service has been administering Special Use permits associated with the same activities in the Proposed Action for numerous years and is very experienced in administering Special Use permits. Effects of the Proposed Action to the human environment are not significant or outside what would be expected with permits of this type.

6. *The degree to which the action may establish precedent for future actions with significant effects or represents a decision in principle about a future consideration.*

The issuance of permits associated with the Proposed Action is a site specific analysis and does not set precedent for future actions or present a decision in principle about future considerations. Any proposed future actions associated with Priority Special Use permits will be evaluated on its own merits under a separate environmental analysis.

7. *Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively*

*significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.*

The EA and Project Record account for past, present, and reasonably foreseeable future actions of the Forest Service in the analysis area. The analysis of cumulative effects follows the National Environmental Policy Act (NEPA) regulations (36 CFR 220.6). Based upon my review of the analysis recorded in the EA and the Project Record, I conclude that the Proposed Action does not represent a significant cumulative effect.

8. *The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.*

Consultation with the Wyoming State Historic Preservation Officer has begun and progressive hiking, backpacking, camping, mountain climbing, and rock climbing are activities that pose an insignificant threat to cultural resources. Base camp activities associated with a few permits would not be issued with any decision until locations have been surveyed and full compliance with the National Historic Preservation Act is complied with through consultation with the Wyoming State Historic Preservation Office. Consequently all relevant laws and regulations will be met as well as compliance with the Forest Plan and therefore the Proposed Action will not have a significant effect on scientific, cultural, or historical resources.

9. *The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.*

After a full review of the EA and Project Record, Biological Evaluations and Assessments, and the results of consultation with the United States Fish and Wildlife Service I find that the Proposed Action would not jeopardize the continued existence of grizzly bears in the analysis area and is unlikely to significantly adversely impact any threatened, endangered, or sensitive wildlife or plant species and would not likely lead to a trend toward Federal Listing or cause a loss of viability to the population or species.

10. *Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.*

After reviewing the Proposed Action in light of applicable laws or requirements for each resource I find that the Proposed Action is consistent with all applicable laws or requirements imposed for the protection of the environment. I have concluded based upon my review of the project that this action will not violate Federal, State, or local laws or requirements for the protection of the environment.

## Chapter 5: References

The following references were either cited in the EA, specialist reports, or biological evaluations or used as background references for this analysis.

### Wildlife

- Canfield, J. E., L. J. Lyon, J. M. Hillis, and M. J. Thompson. 1999. Ungulates. Pages 6.1-6.25 in G. Joslin and H. Youmans, coordinators. *Effects of recreation on Rocky Mountain wildlife: A Review for Montana*. Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society. 307pp.
- Hamann, B., H. Johnston, P. McClelland, S. Johnson, L. Kelly and J. Gobielle. 1999. Birds. Pages 3.1-3.34 in G. Joslin and H. Youmans, coordinators. *Effects of recreation on Rocky Mountain wildlife: A Review for Montana*. Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society. 307pp.
- Hickman, G. R., B. G. Dixon, and J. Corn. 1999. Small Mammals. Pages 4.1-4.16 in G. Joslin and H. Youmans, coordinators. *The effects of recreation on Rocky Mountain wildlife: A Review for Montana*. Committee on Effects of Recreation on Wildlife, Montana Chapter of The Wildlife Society. 307pp.

### Wetland/Riparian

- Palmer, M. A., Lettenmaier, D. P., Poff, N. L., Postel, S. L., Richter, B., & Warner, R. (2009). Climate change and river ecosystems: protection and adaptation options. *Environmental Management*, 44, 1053-1068.
- Shanley, J.B, and B. Wemple. *Water quality and quantity in the mountain environment*. Vermont Law Review 26.3 (2002): 717-751. Print.
- University of Wyoming, Water Resources Data Center. Wyoming Water and Climate Map Server. <http://waterplan.wrds.uwyo.edu/Website/Statewide/>. Web. May 30, 2012.
- USDA, Forest Service. (2012). National Best Management Practices for Water Quality on National Forest Lands. Volume1: National Core BMP Technical Guide. FS-990a.
- Wemple, B., J. Shanley, J. Denner, D. Ross, and K. Mills. *Hydrology and water quality in two mountain basins of the northeastern US: assessing baseline conditions and effects of ski area development*. Hydrological Processes 21 (2007): 1639-1650. Print.
- Wyoming Department of Environmental Quality. 2001. Wyoming Surface Water Classification List. Water Quality Division, Surface Water Standards. <http://deq.state.wy.us/wqd/watershed/surfacestandards/Downloads/Standards/2-3648-doc.pdf>
- Wyoming Department of Environmental Quality. 2013. Water Quality Rules and Regulations, Chapter 1, Wyoming Surface Water Quality Standards. [http://deq.state.wy.us/wqd/WQDrules/Chapter\\_01.pdf](http://deq.state.wy.us/wqd/WQDrules/Chapter_01.pdf)
- USDA, Forest Service. 2006. Watershed Conservation Practices Handbook. RoCreeky Mountain Region. FSH 2509.25 (Region 2): FSH 2509.25: Chapter 10- Management Measures and Design Criteria.
- USDA, Forest Service. 2012. National Best Management Practices for Water Quality Management on National Forest System Lands: Volume 1, National Core BMP Technical Guide. FS-990a.
- USDA, Forest Service. 2011. Watershed Condition Framework. FS-977. <http://www.fs.fed.us/publications/watershed/>

Range-Wide YCT Conservation Team. 2009. Conservation strategy for Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*) in the States of Idaho, Montana, Nevada, Utah, and Wyoming. Montana Fish, Wildlife & Parks, Helena. Conservation Agreement.

Shoshone National Forest Riparian Condition, 2013. Maintained in the Supervisor's Office GIS Library.

Shoshone National Forest Fish Distribution and Barriers, 2011. Maintained in the Supervisor's Office GIS Library.

Wyoming Department of Game and Fish, Cody Region. Cody, Wyoming. Stream and Lake Database. 2011.

## **Sensitive Plants**

Cripps, C.L., & E. Horak. 2008. Checklist and ecology of the Agaricales, Russulales and Boletales in the alpine zone of the Rocky Mountains (Colorado, Montana < Wyoming) at 3000-4000 m a.s.l. *Sommerfeltia* 31: 101-123.

Cripps, C.L., & E. Horak. 2010. *Amanita* in the Rocky Mountain alpine zone, USA: new records for *A. nivalis* and *A. groenlandica*. *North American Fungi* 5(4): 9-21.

Cripps, C.L., & J. Ammirati. 2010. Eighth International Symposium on Arctic-Alpine Mycology (ISAM 8), Beartooth Plateau, Rocky Mountains, USA, 2008. *North American Fungi* 5(5): 1-8.

Cripps, C.L., & L.H. Eddington. 2005. Distribution of mycorrhizal types among alpine vascular plant families on the Beartooth Plateau, Rocky Mountains, U.S.A., in reference to large-scale patterns in arctic-alpine habitats. *Arctic, Antarctic, and Alpine Research* 37(2): 177-188.

Fertig, W.F. 2013. (Draft) annotated checklist of the vascular plant flora of the Shoshone National Forest. Unpublished report to Shoshone National Forest (8 September 2013).

Fertig, W.F., R.L. Hartman, R.T. Massatti, and B.E. Nelson. 2013. Annotated checklist of the Wind River Range, Wyoming (U.S.A.). *J. Bot. Res. Inst. Texas* 7(2): 905 – 939.

Gentili, R., S. Armiraglio, S. Sgorbati, & C. Baroni. 2013. Geomorphological disturbance affects ecological driving forces and plant turnover along an altitudinal stress gradient on alpine slopes. *Plant Ecol* 214:571-586.

Johnson, P.L., and W.D. Billings. 1962. The alpine vegetation of the Beartooth Plateau in relation to cryopedogenic processes and patterns. *Ecological Monographs* 32(2): 105-135.

Keane, R.E., D.F. Tomback, C.A. Aubry, A.D. Bower, E.M. Campbell, C.L. Cripps, M.B. Jenkins, M.F. Mahalovich, M. Manning, S.T. McKinney, M.P. Perkins, D.P. Reinhart, C. Ryan, A.W. Schoettle, & C.M. Smith. 2012. A range-wide restoration strategy for whitebark pine (*Pinus albicaulis*). Gen. Tech. Rep. RMRS-GTR-279. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. 108 pp.

Kosovich-Anderson, Y.I. 2009. Preliminary annotated checklist of bryophytes of Beartooth Mountains of Wyoming, Shoshone National Forest – an unpublished technical report. Prepared for Wyoming Natural Diversity Database (WYNDD), Laramie, WY, and Shoshone National Forest, USDA Forest Service.

Kosovich-Anderson, Y.I. 2011. *Pogonatum urnigerum* and *Dicranella palustris*, new to Wyoming. *Evansia* 28(4).

- Kosovich-Anderson, Y.I., & M.S. Ignatov. 2010. Three interesting Brachytheciaceae mosses from the Beartooth Plateau (Rocky Mountains, Wyoming, U.S.A.). *Arctoa* 19: 183-190.
- Kosovich-Anderson, Y.I., & J.R. Spence. 2008. A remarkable new range extension of the subtropical *Brachytenium vinosulum* Cardot (Bryaceae). *Evansia* 25(4).
- NatureServe. 2013. NatureServe Explorer. Retrieved 19 December 2013 from: <http://www.natureserve.org/explorer/>
- Rice, J., A. Tredennick, and L.A. Joyce. 2012. Climate change on the Shoshone National Forest, Wyoming: A synthesis of past climate, climate projections, and ecosystem implications. Gen. Tech. Rep. RMRS-GTR-264. Fort Collins, CO: USDA, Forest Service, Rocky Mountain Research Station. 60 pp.
- USDA Forest Service [USFS]. 2013. Region 2 Sensitive Species List (updated 24 August 2013). Retrieved 17 December 2013 from: <http://www.fs.usda.gov/detail/r2/landmanagement/?cid=stelprdb5390116>
- Wyoming Natural Diversity Database [WYNDD]. 2013. Vascular plant species of concern list (updated 2012). Retrieved 19 December 2013 from: <http://www.uwyo.edu/wyndd/species-of-concern/plants/vascular-plants.html>