Appendix C – Biological Assessment/Biological Evaluation

Biological Assessment/Biological Evaluation For Fiddlers Lake Timber Sale

Washakie Ranger District of the Shoshone National Forest
Fremont County, Wyoming
2002

Prepared by Mark Hinschberger and Kent Houston April 2002

1.0 Introduction

A biological evaluation of the proposed action, and alternatives to it, is required, as is the disclosure of possible effects on selected wildlife and plant species and their habitat. This document constitutes the required evaluation along with the appropriate NEPA disclosure. This assessment/evaluation was prepared in accordance with Section 7 of the Endangered Species Act as amended (P.L.97-304), the Interagency Cooperation Regulations (51FR19926), and the Forest Service Manual (2672.42).

1.1 Project Description.

The Washakie District proposes to treat between 103 and 125 acres (depending on action alternative) to improve the visual quality along the Loop Road and to improve the health and productivity of forest vegetation along the Loop Road in the vicinity of Fiddlers Lake. Vegetation management along the Loop Road would reduce wildfire risk and enhance the use of the Loop Road as a firebreak. This project is located in portions of Sections 22, 23, 26, 27, 34, 35, and 36 of Township 31 North, Range 101 West.

Direct actions associated with the proposed action include:

- Clear-cut, clear-cut with reserve tree, and commercially thin lodgepole pine stands to improve the long-term health and productivity of these stands, reduce fire risk, and to improve visual quality.
- Visual treatment[1] lodgepole stands open up views of ponds in the foreground of the Loop Road, provide vistas of surrounding mountain ranges, and enhance views of Fiddlers Lake.
- Removing competing confers from existing aspen clones and regenerate decadent and dieing aspen with the coppice[2] method.

Connected actions associated with the proposed action include:

- The use of existing roads and construction of approximately 0.25 miles of temporary road.

[1] Visual treatments would be variably marked; removing a few, some, or all trees from small clumps or groups within the stand.
[2] Regeneration method where all trees are clear-cut and resprouting occurs from the roots or stumps. In aspen, root sprouting occurs.

- Relocating the pullout at Fiddlers Lake to the east side of the Loop Road. The existing pullout would be closed. This is being done to provide a landing area for slash and to reduce the amount of sediment entering the lake from the existing pullout.
- Roadside clearing to improve site distance and public safety along the Loop Road.
- Possible fill-in or full planting to insure sufficient regeneration.
- Broadcast or jackpot burning concentrations of slash following harvest.

Alternative 1 – Proposed Action. This alternative proposes approximately 103 acres of treatment. It proposes more traditional silvicultural methods (clear-cutting, reserve tree cutting, thinning) while incorporating some visual treatment adjacent to Fiddlers Lake and the Christina Lake Trailhead. Thinning units are also used as a 'connector' between visual treatments and clear- and reserve tree cuts, so that treatment units are less compartmentalized along the Loop Road. The resulting effect would be treatments that are connected and undulating rather than disjointed.

Alternative 2 – No Action. This alternative would result in continuation of resource conditions and trends. Since there is no action associated with this alternative, other than a decision to do nothing, there would be no affect to threatened, endangered, or sensitive species.

Alternative 3. This alternative treats approximately 123 acres. This alternative proposes less clear cutting and more reserve tree and visual treatments than Alternative 1. Additional visual treatment would be used to connect all treatments along the Loop Road corridor. It would more effectively treat the entire Loop Road corridor than Alternative 1, resulting in more connection and visually pleasing landscape.

Table 1. *Comparison of action alternatives (all units are approximations)*

Alternative Features	Alternative 1	Alternative 2	Alternative 3
Clear-cut (acres)	28	NA	21
Clear-cut with Reserve Trees (acres)	20	NA	27
Commercial Thin (acres)	17	NA	17
Aspen Release/Coppice (acres)	12	NA	12
Visual Treatments (acres)	26	NA	46
Temporary Road (miles)	.25	NA	.25
Sale Duration (years)	2	NA	2

1.2 Features Common to all Action Alternatives

Visual Treatments. Visual treatments would be variably marked, removing a few, some, or all trees from small clumps or groups within the stand. Each clump or group would not be more than a few acres in size. All trees would be removed in some groups to open up views of kettle ponds along the Loop Road corridor, where mistletoe and commandra rust infection are so heavy that healthy reserve trees are lacking, or where vistas or background views would be made visible (*see* EA Appendix A, figures 8 and 9). Where possible, edges of groups with trees completely removed would be undulating.

Other groups will be marked to various spacings. Groups of different spacings will be placed adjacent to one another to provide for maximum visual diversity.

The visual treatment on the southeast side of Fiddlers Lake (between the lake and the Loop Road) would involve removing or limbing individual trees to meet specific visual objectives. Some saplings and pole timber would be removed to improve motorist's site distance while driving down the road (*see* EA Appendix A, figure 10). Removal of these trees, with the additional removal of some of the sawtimber trees will provide 'gaps' in the tree cover where views of the lake and surrounding mountain range will be provided (*see* EA Appendix A, figures 11 and 12). Large whitebark pine trees would be left along the lakeshore as 'character' trees (visually pleasing because of their multi-stemmed form). These trees would also be left to provide shade for anglers (*see* EA Appendix A, figure 13). Some of these trees may have limbs removed from the bottom so that the lake can be viewed from the road (*see* EA Appendix A, figure 14). Pole and saw timber will also be left along the lakeshore to provide replacement trees for those that are cut. Enough trees would remain in this area to provide for visual and noise screening from the Fiddlers Lake Campground, located on the west side of the lake (*see* EA Appendix A, figure 15).

Areas of heavy mistletoe and commandra rust infection in visual treatments would be sanitized.

Regeneration Harvests. Regeneration treatments (clear-cut and clear-cut with reserves[3]) in lodgepole pine would target stands with heavy dwarf mistletoe and commandra rust infection and where current or expected mortality is high. Low seed production associated with numerous dead tops in the stands proposed for harvest would likely affect the natural regeneration capability of these stands. As a result, fill in or full planting may be necessary to insure sufficient regeneration.

Clear-Cut Units. Clear-cut units would be used where current mortality from mistletoe and commandra rust is excessive (*see* EA Appendix A, figure 16). Trees in these units are mostly dead or dying, or are so heavily infected with mistletoe that leaving reserve trees would infect newly established regeneration. Some clear-cuts would also be used to open up vistas of surrounding mountain ranges (*see* EA Appendix A, figure 17).

Clear-cuts with Reserve Trees. Reserve tree units will also be used in place of traditional clear-cuts to provide visual diversity. Some reserve tree units would also be used to open up vistas of surrounding mountain ranges. Although trees in these stands are infected with mistletoe and commandra rust, those that are exceptionally healthy, cone producing, and exhibiting good form with full crowns will be left as reserve trees. Reserve would be retained within the stand until regeneration is established or as long as they are free of disease. Reserve trees used in conjunction with clear-cutting would promote more visually appealing stands while moving these stands towards the desired

[3]Clear-cut with reserve tree cuts would result in an open park-like stand comprised of randomly spaced reserve trees in clumps and as individual scattered trees. Approximately 75-80 percent of the trees would be removed under this method.

condition. They would also provide for structural diversity within the regenerated stands, a potential seed source for natural regeneration, and habitat for certain species of wildlife.

Commercial Thinning and Aspen Release/Coppice. Lodgepole pine stands proposed for commercial thinning[4] are post and pole stands past rotation age. Areas of heavy mistletoe and commandra rust infection in thinning units would be sanitized. Thinning may not necessarily improve growth due to the physiological age of the trees, but delaying regeneration harvest in these stands will improve the age-class/structural diversity in the analysis area by creating new stands at different time intervals, while providing a highly demanded wood product. Thinning areas are also placed between regeneration and visual treatments. This should enhance visual diversity by providing a variety of tree densities along the Loop Road corridor. Commercial thinning would occur where stands no longer provide snowshoe hare habitat[5] according to the Canada Lynx Conservation Assessment and Strategy (2000).

Aspen release will remove competing conifers from a remnant aspen clone. It will then be regenerated with the coppice method. Aspen along the Loop Road is being out competed by conifers due to successional processes and fire suppression. Aspen release and regeneration will ensure that aspen will remain a component of forested landscape.

Road Side Clearing. Trees (of all sizes) encroaching on the Loop Road, particularly along curves, that block motorist's site distance down the road will be removed to improve motorist's safety (*see* EA Appendix A, figures 18). This would mostly occur within proposed harvest units and extend approximately 10-15 feet into the unit from the road's edge. Roadside clearing would also be performed in two places on the Loop Road outside of proposed harvest units.

Access and Logging Systems. Treatments would be conducted using standard ground based and road supported logging systems. There will be no net increase in roads, in accordance with Forest Plan ASQ amendment. Approximately .25 miles of temporary road may be necessary for access to some harvest units. All temporary roads would be obliterated, recontoured, and seeded if necessary. The existing pullout at Fiddlers Lake will be relocated to the east side of the Loop Road. The existing pullout would then be closed. This is being done to reduce the amount of sediment entering the lake from the existing pullout. It is also being done to provide a landing area for wood and/or slash generated from the visual treatment on the southeast side of Fiddlers Lake.

Sale Duration. The duration of timber sale activities would be two years. Slash and other post-sale treatments (i.e. aspen coppice, road side clearing of unmerchantable material, fill-in planting, etc.) should occur within five years of sale closure.

Mitigation. The proposed action and alternatives to it would be implemented using Forest Plan standards and guidelines. The following mitigation measures related to

[4] Leaving trees at approximately 15 x 15 foot spacing.
[5]Self-pruning processes have eliminated snowshoe hare cover and forage availability during winter conditions with average snowpack.

wildlife are implicit in meeting standards, and have been demonstrated to be effective at achieving their purpose. Unless otherwise specified, they would be included in all action alternatives.

- All temporary roads would be obliterated, recontoured, and seeded if necessary.
- Food and garbage storage regulations for bear use areas would be followed.
- Focus regeneration harvests on areas that currently provide limited habitat for lynx primary prey species (snowshoe hare and red squirrel) and that have the highest potential to rapidly produce snowshoe hare habitat.
- Retain existing large down woody debris during timber harvest and broadcast burning.
- If winter logging occurs, allow no increase in travel ways (plowed roads and groomed snowmobile routes) than is necessary for the activities that are occurring.
- In clear-cut harvest units larger that 20 acres, retain an island of large-diameter trees and down wood by grouping leave trees and snags for these units into uncut patches 3 to 5 acres in size on the down wind side of the units and as far from road access as possible.

2.0 Evaluation Process

The analysis and evaluation process consisted of the following general steps:

1. The identification of all proposed, endangered, threatened, or regionally sensitive (PETS) species known or suspected to be in the project area or project influence zone or that the proposed project or alternatives may potentially affect.

2. The identification of any officially designated "critical habitat" or habitat recognized as essential for the recovery of listed or proposed species or to meet Forest Service objectives for sensitive species, that could be affected.

3. A prediction of the effects of the proposed action or alternatives on the above identified species and/or habitat.

4. A consideration of the cumulative effects resulting from the effects of other State and private activities on identified species and habitats that are reasonably certain to occur within the project influence area. It is important to note and understand that this step (as per ESA Section 7 regulation) does not include consideration for effects of future Federal activities. Such effects would be considered under the broader definition of cumulative effects as a part of any National Environmental Policy Act process and under future ESA biological evaluations as these projects come on line.

5. A determination of "no effect", "not likely to adversely affect", or "likely to adversely affect" for federally listed threatened and endangered species; “no effect”, "not likely to jeopardize continued existence or adversely modify

proposed critical habitat", or "likely to jeopardize continued existence or adversely modify proposed critical habitat" for experimental species or species proposed for federal listing; and "no impact", "beneficial impact", "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" or "likely to result in a loss of viability on the planning area, in a trend to federal listing, or a loss of species viability rangewide" for sensitive species, is made for each species, as appropriate.

6. The rationale for the determination conclusion for each species.

7. Recommendations for avoiding, removing, or compensating for any projected adverse effects.

8. A listing of any references, contacts, and data sources used in the evaluation process.

3.0 Results

The U.S. Fish and Wildlife Service has indicated there are seven threatened, endangered, or proposed species that may occur on or be affected by activities on the Shoshone National Forest (letter dated April 27, 2001). This list is included in Table 2.

Table 2. *Threatened, endangered, or proposed species that may occur on or be affected by activities on the Shoshone National Forest.*

Common Name	Scientific Name
Endangered	
Black-footed ferret	*Mustela nigripes*
Whooping crane	*Grus americana*
Threatened	
Gray wolf*	*Canis lupus*
Grizzly bear	*Ursus arctos horribilis*
North American lynx	*Felis lynx canadensis*
Bald eagle	*Haliaeetus leucocephalus*
Proposed	
Mountain Plover	*Charadrius montanus*

** The gray wolf, which was formally listed as endangered, was reclassified as non-essential, experimental in the Yellowstone area with the publication of the Final Rules in the Federal Register (November 22, 1994; Vol. 59, No. 244).*

3.1 Potentially Affected Species

Some areas of the Shoshone National Forest are known to provide habitat for the following proposed, endangered, threatened, or sensitive species (*see* Table 3).

Table 3. *PETS species with areas of known habitat on the Shoshone National Forest.*

Common Name	Scientific Name
Threatened	
Gray wolf*	*Canis lupus*
Grizzly bear	*Ursus arctos horribilis*
North American lynx	*Felis lynx canadensis*
Bald eagle	*Haliaeetus leucocephalus*
Sensitive Wildlife Species	
Dwarf shrew	*Sorex nanus*
Fringed myotis	*Myotis thysanodes*
Townsend's big-eared bat	*Plecotus townsendii*
Water vole	*Microtus richardsoni*
Marten	*Martes americana*
Fisher	*Martes pennanti*
North American wolverine	*Gulo gulo luscus*
Common Loon	*Gavia immer*
Trumpeter Swan	*Cygnas buccinator*
Harlequin duck	*Histrionicus histrionicus*
Northern Goshawk	*Accipiter gentilis*
Greater sandhill crane	*Grus canadensis tabida*
Boreal owl	*Aegolius funereus*
Black-backed woodpecker	*Picoides arcticus*
Northern three-toed woodpecker	*Picoides tridactylus*
Tiger Salamander	*Ambystoma tigrinum*
Boreal western toad	*Bufo boreas boreas*
Northern leopard frog	*Rana pipiens*
Spotted Frog	*Rana pretiosa*
Yellowstone Cutthroat trout	*Oncorhynchus clarki bouvieri*

* *The gray wolf (Canis lupis), which was formally listed as threatened, was reclassified as non-essential, experimental in the Yellowstone area with the publication of the Final Rules in the Federal Registrar (November 22, 1994; Vol. 59, No. 244).*

In addition to the above-identified species, Table 4 contains a list of animal species that are also suspected to occur on the Shoshone National Forest, although their presence has not been confirmed recently and habitat for these species on the forest is marginal at best.

Table 4. *PETS species suspected to occur on the Shoshone National Forest but not confirmed.*

Common Name	Scientific Name
Sensitive	
Spotted bat	*Euderma maculatum*
Merlin	*Falco columbarius*
Pygmy nuthatch	*Sitta pygmaea*

Some other animal species appear on the Forest list of PETS species but are not currently considered to be of special concern on the Shoshone National Forest. These species, and the reason(s) they are not currently considered of special management concern on the

Forest are listed in Table 5.

Table 5. *PETS species that are not considered to be of concern on the Shoshone National Forest.*

Species	Reason for not considered for special management concern
Endangered	
Black-footed ferret *(Mustela nigripes)*	Despite extensive survey work throughout Wyoming including the SNF there is no indication this species currently occurs in any of its historical range in the State except where reintroduction has occurred.
Whooping crane *(Grus americana)*	No observations for this species have been confirmed on the SNF. The only observations near the Forest were on private land along the DuNoir River during the cross-fostered reintroduction effort in the 1980's with Sandhill Cranes at Grey's Lake, Idaho. That effort was unsuccessful and by 1996 only 3 individuals were known alive. There is no evidence to suggest that habitats on the Forest are or were ever important to this species.
Proposed	
Mountain plover *(Charadrius montanus)*	No observations for this species have been confirmed on the SNF and recent survey work indicates suitable habitat for significant or viable populations on the Forest does not occur.
Delisted and now Sensitive	
Peregrine falcon *(Falco peregrinus)*	The Secretary of Interior recently removed this species from the Endangered Species List. There are nesting pairs of falcons on SNF and they occur on the Washakie Ranger District, however there is no nesting habitat within the project area and the project will have **"no impact"** on peregrine falcons.
Sensitive	
Allen's thirteen-lined ground squirrel *(Spermophilus tridecemlineatus alleni)*	This subspecies is considered very rare if not extirpated and its occurrence is currently based entirely on two records from the Bighorn Basin and one record from the head of Twin Creek in the southern Winds, and one record from Sublette County. Until additional scientific information exists regarding its status, little can be accomplished regarding implications for Forest management activities.
Ferruginous hawk *Buteo regalis*	Although individuals of this species are sometimes observed over the Forest during the fall migration period, preferred nesting habitat does not occur on the SNF and nesting has never been documented. This species is primarily associated with more semi-arid open prairie/badland country than occurs on the SNF.
Osprey *(Pandion haliaetus)*	Individual ospreys have been seen near most of the major aquatic systems in or near the SNF. Increasing populations and extreme tolerance to nearby human activity relegated osprey to a lower priority status by the Wyoming Game and Fish Department and are not currently considered of special management concern on the Forest as a result.
Long-billed curlew *Numenius americanus*	Only one confirmed observation for this species has occurred on the SNF in the past quarter century. Recent survey work indicates suitable habitat for significant or viable populations on the Forest does not occur.
Upland sandpiper *(Bartramia loicauda)*	No confirmed observations of this species have occurred on the SNF in recent decades. Survey work conducted in recent years also indicates suitable habitat for significant or viable populations does not occur on the Forest.
Black tern *(Chlidonias niger)*	This species has been designated as sensitive since disjunct breeding habitat does occur in Wyoming and nesting has been documented at a few sites in the State as well as in other parts of USFS Region 2. However, relatively stable, large marsh habitat required by this species is not present on the Forest and observations on the Forest have not occurred.
Yellow-billed cuckoo *(Coccyzus americanus)*	The type of breeding habitat preferred by this species (large stands of cottonwood riparian habitat) is not available on the SNF and confirmed observations on the Forest have not been recently recorded.
Burrowing owl *(Athene cunicularia)*	Potential breeding habitat for this species is absent or at best extremely limited on the Forest. No confirmed observations have occurred in recent years.

Species	Reason for not considered for special management concern
Lewis' woodpecker *(Melenerpes lewis)*	The primary habitat (Ponderosa pine savannah) used by this species for nesting does not occur on the SNF. No confirmed observations have occurred in recent years.
Olive-sided flycatcher *(Contopus borealis)*	This species is common throughout Wyoming and the SNF where suitable breeding habitat (coniferous forests from 8000 feet to timberline and aspen riparian areas) occurs. Observations can usually be made on any given day during the breeding season.
Golden-crowned kinglet *(Regulus satrapa)*	Although this species is uncommon in Wyoming and the SNF, it has been documented on 2 of the 3 Breeding Bird Survey routes on the Forest and populations appear to be stable. Preferred habitat (coniferous and mixed conifer-aspen forests) is relatively common.
Loggerhead shrike *(Lanius ludovicianus)*	Preferred habitat (pine-juniper, woodland-chaparral, basin-prairie shrubland, and mountain foothills shrubland) is generally lacking on the SNF. Breeding Bird Survey routes on the Forest have never recorded this species.
Baird's sparrow *(Ammodramus bairdii)*	Preferred habitat (shortgrass eastern great plains grasslands) does not occur on the Forest. The 3 Breeding Bird Survey routes on the Forest have not recorded the presence of this species in recent years.
Fox sparrow *(Passerella iliaca)*	This species is considered common in Wyoming and populations are believed to be stable. Preferred habitat (riparian shrubland with adjacent conifers and coniferous habitat that has been burned, logged, or thinned) occurs on the SNF and the species occurrence has been recently documented.

Table 6 lists the sensitive plants that occur on the Forest. The Atlantic analysis area only includes potential habitat for two of these sensitive plants, pink agoseris and Fremont's bladderpod. The habitat of these two species is non-forested openings (Fertig, 1994). Within the affected proposed cut areas the probability of either species occurring is extremely low.

Table 6. *Sensitive plants on the Shoshone National Forest*

Species Name	Vegetation Type	Soil Type	Habitat Present in Project Area	Project Area Method of Survey	Species Present in Project Area	Notes
Pink agoseris (*Agoseris lackschewitzii*)	Wet Montana/subalpine meadows	Variable	Yes	Literature cited	Possibly	meadows
Round-leaved orchid (*Amerorchis rotundifolia*)	Coniferous bogs	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Red manzanita (*Arctostaphylos rubra*)	Coniferous bogs	Calcareous	No	Literature cited	No	Swamp lake area primary occurrence
Upward-lobe moonwort (*Botrychium ascendens*)	Wet meadows/willow	Alluvium	No	Literature cited	No	Willow riparian
Livid sedge (*Carex livida*)	Floating mats, bogs, fens	Calcareous	No	Literature cited	No	
Wyoming tansymustard (*Descurainia torulosa*)	Rocky slopes and ridges	Volcanic	No	Literature cited	No	Endemic to Absaroka Mountain Range
Hall's fescue (*Festuca hallii*)	Montane grassland	Calcareous	No	Literature cited	No	
Kirkpatrick's ipomopsis (*Ipomopsis spicata* spp. *robruthii*)	Alpine scree	Volcanic	No	Literature cited	No	
Fremont bladderpod (*Lesquerella fremontii*)	Barren slopes and ridges	Calcareous	Yes	Literature cited	Possibly	meadows
Marsh muhly (*Muhlenbergia glomerata*)	Bogs, floating mats, fens	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Naked-stemmed parrya *(Parrya nudicaulis*)	Alpine	Calcareous	No	Literature cited	No	
Greenland primrose (*Primula egaliksensis*)	Bogs, fens	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Absaroka goldenweed (*Pyrrocoma carthamoides* var. *subsquarrosa*)	Montane meadows, grasslands	Calcareous	No	Literature cited	No	

Species Name	Vegetation Type	Soil Type	Habitat Present in Project Area	Project Area Method of Survey	Species Present in Project Area	Notes
Myrtleleaf willow (*Salix myrtillifolia* var. *myrtillifolia*)	Floating mats, bogs, fens	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Rolland bulrush (*Scirpus rollandii*)	Floating mats, bogs, fens	Calcareous	No	Literature cited	No	Swamp Lake area primary occurrence
Shoshonea (*Shoshonea pulvinata*)	Calcareous Soils & Rock outcrops	Calcareous	No	Literature cited	Unlikely	
North Fork easter daisy (*Townsendia condensate* var. *anomala*)	Rocky slopes and ridges	Volcanic	No	Literature cited	Unlikely	Endemic to Absaroka Mountain Range

3.2 Critical Habitat or Habitat of Special Designation

The Shoshone National Forest does not provide habitat designated as critical for any listed species. In addition, the project-affected area does not contain any specially designated habitats relative to any Forest PETS species.

3.3 Species of Possible Concern Following Initial Review

A review of readily available and accessible information relating to the habitat requirements of the above species, distribution of habitats in the project influence zone, recorded observations of the above species on Shoshone National Forest, known areas of population occupancy, field trips to the project sites(s) in 1998, 1999, and 2001, and other data led to the conclusion that only the species identified below should be carried further into the evaluation process. All others, identified above, were dismissed following this initial review of data process.

Species Evaluated Further:

- Gray wolf
- Grizzly bear
- North American lynx
- Bald eagle
- Dwarf shrew
- Water vole
- Marten
- Fisher
- Wolverine
- Northern goshawk
- Boreal owl
- Black-backed woodpecker
- Northern three-toed woodpecker
- Tiger salamander
- Boreal western toad
- Northern leopard frog
- Yellowstone cutthroat trout

3.4 Anticipated Effects of the Proposed Action on Species Evaluated Further.

The conclusions and determinations reached regarding the anticipated effects of the proposed action on species receiving further and more detailed analysis as well as the rationale for each determination are indicated below.

3.4.1 Gray Wolf – Is Not Likely to Jeopardize the Continued Existence

The availability of a stable ungulate prey base is the primary special habitat requirement for this species although smaller animals and carrion are also used as prey. Concentrations of available prey do occur on the winter range areas off forest or east of this analysis area, but these areas are located downstream several miles from the project sites. No known locations of the 40 plus radio-collared wolves from the Yellowstone reintroduction effort have been recorded in the Fiddlers Lake Project or Atlantic Analysis Areas.

According to the Federal Register (Vol. 59, No. 244. Establishment of a Nonessential Experimental Population of Gray Wolves in Yellowstone National Park in Wyoming, Idaho, Montana, Central Idaho and Southwestern Montana; Final Rules), "there are no conflicts envisioned with any current or anticipated management actions of the Forest Service." "The national forests are beneficial to the reintroduction effort in that they form a natural buffer to private properties and are typically managed to produce wild animals that wolves could prey upon."

Determination. These marked wolves and others would not be affected by the habitat changes anticipated in these areas from timber harvest. They may change how they use these areas during the time that the activities are occurring, however, the other wolves from this re-introduction have visited and resided in areas with human habitation and activity. The open road densities would not increase after any action alternative and the big game population numbers in the herd unit would not change because of these habitat modifications. Implementing any of the alternatives in these projects would **"not jeopardize the continued existence of wolf"** in the wild or in the experimental population, and thus would not jeopardize the recovery of gray wolf**.**

3.4.2 Grizzly Bear – No Effect

The Fiddlers Lake Project Area occurs outside the officially designated grizzly bear recovery zone and thus in an area of Shoshone National Forest where grizzlies occur rarely, if at all, and management for bears and their habitat is not directed. In the past decade, grizzlies have expanded their range on the forest; however, their occurrence on the Washakie Ranger District has not been documented during that time. During the fall of 2001, a grizzly bear was reported north of the Atlantic Analysis Area in the Popo Agie Wilderness. Seasonal food sources in the form of cutworm moths, ungulate carrion, and succulent riparian vegetation all occur within a reasonable distance of the project treatment sites. Federal agencies, such as the Shoshone National Forest, are required to

conserve listed species, such as the grizzly, and not jeopardize their continued existence wherever they occur.

Determination. In general, it appears that the Fiddlers Lake project would not adversely affect overall habitat conditions for bears in the project area or analysis area or increase the potential for grizzly/human conflicts and bear mortalities, over existing conditions. Because no bears have been documented to use the project area, the project is of limited scope and size, and treatments occurs within close proximity of the Loop Road, an area that has current human visitation and disturbance, the Fiddlers Lake project will have **"no effect"** on the grizzly bear or its habitat.

3.4.3 North American Lynx – Not Likely to Adversely Affect

The U.S. Fish and Wildlife Service published a Final Rule in the Federal Register on the March 24, 2000 listing the North American lynx population in the contiguous United States as threatened, pursuant to the Endangered Species Act, effective 30 days after the final rule was published.

Habitat and extensive winter snow survey work has been conducted for this species during the recent past on the Shoshone National Forest in partnership with the Wyoming Game & Fish Department. Results indicate a rather naturally fragmented boreal forest component on the middle two-thirds of the forest due to topography and associated factors. The larger potential habitat patches occur in the Dubois/Togwotee Pass area with some additional but more limited potential on parts of the Washakie Ranger District and in the Beartooth Mountains. Tracks of two different lynx have been confirmed in the Dubois area and tracks of a single lynx in both the Washakie District area and in the Beartooths just across the Wyoming/Montana State line and immediately adjacent to the Shoshone National Forest were also located.

The project area occurs in the more limited potential habitat of the forest and thus possible use by lynx would likely only be occasional and for passing through during exploration and travel.

Important Interactions. The primary vegetation that contributes to lynx habitat in the western mountains is lodgepole pine, subalpine fir, and Engelmann spruce (Aubry et al. 2000). Lynx habitat has been categorized into foraging, denning, and connecting. Lynx habitat in the western mountains consists primarily of two structurally different forest types occurring at opposite ends of the stand age gradient (Ruediger et al. 2000). Lynx require early successional forests that contain high numbers of prey (especially snowshoe hares) for foraging and late-successional forests that contain cover (especially deadfalls) for kittens and for denning. Intermediate successional stages may serve as travel cover for lynx but function primarily to provide connectivity within a forest landscape. Although lynx does not require such habitats, they prefer to move through continuous forest and this habitat fills in the gaps between foraging and denning habitat within a landscape mosaic of forest successional stages (Koehler and Aubry 1994). Although lynx are believed to do best in a mosaic of plant seral stages, specific spatial arrangements of

different habitat types within individual home ranges are required. Denning sites must be in close proximity to foraging habitat and denning and foraging habitats must be interconnected by stands suitable for lynx travel (Koehler and Aubry 1994).

The Atlantic Analysis Area has potential habitat for lynx. Forest cover types of lodgepole pine and spruce-fir are present. The current age-class structure within this area, however, shows a trend toward a greater proportion of older age stands and very few early successional stands (*see* Fiddlers Lake Environmental Assessment, table 3-1). Analysis of age and size class data show that 74 percent of the forested stands are mature to over mature, have an average diameter of nine inches or greater, and an average age of 160 years old. Many of these stands could provide denning or security habitat for lynx. Much of the spruce-fir, which makes up 8.2 percent of the forested area in the Atlantic Analysis Area, are late-successional stands with large amounts of coarse woody debris, multiple-age classes of trees, and limited human disturbance and provide the attributes of denning or security habitat and foraging habitat for alternate prey, such as red squirrels. Although there are many even-aged, older stands of lodgepole pine, most are void of understory vegetation, especially shrubs, but most stands have large amounts of coarse woody debris. However, these stands do not provide the same vertical diversity or structure as spruce-fir stands and are probably marginal denning habitat. And because of their age and structure, their canopies are well beyond the reach of snowshoe hares during most winters' snow depths, and so they do not function as foraging habitat for hares or lynx either. These older lodgepole pine stands do provide forested cover and therefore facilitate stand conditions for lynx to move through.

Although the spruce-fir stands have vertical structure (some trees that have canopies within reach of hares during winters' average snow depth) to provide some foraging for hares, they have fewer stems per acre and are older than most optimum hare habitat found in the northern boreal forests. However, these stands do provide habitat for red squirrels that lynx also use as secondary or alternate prey (Aubry et al. 2000). Lynx natality and mortality are influenced by foraging habitat quality, i.e., snowshoe hare abundance (Koehler and Aubry 1994). During periods of hare abundance, lynx have exhibited increases in reproductive rates, litter sizes, kitten survival, and lower mortality levels. During periods of hare scarcity, starvation appears to be the primary cause of natural mortality for lynx. The mortality rate for kittens is particularly sensitive to changes in snowshoe hare abundance, and it appears that there may be a minimum density of hares at which female lynx are no longer able to successfully rear kittens (Koehler and Aubry 1994).

Vegetative characteristics that hares prefer include densely stocked, regenerating stands containing both deciduous and conifer species (although a preference for conifer dominated stands has been demonstrated) that provide sufficient cover and forage at varying snow depths (Koehler and Aubry 1994). Poor quality hare habitat (i.e., sparsely stocked stands), however, may actually benefit lynx by serving as dispersal sinks in which juvenile hares are more vulnerable to predation. For these reasons, an interspersion of dense and sparse regenerating stands may be more beneficial to lynx (Koehler and Aubry 1994). Based on hare pellet counts in Washington, hares were more abundant in

younger-aged stands of lodgepole pine than in any other forest type. Hares were 4-5 times more abundant in 20-year-old lodgepole pine stands than in 43- and 80-year-old stands, and 9 times more abundant than in stands >100 years old (Koehler and Aubry 1994).

It appears from information about lynx habitat in western states and the vegetative characteristics that occur in the Atlantic analysis area that there is a disproportionate lack of quality foraging habitat (i.e., snowshoe hare habitat) to potential denning and travel habitat for lynx. In areas where lynx have been documented in the Wind River Ranger District (Horse, Burroughs, Middle Fork of Long, Warm Springs, and Sheridan Creeks) there are more early successional forests (potential hare habitat and lynx foraging habitat) interspersed in close proximity to late-successional forest (potential lynx denning and security habitat) than in the Atlantic analysis area. These early successional forests are the result of clear-cut harvesting that occurred from 20 to 40 years ago in these areas.

Besides lynx population persistence in the western mountains being threatened by low quality and quantities of snowshoe hare habitat; by low quality, quantities, and poor interspersion of denning and travel habitats; and inadequate spatial distribution of these habitat components on the landscape at the stand, subdrainage, and drainage scales; there are other threats to lynx populations in the periphery of it range (i.e., southern ecosystems). Some of these may include, bottlenecks to both dispersal movements and genetic intermixing between populations because of the inherently peninsular and disjunct distribution of suitable habitats across the landscape at a regional scale. At various spatial scales, the presence and abundance of snowshoe hare predators and competitors also present a threat to lynx, especially if the abundance and presence are related to human activities. Some of these threats are relevant at the smaller spatial scales (e.g., stand, subdrainage, and drainage) in this analysis of the Atlantic area.

Fires, epidemics of forest disease, and logging may have negative short-term effects by eliminating cover for snowshoe hares and lynx, but will have long-term benefits as succession progresses, cover is restored, and snowshoe hares become abundant (Koehler and Aubry 1994).

Treatment (e.g., burning or harvesting) of habitats that function as lynx denning or security habitat which result in adverse modification of those habitat conditions (e.g., reduction in the amount of coarse woody debris and deadfall, elimination of one or more age-classes or canopies) must be placed in context of the surrounding landscape. If denning or security habitat is limited or in short supply when considered at the subdrainage, drainage, or landscape scales, then the treatments would be impacting a much larger percentage of that habitat and have a much greater impact than if there are many areas where denning/security habitat occurs at these spatial scales. In that situation, treatments would impact a much smaller percentage of the denning/security habitat.

Treatments such as burns or clear-cutting that modify large expanses of habitat may create barriers to lynx movements. Barriers to lynx movements must be evaluated in the context of the travel cover habitat remaining across the landscape.

Treatments, such as thinning stands, which are functioning as lynx foraging habitat will reduce stem densities of those habitats and, depending on the amount, could reduce the effectiveness of these stands for snowshoe hare and lynx foraging habitats. These effects must be viewed in the context of the availability and arrangement of this habitat on the landscape before and after the habitat modification.

Road construction that increases access into areas which have been previously secluded or lightly visited by humans, especially into areas where there is suitable denning/security habitat, can have adverse impacts on lynx. These impacts can be direct (e.g., displacement and kitten mortality due to human presence and habitat alterations) and indirect (e.g., mistaken or illegal harvest). Again, these impacts must be placed in context with the availability of this habitat in the surrounding landscape. Another indirect effect of road construction is the increase in winter use (e.g., snowmobiling) that allows the range extensions of lynx competitors (e.g., bobcat, coyote, and red fox) and predators (e.g., coyote and mountain lion) into the higher elevation ranges of lynx.

Effects on Canada Lynx.

Alternative 1. This alternative would treat 103 acres of timber. Much of the timber would be removed from 86 acres (1.9 percent) of the older age lodgepole pine stands in the analysis area using clear-cut (7 more acres are treated in this alternative than alternative 3), clear-cut with reserve trees (7 fewer acres are treated in this alternative than alternative 3), visual treatments (20 fewer acres are treated in this alternative than alternative 3), and aspen release/coppice harvest methods and prescribed burning. Some of the timber would be removed from 17 acres (0.5 percent) of the pole size lodgepole pine stands in the analysis area using commercial thinning (the amount and location of this treatment is the same in alternative 1 and 3). These treatments will eliminate (86 acres) or reduce (17 acres) these stands ability to function as connecting habitat for lynx during the short-term (possibly up to 20 years). These stands would eventually (6-25 years) become recolonized with hares and become optimum lynx foraging habitat, and based on the spatial arrangement of these harvest units, would be in close proximity to late-successional stands providing denning/security habitat.

Harvesting 103 acres would adversely modify 1.2 percent of the lodgepole pine stands within the landscape and render them as unsuitable or marginal habitat for lynx in the short-term. When considered at the subdrainage, drainage, or landscape scales, the Atlantic analysis area has a large proportion of habitat at these spatial scales and these treatments are impacting a small percentage of that potential habitat.

Alternative 2. With no harvest of timber, additional road construction, or prescribed fire planned in this landscape, the habitat for lynx would remain relatively unchanged in the short term (20 years) and possibly longer. There would continue to be a disproportionate lack of quality lynx foraging habitat (i.e., snowshoe hare habitat) to denning and travel habitat. Without some kind of disturbance to these late successional stands or this

landscape, the trend toward a greater proportion of older stands would continue. Snowshoe hare habitat for lynx foraging would continue to be limited.

It is possible that in the short- or long-term one or more disturbances could occur in the Atlantic analysis area, regardless of the alternative implemented. These disturbances, including high wind events, insect and disease epidemics, and natural or man-caused wildfire have the potential to alter large portions of this landscape. Generally, wind thrown trees and insect or disease killed timber predisposes those areas to fire later. The direct and indirect effect of these types of disturbances result in earlier successional vegetation, which would favor early successional wildlife species possibly to the detriment of wildlife species dependent on late successional habitats; depending of course on the extent of the altered landscape. In the case of lynx, as mentioned above, this could eventually benefit lynx by creating a mosaic of early successional habitats with high hare densities and late successional stands with downed woody debris for thermal and security cover and for denning. It may take hares six to seven years to recolonize these disturbed areas, thus it could take 20-25 years for snowshoe hare densities to reach their highest levels (Koehler and Aubry 1994).

If the extend of this altered landscape is due to large scale rather than small scale disturbances, a mosaic pattern of late and earlier successional stages and the proper spatial configuration of those habitats may not be attained and the resulting large early successional areas could create barriers to lynx movement both within and across the landscape in the short-term. These effects are potentially greater in this alternative than the action alternatives, because this alternative has the greatest potential to alter large portions of this landscape due to the higher probability of high intensity and large catastrophic wildfire and that probability would increase over time. The action alternatives would reduce the chances for large-scale disturbances by reducing wildfire risks.

A large-scale disturbance event within this landscape could modify a large amount of lynx habitat and make it unsuitable in the short-term. Also, if this large disturbance event does not result in a mosaic pattern on the landscape, but rather results in large tracts that are affected, a larger proportion of lynx foraging habitat to denning/security habitat with poor spatial arrangement would result in the long-term (opposite of the existing situation). Relative to the other alternatives, this alternative may provide less opportunities to have later vegetative management entries which could still meet spatial requirements and suitable habitat limits and it may provide less opportunity to create additional age classes of lynx foraging habitat on the landscape over time.

Alternative 3. This alternative would treat 125 acres of timber. Much of the timber would be removed from 106 acres (2.3 percent) of the older age lodgepole pine stands in the analysis area using clear-cut (7 fewer acres are treated in this alternative than alternative 1), clear-cut with reserve trees (7 more acres are treated in this alternative than alternative 1), visual treatments (20 more acres are treated in this alternative than alternative 1), and aspen release/coppice harvest methods and prescribed burning. Some of the timber would be removed from 17 acres (0.5 percent) of the pole size lodgepole

pine stands in the analysis area using commercial thinning (the amount and location of this treatment is the same in alternative 1 and 3). These commercial thinned stands could function as marginal travel habitat in the short term because of the remaining forested cover. These treatments will eliminate (106 acres) or reduce (17 acres) these stands ability to function as connecting habitat for lynx during the short-term (possibly up to 20 years). Because of the cover type, the likely response of naturally regeneration, the planned planting of lodgepole pine where no regeneration occurs, and regenerating aspen, these stands could provide the vegetative structure that hares prefer and recolonize and thus lynx could forage in within 6-25 years. These stands would eventually become optimum lynx foraging habitat, and based on the spatial arrangement of these harvest units, would be in close proximity to late-successional stands providing denning/security habitat.

Harvesting 123 acres would adversely modify 1.5 percent of the lodgepole pine stands within the landscape and render them as unsuitable or marginal habitat for lynx in the short-term. When considered at the subdrainage, drainage, or landscape scales, the Atlantic analysis area has a large proportion of habitat at these spatial scales and these treatments are impacting a small percentage of that potential habitat.

Effects Common to Both Action Alternatives. Both Alternatives 1 and 3 would construct 0.25 miles of temporary new road to access harvest units. Road construction through forested stands would eliminate travel cover and denning/security habitat for lynx in those areas of the stands. Less than one acre may be eliminated if the temporary new road is constructed through forested stands that currently provide habitat. More important is the impact that these roads have both during the activities and after. These roads provide access during the activities to areas that, before this action, were more secluded or lightly visited by humans. This has both direct and indirect adverse effects as mentioned above, however potential effects are very small since very little new road is being constructed and the activities are occurring in close proximity to the already existing Loop Road. More of a concern is use these roads surfaces would get during the winter from snowmobiles, even if the roads were physically closed to wheeled vehicles for the remainder of the year after the activities are completed. The compacting of the snow along these routes into these higher elevations provides easier access to the lynx habitats by their potential competitors and predators (coyotes, bobcats, lions, and red fox) that are not adapted to the deeper snows like lynx. Some snowmobiling already occurs in this area, mainly along the existing road surfaces (see tables 3-5 and 3-6 in the Fiddlers Lake Environmental Assessment) and some of these competitors already occur in the area.

In the long-term if nothing else happens in this landscape, the amount of small scale disturbance proposed in either action alternative could beneficially impact lynx by approximating the natural disturbance frequency and spatial patterns on the landscape and create a mosaic of early (foraging) and late-successional (denning/security) habitats in about 20 years for about 20 years.

LAU Analysis. The project occurs in the Lynx Analysis Unit #18. This LAU is 123,347 acres in size and contains 17,374 acres of suitable lynx habitat. The some of the project treatment units occur within suitable habitat and after the project is completed that habitat would be unsuitable. These treated areas would be unsuitable for at least 10 years. Alternative 1 would affect 66 acres of suitable habitat or about 0.38 percent of the suitable habitat within LAU #18. Alternative 3 would affect 73 acres of suitable habitat. This alternative affects 0.42 percent of the suitable habitat within this LAU. The differences between action alternatives are minor and are only in the amount of visual treatments, which occur immediately adjacent along the Loop Road. Recent past activities such as timber sales and broadcast burning totaling 285 acres have made 1.6 percent of potential lynx habitat unsuitable in this LAU. This project and other past management actions have not changed more than 15 percent of lynx habitat within the LAU to an unsuitable condition within a 10-year period and thus are within the standards established in the Canada Conservation Lynx Assessment and Strategy. It is likely that Alternative 3 which removes more of the timber and woody debris from more stands would affect more lynx habitat and affect more future denning habitat than the other alternatives. Alternative 1 would result in reducing habitat but not as greatly as Alternative 3, since more forested canopy would be left after harvest and more woody debris would be retained.

Determination. Review of habitat requirements, compared to habitat availability in and adjacent to the Atlantic analysis area and the LAU, combined with the effects analysis, indicates that implementing any of the action alternatives may affect individual lynx and/or their immediate habitat in the short-term. These effects are expected to be insignificant and discountable and in the long-term beneficial. No taking, harm, or harassment of lynx is expected to occur because of this proposed action. These action alternatives are **"not likely to adversely affect"** lynx.

Recommended Mitigation. The following measures are recommended to reduce impacts to lynx and their habitat.

- Focus regeneration harvests on areas that currently provide limited habitat for primary prey species (snowshoe hare and red squirrel) and that have the highest potential to rapidly produce snowshoe hare habitat.
- Retain existing large down woody debris during timber harvest and broadcast burning.
- If winter logging occurs, allow no increase in travel ways (plowed roads and groomed snowmobile routes) than is necessary for the activities that are occurring.
- In clear-cut harvest units larger that 20 acres, retain an island of large-diameter trees and down wood by grouping leave trees and snags for these units into uncut patches 3 to 5 acres in size on the down wind side of the units.
- Obliteration of all roads constructed and reconstructed in the project after activities are completed for any alternative selected.

3.4.4 Bald Eagle. No Effect

There has been a significant increase in the number of nesting bald eagles in Wyoming and the Greater Yellowstone area in the past two decades. However, currently no bald eagle nesting is known to occur in the Fiddler Lake project area, in the Atlantic analysis area, or on the Shoshone National Forest. A few individuals winter on or near the Forest's major drainages each year.

Special habitat requirements for eagles include moderate to large water bodies open during all seasons, particularly during nesting and brood rearing, and large trees for nesting, perching, and roosting. Fiddlers Lake is not ice-free during all seasons and does not provide appropriate nesting habitat requirements during nest initiation and incubation. Although some treatment sites occur near Fiddlers Lake, those areas do not provide large trees for nesting or perching. These treatment sites near Fiddlers Lake are immediately adjacent to the Loop Road, which has regular human use and disturbance along it in the vicinity of Fiddlers Lake. Bald eagles are largely fish eaters with the addition of other foods such as crippled waterfowl, carrion, and occasionally rabbits during the winter. The project area does not provide suitable aquatic habitat, nesting structures, or prey base during nest initiation and brood rearing to offer habitat of more than incidental use.

Determination. Neither action alternative of this proposed project will result in any increased potential for direct eagle mortality or significant alteration of habitat conditions for bald eagle in the drainage. The project will have **"no effect"** on bald eagle or its habitat.

3.4.5 Dwarf Shrew. May adversely impact individuals, but is 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

The global range of this species extends from Montana to southern New Mexico, and western South Dakota to central Utah. The dwarf shrew is considered uncommon in Wyoming, with only a few records of occurrence statewide. Recent (1997) survey work failed to add to the documented record of occurrence in one GAP cell of the 24 GAP cell areas on the Forest. Potential habitat occurs over a significant part of the Shoshone National Forest and confirmation may be probable with additional survey work. This species occurs from alpine tundra to dry grassland with some affinity for talus slopes and outcrops of broken rock. Based on distribution and general habitat use, most habitats for this species probably occur on mountainous national forest units in Rocky Mountain Region.

Determination. The lack of information on this species throughout its range as well as the Forest makes it difficult to generalize about specific habitat requirements, habitats utilized, distribution, population parameters, or other factors including predicting likely effects of proposed human activities. In general, however, this taxon is not known to be especially susceptible to any specific environmental pressure. Small size, small area requirements, association with fine-scale (rather than patch or landscape-scale) habitat

features, and general feeding habits allow occupation of multiple life zones. Although individuals are short-lived, reproductive output is likely adequate for populations to quickly rebound from temporary declines. It is unlikely that any human activities that might be associated with either action alternative would have potential for adverse effects on this species, since the likely fine-scale habitats (talus slopes and outcrops of broken rock) of the dwarf shrew are not being impacted. However, because of the variable nature of general habitats utilized by dwarf shrews and the possible occurrence within the project treatment sites, it is possible that either action alternative **"may adversely impact individuals, but is 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"** for the dwarf shrew.

3.4.6 Water Vole . No Impact

Surveys on the Forest from 1995-97 have greatly added to our information base for this species. During these surveys, it was found that water vole presence was widely distributed on all five ranger districts of the forest wherever suitable habitat (along high elevation alpine or subalpine meadows adjacent to deep/narrow, low gradient stream channels with over-hanging banks with grass and forb vegetation along the banks) occurred. Preferred habitat is widely distributed but limited and often isolated from other similar habitat. The greatest potential threat to habitat for this species would appear to be ungulate overgrazing if and where it occurred.

Determination. Field reviews of the project sites indicate that the proposed timber harvest areas do not possess habitat characteristics preferred by water voles, while they have been found near by in representative habitat, such as along the Little Popo Agie River and in Grannier Meadows. Thus, the potential for adverse effects related to this species does not exist. Either action alternative will have **"no impact"** on water voles or their habitat.

3.4.7 Marten. May adversely impact individuals, but is 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

Marten show consistent close association with mesic, dense coniferous forests with complex physical structure. Recent surveys on the Forest indicate this species is widespread and occurs wherever suitable habitat (mature spruce-fir, lodgepole, Douglas fir, and mixed conifer forests) is available. Martens were found on each snowmobile route surveyed on the Forest (233 miles of snowtrack surveys) in 1995-96 with an average rate of occurrence of .7 marten per mile of route. The species is classified as a furbearer in Wyoming and martens are legally harvested most years on the Forest during the trapping season. Marten harvest over a 10-year period from 1986-87 through 1995-96, shows a relatively stable population trend (Oakleaf et al. 1997). Rangewide the species seems secure. At the same time, the marten is closely associated with a relatively narrow ecological range. The best marten populations are found in mature and old growth spruce-fir forests with well-developed structure and abundant coarse woody debris.

Determination. Based on the data above and the presence of suitable habitat in the Atlantic analysis area, marten are likely widely distributed in the area also. Because marten rarely use natural or man-created openings, it is likely that Alternative 3, which treats more total acres of potential marten habitat and creates slightly more acres of openings, will have greater potential impacts than the other alternatives. However, the differences between alternatives are relatively minor compared to the amount of marten habitat on the Washakie Ranger District. Although the treatment areas are mostly even-age, xeric lodgepole pine stands with lots of dead and dying trees and is generally not considered the best marten habitat, the action alternatives **"may adversely impact individuals, but is 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"** for the marten.

3.4.8 Fisher. No Impact

This species is considered very rare in Wyoming and on the Shoshone National Forest. The Wyoming Game & Fish Department questions that it is a reproductively viable species in the State. Recent extensive surveys on the Forest (snow machine and snowshoe surveys of 7,269 miles during 1995/1996, 1996/1997, and 1997/1998 winters) failed to locate any sign of fishers. The desired habitat for this species where it occurs seems to be mostly late-successional closed-canopy coniferous forests.

Determination. Based on preferred habitat, the vegetation types proposed for treatment, treatment method in either alternative, and the apparent lack of presence of fisher on the Forest, it appears that the proposed project would have **"no impact"** on the species or the habitat usually preferred by this species.

3.4.9 Wolverine. No Impact

The status of this species in Wyoming appears to be one of very low densities both historically and at the present time in the western third mountainous part of the State including the Shoshone National Forest. Habitat concerns revolve around areas above timberline used for denning, travel, and scavenging. Preferred habitat is generally best described in terms of abundance of year-round food supplies and large sparsely inhabited, relatively remote areas.

During track surveys over 1,675 miles of snowmobile routes and trails for lynx, wolverine, and fisher in 1995-1996, one occurrence of a wolverine track was detected in the Beartooth Mountains in January 1996. Two other wolverines were encountered and reported within the Forest during the 1995-1996, winter. One was in the Union Pass area and the other was on the North Fork of the Shoshone River above Pahaska Tepee. In March of 1997, helicopter surveys on the Forest in the Beartooth Mountains, Clarks Fork River, North and South Forks of the Shoshone River, and upper DuNoir drainage yielded one set of wolverine tracks in upper Robinson Creek in the South Fork of the Shoshone River. During the summer of 2001, three sightings of possibly two different wolverine were made in the northern Fitzpatrick Wilderness. It is possible that wolverine could be using areas at or above timberline in the analysis area based on suitable habitat at those high elevation cirques.

Determination. Because of wolverine prefer remote, sparsely inhabited type habitats and that this project is located in an area that currently has a developed campground and the Loop Road, it is likely that either of the action alternatives will have any significant positive or negative impacts on this species or its habitat. Any potential for impacts may be greater in Alternative 3, which removes more forested canopy in more stands treated, compared to Alternative 1, which leaves more of a forested setting when the sale is completed.

3.4.10 Northern Goshawk. May adversely impact individuals, but is 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

The U.S. Fish & Wildlife Service recently determined that this species was not warranted for listing under the Endangered Species Act. However, it does remain on the Forest Service Region 2 Sensitive Species list. Goshawks appear to be relatively common in forested areas in Wyoming and the Shoshone National Forest and nesting can usually be observed each year on the Forest with minimal effort. The goshawk is often associated with dense mature or old growth conifer, aspen, or mixed conifer/aspen stands. Although the species exhibits habitat preferences in specific areas, they nest in a variety of habitat types.

Determination. Based on the data above and the presence of suitable habitat in the Atlantic analysis area, goshawks are likely widely distributed in the area also. Because goshawks do not use natural or man-created openings for nesting, it is likely that Alternative 3 which removes more of the timber from more acres treated would adversely affect more potential goshawk nesting habitat than the other alternatives and that Alternative 1 would result in reducing nesting habitat but not as greatly as Alternative 3, since more closed forested canopy would be left after harvest. However, since both alternatives occur in close proximity to the Loop Road, the effects to likely nesting habitat over existing conditions are low. The action alternatives **"may adversely impact individuals, but is 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"** for the goshawk.

3.4.11 Boreal Owl. No Impact

Forest types most commonly used in the southern portions of the boreal owl's range in North America are subalpine forest habitats characterized largely by subalpine fir and Engelmann spruce. Large trees are required for nesting boreal owls. Recent surveys in 1998, by the Wyoming Game and Fish Department (Oakleaf etal. 1999) on the Shoshone National Forest have documented the presence of this species. Presence was confirmed on 5 of 6 survey routes via vocal identification. Eight separate individuals were positively documented by the surveys and as many as 12 individuals may have been present. The 6 survey areas included the Brooks Lake Road, Moccasin Basin Road, Wind River Lake Road, Pelham Lake Road, Brooks Lake Creek, and South of Beartooth Highway. The habitat types surveyed generally consisted of mature Engelmann spruce-subalpine fir or mixed mature spruce-fir/lodgepole pine with scattered small to large openings confirming the importance of these habitat types for Boreal owl breeding sites.

Determination. Some of these habitat requirements can be found in the Atlantic analysis area, however the proposed harvest sites include very little Engelmann spruce or subalpine fir and are more xeric lodgepole pine. Thus, both action alternative would likely have **"no impact"** on boreal owls or their habitat.

3.4.12 Black-backed Woodpecker and Northern Three-toed Woodpecker.

May adversely impact individuals, but is 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

Some stands within the analysis area do provide habitat for primary cavity excavators such as the black-backed and northern three-toed woodpeckers. They utilize dead and dying trees for both nesting and foraging for insects. In Wyoming, these species inhabit Engelmann spruce-subalpine fir and lodgepole pine forests, especially those coniferous forests that have burned and have standing dead trees.

Determination. Based on the data above and the presence of some suitable habitat in the Atlantic analysis area, these woodpecker species likely occur in the project area also. Because these woodpeckers prefer large, unbroken coniferous stands with plenty of standing dead for foraging and nesting, it is likely that both action alternatives which removes most of dead or dying timber would adversely affect potential woodpecker habitat. Alternative 3 would reduce more habitat than the other alternatives since more acres are treated. Although the proposed action occurs with close proximity to the existing Loop Road and fire gathering occurs regularly along this road corridor, the action alternatives **"may adversely impact individuals, but is 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"** for these woodpeckers.

3.4.13 Tiger Salamander, Boreal Toad, and Northern Leopard Frog. No Impact

Habitat characteristics for the four sensitive amphibians species on the Shoshone National Forest are present within the Atlantic Analysis Area. Habitat for boreal toads is restricted to aquatic areas within lodgepole pine and spruce-fir forests and alpine meadow areas. During recent surveys, no boreal toads have been located on the Washakie Ranger District. The northern leopard frog is highly dependent on aquatic habitats, which include the banks and shallow portions of marshes, ponds, lakes, reservoirs, beaver ponds, streams, and other bodies of permanent water. Northern leopard frogs have been located on the Shoshone in the southern Wind River Mountains, however none have been located in the Atlantic Analysis Area. The tiger salamanders are highly dependent on aquatic habitat such as permanent water in ponds, however during recent surveys none were found in the southern Wind River Mountains on the Forest.

Determination. The proposed action involves harvesting timber from lodgepole pine stands along the Loop Road and the proposed units in neither action alternative occur within aquatic habitats that may be used by the amphibians. Either action alternative will have **"no impact"** on these amphibians.

3.4.14 Yellowstone Cutthroat Trout. No Impact

Before white settlers, accessible streams without upstream migration barriers in the Little Popo Agie drainage contained Yellowstone cutthroat trout (YSC). They have been

reduced to a fraction of their historical range in the entire Yellowstone River Basin from introduction of non-native fish species, habitat modification/degradation and past overfishing. As a result, they are on the Region 2 sensitive species list. They were recently been petitioned for listing under the Endangered Species Act, however the USFWS decided the petition to list was not warranted. Over the years, various species and subspecies of fish have been introduced in the Little Popo Agie River drainage. Only introduced or hybridized fish species are currently known to inhabit this drainage. There currently are no known pure populations of YSC in the analysis area.

Determination. The proposed action involves harvesting timber from lodgepole pine stands along the Loop Road and the proposed units in neither action alternative occur within aquatic habitats and the Yellowstone cutthroat trout will not be impacted by either action alternative.

3.5 ESA Cumulative Effects

There are no other Private or State permitted activities that are expected to occur within the project influence zone that would result in significantly modifying the conclusions reached and outlined in the previous section of this report, regarding anticipated effects on species or their habitat. No other private land occurs within close proximity to the project sites. The primary State permitted activity in the area is regulated wildlife hunting/trapping and fishing seasons. The proposed project is not expected to have any influence on or be affected by these non Forest Service permitted or regulated activities.

3.6 Recommendations

See mitigation listed above in the North American lynx discussion.

3.7 Literature Cited - References

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