UNITED STATES FOREST SERVICE
INTERMOUNTAIN REGION

BIOLOGICAL EVALUATION OF REGIONALLY SENSITVE VERTEBRATE SPECIES FOR THE UTAH NORTHERN GOSHAWK HABITAT MANAGEMENT ENVIRONMENTAL ASSESSMENT

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(Revised)

I. INTRODUCTION

This programmatic Biological Evaluation (BE) analyzes the potential effects of the Utah Northern Goshawk Management Project (Alternative F) on species listed as Regionally Sensitive by the Intermountain Regional Forester. All National Forest System lands within the Ashley, Dixie, Fishlake, Manti-LaSal, Uinta and Wasatch-Cache National Forests are being analyzed this BE (Table 1). The Names and Status of these species known or suspected to occur on the forests described above are shown in Table 1. The occurrence of these species by National Forest is documented in Table 2. The purpose of this biological evaluation is to document a programmatic determination regarding the likely effects of the purposed action on the status of these species and avoid impacts that would cause a trend towards federal listing. Because this analysis is programmatic, all site-specific project proposals that implement this proposed action would be determined through individual biological evaluations.

The objectives of this Biological Evaluation (or Assessment for endangered, threatened or proposed species) include the following (FSM 2672.41): (1.) To ensure that Forest Service actions do not contribute to the loss of viability of any native or desired non-native plant or animal species or contribute to animal species trends towards Federal listing of any species, (2.) To comply with the Endangered Species Act that Federal actions from Federal agencies do not jeopardize or adversely modify critical habitat of Federally listed or proposed species, and (3.) To provide a process and standard by which to ensure that Endangered, Threatened, Proposed and Sensitive species receive full consideration in the decision making process.

All 10 regionally sensitive vertebrate species in Utah are being considered in this evaluation. Table 3 documents the occurrence of those species that are known to occur in goshawk habitat[1], and the rational used for determining suitable habitat that would not be affected directly, indirectly or cumulatively as a result of implementing the proposed action.

Current Management Direction

Current policy as stated in the Forest Service Manual (FSM 2672.1) includes the following: Sensitive species of native plant and animal species must receive special management emphasis to ensure their viability and to preclude trends towards endangerment that would result in the need for Federal listing.

The current management direction specified by each National Forest Land and Resource Management Plan in general is to manage classified species habitat to maintain or enhance their status through direct habitat improvement and agency cooperation and to manage and provide habitat for recovery of endangered, threatened, proposed, and sensitive species.

Table 1. Names and Status of Sensitive Vertebrate Species known or suspected to occur in National Forest System lands in Utah

	STATUS OF SENSITIVE SPECIES	
SPECIES	Region 4	State Sensitive
Spotted Bat *Euderma maculatum*	X	X
Western big-eared Bat *Corynorhinus townsendii*	X	X
Flammulated Owl *Otus flammeolus*	X	
Three-toed Woodpecker *Picoides tridactylus*	X	X
Northern Goshawk *Accipiter gentilis*	X	X
Boreal Owl *Aegolius funereus*	X	

[1] Goshawk habitat is defined as habitat that is usable for nesting, roosting, and foraging. Forest habitat need not be occupied by goshawks to be considered habitat (Reynolds 1992)

Table 1. Names and Status of Sensitive Vertebrate Species known or suspected to occur in National Forest System lands in Utah
(continued)

SPECIES	STATUS OF SENSITIVE SPECIES	
	Region 4	State Sensitive
Great Grey Owl *Strix nebulosa*	X	
Spotted frog *Rana pretiosa*	X	X
Colorado Cutthroat Trout *Oncorhynchus clarki pleuriticus*	X	X
Bonneville Cutthroat Trout *Oncorhynchus clarki utah*	X	X

1 = Utah State Sensitive Species List, March 1997.

Table 2 – Occurrence of Sensitive Species by National Forest in Utah

Species (Vertebrates)	Ash	Dix	Fish	M-L	Uin	W-C
Spotted Bat *Euderma maculatum*	X	X	X	X	P	P
Western big-eared Bat *Corynorhinus townsendii*	X	X	X	X	X	X
Flammulated Owl *Otus flammeolus*	X	X	X	X	X	X
Three-toed Woodpecker *Picoides tridactylus*	X	X	X	X	X	X
Northern Goshawk *Accipiter gentilis*	X	X	X	X	X	X
Boreal Owl *Aegolius funereus*	X				X	X
Great Grey Owl *Strix nebulosa*	X					X
Spotted Frog *Rana pretiosa*	P			X	X	X
Colorado Cutthroat Trout *Oncorhynchus clarki pleuriticus*	X	X	X	X	X	X
Bonneville Cutthroat Trout *Oncorhynchus clarki utah*		X	X		X	X

P = Potential habitat

Table 3. Habitat suitability and species occurrence in goshawk habitat for sensitive species on National Forest System lands in Utah

Sensitive Vertebrate Species	Occurring In Habitat Used By Goshawk	Habitat Unsuitable based on the Following
Spotted Bat *Euderma maculatum*	*	
Western big-eared Bat *Corynorhinus townsendii*	*	
Boreal Owl *Aegolius funereus*	*	

Table 3. Habitat suitability and species occurrence in goshawk habitat for sensitive species on National Forest System lands in Utah (continued)

Sensitive Vertebrate Species	Occurring In Habitat Used By Goshawk	Habitat Unsuitable based on the Following
Flammulated Owl *Otus flammeolus*	*	
Three-toed Woodpecker *Picoides tridactylus*	*	
Great Gray Owl *Strix nebulosa*	*	
Northern goshawk *Accipiter gentilis*	*	
Spotted frog *Rana pretiosa*		Occurs in aquatic ecosystems not effected by this project
Colorado River Cutthroat Trout *Oncorhynchus clarki pleuriticus*		Occurs in aquatic ecosystems not effected by this project
Bonneville Cutthroat Trout *Oncorhynchus clarki utah*		Occurs in aquatic ecosystems not effected by this project

Proposed Action

Purpose and Need for Action

Purpose: This project was initiated not because the agency was concerned that we would lose a viable population of goshawks prior to revision of Forest Plans in Utah (projected to be 4 years), but in response to identified concerns that current management strategies permitted actions that could degrade habitat and did not emphasize some actions needed to maintain or restore goshawk habitat. In addition, new direction was needed to provide greater consistency in management of habitat for the goshawk. Current direction is not sufficient to provide consistency, resulting in a variety of interpretations on how to manage goshawk habitat. For a far-ranging species such as the goshawk that spans multiple national forests and other jurisdictional boundaries, consistency in habitat management is an essential component of actions needed to provide reasonable assurances that habitat to support viable goshawk populations can be sustained in the future.

Due to the important role NFS lands play in restoring or maintaining habitat for the northern goshawk in Utah, the Intermountain Region elected to take action to determine how to incorporate principles recommended in the HCS into management actions proposed in the future. This action will contribute to on-going interagency efforts to prevent the goshawk from being listed as threatened or endangered. Once a species is listed as endangered or threatened, options for management can be reduced.

Need: A habitat assessment and management recommendations for the northern goshawk and subsequent habitat conservation strategy were developed for the State of Utah in response to suspected downward trends in goshawk habitat and/or populations. Due to the important role NFS lands play in restoring or maintaining forested habitat for the northern goshawk, there is an immediate need to incorporate the principles and recommendations from these documents into management direction, for the reasons stated below.

Changes in forest structure, especially large tree removal and other forest management activities singly or in combination, may negatively affect goshawk populations (Crocker-Bedford 1990). In addition, fire exclusion has resulted in an ingrowth of forest stands by shade tolerant species. This in and of itself would likely not lead to goshawk population declines. In the short term the increase in

older seral conditions may actually be beneficial. The main issue is the changes in fire severity and risk of large scale habitat losses from catastrophic fire and insect events that would ultimately lead to a loss of nesting habitat (Bloom et al. 1986, Herron et al. 1985, Kennedy 1989) [Graham et al. 1999].

Each of the six national forests identified in Chapter 1.4.1 completed Supplemental Information Reports (SIRs). The SIRs assessed the sufficiency of management direction in current forest plans to allow use of new information, including management recommendations, found in the Assessment and HCS. While current management direction would allow for use of the recommendations at the project level, some direction was so broad that it also allowed actions that could degrade goshawk habitat. As a result, it was determined that amendments to current forest plans are necessary to address new information found in the assessment and strategy.

Geographic Range and Scope of the Action

Geographic Range: The Proposed Action provides management direction for affected forested habitats on NFS lands within the Ashley, Dixie, Fishlake, Manti-LaSal, Uinta, and Wasatch-Cache National Forests (NF) (hereinafter referred to as Utah's NFs) of the Intermountain Region. Specifically, the geographic area described includes the majority of NFS lands in the State of Utah, with small portions of Wyoming and Colorado. The total NFS lands within these six national forests is approximately 8.1 million acres; 7.98 million acres in Utah, 90,000 acres in Wyoming and 30,000 acres in Colorado. Coniferous and aspen forests occur on approximately 3.9 million acres of this 8.1 million acres.

Scope*:* *Under the provisions of the NFMA, this action will amend current management direction in six forest plans. It will provide consistency in future project design, implementation and monitoring on the Ashley, Dixie, Fishlake, Manti-LaSal, Uinta, and Wasatch-Cache NFs where habitat for the goshawk and its prey is involved. When forest plans for the affected national forests are revised, the management direction adopted through this amendment will be integrated as needed to best meet the intent of the conservation strategy and assessment.*

Components of the Preferred Alternative (Alternative F)

Categories of Management Direction: The proposed management direction will apply to all forested habitats on the affected national forests except as exempted (see "Features Common to All Action Alternatives"). Seven categories of management direction/requirements have been developed. These management direction categories are:

- *Category 1: Native processes.* This category applies to all aspects of a goshawk home range[1]. Natural disturbances (i.e., fire, insects, disease and wind) are integral processes in many systems. Species like the goshawk and its prey have evolved in response to environmental changes triggered by disturbance. Restoring or mimicing these disturbances is one of the best indicators of ecological sustainability, including sustaining populations of goshawks (Graham et al. 1999; HCS, 1998; R4 Properly Functioning Condition (PFC) Process, 1998).

- *Category 2: Forest composition*. This category applies to all aspects of a goshawk home range. Forest composition focuses on the importance of seral species and native species in landscape diversity. Landscape diversity is the variety of plant communities evaluated at the landscape level (including their identity, distribution, juxtaposition, and seral stage). The diversity of plant species present within a landscape, especially seral and native species, can have a profound influence on the resiliency of a system and the ability of a system to renew or maintain and propagate itself after disturbance. The continuing productivity of an ecological system, including its ability to produce desirable outputs such as habitat for goshawk and its prey, depends upon potential renewal (ibid.).

[1] A home range refers to all non-exempt forested acres within nest, post-fledgling (brood rearing) and foraging areas where management direction under the category will apply.

- *Category 3: Forest structure*. This category applies to all aspects of a goshawk home range. Alternatives address biological landscape structural attributes (i.e., vegetative structural stage, snags, down logs and woody debris, and canopy closure) important to habitat for the goshawk and its prey. The sizes, shapes, patterns, and connectivity of these habitat attributes all influence the ability of the goshawk and its prey to exist in landscapes (Graham et al. 1999; HCS 1998; Reynolds et al. 1992).
- *Category 4: Nest and post-fledgling areas only*. This category applies only to non-exempt forested acres within defined nest and post-fledgling areas. Direction provides additional requirements/guidance specifically designed to sustain nest and post-fledgling areas (Graham et al. 1999; HCS 1998; Reynolds et al. 1992).
- *Category 5: Other miscellaneous areas of concern*. Some alternatives provide a mix of additional direction addressing other areas of concern that may be important to sustaining habitat for the goshawk and its prey. When management direction is included in this category, it applies to all aspects of a goshawk home range, all forested acres except as exempted. Alternatives address items such as road disturbance, grazing practices, and the need to do landscape assessments to provide context for future project design and implementation (Graham et al. 1999; HCS, 1998; Reynolds et al. 1992; Arizona Game and Fish, 1992/93; Braun et al. 1996; conservation biologist for Forest Guardians and Southwest Center for Biological Diversity).
- *Category 6: Treatment prioritization*. Alternative F specifically addresses the importance of providing direction to prioritize treatments in areas requiring restoration or areas at high risk to being lost or degraded for the remainder of the current planning period. Management direction is applied to all aspects of a goshawk home range (Graham et al. 1999).
- *Category 7: Monitoring Requirements*. Key features in any adaptive management strategy are implementation monitoring and, to a lesser extent, effectiveness monitoring; validation monitoring is not addressed. The short-term nature of this direction (remainder of the current planning period) will not allow for meaningful validation monitoring. Monitoring is incorporated into all alternatives, but will not be used to compare alternatives. Monitoring associated with this proposal does not preclude established monitoring efforts by the individual national forests (HCS, 1998).

Desired Habitat Condition*:* The Assessment by Graham et al. (1999) states that all forested landscapes in Utah are potentially suitable as goshawk habitat for some portion of their life cycle (HCS, page 4). Forested landscapes include those areas dominated by coniferous and aspen forest; but not woodlands such as pinyon-juniper.

In general, when forested landscapes of Utah are in a properly functioning condition (PFC 1998) they will provide excellent habitat for the goshawk and its prey (Graham et al. 1999). Desired habitat attributes important to the home range of the goshawk and its prey, as stated in the HCS, include :

1. Diverse forest cover types with strong representation of early seral tree species dominate the landscape.
2. High quality habitat patches that are no more than 60 miles apart, preferably less than 20 miles apart, exist throughout landscapes (connected habitat).
3. Forested landscapes have 40% of the coniferous land area and 30% of the aspen land area dominated by large trees **(***older vegetative structural stages (VSS) 5 and 6)*, well distributed. Large trees are defined based on the average size of trees found in the area and by the site potential.
4. Habitats for prey and other associated species are present to meet their needs as described by Reynolds el al. 1992 and Graham et al. 1999 (e.g., snags, down woody, cover, etc.).
5. A variety of structural stages as recommended by Reynolds et al. (1992) are present.

A balance of structural stages across the landscape is needed to ensure the larger structural stages are sustained over time. Tree densities in the smaller structural stages should promote accelerated tree growth into the larger structural stages and maintain crown development important to meeting desired canopy closures in the larger stages. Outside of nest areas, there should be open understories in the larger structural stages with trees irregularly spaced (Reynolds et al. 1992; Graham et al. 1999).

Nesting habitat is an essential component of goshawk home range. With the associated post-fledgling family area, it contributes to habitat connectivity across landscapes and the continuous recruitment of goshawks into the population (Graham et al. 1999). Both habitat connectivity and continuous recruitment are important components for sustaining viable populations of the northern goshawk in Utah. Thus, it is desirable to have nesting habitat and the associated post-fledgling areas well-distributed within and across forested landscapes. Desired nest area habitat varies from the overall home range habitat in that it typically occurs in older-aged stands that have a higher density of large trees, high tree canopy cover, and higher understory tree density.

To understand relationships of these desired habitat conditions they must be viewed in scales at tens of thousands of acres or larger. Scales greater than hundreds of thousands of acres are too large to ensure that desired habitat connectivity attributes are sufficiently distributed.

Where the Proposed Management Direction Will and Will Not Be Applied*:* The proposed management direction will apply to National Forest System lands within the Ashley, Dixie, Fishlake, Manti-LaSal, Uinta, and Wasatch-Cache National Forests found within the State of Utah, with small portions of these forests in Wyoming and Colorado.

This direction will apply to forested habitats found within the approximately 8.1 million acres of National Forest System lands within the six Utah National Forest identified, *except* in the following areas:

(1) Designated wilderness areas;

(2) Administratively or Congressionally designated areas with a defined purpose (e.g., Research Natural Areas, National Recreation Areas, etc.);

(3) Areas currently managed or allocated for concentrated recreation use and development (does not include ski resorts; ski resorts included under category #5 below);

(4) National Forest System lands that are significantly influenced by lands in other ownership (e.g., high use urban interface areas); or,

(5) Areas allocated for leasable mineral activities in current forest plans[2], areas under existing special use permits (includes ski resorts) which allow vegetative disturbance or treatments (vegetation will be managed to meet the intent of the permit), or current administrative site uses and development.

In these areas, current forest plan direction will still apply. However, *when the direction adopted for management of goshawk habitat through this amendment does not conflict with the primary use in the exemption area, it will be applied.* Refer to Table 1 for acres by forest and exemption area.

While the direction adopted in this amendment will only be applied when it does not conflict with the primary use of an area, the contribution of these areas to sustaining habitat components for the goshawk and its prey are still important and will be analyzed and evaluated through the landscape assessment process. For example, areas such as wilderness may provide suitable goshawk habitat which may influence how habitat attributes in areas outside the wilderness are managed through time. However, vegetation in the wilderness is managed to meet the goals of the wilderness resource which may or may not be contrary to suitable goshawk habitat.

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[2]***Areas Allocated for Mineral Activities under a Forest Plan***: Areas designated by existing Forest Plans with management emphasis on mineral activities. For example: This includes MMA management units (Minerals Management Area) on the Manti-La Sal National Forest where coal mine facilities exist or are reasonably foreseeable and are specifically managed for leasable mineral activities.

Areas where the proposed direction will and will not apply (#1-5 above) are shown on Maps 1 through 7 in *Appendix D*, when of sufficient size to be mapped. Due to the small size of some areas included under #5, all areas are not shown on the attached map. Examples of these types of areas include existing electronic sites, Federal Aviation Administration (FAA) sites, research plots, and some utility corridors and rights-of-way.

In addition to areas defined in #1-5 above, any valid, prior existing rights on National Forest System lands will not be affected by this amendment. Also, locatable, mineral material or leasable mineral activities and facilities[3] that have been authorized for such use under existing plans, licenses or permits[4], or have been leased or authorized for leasing[5] prior to the decision date of this amendment, will not be affected by this amendment. Restrictions required on mineral activities in these situations must be consistent with the mining laws, lease rights, and existing lease stipulations. Leasable mineral uses and activities that will not be affected include both on and off-lease activities and facilities[6] reasonably required to exercise rights granted by the mineral leases. However, appropriate measures will be taken to protect goshawk habitat and nesting activity to the extent agreed to by the lessee, permittee, or operator and/or within the legal authorities of the responsible agencies.

The proposed direction will not apply in areas 1-5 above, or relative to existing uses or rights discussed, because:

- the forested habitats in these areas are managed for other purposes as defined by current policy, permits or regulations; or,
- the existing use permitted under the current forest plan will not always allow for the management of habitat as outlined in the proposed management direction; or
- the degree of influence resulting from adjacent lands in other ownership may preclude application of this direction.

Managing these areas consistent with current management direction and allowing for uses discussed above is important to meeting other goals and objectives in the forest plan. Doing so will not result in the loss of sufficient habitat needed to support the currently viable population of goshawks in the State of Utah (refer to Chapter 4, section 4.3.2).

Application of Management Direction: The management direction in the selected alternative will only apply to projects for which there has not been a decision document issued prior to the effective date of this amendment; prospective only.

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[3]***Mineral Activities and Facilities***: Those activities and facilities needed to reasonably explore for and produce locatable and leasable minerals and mineral materials consistent with the rights granted by a plan of operation, permit, license, lease and requirements of applicable laws, regulations, and lease terms, conditions, and stipulations.

[4]***Plans or Permit Areas***: Areas where plans, licenses or permits have already been approved or issued for mineral related activities. They will include the permit areas for mines, oil and gas fields, oil and gas exploratory and development wells, preliminary exploration activities such as geophysical surveys, as well as ancillary facilities within or outside of existing leases, including (but not limited to) access roads, sediment ponds, staging or office facilities, pipelines, ventilation breakouts/shafts, etc.

[5]***Areas Authorized for Leasing***: Area included within existing leases and those areas authorized and forwarded to the responsible agency for leasing by the Forest Service prior to the date of the Goshawk decision. This does not include all areas potentiality available for mineral leasing under Forest Plans.

[6]***Activities/Facilities Required to Exercise Rights Granted by a Lease***: This will include such activities and facilities within or outside of existing leases reasonably necessary to exercise pre-existing rights granted by a lease and subject to existing lease terms, conditions, and stipulations. They will include exploration and production facilities, reconstruction of existing Forest Service roads for access to leases/facilities, and construction of new access/transportation facilities (roads, pipelines, powerlines).

Table 1: Acres by forest and exemption category

			Acres Direction will not apply (acres rounded to thousands)					
National Forest	Total National Forest Acres (millions)	Acres (Millions) and Percent of Total Acres Direction *Will* Apply	Total Acres (Millions) and Percent of Total Acres	#1 Wilderness	#2 i.e., RNAs, NRAs, etc.	#3 Developed Recreation [7]	#4 Urban Interface	#5 MMAs, Special Uses[8]
Ashley	1.3	0.9 -- 70%	0.4 -- 30%	273,000	83,000	57,000	0	6,000
Dixie	1.9	1.8 -- 94%	0.1 -- 6%	83,000	14,000	13,000	0	7,000
Fishlake	1.5	1.4 -- 96%	0.1 -- 4%	0	10,000	37,000	0	8,000
Manti-Lasal	1.3	1.2 -- 94%	0.1 -- 6%	45,000	20,000	5,000	0	9,000
Uinta	0.9	0.8 -- 88%	0.1 -- 12%	58,000	4,000	20,000	11,000	6,000
Wasatch-Cache	1.2	0.8 -- 64%	0.4 -- 36%	313,000	6,000	9,000	51,000	53,000
Totals	8.1	6.9 -- 85%	1.2 -- 15%	772,000	137,000	141,000	62,000	89,000

***Alternative F*:** This alternative responds to the issue that "Management activities should concentrate on maintenance of habitat areas at risk to provide for the greatest opportunity to minimize any further degradation of habitat and loss of management options." This alternative focuses management on goshawk habitat acres at-risk. Acres at-risk are defined as those that, during the life of this amendment, may lose sufficient habitat elements important to the goshawk and its prey, such that they will no longer be rated as high and optimum habitat based on the Graham et al. (1999) rating process. By focusing management on those forested acres that are at greatest risk of dropping from high and optimum goshawk habitat to low or moderate, the agency will do the most it can do in over the projected 4 year life of this amendment to minimize any further loss of key habitat areas. Graham et al. (1999) use the current distribution and connectivity of high and optimum habitat as their basis for determining if sufficient amounts of habitat are available in the State of Utah to support the currently viable population of goshawks.

This alternative is similar to Alternative C. The key elements that changed in this alternative are:

1. All long term goals common to Alternative C and other action alternatives were deleted and replaced with a single goal which focuses on short-term maintenance or restoration of high or optimum habitats (per Graham et al. 1999 assessment process);
2. Unlike other action alternatives, an objective was added which emphasizes the need to treat at least 1000 acres per year on each administrative unit to further achievement of the short term goal previously discussed.

[7] Total Forest acres includes both forested and non-forested. Though recent Forest Inventory and Analysis (FIA) work has estimated that approximately 3.9 million acres of the total 8.1 million acres are forested (not including woodland), there is no data set currently available to spatially tie this data set to locations on the ground. GAP data was considered for this purpose, but based on reviews was determined not to be accurate enough for addressing location information of items in categories 3,4 and 5; and marginal in categories 1 and 2. GAP data was intended to be used at the state scale; use at smaller scales has mixed results. Therefore, direction relates to any forested acres found outside exemption areas within the total 6.9 million acres it will be applied to.

[8] #5 - Includes ski resort acres. Several special use permit areas are of small spatial area and highly dispersed. It is impractical to map these small special use areas at the scale of maps contained in Appendix D and forestwide mapping of these areas is still being developed; therefore they are not included on these maps. However, these areas are in the acreage calculation in Table 1 based on acres estimated under permit. Refer the special uses section in chapter 3 and 4 of this document (3.5.6 and 4.5.6, respectively) for a discussions relating to this subject.

3. This alternative includes grazing direction. The focus is on the need to change grazing practices only in those areas where landscape assessments determine grazing is a factor in putting a landscape at-risk relative to habitat needs of the goshawk.

Six monitoring requirements are included under this alternative, m-1 through m-5, and m-7. This is the same as Alternatives C, D and E except the grazing requirement under Alternative D, m-6, is replaced with m-7.

II. EFFECTS OF THE PROPOSED PROJECT

A total of 10 Regionally Sensitive Vertebrate Species occur on National Forest Systems lands in Utah (Table 1). Of the 10 species identified, 7 species may use goshawk habitat[1] for all or a portion of their life cycle. The 7 species that will be analyzed in this document are identified in Table 3.

Potential effects to the 7 species described above and the habitat they use on National Forest System lands in Utah will be addressed in this document at the programmatic level. Site-specific documentation for all proposed actions that may directly, indirectly or cumulatively impact any of these species will be conducted at the project-specific level through the biological evaluation process.

Existing Environment

A complete list of all Regionally Sensitive Species can be found in Table 1. In addition, location information, by National Forest can also be found in Table 2.

Listed below are the species that may occur in goshawk habitat[1] in Utah

A. Spotted Bat (*Euderma maculatum*)

Spotted bats inhabit a variety of communities including open ponderosa pine, desert scrub, pinyon-juniper, open pastures, and hay fields. They roost in rock crevices, located high on steep rock faces in limestone or sandstone cliffs. Crevices range from 0.8 to 2.2 inches in width. Roost sites are usually in relatively remote and undisturbed areas. Availability of suitable roost sites and human disturbance are the limiting factors to this species' success (Spahr et al. 1991). Spotted bats are known to be rare and limited to relatively remote and undisturbed areas.

Spotted bats are strong fliers and have been observed to move up to 10 km from roosts or capture sites. Spotted bats forage primarily in flight on larger insects such as Lepidoptera but have also been seen foraging on the ground on grasshoppers (Toone 1992).

Spotted bats breed in late February to early April and give birth to one young in late May to early June. Spotted bats are territorial and avoid each other while foraging. There is some evidence that they exhibit roost site fidelity. Moths are thought to be their main prey species. Little is known about their seasonal movements, but they are thought to migrate south for winter hibernation (Spahr et al. 1991).

Spotted bats occur in scattered areas in British Columbia, Idaho, southeast Oregon, southwest Montana, western Wyoming, Nevada, Utah, western Colorado, southeastern California, Arizona, New Mexico, and south to the Mexican state of Queretaro (Spahr et al. 1991).

Human disturbance to hibernacula from cave exploration and bat banding has been found to cause significant declines of bat populations (Gillette and Kimbrough 1970, Mohr 1972, both cited in Christy and West 1993). Other threats to bats are establishment of dams that flood hibernacula (DeBlase et al. 1965, Griffin 1953, Hall 1962, all cited in Christy and West 1993), and the application of pesticides, which reduces food supplies and subjects them to contaminated prey (Clark 1981).

[1] Goshawk habitat is defined as habitat that is usable for nesting, roosting, and foraging. Forest habitat need not be occupied by goshawks to be considered habitat (Reynolds 1992)

Spotted bats have been documented on all National Forests in Utah. They have been found roosting along rock crevices high on steep cliff faces throughout the state. Foraging habitat has ranged from pinyon-juniper, desert scrub, to open ponderosa pine landscapes.

B. Western Big-eared Bat (*Corynorhinus townsendii*)

The Townsend's big-eared bat inhabits pinyon/juniper forests, shrub/steppe grasslands, deciduous forests, and mixed conifer forests located at elevations between sea level and 10,000 feet elevation. Caves, rocky outcrops, old buildings, and mine shafts provide suitable roost sites for this species. The low reproductive rate, limited availability of roost sites, and human disturbance are considered limiting factors for this species (Spahr et al. 1991).

Townsend's big-eared bats are insectivores, eating mostly moths. Breeding occurs at winter roost sites between October and February. Because fertilization occurs during winter months, females do not give birth until late spring or early summer. Each female usually gives birth to one offspring. Females and young roost in communal nurseries which range in size from 12-200 individuals. The offspring fly at three weeks and are weaned in six to eight weeks. Nurseries break up by August. During the winter bats of this species roost singly or in small clusters in hibernacula from October to February. They do not migrate but occasionally move to different roosts or hibernacula presumably in response to temperature changes (Spahr et al. 1991).

The Townsend's big-eared bat occurs throughout North America, from British Columbia to southern Mexico, and east to South Dakota and western Texas and Oklahoma. Isolated populations exist in southern Missouri, northwestern Arkansas, and northeastern Oklahoma, and in eastern Kentucky, West Virginia, and western Virginia (Spahr et al. 1991).

Townsend's big-eared bats have been located on all National Forests in Utah. They have been located roosting in caves, old mines and abandon buildings. Foraging habitat includes mixed conifer, pine forests, pinyon-juniper, and desert scrub landscapes.

C. Flammulated Owl (*Otus flammeolus*)

Flammulated owls appear to be associated with mature pine and mixed conifer habitat types (Reynolds and Linkhart 1984). Within Montana forests, they typically occur with the yellow pine belt, which includes ponderosa pine and Jeffrey pine (Marshall 1957, Marcot and Hill 1980). Flammulated owls have also been found in stands of fir (Abies spp.), Douglas fir and incense cedar (Marshall 1939, Reynolds and Linkhart 1984). Undergrowth of oak/pine mix may be a required habitat component in some portions of its range (Phillips et al. 1964).

Radio-telemetry studies of foraging and habitat use by flammulated owls in Colorado (Linkhart 1984, Reynolds and Linkhart 1987) showed the owl's preference to forage in old-growth (>200 years old) ponderosa pine-Douglas fir stands over other forest types and ages available within the study area. Goggans (1986) found that flammulated owls monitored in Oregon foraged in edge habitat between forests and grasslands significantly more than these types occurred within their home range and that the relative proportions of arthropods (flammulated owls' main prey species), were greatest in grassland habitat.

Flammulated owls are obligate secondary cavity nesters and rely on previously excavated cavities in large diseased or dead trees for nest habitat (Bull and Anderson 1978, Reynolds et al. 1985). Possible limitations to this species include the loss of suitable habitat by logging of mature forest stands and availability of snags for nesting.

Flammulated owls are almost exclusively insectivorous, preying on small to medium-sized moths, beetles, caterpillars, crickets, spiders, scorpions, and other arachnids. Breeding begins in May when pair formation and nest site selection take place. Flammulated owls are obligate secondary cavity nesters. Clutches of two to three eggs are laid in natural or flicker-sized woodpecker holes in early June. Young are hatched after a 21-22 day incubation period and fledged in late July. They disperse from the natal area by September. In mid-October, flammulated owls migrate to wintering grounds in Mexico and Central America (Spahr et al. 1991).

Flammulated owls are distributed from southern British Columbia south to Veracruz, Mexico and from the Rocky Mountains to the Pacific during breeding. In winter their range is thought to extend from central Mexico to Guatemala and El Salvador (Spahr et al. 1991).

Flammulated owls have been documented on all National Forests in Utah. They have been located in a variety of habitats throughout the state, ranging from pine mixed with oak at lower elevations to mixed conifer with fir and spruce in the upper elevations. They have also been located in aspen and pure ponderosa pine landscapes.

D. Three-toed Woodpecker (*Picoides tridactylus*)

Three-toed woodpeckers are found in northern coniferous and mixed forest types located at elevations up to 9,000 feet and composed of Engelmann spruce, sub-alpine fir, Douglas fir, grand fir, ponderosa pine, tamarack and lodgepole pine (Gabrielson and Jewett 1940, Farner 1952, Larrison and Sonnenberg 1968, Marshall 1969). This species is attracted to areas where there are numerous dead trees due to a fire, insect epidemic, blow-down, or other die-off (Whittle 1920, Bent 1939, Spring 1965, Larrison and Sonnenberg 1968). Nests are found in cavities located 5-12 feet above ground in dead spruce, tamarack, pine, cedar, and aspen trees. This species uses a variety of tree species as foraging substrata; fire-killed trees appear to be preferred. In Colorado, this woodpecker was found to prefer old growth and mature trees for foraging; in Oregon they have been observed foraging on lodgepole pine trees with an average DBH of 9.4 inches and height of 59 feet. Because this species requires snags for feeding, perching, nesting, and roosting, it is threatened by activities such as logging and fire suppression, which remove or eliminate snags (Spahr et al. 1991).

This species feeds of wood-boring insect larvae, mostly beetles, but they also eat moth larvae and occasionally sap at sapsucker pits. They are major predators of the spruce bark beetle and may contribute to its control. Three-toed woodpeckers breed in May and June. Both sexes excavate the nest cavity in a dead or occasionally live tree where they incubate an average of four eggs for 12-14 days. Young fledge at 22-26 days and remain with the parents for another month (Spahr et al. 1991).

Three-toed woodpeckers range across North America from tree line south to southern Oregon and through Idaho and Utah to New Mexico and Arizona. In eastern North America they are found south to Minnesota, southern Ontario, New York, and northern New England. They also occur across northern Europe and Asia (Spahr et al. 1991). In the Intermountain Region, densities are presumed to be low; however, little information is available.

This species has been documented on all National Forests in Utah. They have been located in variety of species ranging from the lodgepole pine type on the Ashley National Forest to the high elevation spruce type on the Dixie National Forest.

E. Northern Goshawk (*Accipiter gentilis*)

Northern goshawks are associated with coniferous and mixed forest through much of the Northern hemisphere (Wattel 1981). Studies of nesting habitat show that goshawks nest in older-aged forests with variable tree species (Shuster 1980, Reynolds and Wight 1978, Saunders 1982, Moore and Henny 1983, and Hall 1984). The most consistent vegetative characteristic of goshawk nest sites is high percent canopy closure. Studies on habitat characteristics at goshawk nest sites have reported average canopy closure measurements ranging from 60 percent in eastern Oregon and 77 percent in northern California, to 94 percent in northwestern California (Reynolds and Wight 1978, Saunders 1982, and Hall 1984). Stand structure ranges from dense multi-layered stands in Oregon (Reynolds 1975, Reynolds and Wight 1978) to open park-like understories in Colorado and California (Shuster 1980, Saunders 1982, Hall 1984). Average tree size is just as variable with mean tree diameters ranging from 8-20 inches in Colorado (Shuster 1980), 20 inches in Oregon (Moore and Henny 1983), and 18 inches in northwestern California (Hall 1984).

Goshawks appear to prefer north to east aspects for nest sites as stands on these aspect are typically denser and more suitable (Reynolds 1983, Reynolds and Wight 1982, Shuster 1980, Hall 1984). Slope also appears important as nests are usually placed on flat to moderately sloped land where trees are able to grow larger and at a higher density (1-39 percent) (Reynolds 1983, Shuster 1980, Hall 1984).

The importance of the proximity of the nest area to water is not known. Saunders (1982) and Moore and Henny (1983) found that the distances of water from nests averaged approximately 650 feet. Reynolds (1979) suggested that permanent water source is not required but there may be a preference for this condition.

Reynolds and Meslow (1984) found that the goshawk is a height zone generalist, taking prey from the ground-shrub, shrub-canopy, and layers. Fischer et al. (in prep.) found preference for woodlands with large, mature trees. Bloom et al. (1986) stress the importance of meadows, streams, and aspen stands, which may be important to prey species on which the goshawk feeds. However, Reynolds (1979) observed that goshawks forage in a variety of habitats probably along edge as well as in deep forests, provided that there is available prey and vegetation is not too dense to prevent flight. Prey plucking sites within the nesting territory is also a habitat characteristic related to foraging. Prey plucking sites usually consist of stumps, fallen logs, snags, arched trees, rocks, or horizontal tree limbs below the canopy (Bartelt 1974, Reynolds and Wight 1978). In Oregon and California studies, goshawks were found to forage primarily on birds and mammals (Schnell 1958, Reynolds and Wight 1978, Reynolds 1979, Bloom et al. 1986). In northern Arizona, Boal and Mannon (1991) found that Steller's jay, northern flicker, golden-mantled ground squirrel, and the least chipmunk were the primary prey species.

Available evidence suggests that two important resources, food and nest habitat, are the principle mechanisms limiting goshawk densities (Newton 1989, 1991, Village 1990). Specifically, populations may be limited by shortage of nest sites; and where nest sites are readily available, densities may be limited by food abundance and availability.

Goshawks begin breeding activities in April. Clutches of three to five eggs are laid in mid-June with the nestling period extending through mid-July. Nests are typically large stick platform structures built in a fork near the trunk of the tree, on a large branch, or on top of a mistletoe whorl, 30-40 feet from the ground in the lower two-thirds of the crown (Eng and Gullion 1962, McGowan 1975, Reynolds 1975, Bartelt 1974, Moore 1980, Hall 1984, McCarthy et al. 1989, Hennessy 1978, Shuster 1980, Reynolds and Wight 1978). Young are fledged between July 15-August 15 and may be dependent on adults for food until September 30. Goshawks typically build more than one nest in adjacent trees or as far as one mile from the active nest tree. Goshawks may alternate between one or more of these alternate nests on an annual or semi-annual basis.

The Northern goshawk is holarctic in distribution. In North America it occurs primarily in boreal forests, but it also occurs far to the south in montane forests of western United States and Mexico. The most widespread subspecies (A. g. atricapillus) occurs from the northeastern United States across the boreal forests of Canada to Alaska and southward through the upland forests of western United States. The goshawk is partly migratory in the northern portion of its range, where in winters of food shortage it migrates southward. In high elevations and montane areas, some goshawks descend to lower elevations into woodlands, riparian areas, and scrublands during the winter (Kennedy, unpubl. data). There is evidence that goshawks in the southwest winter in close proximity to their nesting home range (Kennedy unpubl. data, Reynolds in prep.).

Goshawks have been located on all National Forests in Utah. They can nest and forage in a variety of habitats ranging from Lodgepole pine and aspen to high elevation spruce.

F. Boreal Owl *(Aegolius funereus)*

The range of this owl is circumboreal. In North America, it breeds from Alaska east across Canada, and south into the mountains of Washington, Idaho, Montana, Wyoming, Colorado, and recently found in northern Utah. The boreal owl is small, chocolate brown owl with long, broad wings, and a short tail associated with high elevation forests. Average length is 9 inches. They also possess a large, rounded head with a well-defined facial disk with no ear tufts, a light colored bill, and white head spots.

During winter boreal owls may wander south of their breeding range. Boreal owls are closely associated with high elevation spruce-fir forests due to their dependence on this forest type for foraging year round. Nesting habitat structure consists of forests with a relatively high density of large trees (12 in. dbh), open understory, and multi-layered canopy. Owls nest in cavities excavated by large

woodpeckers in mixed coniferous, aspen Douglas-fir, and spruce-fir habitat types. In summer, owls roost in cool spruce-fir stands. In winter, they may move down in elevation and roost in protected forested areas. Boreal owls roost close to the bole of the tree, usually within 6 inches, probably for both security and thermoregulation. Boreal owls avoid open areas, such as clearcuts and open meadows, except for occasional use of edges of openings for foraging. Boreal owls actively defend small areas in the immediate vicinity of the nest tree. Home ranges are large, probably because of the need for different forest cover types to provide for nesting, foraging, and roosting. Boreal owls don't migrate but are considered nomadic and will move some distances in search of prey (Spahr et al. 1991).

Boreal owls have been located on the Ashley, Uinta and Wasatch-Cache National Forests. They have been located in aspen and spruce-fir types, primarily in the upper elevations.

G. Great Gray Owl *(Strix nebulosa)*

The great gray owl is the largest North American owl measuring 18-26 inches in length. It is mostly feathers however, and is outweighed by both the great horned and the snowy owl. The general plumage color is dusky grayish brown or sooty, broken grayish white mottling. It has a large, circular facial disk with no ear tufts. A conspicuous whit patch or "bow tie" is present on the throat. The eyes and bill are both yellow.

In North America, great gray owls breed from the boreal forests of Alaska, east to Ontario, and south to northeastern Minnesota, northwestern Wyoming western Montana, Idaho, Utah and through the Sierra Nevadas of California and Nevada.

Great gray owls use mixed coniferous and hardwood forests usually bordering small openings or meadows. They forage along edges and clearings. Semi-open areas, where small rodents are abundant, near dense coniferous forests are desirable for roosting and nesting. During winter some birds stay on or near breeding territories and make other irregular movements in search of prey and favorable snow conditions. In the Intermountain Region, great grays occupy primarily lodgepole pine/Douglas-fir/aspen types and also in ponderosa pine (Spahr et al. 1991).

Great gray owls have been located on the Ashley and Wasatch-Cache National Forests. They were located in the upper reaches of the lodgepole pine type and also in the spruce-fir type.

Indirect Effects

In addition to the direct and indirect effects discussed by species groups, the following discussion pertaining to indirect effects are common to all species.

Effects occurring at a later time may be: 1) increase grass, forb, and shrub species diversity, 2) increase animal species diversity, 3) changes in localized animal distribution, 4) increased human disturbances, 5) fragmentation of forested habitats, and 6) increased forested edge to interior ratios.

An indirect impact, which may occur as a result of implementing the proposed action, would be increased human activity due to improved road access, which may displace or disrupt some species. Improved access coupled increased recreation and fuelwood gathering opportunities may cause further disturbances partially as a result of off road use and a reduction in snags from woodcutting. However, these disturbances would be seasonal and short term (1-5 years).

Direct Effects

Spotted bat (*Euderma maculatum*), and Western Big-eared Bat (*Corynorhinus townsendii*)

Direct effects to these species would be minimal if any because they roost in caves, old mines, and abandon buildings, all habitats that will not be directly affected by the proposed action. Because specific surveys would locate individuals and/or suitable habitat, direct effects to individuals or habitats would be minimal if any over the next four years. Effects would be documented in a project-specific Biological Evaluation.

Flammulated Owl (*Otus flammeolus*), Boreal Owl *(Aegolius funereus)*, and Great Gray Owl *(Strix nebulosa)*

Effects resulting from implementation of the proposed action would likely occur from all ground disturbing activities pertaining to timber harvesting. This would range from the transportation system, to the removal of mature and over mature forests. Because site-specific surveys and analyses would occur, effects to members of these species and their habitat would be minimal, if any over the next four years. Effects would be documented in a project-specific Biological Evaluation.

Three-toed Woodpecker (*Picoides tridactylus*)

Because three-toed woodpeckers forage and nest in forested landscapes, effects resulting from implementation of the proposed action would likely occur from all actions pertaining to timber harvesting. Effects could range from development of the transportation system, to fuelwood gathering. Because site-specific surveys will be conducted on all projects, which occur in potentially suitable habitat, effects to this species and their habitat would be minimal if any over the next four years. Effects would be documented in a project-specific Biological Evaluation.

Northern Goshawk (*Accipiter gentilis*)

Direct effects that may occur to this species as a result of implementation of the proposed action include all action pertaining to timber harvesting. Effects would likely occur from activities such as development of the transportation system, harvesting trees, and human use of the project areas proceeding the implementation. Because project-specific surveys in combination with implementation of the approved Conservation Assessment, Strategy and Agreement, effects would be minimal if any over the next four years. Effects would be documented in a project-specific Biological Evaluation.

Cumulative Effects Area

"Cumulative effects" or cumulative impacts are those impacts on the environment which result from the incremental effects of a proposal added to other past, present or reasonably foreseeable future actions regardless of which agency or person undertakes them (see CFR 1508.7). In light of the extremely broad geographic scope of the proposed action and the level of spatial resolution involved, the analysis does not in most instances address all possible cumulative effects that may result at the site-specific level. A more detailed analysis would be conducted at the site-specific level on all projects that may potentially impact suitable goshawk habitat. Furthermore, this analysis is only effective over the next 4 years until forest plans are revised. Therefore, the effects that may be cumulative are minimal, whereas, in an extended timeframe they may be more important. In the short timeframe involved, effects from past, present and reasonably foreseeable future actions on potentially suitable habitat may include those occurring from the following: ungulate grazing, timber harvest, recreation, existing policies (e.g. fire management), endangered species act, recovery plans, existing conservation, and assessments, strategies and agreements.

The cumulative effects area for Regionally sensitive vertebrate species includes the entire State of Utah and contiguous forested lands in the adjoining states of Colorado and Wyoming (Map 1). This area includes all or portions of the sections as adapted from the Baileys Ecoregions of the United States (1994). All or portions of the following sections were included in this analysis: Grand Canyon Lands, Uinta Mountains, Bonneville Basin, Northern Canyon Lands, Uinta Basin, Southeastern Great Basin, Tavaputs Plateau, Overthrust Mountains and Utah High Plateaus and Mountains sections. This cumulative effects analysis area was selected because it represents areas where goshawks and other regionally sensitive species are known to occupy in their normal life cycle during spring, summer, and fall. Goshawks have been occasionally observed during winter months in pinyon/juniper; however, little information exists on winter habitat use in Utah. In addition, most of these species are known to migrate to unknown locations, some of which could be outside of Utah. Therefore, this disclosure of effects does not include winter habitat use.

Past use or Management

Past use or management has been highly variable throughout the State of Utah. It has included practices such as oil, gas and mining, timber harvest, livestock grazing, a variety of recreational uses; and many other special uses. These and other uses have had varying levels of impact on habitats for sensitive vertebrate species. Timber management has likely had the greatest effect to habitats for the listed species discussed in this document. Listed below is a brief discussion of past use or management regarding timber.

Past and present timber sales in the State of Utah have and will remove varying amounts of timber. Intensive timber management practices have occurred in ponderosa and lodgepole pine stands. Within the spruce/fir and mixed conifer areas, only moderate harvesting has occurred. These areas have varying amounts of sensitive species habitat remaining.

Average road densities from past timber harvest has left densities variable throughout the State. Road closures are an ongoing practice on most National Forests and are expected to continue.

Positive effects that will likely occur as a result of implementing the proposed action along with reasonably foreseeable future actions may be: 1) improved stand health, 2) regulation of age and size class distribution, 3) sustainable progression of vegetation classes, 4) management of open roads, 5) wildlife game cover, and 6) irregular spacing and the retention of groups of old live trees with interlocking crowns distributed throughout the area which will provide good wildlife cover, through time, and provide habitat for many species of wildlife, including the spotted owl, Canada lynx, goshawk, flammulated owl, boreal owl, great grey owl and other sensitive species that use forested landscapes.

Strategies to retain old growth in past actions have not been strongly emphasized on National Forest System lands in Utah or in the Intermountain Region. This was partially due to the lack of a definition and information that Federal and State agencies had on old growth and old growth dependent and related wildlife species. Timber management has contributed to the loss of some old growth. Forest Plan guidance in Utah recommends varying amounts of old growth be retained, or managed for on National Forest System lands, if it exists. The proposed action would implement a strategy for the management of vegetation ages or structural stages (including old growth) at the landscape level to be carried out and maintained through time. Some areas will be deficient of large old trees due to the nature of how and where past events have occurred, such as catastrophic loss from beetle and/or fire, however, at the landscape level, old growth will be enhanced so that it may be managed and sustained through time.

A positive cumulative effect of the proposed action in the spruce/fir zone would be that it may slow down the catastrophic loss of large old trees (old growth) such as that occurring on the Dixie, Fishlake, and Manti-LaSal National Forests and that it establishes a long range strategy which maintains and enhances important wildlife habitat components with emphasis on maintaining a landscape with large old trees present. Future management actions would attempt to sustain old growth characteristics throughout the state. This would likely lead to long-term positive effects to all Regionally sensitive species that use forested landscapes.

Past, present, proposed, and reasonably foreseeable actions should not adversely affect any of the species evaluated within this document. The retention of old growth along with uneven-aged management will help sustain existing and potential habitat through time. Suitable, or potentially suitable habitat will be managed to meet the needs of the species evaluated in this document.

Past, present, and reasonably foreseeable timber management practices have not impacted riparian habitats, which may support prey species for both goshawks and owls. Effects from past livestock grazing has most likely degraded potentially suitable habitat for prey species used by the goshawks, great grey and boreal owls. However, these effects are unknown and need further study. Cumulatively, however, the proposed action would not add to this past habitat degradation.

The number of occurrences of sensitive vertebrate species and the amount of suitable habitat that has been adversely affected by previous management activities and programs on private and federal lands has not been recorded from past activities. Given the magnitude of these activities during the past 100

years, it is likely that suitable habitat for the sensitive vertebrate proposed species being evaluated has been degraded by fire suppression, overgrazing, road construction, and timber management.

III. COMPLIANCE WITH MANAGEMENT DIRECTION

This Biological Evaluation process has served to review the effects to Regionally Sensitive vertebrate species as a result of implementing the proposed action (Alternative F) on National Forest Systems lands in Utah. The effects from site-specific projects throughout the state will go through individual project level Biological Evaluations. The programmatic effects being analyzed in this evaluation are not expected to cause any adverse impacts to the species being evaluated in this document. Adverse impacts that may affect the viability of the species evaluated in this document have been avoided.

IV. DETERMINATION

As a result of this Biological Evaluation and its requirements, it is my professional determination that implementation of the proposed action, (Alternative F) has the potential to impact individuals or habitat for all of the species being evaluated in this document, but will not likely contribute to a trend towards Federal listing or cause Federal listing, cause a loss of viability to the population or the species. Furthermore, site-specific analyses will be conducted on each proposed project in suitable or potentially suitable habitat. This will further ensure that site-specific projects will not contribute to a trend towards Federal listing or cause Federal listing or cause a loss of viability to the population or the species.

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Prepared by Ronald L. Rodriguez
Wildlife and Rare Plant Program Leader
Dixie and Fishlake National Forests

Reviewed and Concurred by:

_____

Kathleen M. Paulin
Forest Biologist, Ashley National Forest

_____

Rodney L. Player
Forest Biologist, Manti-LaSal National Forest

_____

Richard Williams
Forest Biologist, Wasatch-Cache National Forest

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