

**Appendix D – Biological Resources
Supporting Data**

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APPENDIX D – BIOLOGICAL RESOURCES SUPPORTING DATA

Information presented in this appendix was compiled to assist in completion of biological resource inventories and impacts analysis included in Chapters 3 and 4. Lists of species likely to occur were compiled from data obtained from the Utah Natural Heritage Program (UNHP); Utah Division of Wildlife Resources (UDWR) habitat models; previous studies in the project area (Milford Wind Environmental Assessment); Fishlake and Dixie National Forests land and resource management plans; and Bureau of Land Management (BLM) Cedar City, Fillmore, and Richfield Field Offices resource management plans (RMPs). Special status species lists were compiled from lists of threatened and endangered species from the U.S. Fish and Wildlife Service (FWS) (county level), BLM-sensitive species (field office level), U.S. Forest Service (USFS) sensitive and management indicator species (MIS) (forest level), and State of Utah sensitive species (county level). Species accounts, habitat assessments, and likelihood of occurrence were written and determined through comprehensive review of scientific literature, heritage data, and collaboration with agency resource specialists. The species lists are presented in Tables D-1 through D-6.

D.1 Species Lists

Common Name	Scientific Name	Tier	Primary Habitat	Secondary Habitat
Allen's Big-eared Bat	<i>Idionycteris phyllotis</i>	II	Lowland Riparian	Pinyon-Juniper
Badger	<i>Taxidea taxus</i>	N/A	N/A	N/A
Big free-tailed bat	<i>Nyctinomops macrotis</i>	II	Lowland Riparian	Cliff
Black-tailed jackrabbit	<i>Lepus californicus</i>	N/A	N/A	N/A
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	N/A	N/A	N/A
Chipmunk	<i>Tamias (Neotamias) sp.</i>	N/A	N/A	N/A
Cottontail	<i>Sylvilagus sp.</i>	N/A	N/A	N/A
Coyote	<i>Canis latrans</i>	N/A	N/A	N/A
Dark kangaroo mouse	<i>Microdipodops megacephalus</i>	II	High Desert Scrub	Shrubsteppe
Deer mouse	<i>Peromyscus sp.</i>	N/A	N/A	N/A
Golden-mantled ground squirrel	<i>Spermophilus lateralis</i>	N/A	N/A	N/A
Hoary bat	<i>Lasiurus cinereus</i>	N/A	N/A	N/A
Kangaroo rat	<i>Dipodomys sp.</i>	N/A	N/A	N/A
Kit fox	<i>Vulpes macrotis</i>	II	High Desert Scrub	
Little brown myotis	<i>Myotis lucifugus</i>	N/A	N/A	N/A
Long-eared myotis	<i>Myotis evotis</i>	N/A	N/A	N/A
Mule deer	<i>Odocoileus hemionus</i>	III	Shrubsteppe	Mountain Shrub
Packrat	<i>Neotoma sp.</i>	N/A	N/A	N/A
Pallid bat	<i>Antrozous pallidus</i>	N/A	N/A	N/A
Piute ground squirrel	<i>Spermophilus mollis</i>	N/A	N/A	N/A
Pocket gopher	<i>Thomomys sp.</i>	N/A	N/A	N/A
Pronghorn	<i>Antilocapra americana</i>	N/A	N/A	N/A
Pygmy rabbit	<i>Brachylagus idahoensis</i>	II	Shrubsteppe	
Rocky Mountain elk	<i>Cervus canadensis</i>	N/A	N/A	N/A
Silver-haired bat	<i>Lasiomyotis noctivagans</i>	N/A	N/A	N/A
Spotted bat	<i>Euderma maculatum</i>	II	Low Desert Scrub	Cliff

**TABLE D-1
MAMMAL SPECIES LIKELY TO OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name	Tier	Primary Habitat	Secondary Habitat
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	II	Pinyon-Juniper	Mountain Shrub
Utah prairie dog	<i>Cynomys parvidens</i>	I	Grassland	Agriculture
Western pipistrelle	<i>Pipistrellus hesperus</i>	N/A	N/A	N/A
Western red bat	<i>Lasiurus blossevillei</i>	II	Lowland Riparian	
Western small-footed myotis	<i>Myotis ciliolabrum</i>	N/A	N/A	N/A
White-tailed antelope squirrel	<i>Ammospermophilus leucurus</i>	N/A	N/A	N/A

**TABLE D-2
AVIAN SPECIES LIKELY TO OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name	Tier	Primary Habitat	Secondary Habitat
American avocet	<i>Recurvirostra americana</i>	III	Wetland	Playa
American coot	<i>Fulica americana</i>	N/A	N/A	N/A
American pipit	<i>Anthus rubescens</i>	N/A	N/A	N/A
American robin	<i>Turdus migratorius</i>	N/A	N/A	N/A
American white pelican	<i>Pelecanus erythrorhynchos</i>	II	Water - Lentic	Wetland
Barn swallow	<i>Hirundo rustica</i>	N/A	N/A	N/A
Black-billed magpie	<i>Pica hudsonia</i>	N/A	N/A	N/A
Black-chinned sparrow	<i>Spizella atrogularis</i>	N/A	N/A	N/A
Black-crowned night-heron	<i>Nycticorax nycticorax</i>	N/A	N/A	N/A
Black-throated sparrow	<i>Amphispiza bilineata</i>	N/A	N/A	N/A
Blue grosbeak	<i>Passerine caerulea</i>	N/A	N/A	N/A
Brewer's blackbird	<i>Euphagus cyanocephalus</i>	N/A	N/A	N/A
Brewer's sparrow	<i>Spizella breweri</i>	III	Shrubsteppe	High Desert Scrub
Broad-tailed hummingbird	<i>Selasphorus platycercus</i>	III	Lowland Riparian	Mountain Riparian
Brown-headed cowbird	<i>Molothrus ater</i>	N/A	N/A	N/A
Bullock's oriole	<i>Icterus bullockii</i>	N/A	N/A	N/A
California Condor	<i>Gymnogyps californianus</i>	I	Cliff	
Canada goose	<i>Branta canadensis</i>	N/A	N/A	N/A
Chipping sparrow	<i>Spizella passerine</i>	N/A	N/A	N/A
Cinnamon teal	<i>Anas cyanoptera</i>	N/A	N/A	N/A
Cliff swallow	<i>Petrochelidon pyrrhonota</i>	N/A	N/A	N/A
Common nighthawk	<i>Chordeiles minor</i>	N/A	N/A	N/A
Common raven	<i>Corvus corax</i>	N/A	N/A	N/A
Common yellowthroat	<i>Geothlypis trichas</i>	N/A	N/A	N/A
European starling	<i>Sturnus vulgaris</i>	N/A	N/A	N/A
Great blue heron	<i>Ardea herodias</i>	N/A	N/A	N/A
Greater sage-grouse	<i>Centrocercus urohasianus</i>	II	Shrubsteppe	
Green heron	<i>Butorides virescens</i>	N/A	N/A	N/A
Green-tailed towhee	<i>Pipilo chlorurus</i>	N/A	N/A	N/A
Green-winged teal	<i>Anas crecca</i>	N/A	N/A	N/A
Hairy woodpecker	<i>Picoides villosus</i>	N/A	N/A	N/A
Horned lark	<i>Eremphila alpestris</i>	N/A	N/A	N/A
House finch	<i>Carpodacus mexicanus</i>	N/A	N/A	N/A
Killdeer	<i>Charadrius vociferous</i>	N/A	N/A	N/A
Lark sparrow	<i>Chondestes grammacus</i>	N/A	N/A	N/A

**TABLE D-2
AVIAN SPECIES LIKELY TO OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name	Tier	Primary Habitat	Secondary Habitat
Lewis's woodpecker	<i>Melanerpes lewis</i>	II	Ponderosa Pine	Lowland Riparian
Lincoln's sparrow	<i>Melospiza lincolnii</i>	N/A	N/A	N/A
Loggerhead strike	<i>Lanius ludovicianus</i>	N/A	N/A	N/A
Long-billed curlew	<i>Numenius americanus</i>	II	Grassland	Agriculture
MacGillivray's warbler	<i>Oporornis tolmiei</i>	N/A	N/A	N/A
Mallard	<i>Anas platyrhynchos</i>	N/A	N/A	N/A
Mountain bluebird	<i>Sialia mexicana</i>	N/A	N/A	N/A
Mourning dove	<i>Zenaida macroura</i>	N/A	N/A	N/A
Northern flicker	<i>Colaptes auratus</i>	N/A	N/A	N/A
Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	N/A	N/A	N/A
Pied-billed grebe	<i>Podilymbus podiceps</i>	N/A	N/A	N/A
Red-winged blackbird	<i>Agelaius phoeniceus</i>	N/A	N/A	N/A
Rock wren	<i>Salpinctes obsoletus</i>	N/A	N/A	N/A
Ruddy duck	<i>Oxyura jamaicensis</i>	N/A	N/A	N/A
Sage sparrow	<i>Amphispiza belli</i>	III	Shrubsteppe	High Desert Scrub
Sage thrasher	<i>Oreoscoptes montanus</i>	III	Shrubsteppe	High Desert Scrub
Savannah sparrow	<i>Passerculus sandwichensis</i>	N/A	N/A	N/A
Say's phoebe	<i>Sayornis saya</i>	N/A	N/A	N/A
Song sparrow	<i>Melospiza melodia</i>	N/A	N/A	N/A
Sora	<i>Porzana carolina</i>	N/A	N/A	N/A
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	I	Lowland Riparian	Mountain Riparian
Spotted sandpiper	<i>Actitis macularius</i>	N/A	N/A	N/A
Spotted towhee	<i>Pipilo maculatus</i>	N/A	N/A	N/A
Summer tanager	<i>Piranga rubra</i>	N/A	N/A	N/A
Three-toed woodpecker	<i>Picoides tridactylus</i>	II	Sub-Alpine Conifer	Lodgepole Pine
Townsend's solitaire	<i>Myadestes townsendi</i>	N/A	N/A	N/A
Tree swallow	<i>Tachycineta bicolor</i>	N/A	N/A	N/A
Vesper sparrow	<i>Poocetes gramineus</i>	N/A	N/A	N/A
Western bluebird	<i>Sialia mexicana</i>	N/A	N/A	N/A
Western kingbird	<i>Tyrannus verticalis</i>	N/A	N/A	N/A
Western meadowlark	<i>Sturnella neglecta</i>	N/A	N/A	N/A
Western scrub jay	<i>Aphelocoma californica</i>	N/A	N/A	N/A
White-crowned sparrow	<i>Zonotrichia leuophrys</i>	N/A	N/A	N/A
White-faced ibis	<i>Plegadis chihi</i>	N/A	N/A	N/A
White-throated swift	<i>Aeronauts saxatalis</i>	N/A	N/A	N/A
Wild turkey	<i>Meleagris gallopavo</i>	N/A	N/A	N/A
Willet	<i>Catoptrophorus semipalmatus</i>	N/A	N/A	N/A
Yellow warbler	<i>Dendroica petechia</i>	N/A	N/A	N/A
Yellow-breasted chat	<i>Icteria virens</i>	N/A	N/A	N/A
Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	N/A	N/A	N/A
Yellow-rumped warbler	<i>Dendroica coronate</i>	N/A	N/A	N/A

**TABLE D-3
RAPTOR SPECIES LIKELY TO OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name	Tier	Primary Habitat	Secondary Habitat
American kestrel	<i>Falco sparverius</i>	I	Lowland Riparian	Agriculture
Bald eagle	<i>Haliaeetus leucocephalus</i>	II	High Desert Scrub	Grassland
Burrowing owl	<i>Athene cunicularia</i>	N/A	N/A	N/A
Cooper's hawk	<i>Accipiter cooperii</i>	II	Pinyon-Juniper	Shrubsteppe
Ferruginous hawk	<i>Buteo regalis</i>	I	Lowland Riparian	Agriculture
Flammulated owl	<i>Otus flammeoulus</i>	N/A	N/A	N/A
Golden eagle	<i>Aquila chrysaetos</i>	N/A	N/A	N/A
Merlin	<i>Falco columbarius</i>	N/A	N/A	N/A
Northern goshawk	<i>Accipiter gentilis</i>	I	Mixed Conifer	Aspen
Northern harrier	<i>Circus cyaneus</i>	N/A	N/A	N/A
Osprey	<i>Pandion haliaetus</i>	N/A	N/A	N/A
Peregrine falcon	<i>Falco peregrinus</i>	III	Cliff	Lowland Riparian
Prairie falcon	<i>Falco mexicanus</i>	N/A	N/A	N/A
Red-tailed hawk	<i>Buteo jamaicensis</i>	N/A	N/A	N/A
Rough-legged hawk	<i>Buteo lagopus</i>	N/A	N/A	N/A
Sharp-shinned hawk	<i>Accipiter striatus</i>	N/A	N/A	N/A
Short-eared owl	<i>Asio flammeus</i>	II	Wetland	Grassland
Swainson's hawk	<i>Buteo swainsoni</i>	N/A	N/A	N/A
Turkey vulture	<i>Cathartes aura</i>	N/A	N/A	N/A

SOURCE: BLM 2008

**TABLE D-4
REPTILE AND AMPHIBIAN SPECIES LIKELY TO OCCUR IN THE PROJECT AREA**

Common Name	Scientific Name	Tier	Primary Habitat	Secondary Habitat
Amphibians				
Arizona toad	<i>Bufo microscaphus</i>	II	Lowland Riparian	Wetland
Canyon treefrog	<i>Hyla arenicolor</i>	III	Lowland Riparian	Water - Lotic
Great Basin spadefoot	<i>Spea intermontana</i>	N/A	N/A	N/A
Great Plains toad	<i>Bufo cognatus</i>	III	High Desert Scrub	Grassland
Northern leopard frog	<i>Rana pipiens</i>	III	Wetland	Lowland Riparian
Red-spotted toad	<i>Bufo punctatus</i>	N/A	N/A	N/A
Tiger salamander	<i>Ambystoma tigrinum</i>	N/A	N/A	N/A
Western (boreal) toad	<i>Bufo boreas</i>	II	Wetland	Mountain Riparian
Woodhouse's toad	<i>Bufo woodhousii</i>	N/A	N/A	N/A
Reptiles				
Common garter snake	<i>Thamnophis sirtalis</i>	III	Wetland	Wet Meadow
Common sagebrush lizard	<i>Sceloporus graciosus</i>	III	Low Desert Scrub	Pinyon-Juniper
Common kingsnake	<i>Lampropeltis getula</i>	N/A	N/A	N/A
Common side-blotched lizard	<i>Uta stansburiana</i>	N/A	N/A	N/A
Desert horned lizard	<i>Phrynosoma platyrhinos</i>	N/A	N/A	N/A
Desert spiny lizard	<i>Sceloporus magister</i>	N/A	N/A	N/A
Desert striped whipsnake	<i>Masticophis taeniatus taeniatus</i>	N/A	N/A	N/A
Eastern racer	<i>Coluber constrictor</i>	N/A	N/A	N/A
Glossy snake	<i>Arizona elegans</i>	III	Grassland	Low Desert Scrub
Gophersnake	<i>Pituophis catenifer</i>	N/A	N/A	N/A

TABLE D-4 REPTILE AND AMPHIBIAN SPECIES LIKELY TO OCCUR IN THE PROJECT AREA				
Common Name	Scientific Name	Tier	Primary Habitat	Secondary Habitat
Great Basin collared lizard	<i>Crotaphytus bicinctores</i>	N/A	N/A	N/A
Great Basin rattlesnake	<i>Crotalus oreganus lutosus</i>	N/A	N/A	N/A
Greater short-horned lizard	<i>Phrynosoma hernandesi</i>	N/A	N/A	N/A
Groundsnake	<i>Sonora semiannulata</i>	III	Low Desert Scrub	
Long-nosed leopard lizard	<i>Gambelia wislizenii</i>	III	Low Desert Scrub	High Desert Scrub
Long-nosed snake	<i>Rhinocheilus lecontei</i>	III	High Desert Scrub	Shrubsteppe
Milksnake	<i>Lampropeltis triangulum</i>	III	High Desert Scrub	Shrubsteppe
Nightsnake	<i>Hypsiglena torquata</i>	III	Pinyon-Juniper	High Desert Scrub
Ornate tree lizard	<i>Urosaurus ornatus</i>	N/A	N/A	N/A
Sonoran Mountain kingsnake	<i>Lampropeltis pyromelana</i>	III	Pinyon-Juniper	Mountain Riparian
Striped whipsnake	<i>Masticophis taeniatus</i>	N/A	N/A	N/A
Western fence lizard	<i>Sceloporus occidentalis</i>	N/A	N/A	N/A
Western lyresnake	<i>Trimorphodon biscutatus</i>	III	Low Desert Scrub	Lowland Riparian
Western skink	<i>Eumeces skiltonianus</i>	III	Pinyon-Juniper	Mountain Shrub
Western whiptail	<i>Cnemidophorus tigris</i>	N/A	N/A	N/A

TABLE D-5 FISH SPECIES LIKELY TO OCCUR IN THE PROJECT AREA				
Common Name	Scientific Name	Tier	Primary Habitat	Secondary Habitat
Bonneville cutthroat trout	<i>Oncorhynchus clarki utah</i>	I	Water - Lotic	Mountain Riparian
Brown trout	<i>Salmo trutta</i>	N/A	Water – Lotic	Mountain Riparian
Cutthroat trout	<i>Oncorhynchus clarki</i>	I	Water - Lotic	Mountain Riparian
Desert sucker	<i>Catostomus clarkii</i>	II	Water - Lotic	
Golden shiner	<i>Notemigonus crysoleucas</i>	N/A	N/A	N/A
Mountain sucker	<i>Catostomus platyrhynchus</i>	N/A	Water – Lotic	Mountain Riparian
Rainbow trout	<i>Oncorhynchus mykiss</i>	N/A	Water – Lotic	Mountain Riparian
Southern leatherside chub	<i>Gila copei</i>	II	Water - Lotic	Mountain Riparian
Speckled dace	<i>Rhinichthys osculus</i>	III	Water - Lotic	Lowland Riparian

TABLE D-6 SPECIAL STATUS SPECIES LISTED IN COUNTIES, NATIONAL FORESTS, AND BLM FIELD OFFICES WITHIN THE PROJECT AREA¹				
Common Name	Scientific Name	Status²	Suitable Habitat Present in Study Corridors³	Likelihood of Occurrence in Study Corridors⁴
Plants				
Angell cinquefoil	<i>Potentilla angelliae</i>	USFS	No	Does not occur
Aquarius paintbrush	<i>Castilleja aquariensis</i>	USFS	No	Does not occur
Arizona willow	<i>Salix arizonica</i>	USFS	No	Does not occur
Barneby woody aster	<i>Aster kingii var. barnebyana</i>	USFS	No	Does not occur

**TABLE D-6
SPECIAL STATUS SPECIES LISTED IN COUNTIES, NATIONAL FORESTS, AND BLM FIELD
OFFICES WITHIN THE PROJECT AREA¹**

Common Name	Scientific Name	Status²	Suitable Habitat Present in Study Corridors³	Likelihood of Occurrence in Study Corridors⁴
Barneby's breadroot	<i>Pediomelum aromaticum</i> var. <i>barnebyi</i>	BLM	No	Does not occur
Basalt milkvetch	<i>Astragalus subcinereus</i> var. <i>basalticus</i>	BLM	Yes	May occur
Beaver Mountain groundsel	<i>Senecio castoreus</i>	USFS	No	Does not occur
Bicknell milkvetch	<i>Astragalus consobrinus</i>	USFS	No	Does not occur
Bicknell thelesperma	<i>Thelesperma subnuda</i> var. <i>alpina</i>	USFS	No	Does not occur
Cedar Breaks biscuitroot	<i>Cymopterus minimus</i>	USFS	No	Does not occur
Cedar Breaks goldenbush	<i>Haplopappus zionis</i>	BLM	No	Does not occur
Clark's lomatium	<i>Lomatium graveolens</i> var. <i>clarkii</i>	BLM	No	Does not occur
Creeping draba	<i>Draba sobolifera</i>	USFS	No	Does not occur
Currant milkvetch	<i>Astragalus uncialis</i>	BLM	No	Does not occur
Dana milkvetch	<i>Astragalus henrimontanensis</i>	USFS	No	Does not occur
Dwarf bear-poppy	<i>Arctomecon humilis</i>	FWS E	No	Does not occur
Elsinore buckwheat	<i>Eriogonum batemanii</i> var. <i>ostlundii</i>	USFS	Yes	Known to occur
Escarpment milkvetch	<i>Astragalus striatiflorus</i>	BLM	No	Does not occur
Evening primrose	<i>Camissonia bairdii</i>	BLM	No	Does not occur
Fishlake naid	<i>Najas caespitosa</i>	USFS	No	Does not occur
Four-petal jamesia	<i>Jamesia tetrapetala</i>	BLM	No	Does not occur
Franklin's penstemon	<i>Penstemon franklinii</i>	BLM	Yes	May occur
Frisco buckwheat	<i>Eriogonum soledium</i>	BLM	No	Does not occur
Frisco clover	<i>Trifolium friscanum</i>	BLM	No	Does not occur
Gierisch mallow	<i>Sphaeralcea gierischii</i>	FWSFWS	No	Does not occur
Gould camissonia	<i>Camissonia gouldii</i>	BLM	No	Does not occur
Greenwood's goldenbush	<i>Haplopappus lignumviridis</i>	BLM	Yes	May occur
Guard milkvetch	<i>Astragalus zionis vigulus</i>	USFS	No	Does not occur
Gumbo milkvetch	<i>Astragalus ampullarius</i>	BLM	No	Does not occur
Holmgren milkvetch	<i>Astragalus holmgreniorum</i>	FWS E	No	Does not occur
House Range primrose	<i>Primula cusickiana</i> var. <i>domensis</i>	BLM	No	Does not occur
Ibex buckwheat	<i>Eriogonum nummularae</i> var. <i>ammophilum</i>	BLM	No	Does not occur
Jane's globemallow	<i>Sphaeralcea janeae</i>	BLM	No	Does not occur
Jones globemallow	<i>Sphaeralcea caespitosa</i> var. <i>caespitosa</i>	BLM	No	Does not occur
Jones goldenaster	<i>Heterotheca jonesii</i>	USFS	No	Does not occur
Last chance townsendia	<i>Townsendia aprica</i>	FWS T	No	Does not occur
Little penstemon	<i>Penstemon parvus</i>	USFS	No	Does not occur
Maguire campion	<i>Silene petersonii</i>	USFS	No	Does not occur
Maguire daisy	<i>Erigeron maguirei</i>	FWS T	No	Does not occur
Mound cryptanth	<i>Cryptantha compacta</i>	BLM	No	Does not occur
Mussentuchit gilia	<i>Gilia tenuis</i>	BLM	No	Does not occur

**TABLE D-6
SPECIAL STATUS SPECIES LISTED IN COUNTIES, NATIONAL FORESTS, AND BLM FIELD
OFFICES WITHIN THE PROJECT AREA¹**

Common Name	Scientific Name	Status²	Suitable Habitat Present in Study Corridors³	Likelihood of Occurrence in Study Corridors⁴
Navajo Lake milkvetch	<i>Astragalus limnocharis</i> var. <i>limnocharis</i>	USFS	No	Does not occur
Neeses' peppergrass	<i>Lepidium montanum</i> var. <i>neeseeae</i>	USFS	No	Does not occur
Nevada willowherb	<i>Epilobium nevadense</i>	BLM, USFS	No	Does not occur
Ostler's ivesia	<i>Ivesia shockleyi</i> var. <i>ostleri</i>	BLM	No	Does not occur
Ostler's pepperplant	<i>Lepidium ostleri</i>	BLM	No	Does not occur
Paradox moonwort	<i>Botrychium paradoxum</i>	USFS	No	Does not occur
Paria breadroot	<i>Pediomelum pariense</i>	USFS	No	Does not occur
Parry petalonyx	<i>Petalonyx parryii</i>	BLM	No	Does not occur
Pine Valley goldenweed	<i>Haplopappus crispus</i>	BLM, USFS	No	Does not occur
Pink egg milkvetch	<i>Astragalus oophorus</i> var. <i>lonchocalyx</i>	BLM	No	Does not occur
Pinnate spring-parsley	<i>Cymopterus beckii</i>	USFS	No	Does not occur
Pinyon penstemon	<i>Penstemon pinorum</i>	BLM, USFS	Yes	Known to occur
Pipe Springs cryptanth	<i>Cryptantha semiglabra</i>	BLM	No	Does not occur
Podunk groundsel	<i>Senecio malmstenii</i>	USFS	No	Does not occur
Red Canyon beardtongue	<i>Penstemon bracteatus</i>	USFS	No	Does not occur
Reveal paintbrush	<i>Castilleja parvula</i> var. <i>revealii</i>	USFS	No	Does not occur
Rock-tansy	<i>Sphaeromeria capiata</i>	USFS	No	Does not occur
Ryberg's milkvetch	<i>Astragalus perianus</i>	MIS	No	Does not occur
San Rafael cactus	<i>Pediocactus despainii</i>	FWS E	No	Does not occur
Sandloving penstemon	<i>Penstemon ammophilus</i>	BLM	No	Does not occur
Scarlet buckwheat	<i>Eriogonum phoenicium</i>	BLM	No	Does not occur
Sigurd townsendia	<i>Townsendia jonesii</i> var. <i>lutea</i>	USFS	Yes	Likely to occur
Shivwitz milkvetch	<i>Astragalus ampullarioides</i>	FWS E	No	Does not occur
Siler pincushion cactus	<i>Pediocactus sileri</i>	FWS T	No	Does not occur
Small spring-parsley	<i>Cymopterus acaulis</i> var. <i>parvus</i>	BLM	No	Does not occur
Sweet penstemon	<i>Penstemon angustifolius</i> var. <i>dulcis</i>	BLM	No	Does not occur
Table Cliff milkvetch	<i>Astragalus limnocharis</i> var. <i>tabulaeus</i>	USFS	No	Does not occur
Tushar paintbrush	<i>Castilleja parvula</i> var. <i>parvula</i>	USFS	No	Does not occur
Utah phacelia	<i>Phacelia utahensis</i>	BLM	Yes	Known to occur
Ute ladies' tresses orchid	<i>Spiranthes diluvialis</i>	FWS T	No	Does not occur
Virgin thistle	<i>Cirsium virginensis</i>	BLM	No	Does not occur
Ward beardtongue	<i>Penstemon wardii</i>	USFS	Yes	Known to occur
White River swertia	<i>Swertia gypsicola</i>	BLM	No	Does not occur
Widsoe buckwheat	<i>Eriogonum aretioides</i>	USFS	No	Does not occur
Wonderland Alice flower	<i>Gilia caespitosa</i>	USFS	No	Does not occur
Wright fishhook cactus	<i>Sclerocactus wrightiae</i>	FWS E	No	Does not occur
Yellow-white catseye	<i>Cryptantha ochroleuca</i>	USFS	No	Does not occur

**TABLE D-6
SPECIAL STATUS SPECIES LISTED IN COUNTIES, NATIONAL FORESTS, AND BLM FIELD
OFFICES WITHIN THE PROJECT AREA¹**

Common Name	Scientific Name	Status²	Suitable Habitat Present in Study Corridors³	Likelihood of Occurrence in Study Corridors⁴
Zion jamesia	<i>Jamesia americana var. zionis</i>	BLM, USFS	No	Does not occur
Invertebrates				
Bifid duct pyrg	<i>Pyrgulopsis peculiaris</i>	UT/BLM	No	Does not occur
Brian Head mountainsnail	<i>Oreohelix parawanensis</i>	UT/BLM	No	Does not occur
California floater	<i>Anodonta californiensis</i>	UT/BLM	No	Does not occur
Carinate Glenwood pyrg	<i>Pyrgulopsis inopinata</i>	UT/BLM	No	Does not occur
Cloaked physa	<i>Physa megalochlamys</i>	UT/BLM	No	Does not occur
Desert springsnail	<i>Pyrgulopsis deserta</i>	UT/BLM	No	Does not occur
Hamlin Valley pyrg	<i>Pyrgulopsis hamlinensis</i>	UT/BLM	No	Does not occur
Longitudinal gland pyrg	<i>Pyrgulopsis anguina</i>	UT/BLM	No	Does not occur
Otter Creek pyrg	<i>Pyrgulopsis fusca</i>	UT/BLM	No	Does not occur
Smooth Glenwood pyrg	<i>Pyrgulopsis chamberlini</i>	UT/BLM	No	Does not occur
Sub-globose naked pyrg	<i>Pyrgulopsis saxatilis</i>	UT/BLM	No	Does not occur
Wet-rock physa	<i>Physella zionis</i>	UT/BLM	No	Does not occur
Fish				
Bluehead sucker	<i>Catostomus discobolus</i>	UT/BLM, CAS	No	Does not occur
Bonneville cutthroat trout	<i>Oncorhynchus clarki utah</i>	UT/BLM, USFS, CAS, MIS	Yes	Known to occur
Bonytail	<i>Gila elegans</i>	FWS E	No	Does not occur
Brook trout	<i>Salvelinus fontinalis</i>	MIS	No	Does not occur
Brown trout	<i>Salmo trutta</i>	MIS	Yes	Known to occur
Colorado pikeminnow	<i>Ptychocheilus lucius</i>	FWS E	No	Does not occur
Colorado River cutthroat trout	<i>Oncorhynchus clarki pleuriticus</i>	UT/BLM, USFS, CAS, MIS	No	Does not occur
Cutthroat trout	<i>Oncorhynchus clarki</i>	MIS	Yes	Known to occur
Desert sucker	<i>Catostomus clarkii</i>	UT/BLM	Yes	Known to occur
Flannelmouth sucker	<i>Catostomus latipinnis</i>	UT/BLM	No	Does not occur
Humpback chub	<i>Gila cypha</i>	FWS E	No	Does not occur
Lake trout	<i>Salvelinus namaycush</i>	MIS	No	Does not occur
Least chub	<i>Iotichthys phlegethontis</i>	FWS C, UT/BLM	No	Does not occur
Rainbow trout	<i>Oncorhynchus mykiss</i>	MIS	Yes	Known to occur
Razorback sucker	<i>Xyrauchen texanus</i>	FWS E	No	Does not occur
Southern leatherside chub	<i>Lepidomeda aliciae</i>	UT/BLM, CAS, USFS	Yes	Likely to occur
Virgin River chub	<i>Gila robusta seminuda</i>	FWS E, UT/BLM	No	Does not occur
Virgin spinedace	<i>Lepidomeda mollispinis</i>	UT/BLM, CAS	No	Does not occur

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OFFICES WITHIN THE PROJECT AREA¹**

Common Name	Scientific Name	Status²	Suitable Habitat Present in Study Corridors³	Likelihood of Occurrence in Study Corridors⁴
Woundfin	<i>Plagopterus argentissimus</i>	FWS E, UT/BLM	No	Does not occur
Amphibians/Reptiles				
Arizona toad	<i>Bufo microscaphus</i>	UT/BLM	Yes	Likely to occur
Columbia spotted frog	<i>Rana luteiventris</i>	UT/BLM	No	Does not occur
Common chuckwalla	<i>Sauromalus ater</i>	UT/BLM	No	Does not occur
Desert iguana	<i>Dipsosaurus dorsalis</i>	UT/BLM	No	Does not occur
Desert night lizard	<i>Xantusia vigilis</i>	UT/BLM	No	Does not occur
Desert tortoise	<i>Gopherus agassizii</i>	FWS T, UT/BLM	No	Does not occur
Gila monster	<i>Heloderma suspectum</i>	UT/BLM	No	Does not occur
Mojave rattlesnake	<i>Crotalus scutulatus</i>	UT/BLM	No	Does not occur
Relict leopard frog	<i>Rana onca</i>	UT/BLM	No	Extirpated
Sidewinder	<i>Crotalus cerastes</i>	UT/BLM	No	Does not occur
Speckled rattlesnake	<i>Crotalus mitchellii</i>	UT/BLM	No	Does not occur
Western banded gecko	<i>Coleonyx variegatus</i>	UT/BLM	No	Does not occur
Western threadsnake	<i>Leptotyphlops humilis</i>	UT/BLM	No	Does not occur
Western toad	<i>Bufo boreas</i>	UT/BLM, USFS	Yes	May occur
Birds				
American white pelican	<i>Pelecanus erythrorhynchos</i>	UT/BLM	Yes	Not known to breed in study corridors, but suitable habitat is present; foraging habitat and incidental migrants known to occur
Bald eagle	<i>Haliaeetus leucocephalus</i>	UT/BLM, USFS	Yes	Suitable breeding habitat present; known to forage and winter roost
Black swift	<i>Cypseloides niger</i>	UT/BLM	No	No breeding habitat; incidental migrants may occur
Bobolink	<i>Dolichonyx oryzivorus</i>	UT/BLM	No	No breeding habitat; incidental migrants may occur
Brewer's sparrow	<i>Spizella breweri</i>	MIS	Yes	Likely to breed and forage
Burrowing owl	<i>Athene cunicularia</i>	UT/BLM	Yes	Known to breed and forage

**TABLE D-6
SPECIAL STATUS SPECIES LISTED IN COUNTIES, NATIONAL FORESTS, AND BLM FIELD
OFFICES WITHIN THE PROJECT AREA¹**

Common Name	Scientific Name	Status²	Suitable Habitat Present in Study Corridors³	Likelihood of Occurrence in Study Corridors⁴
California condor	<i>Gymnogyps californianus</i>	FWS E ⁵ , FWS X	Yes	No breeding habitat; foraging may occur
Ferruginous hawk	<i>Buteo regalis</i>	UT/BLM	Yes	Known to breed and forage
Flammulated owl	<i>Otus flammeoulus</i>	USFS	Yes	No breeding habitat; foraging may occur
Greater sage-grouse	<i>Centrocercus urophasianus</i>	FWS C, UT/BLM, USFS	Yes	Known to breed and forage
Hairy woodpecker	<i>Picoides villosus</i>	MIS	Yes	Likely to breed and forage
Lewis's woodpecker	<i>Melanerpes lewis</i>	UT/BLM	Yes	No breeding habitat; foraging may occur
Lincoln's sparrow	<i>Melospiza lincolnii</i>	MIS	Yes	No breeding habitat; foraging likely to occur
Long-billed curlew	<i>Numenius americanus</i>	UT/BLM	Yes	Known to breed and forage
MacGillivray's warbler	<i>Oporornis tolmiei</i>	MIS	Yes	No breeding habitat; foraging may occur
Mexican spotted owl	<i>Strix occidentalis lucida</i>	FWS T	No	No breeding or foraging habitat; transients may occur
Mountain bluebird	<i>Sialia currucoides</i>	MIS	Yes	Likely to breed and forage
Mountain plover	<i>Charadrius montanus</i>	UT/BLM	Yes	Suitable breeding and foraging habitat occurs, but species reported extirpated from Utah
Northern flicker	<i>Colaptes auratus</i>	MIS	Yes	Suitable breeding habitat present; known to forage
Northern goshawk	<i>Accipiter gentilis</i>	UT/BLM, USFS	Yes	Likely to breed and forage
Peregrine falcon	<i>Falco peregrinus anatum</i>	USFS	Yes	Likely to breed and forage
Sage thrasher	<i>Oreoscoptes montanus</i>	MIS	Yes	Likely to breed and forage

**TABLE D-6
SPECIAL STATUS SPECIES LISTED IN COUNTIES, NATIONAL FORESTS, AND BLM FIELD
OFFICES WITHIN THE PROJECT AREA¹**

Common Name	Scientific Name	Status²	Suitable Habitat Present in Study Corridors³	Likelihood of Occurrence in Study Corridors⁴
Short-eared owl	<i>Asio flammeus</i>	UT/BLM	Yes	Likely to breed and forage
Song sparrow	<i>Melospiza melodia</i>	MIS	Yes	Likely to breed and forage
Southwestern willow flycatcher	<i>Empidonax traillii extimus</i>	FWS E, UT/BLM	Yes	Known to breed and forage
Three-toed woodpecker	<i>Picoides tridactylus</i>	UT/BLM, USFS	Yes	No breeding habitat; foraging may occur
Vesper sparrow	<i>Poocetes gramineus</i>	MIS	Yes	Likely to breed and forage
Western bluebird	<i>Sialia mexicana</i>	MIS	Yes	Likely to breed and forage
Wild turkey	<i>Meleagris gallopavo</i>	MIS	Yes	Likely to breed and forage
Yellow warbler	<i>Dendroica petechia</i>	MIS	Yes	Known to breed and forage
Western yellow-billed cuckoo	<i>Coccyzus americanus</i>	FWS C, UT/BLM, USFS	No	Likely to breed and forage
Mammals				
Allen's big-eared bat	<i>Idionycteris phyllotis</i>	UT/BLM	Yes	No breeding or roosting habitat; foraging may occur
Big free-tailed bat	<i>Nyctinomops macrotis</i>	UT/BLM	Yes	No breeding or roosting habitat; foraging may occur
Bighorn sheep includes Rocky Mountain, California, and desert bighorn sheep	<i>O. canadensis canadensis, O.c. californiana, O.c. nelsoni</i>	USFS	No	Does not occur
Brown (grizzly) bear	<i>Ursus arctos</i>	UT/BLM	No	Does not occur; extirpated from Utah
Canada lynx	<i>Lynx canadensis</i>	UT/BLM	No	Does not occur
Dark kangaroo mouse	<i>Microdipodops megacephalus</i>	UT/BLM	Yes	Likely to breed and forage
Fringed myotis	<i>Myotis thysanodes</i>	UT/BLM	No	No breeding or roosting habitat; foraging may occur
Gray wolf	<i>Canis lupus</i>	UT/BLM	No	Does not occur
Kit fox	<i>Vulpes macrotis</i>	UT/BLM	Yes	Known to breed and forage
Mule deer	<i>Odocoileus hemionus</i>	MIS	Yes	Known to breed and forage
Pygmy rabbit	<i>Brachylagus idahoensis</i>	UT/BLM,	Yes	May breed and

TABLE D-6 SPECIAL STATUS SPECIES LISTED IN COUNTIES, NATIONAL FORESTS, AND BLM FIELD OFFICES WITHIN THE PROJECT AREA¹				
Common Name	Scientific Name	Status²	Suitable Habitat Present in Study Corridors³	Likelihood of Occurrence in Study Corridors⁴
		USFS		forage
Rocky Mountain elk	<i>Cervus canadensis</i>	MIS	Yes	Known to breed and forage
Spotted bat	<i>Euderma maculatum</i>	UT/BLM, USFS	Yes	No breeding or roosting habitat; foraging may occur
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	UT/BLM, USFS	Yes	No breeding or roosting habitat; foraging likely to occur
Utah prairie dog	<i>Cynomys parvidens</i>	FWS T, UT/BLM	Yes	Known to breed and forage
Western red bat	<i>Lasiurus blossevillii</i>	UT/BLM	Yes	No breeding or roosting habitat; foraging may occur
NOTES: ¹ Compiled from species lists obtained from the FWS (county level), BLM (field office level), USFS (forest level), and State of Utah (county level). ² FWS E = federal endangered; FWS T = federal threatened; FWS C = federal candidate; FWS X = federal experimental; UT/BLM = Wildlife species designated as sensitive by the State of Utah and Utah BLM; BLM = Plant species designated as sensitive by the Utah BLM; CAS = Conservation Agreement Species; USFS = Species designated as sensitive by the USFS Intermountain Region.; MIS = Species designated as management indicator species in Dixie or Fishlake National Forest Land and Resource Management Plans (USFS 1986a, 1986b). ³ Suitable habitat is classified as present if the study corridors are within the known species range and contains required habitat for breeding, foraging, or roosting (animals) or required geology and vegetative communities (plants). ⁴ Probability of occurrence within the Project area based on species breeding and foraging habitat requirements, current known range and distribution, and documented occurrence. May occur indicates suitable habitat is present in the Project area, but current distribution and documented occurrences indicate that occupancy of the Project area is unlikely. Likely to occur indicates that suitable habitat is present in the Project area, and current distribution and documented occurrences indicate that occupancy of the Project area is probable. ⁵ Considered endangered west of I-15 and north I-70 (61 FR 54043-54060).				

D.2 Special Status Species Accounts

Special status species include plants and animals listed as endangered, threatened, proposed, or candidates for listing pursuant to the Endangered Species Act (ESA) or sensitive by the BLM, USFS, or State of Utah and MIS. A list of special status species that potentially occur within the study corridors was compiled from several sources including (1) county-level lists (Beaver, Iron, Millard, Sevier, and Washington counties) of federally threatened, endangered, proposed, and candidate species (FWS 2009); (2) county-level lists (Beaver, Iron, Millard, Sevier, and Washington counties) of state sensitive species (UDWR 2007a); (3) the BLM state-wide list of sensitive plant species (BLM 2002); (4) the USFS Region 4 list of sensitive species (USFS 2010); and 5) MIS lists for the Dixie and Fishlake National Forests (USFS 1986a, 1986b). The special status species list includes a total of 171 plants and animals known to occur within Beaver, Iron, Millard, Sevier, and Washington counties where the Project area is located, as well as USFS Region 4 and the Dixie and Fishlake National Forests (Table D-5). The following

summarizes the known distribution, habitat requirements, and recent and historical locations for those species which may occur, are likely to occur, or are known to occur in the Project area.

D.2.1 Plants

D.2.1.1 Basalt Milkvetch (BLM Sensitive)

The basalt milkvetch (*Astragalus subcinereus* var. *basalticus*), also known as the silver milkvetch, occurs in pinyon-juniper and ponderosa pine communities on igneous gravel at an elevation of 1,370 to 2,440 meters (4,500 to 8,000 feet). Current distribution in Utah includes BLM, USFS, National Park Service (NPS), and state lands in eastern Sevier, western Emery, and Garfield counties (<http://www.utahrareplants.org>). The study corridors are outside of the known range of the species but suitable habitat is present. The Basalt milkvetch may occur in the study corridors.

D.2.1.2 Elsinore Buckwheat (USFS Sensitive)

Elsinore buckwheat (*Eriogonum batemanii* var. *ostlundi*) is endemic to Piute and Sevier counties in Utah. It grows on igneous gravels in shadscale, mixed desert shrub, sagebrush, juniper, and ponderosa pine communities (Utah Native Plant Society [UNPS] 2009). It is distributed in the Sevier River Valley from near Piute Reservoir northward to Glenwood (UNHP 2009). Elsinore buckwheat is known to occur in the study corridors in the Sevier River valley and in the vicinity of Sage Flat.

D.2.1.3 Franklin Penstemon (BLM Sensitive)

The Franklin penstemon (*Penstemon franklinii*) occurs in unique vegetative communities on a gravelly, silty-sandy loam in purple three-awn, needlegrass, matchweed, and black sagebrush communities at 1,650 to 1,800 meters (5,400 to 5,900 feet). It is endemic to the Cedar Valley of central Iron County where it occurs between the north end of Cedar Valley and Bald Hills (UNPS 2009). The study corridors cross suitable habitat within the known range of the species. The Franklin penstemon is likely to occur in the study corridors.

D.2.1.4 Greenwood Goldenbush (BLM Sensitive)

The Greenwood goldenbush (*Haplopappus lignumviridis*) grows in crevices in igneous rock outcrops and cliffs at approximately 1,890 meters (6,200 feet) (UNPS 2009). It is found in several canyons that are tributaries to the middle Sevier River Valley in Piute and Sevier counties (UDWR 1998). The study corridors are located within the known range of the species though suitable habitat is not present. The Greenwood goldenbush may occur in the study area.

D.2.1.5 Pinyon Penstemon (BLM and USFS Sensitive)

The Pinyon penstemon is endemic to the Pine Valley Mountains of Washington and Iron counties, Utah. It occurs typically on north slopes in the understory of pinyon-juniper on Claron limestone or associated gravel at elevations from 1,710 to 2,040 meters (5,600 to 6,700 feet). Suitable habitat includes pinyon-juniper, mountain mahogany, Mormon tea, oak, sagebrush, and, less commonly, greasewood

communities (Franklin 2005, UNPS 2009). The Pinyon penstemon is known to occur in the study corridors in the Pine Valley Mountains in Iron and Washington counties.

D.2.1.6 Sigurd/Sevier *Townsendia* (BLM and USFS Sensitive)

The Sigurd townsendia (*Townsendia jonesii* var. *lutea*) occurs on gravelly-clay soils of the Arapien Shale in volcanic rubble. Habitat includes salt desert, mixed desert shrub, and juniper-sagebrush communities of the middle Sevier River Valley at 1,675 to 1,920 meters (5,500 to 6,300 feet). Current known distribution includes Sevier County (UNPS 2009). The study corridors are located within the known range of the species and suitable habitat it present. The Sigurd townsendia is likely to occur within the study corridors.

D.2.1.7 Utah Phacelia (BLM Sensitive)

The Utah phacelia (*Phacelia utahensis*) is endemic to the Sevier River Valley. The species grows on gypsiferous soils in salt desert shrub and pinyon-juniper communities on clay hills and banks of the Arapien Shale Formation at elevations between 1,675 to 1,890 meters (5,500 to 6,200 feet) (Franklin 2005; UDWR 1998). The species is generally common only following years of favorable rainfall (UDWR 1998). The study corridors are within the range of the Utah phacelia, suitable habitat is present, and the species has been documented in the study corridors south of Richfield, Utah (UNHP 2009).

D.2.1.8 Ward's Beardtongue (USFS Sensitive)

The Ward's beardtongue (*Penstemon wardii*), also known as Ward's penstemon, is endemic to Millard and Sevier counties, Utah. The species grows between 1,675 to 2,070 meters (5,500 to 6,800 feet) on semibarren, white to gray, fine-textured substrates of the Arapien Shale Formation in ephedra, rabbitbrush, shadscale, mountain mahogany, sagebrush, and pinyon-juniper communities (UNPS 2009, Welsh et al. 2003). The Ward's beardtongue is known to occur in the study corridors.

D.2.2 Fish

D.2.2.1 Bonneville Cutthroat Trout (BLM/State Sensitive, USFS Sensitive, MIS)

The Bonneville cutthroat trout (*Oncorhynchus clarki utah*) occurs in lakes and streams of the Bonneville Basin and a small portion of the Virgin River Drainage. It is most commonly found in high-elevation river reaches of drainages as they enter the Basin (Bosworth 2003). Habitat for the species is widely distributed across Utah and varies from high elevation streams with coniferous and deciduous riparian trees, to low elevation streams in sage-steppe grasslands containing herbaceous riparian zones (Rodriguez 2008). Bonneville cutthroat populations are known to occur in Pine, Birch, Grass Valley, North, Briggs, Sam Stowe, and South Creeks and the Beaver River (UNHP 2009; USFS 2010). Due to impacts from the Twitchell Fire in 2010, plans for reintroduction of Bonneville cutthroat trout in Shingle Creek and Fish Creek were in process at the time of this document (J. Jorgenson 2010). The study corridors are located within the known range of the species and contains suitable habitat. The Bonneville cutthroat trout is known to occur in the study corridors.

D.2.2.2 Brown Trout (MIS)

The brown trout (*Salmo trutta*) is an MIS on both the Fishlake and Dixie National Forests. The species is native to Europe and Western Asia but has been introduced as a sport fish into cool lakes and streams throughout Utah. The study corridors are within the known range of the species and UDWR has stocked streams and rivers that cross the study corridors (UDWR 2010). The brown trout is known to occur in the study corridors.

D.2.2.3 Cutthroat Trout (MIS)

The cutthroat trout (*Oncorhynchus clarki*) represents a combined treatment of the four subspecies (Bonneville, Colorado River, Yellowstone, and Lahontan) that are found in Utah. The cutthroat trout is an MIS on both the Fishlake and Dixie National Forests. The study corridors are located within the known range of the species and contains suitable habitat. The cutthroat trout is known to occur in the study corridors.

D.2.2.4 Desert Sucker (UT/BLM)

The desert sucker (*Catostomus clarki*) is found in small to moderate sized streams with developed pools and riffles and rapids of the Virgin River system (UDWR 1998). Currently, the species is known to inhabit the Santa Clara River in Washington County. The study corridors are located within the known range of the desert sucker and contain suitable habitat for the species. The desert sucker is known to occur in the study corridors.

D.2.2.5 Rainbow Trout (MIS)

The rainbow trout (*Oncorhynchus mykiss*) is an MIS on both the Fishlake and Dixie National Forests. The species is native to the western United States and has been widely introduced to cool waters in Utah as a sport fish. The study corridors are within the known range of the species and UDWR has stocked streams and rivers that cross the study corridors (UDWR 2010). The rainbow trout is known to occur in the study corridors.

D.2.2.6 Southern Leatherside Chub (BLM/State and USFS Sensitive)

The southern leatherside chub (*Lepidomeda aliciae*) is a small minnow native to streams and rivers of the southeastern portion of the Bonneville Basin (UDWR 1998). The leatherside chub generally inhabits low gradient pools with limited riparian vegetation (UDWR 2006). The current known distribution includes the Sevier River and lower Clear Creek (UNHP 2009; USFS 2010). Mid and upper Clear Creek, lower Fish Creek, and Shingle Creeks were likely historical habitat. The study corridors are located within the known range of the species and contains suitable habitat. The southern leatherside chub is likely to occur in the study corridors.

D.2.3 Amphibians and Reptiles

D.2.3.1 Arizona Toad (BLM/State Sensitive)

The Arizona toad occurs in southern Utah in Washington County. It is usually associated with permanent or semi-permanent water bodies in canyons with oak-pine or juniper-dominated woodland, although it can be found along riparian areas in the low desert (Bosworth 2003). The study corridors are within the range of the species and suitable habitat is present. The Arizona toad has been recorded in the vicinity of the study corridors near the Red Butte Substation (UNHP 2009). The Arizona toad is likely to occur in the study corridors along perennial waters in Washington County.

D.2.3.2 Western Toad (BLM/State Sensitive)

The western toad occurs in montane habitats at high elevations (1,570 to 3,220 meters or 5,000 to 10,000 feet) in central and northern Utah. The western toad is associated with permanent water bodies in riparian, mountain shrub, mixed conifer, and aspen-conifer forest habitats. The species breeds in small pools, beaver ponds, reservoirs, and side channels of creeks and rivers. Adults utilize upland habitats during non-breeding periods (Bosworth 2003). The UNHP data (2009) includes observations on the Fishlake National Forest near Annabella Reservoir and in the Beaver River, but there are no records in the study corridors. The study corridors are within the range of the species but most suitable habitat occurs at higher elevations. The western toad may occur in the study corridors.

D.2.4 Birds

D.2.4.1 American White Pelican (BLM/State Sensitive)

The American white pelican is a migratory species that breeds in northern Utah and winters in Mexico and southern California. Gunnison Island in the northern arm of the Great Salt Lake is the only nesting site for the American white pelican in Utah, and represents one of the four largest breeding colonies in North America (Parrish et al. 2002). During spring and fall migrations, pelicans occur on lakes and reservoirs throughout Utah. The American white pelican is commonly observed on lakes and reservoirs adjacent to and within the study corridors, including New Castle Reservoir. Although suitable breeding habitat is present, the American white pelican is not known to breed within the study corridors. Incidental migrants are likely to fly through or over the study corridors as well as forage.

D.2.4.2 Bald Eagle (BLM/State and USFS Sensitive)

The bald eagle was de-listed on August 8, 2007 (72 FR 37346), but the species continues to receive federal protection through the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. There are 11 active bald eagle nests in Utah, all of which are located in large, mature cottonwood trees. Utah also supports a winter population of more than 1,200 birds. Wintering eagles typically forage along lakes, wetlands, and desert valleys, and roost in large trees and wooded canyons (UDWR 2006).

There are no known bald eagle nests within the study corridors, but several bald eagle winter roosts occur along the Beaver, Santa Clara, and Sevier Rivers; Summit, South, and Devil Creeks; Minersville, Baker, and Rocky Ford Reservoirs; Quichapa and Rush Lakes; and Heplers Ponds. Wintering eagles have been

observed within the study corridors (UNHP 2009). Suitable nesting and foraging habitat for the bald eagle occurs in the study corridors.

D.2.4.3 Black Swift (BLM/State Sensitive)

The black swift is a colonial nesting species that constructs nests adjacent to waterfalls above 1,800 meters (6,000 feet), and forages in montane riparian habitats (Parrish et al. 2002). The only known breeding sites are located in the Wasatch Mountains at Bridal Veil Falls, Aspen Grove, and Stewart Falls (Bosworth 2003). Breeding has yet to be verified elsewhere in the state, although several potential sites have been identified in south-central Utah, including Bullion Falls (Parrish et al. 2002) on the Fishlake National Forest. Data from UNHP indicate individuals have been seen migrating through the study corridors. Aside from transient individuals during seasonal migrations, it is unlikely the black swift breeds or forages within the study corridors.

D.2.4.4 Bobolink (BLM/State Sensitive)

The bobolink occurs in small, isolated breeding populations across northern Utah (Parrish et al. 2002). The species inhabits mesic grasslands associated with riparian and wetland communities and sub-irrigated pastures (Bosworth 2003). The study corridors are outside of the known breeding range of this species and suitable breeding and foraging habitat is not present. Transient individuals may be present in the study corridors during seasonal migrations.

D.2.4.5 Brewer's Sparrow (MIS)

The Brewer's sparrow (*Spizella breweri*) is an MIS on the Fishlake National Forest. It is considered a shrub steppe obligate, strongly associated with sagebrush in areas with scattered shrubs and short grass. It nests low in sagebrush, other shrub, or cactus (Rodriguez 2006). As the study corridors are located within the known range of the species and breeding and foraging habitat is present, the Brewer's sparrow is likely to occur in the study corridors.

D.2.4.6 Burrowing Owl (BLM/State Sensitive)

The burrowing owl is widely distributed throughout Utah. It nests in sparsely vegetated grassland, sagebrush, and desert shrub communities, as well as agricultural fields throughout the state (UDWR 2006). The burrowing owl is a neotropical migrant that breeds throughout the western U.S. and migrates to southern California and Central America during the winter. The owl utilizes natural burrows constructed by prairie dogs (*Cynomys* spp.), ground squirrels (*Spermophilus* spp.), and badgers (*Taxidea taxus*), as well as culverts and various manmade structures. The burrowing owl is known to nest and forage in the study corridors, especially in Millard, Beaver, and Iron counties (Bosworth 2003).

D.2.4.7 California Condor (Federal Experimental)

Regulatory Status

The California condor was listed by the FWS as an endangered species on March 11, 1967 (32 FR 4001), under the ESA of 1966. A special provision of the ESA, the 10(j) rule, allows for the designation of non-

essential populations of listed species (Arizona Game and Fish Department [AGFD] 2008), and re-introduction efforts for the condor were developed under this rule. Listing covers only those populations within the United States and excludes the non-essential experimental populations in specific portions of Arizona, Nevada, and Utah (61 FR 54043). Critical habitat for the condor was established in 1977 (42 FR 47840) but is not located in the Project area. In Utah, California condors are considered endangered west of Interstate 15 (I-15) and north of Interstate 70 (I-70). Any condors that leave the experimental population area will be considered as endangered (61 FR 54043). A recovery plan for the California condor was published in 1996. The recovery objective of the plan is to downlist the condor to threatened. Outlined in the plan, the minimum criterion for reclassification includes the maintenance of at least two non captive populations that are spatially disjunct and non interacting, and one captive population which must (1) number 150 individuals, (2) contain at least 15 breeding pairs, and (3) have a positive rate of population growth (FWS 1996).

Taxonomy and Life History

The California condor is a member of the New World vulture, family *Cathartidae* (American Ornithologists' Union [AOU] 1998). California condors feed exclusively on large carrion. A reduction in their range coincided with the megafaunal extinctions in the late Pleistocene. During those times, they probably used carcasses of large mammals such as mastodon, ground sloth, and giant camel. Until the mid 1800s, condors fed on bison, deer, pronghorn, beached marine mammals, and salmon. More recently, the condor's diet has consisted mostly of deer, cattle, and smaller mammals (AGFD 2008; Ehrlich et al. 1988; Snyder and Rea 1998).

The California condor has a wingspan of 9.5 feet, and adult birds typically weigh about 19 pounds but can attain 25 pounds. They may live to 60 years in the wild (AGFD 2008; Snyder and Rea 1998; Snyder and Schmitt 2002; Terres 1980). Condors reach reproductive age at 5 to 7 years and form long-term pair bonds. A recognizable nest is not constructed, but debris adjacent to the nest site may be gathered and consolidated where the egg will be laid (Snyder and Rea 1998). Nest sites may be on the floor of a sheltering cave entrance or on a cliff shelf. Condors normally produce a single egg every other year. Both adults share incubation and feeding responsibilities. Incubation is approximately 8 weeks and young will not fledge for 5 to 6 months. Juveniles are highly dependent on adults for the first several months and typically remain in the nest area during their first year, often into the early breeding season of the following year (hence the alternate year breeding cycle) (AGFD 2008; Ehrlich et al. 1988; Snyder and Rea 1998).

Distribution and Habitat Requirements

Historically, the California condor ranged in the 1800s from British Columbia to Baja California (AOU 1998). The fossil record indicates in prehistoric times these non-migratory birds were also present across the southern U.S. to Florida, and north along the east coast to New York. By the 1970s, condors were resident only in southern California, with breeding sites limited to the Los Padres National Forest (AOU 1998; AGFD 2004 and 2008; Terres 1980).

Condors were placed on the endangered species list because of declining populations. A captive breeding program was initiated by the FWS in 1980 (AGFD 2008). Despite protection, populations continued to decline, and by 1982, only 22 wild condors remained (AGFD 2008; Peregrine Fund 2008). A decision was made to rely on captive breeding programs for recovery of the condor, and the last wild condor was brought into captivity in 1987. In 1992, releases to the wild began in central and southern California, to be followed by releases in the Vermilion Cliffs area of Arizona in 1996 and in Baja California in 2002.

There are currently 81 wild condors in California, 63 in Arizona, and 7 in Baja California (AGFD 2008). The Vermillion Cliffs population is managed by the BLM (AGFD 2008). The current range of this population is centered on the Colorado River Basin in northern Arizona and southern Utah.

Condors occupy remote rugged areas at low to moderate elevation that support large mammals (e.g., deer), which they consume as carrion. These birds require cliff sites or caves for nesting and cliffs, tall conifers, or snags for roosting. Condors prefer nest sites that are inaccessible to terrestrial predators (Snyder and Rea 1998). Because they are such large birds, they typically select roosting sites near cliffs where updrafts provide adequate lift for them to take flight (AOU 1998; AGFD 2004 and 2008; Snyder and Rea 1998; FWS 1996).

Primary Threats to Survival

Because condors have a low reproductive rate, condor populations can be influenced even by sporadic mortality (FWS 1996). Shooting and egg collecting contributed to the decline of condors in the 1800s and 1900s. Other causes of decline in the condor population include pesticides such as DDT that cause eggshell thinning; lead poisoning as the result of ingesting lead fragments from un-recovered or field dressed deer; secondary poisoning from ingesting carcasses of poisoned coyotes; collision and electrocution hazards associated with electric power lines; and conversion of ranch lands (where condors feed on dead livestock) to housing (AGFD 2004 and 2008; Snyder and Rea 1998; Terres 1980; FWS 1996). Since 1995, there has been a total of seven documented power-line related condor deaths in California and Arizona (Ventana Wildlife Society [VWS] 2007).

Many of these threats continue to pose obstacles to the recovery of the California condor. Lead poisoning, electrocution, shooting, and starvation have all been documented as causes of mortality for reintroduced condors (VWS 2007).

Occurrence in the Project Area

The current range of the introduced population is centered at the Vermillion Cliffs and Grand Canyon in northern Arizona. The Project area is located within the known range of the species in Utah but does not contain suitable nesting habitat. The Project area contains suitable foraging habitat and transient individuals could be found in the study corridors.

D.2.4.8 Ferruginous Hawk (BLM/State Sensitive)

The ferruginous hawk is widely distributed throughout Utah, being most prevalent in the southern Bonneville Basin of southwest Utah. It nests in trees and large shrubs in grassland, desert shrub, sagebrush, and pinyon-juniper habitats, and preys upon small mammals including rabbits, hares, and pocket gophers (Bosworth 2003; Parrish et al. 2002). Data from UNHP indicate ferruginous hawks are located throughout valleys and foothills in the Project area, particularly absent from high-elevation regions and the sparsely vegetated desert flats (Bosworth 2003). The ferruginous hawk is known to nest and forage throughout the study corridors.

D.2.4.9 Flammulated Owl (USFS Sensitive)

The flammulated owl inhabits mature, open-canopied ponderosa pine and aspen communities where it forages on insects (Rodriguez 2006, 2008). The Project area is located within the range of the species in Utah; however, no breeding habitat is located within the study corridors. Suitable foraging habitat for the species is located within the study corridors and incidental migrants may also be encountered. The flammulated owl may occur in the study corridors.

D.2.4.10 Greater Sage-grouse (Federal Candidate, BLM/State Sensitive, USFS Sensitive)

Regulatory Status

The greater sage-grouse became a candidate species for listing as threatened or endangered on March 4, 2010 (75 FR 13909). Prior to this rule, the FWS had listed the Washington state population of sage-grouse as a candidate for federal listing in 2001 (66 FR 22984). In both rules, the FWS stated that formal listing for the species is warranted, but is precluded by other higher priority listing actions (FWS 2010 and 2001).

In addition to its candidate status under the Endangered Species Act of 1973 (ESA), the greater sage-grouse is BLM, USFS, and UDWR sensitive. The UDWR published a Greater Sage-Grouse Management Plan in 2009 (UDWR 2009a).

Taxonomy and Life History

The greater sage-grouse is a member of the pheasant family (Phasianidae) and is the largest North American grouse species. This species formerly included *C. minimus*, which is now recognized as a distinct species, the Gunnison sage-grouse (75 FR 13909). Division of *C. urophasianus* into two distinct subspecies along varying geographic lines has been debated (Schroeder et al. 1999), and is considered invalid by many experts (Connelly et al. 2004). The division into two subspecies is not recognized by the FWS (FWS 2003).

Adult male greater sage-grouse are larger than adult females. Males range in size from 4 to 7 pounds and measure 27 to 32 inches, while females weigh from 2 to 4 pounds and measure 20 to 25 inches. Both sexes have narrow, pointed tails; a variegated pattern of grayish brown, buff, and black on the upper parts of the body; and a diffuse black abdominal pattern. Males have blackish brown throats, a dark V-shaped pattern on the neck, and white breast feathers. When strutting during spring mating displays, males inflate two gular sacs of olive green skin and erect hair-like black feathers (filoplumes) on the back of the neck. Females lack the V-shaped pattern, their throats are buff, and their lower throats and breasts are barred with blackish brown (Schroeder et al. 1999).

Sage-grouse breeding occurs between late February and early June and centers on a lek or strutting ground. Leks are usually located in open areas surrounded by low sagebrush. Male and female grouse attend leks where males perform ritualized courtship displays in the early morning hours. Mating is thought to occur on the lek and hens nest 1 to 2 weeks after the courtship display (UDWR 2009a). Nesting usually occurs under sagebrush within 1 to 2 miles of the lek (Connelly et al. 2004, Knerr 2007, Robinson 2007). Sage-grouse generally have lower reproductive rates and higher survival rates than other species of upland game birds (Connelly and Braun 1997). Average clutch size for first nests varies from 6.0 to 9.5 throughout the species range (Schroeder 1997; Sveum 1998). Sage-grouse chicks are dependent

on insect prey base after hatching (Johnson and Boyce 1990), but their diet shifts almost entirely to sagebrush as local vegetation desiccates in the late summer (Schroeder et al. 1999).

Distribution and Habitat Requirements

The greater sage-grouse is a sagebrush-obligate species that depends on sagebrush habitats in all seasons (Connelly et al. 2004). Sage-grouse typically use several seasonal habitats including breeding and nesting habitat in the spring and early summer, brood-rearing habitat in the summer and fall, and winter habitat. Large, interconnected expanses of sagebrush with healthy, native understories are an essential habitat component in all seasonal habitats, and some populations of grouse migrate seasonally to meet these requirements (Connelly et al. 2004). There is little information available regarding minimum sagebrush patch sizes required to support populations of sage-grouse.

Historical distribution of the greater sage-grouse includes 13 U.S. states (Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, South Dakota, North Dakota, Nebraska, and Arizona) and three Canadian provinces (British Columbia, Alberta, and Saskatchewan) (Schroeder et al. 1999, Schroeder et al. 2004, Young et al. 2000). Current distribution represents approximately 56 percent of historical range across 11 U.S. states (Washington, Oregon, California, Nevada, Idaho, Montana, Wyoming, Colorado, Utah, South Dakota, and North Dakota) and two Canadian provinces (Alberta and Saskatchewan) (Schroeder et al. 2004). Within the state of Utah, greater sage-grouse are found in 26 counties with the largest populations occurring in western Box Elder County, the Blue and Diamond mountains in Uintah County in northeastern Utah, Rich County, and on Parker Mountain in south central Utah (UDWR 2009a). Changes in distribution are the result of sagebrush alteration and degradation (Schroeder et al. 2004).

Threats to Survival

Sage-grouse numbers have declined rangewide. Population declines have coincided with decrease in habitat quality. The reasons for habitat loss vary from site to site, but include wildfire, urban expansion, development, agricultural conversion, herbicide treatments, rangeland seeding, noxious weeds and invasive species expansion, conifer encroachment, drought, and improper livestock grazing management (Connelly et al. 2004). The UDWR allows and regulates public hunting of the species under its upland game program.

Occurrence in the Project Area

Sagebrush habitats occur at various sites along the study corridors, and the UDWR has delineated some crucial brooding and winter habitat for greater sage-grouse between Sigurd and Red Butte (UDWR 2007v). The primary sage-grouse habitat in the Project area includes the Bald Hills, Minersville, Milford, and Cove Fort areas (UDWR GIS data). Sagebrush communities in these areas have been degraded by wildfire and the spread of invasive grasses and reduction in native grasses and forbs. During surveys of suitable habitat in the study corridors in March 2010, one known lek was confirmed and one potential new lek was identified.

D.2.4.11 Hairy Woodpecker (MIS)

The hairy woodpecker (*Picoides villosus*) is an MIS on the Fishlake National Forest. It is a fairly common resident of mixed-conifer and riparian deciduous habitats up to 9,500 feet in elevation (Rodriguez 2006). The study corridors are located within the range of the species and contain suitable breeding and foraging habitat. The hairy woodpecker is likely to occur within the study corridors.

D.2.4.12 Lewis's Woodpecker (BLM/State Sensitive)

The Lewis's woodpecker (*Melanerpes lewis*) inhabits open ponderosa pine and cottonwood riparian forests in southern Utah (Parrish et al. 2002). The species requires mature or burned stands with large dead or decaying trees that provide nesting cavities. Although there are species observations from the cities of Parowan and Monroe (UNHP 2009), the Lewis's woodpecker has not been recorded in the study corridors. There is no suitable breeding habitat for the Lewis's woodpecker in the study corridors. Suitable foraging habitat occurs in the study corridors on the Fishlake and Dixie National Forests and incidental migrants may be encountered. The Lewis's woodpecker may be encountered in the study corridors.

D.2.4.13 Lincoln's Sparrow (MIS)

Lincoln's sparrow (*Melospiza lincolni*) is an MIS on the Fishlake National Forest. It is found in wet montane meadows and riparian habitats (Rodriguez 2006). The study corridors occur within the range of the species but lacks suitable breeding habitat. Suitable foraging habitat for the species is found within the study corridors and transient and incidental migrant Lincoln's sparrows are likely to occur in the Project area.

D.2.4.14 Long-billed Curlew (BLM/State Sensitive)

The long-billed curlew (*Numenius americanus*) is a relatively common migratory species that inhabits arid grasslands, grassy shorelines, and agricultural areas in northern and central Utah. The species is less common in southern Utah. Confirmed breeding has occurred near the Milford Wind Farm and the town of Minersville (UNHP 2009). The study corridors are located within the range of the species and contain suitable breeding and foraging habitat. The long-billed curlew is known to occur in the study corridors.

D.2.4.15 MacGillivray's Warbler (MIS)

MacGillivray's warbler (*Oporornis tolmiei*) is an MIS on the Fishlake National Forest. It is found in willow and other dense shrubs in riparian areas or in moist woodlands that provide cover in all seasons (Rodriguez 2006). The study corridors are located within the range of the species, but does not contain suitable breeding habitat. Suitable foraging habitat is present within the study corridors and incidental migrants may also occur.

D.2.4.16 Mexican Spotted Owl (Federally Threatened)

Regulatory Status

The Mexican spotted owl was federally listed as a threatened species on March 16, 1993 (58 FR 14248). Critical Habitat was originally designated on March 16, 1993 (58 FR 14248), and subsequently revoked on March 25, 1998 (63 FR 14378). Critical Habitat was re-established on February 1, 2001 (66 FR 8530), and a comment period on Critical Habitat was re-opened on November 18, 2003 (68 FR 65020). The current defined Critical Habitat was established on August 31, 2004 (69 FR 53181). This apparent irresolution in designation of Critical Habitat is the result of conflict between environmental and economic interests in late seral stage coniferous forests inhabited by the bulk of northern spotted owls in the Pacific Northwest. This conflict has resulted in several species management plans and several FWS status reviews for the species (Gutierrez et al. 1995).

A Recovery Plan for the Mexican spotted owl was published in 1995. The recovery objective of the plan is to delist the species, which can occur when the population in the three most populated Recovery Units are stable or increasing, habitat monitoring protocols are designed and implemented, and a long-term management plan is in place to ensure appropriate management (FWS 1995).

Taxonomy and Life History

The Mexican spotted owl (*Strix occidentalis lucida*) is one of three recognized subspecies of the spotted owl in North America and is the only subspecies that occurs in the Project area. The other subspecies, the California spotted owl (*S. o. occidentalis*) and the northern spotted owl (*S. o. caurina*), are found along the west coast from south-central California north to southwestern British Columbia (Gutierrez et al. 1995).

Spotted owls are usually found in steep canyons with mature or old growth forest, but they may also be found in canyons with steep cliffs and relatively little forest habitat. They usually occur in habitats characterized by a multi-layered canopy with a perennial water source nearby. They have been reported at elevations ranging from 3,700 feet to the subalpine transition (Ganey 1998; Gutierrez et al. 1995; Johnsgard 1988).

Spotted owls are nocturnal ambush hunters that feed mainly on small rodents with wood rats (*Neotoma* spp.) often the dominant dietary component. Invertebrates make up a small portion of their prey, and they may supplement their diet with birds, bats, or lagomorphs (rabbits and hares) (Ehrlich et al. 1988; Ganey 1998; Gutierrez et al. 1995). In Arizona, Mexican spotted owls feed on wood rats, white-footed mice (*Peromyscus leucopus*), voles (*Microtus* spp.), rabbits, and pocket gophers (*Thomomys* spp.) (Ganey 1998).

Spotted owls may construct nests in tree cavities (usually in live trees) or on constructed platforms on tree limbs. In Utah, they nest almost exclusively in caves (Gorell et al. 2005). They may use abandoned raptor or corvid platform nests (Ehrlich et al. 1988; Terres 1980). They produce from two to four eggs, with the typical number being two (Ehrlich et al. 1988; Gutierrez et al. 1995; Terres 1980).

Distribution and Habitat Requirements

The Mexican spotted owl is a permanent resident in the interior mountain ranges of western North America, from southern Utah and central Colorado south through the mountains of Arizona, New

Mexico, and extreme west Texas. Its range in Mexico includes mountainous regions from Sonora, Chihuahua, Coahuila, and Nuevo Leon south to Jalisco, Michoacan, and Guanajuato (AOU 1998).

In Utah, the Mexican spotted owl normally occupies canyon habitats associated with riparian areas. An unaltered core area of approximately 600 acres centered on the nest site is the currently recommended disturbance buffer (Gutierrez et al. 1995). Habitat typically has a structured canopy, a perennial water source, and a rodent-dominated prey base of adequate size (Gutierrez et al. 1995).

Primary Threats to Survival

The primary threats to spotted owls in Utah are recreation, oil and gas development, livestock grazing, and catastrophic wildfire (Ehrlich et al. 1988; Gutierrez et al. 1995). Secondary human-caused habitat impacts include losses associated with developments for urban or suburban expansion and development for agriculture, reservoirs, mining, and fuel wood-harvesting (Gutierrez et al. 1995).

Occurrence in the Project Area

There are no known occurrences of Mexican spotted owl in the Project area. The Project area is within the known range of the species but the study corridors lack suitable breeding and foraging habitat. Transient or dispersing juvenile Mexican spotted owls may occur in the study corridors, but resident pairs and individuals are highly unlikely.

D.2.4.17 Mountain Bluebird (MIS)

The mountain bluebird (*Sialia currucoides*) is an MIS on the Fishlake National Forest. It nests in cavities and prefers open terrains with an occasional tree, rock, fencepost, power line, or other perches from 2,100 to 3,350 meters (7,000 to 11,000 feet) elevation (Rodriguez 2006). The study corridors are within the known range of the species and contain suitable breeding and foraging habitat. The mountain bluebird is likely to occur in the study corridors.

D.2.4.18 Mountain Plover (BLM/State Sensitive)

The mountain plover was formerly a candidate to be federally listed as threatened. The National Park Service withdrew the listing on September 9, 2003, because newly acquired information indicated the threats to the species originally included in the proposal were not as significant as earlier believed (68 FR 53803). The mountain plover is associated with shortgrass prairie landscapes where the topography is fairly flat and the vegetation is sparse, composed primarily of blue grama (*Bouteloua gracilis*) and buffalo grass (*Buchloe dactyloides*) (Parrish et al. 2002). Mountain plovers often breed near areas of excessive disturbance (Knopf and Miller 1994) and prairie dog colonies (Knowles et al. 1982). Breeding in Utah (Duchesne and Uintah counties) has not been documented since 2002 and the Utah population may have been extirpated (Bosworth 2003). The study corridors are within the known range of the species and contain suitable breeding and foraging habitat. Presence of this species in the study corridors are likely limited to incidental migrants.

D.2.4.19 Northern Flicker (MIS)

The northern flicker (*Colaptes auratus*) is an MIS on the Dixie National Forest. It is a cavity nester found in open areas, forest edges, clear-cut areas, burnt areas, agricultural lands, and residential areas (Rodriguez 2008). The study corridors are located within the known range of the species and contain suitable breeding and foraging habitat. The northern flicker is known to occur in the Project area.

D.2.4.20 Northern Goshawk (BLM/State Sensitive, USFS Sensitive, and MIS)

The northern goshawk (*Accipiter gentilis*) is a relatively uncommon species in Utah. It generally inhabits mature ponderosa pine, mixed conifer, and aspen communities at elevations between 1,820 to 3,040 meters (6,000 to 10,000 feet). The study corridors are located within the known range of the species in Utah and contain suitable breeding and foraging habitat. The Northern goshawk is likely to occur in the study corridors.

D.2.4.21 Peregrine Falcon (USFS Sensitive)

The peregrine falcon (*Falco peregrinus anatum*) currently breeds on the Colorado Plateau and along the Wasatch Front in Utah. Nests are typically located on cliff ledges, but individuals are also known to nest on city buildings. Peregrine falcons forage for avian prey in a variety of open habitats including marshes, desert shrub, sagebrush, and grasslands (Bosworth 2003). The study corridors are located within the known range of the species. Peregrine falcons are likely to occur in the study corridors.

D.2.4.22 Sage Thrasher (MIS)

The sage thrasher (*Oreoscoptes montanus*) is an MIS on the Fishlake National Forest. It is a sagebrush obligate associated with semiarid sagebrush plains or shrubby/open woodland growth on foothills (Rodriguez 2006). The study corridors are located within the known range of the species and contain suitable nesting and foraging habitat. The sage thrasher is likely to occur within the study corridors.

D.2.4.23 Short-eared Owl (BLM/State Sensitive)

The short-eared owl (*Asio flammeius*) breeds across the northern two-thirds of Utah and occurs throughout the state during non-breeding periods (Bosworth 2003). The species nests on the ground in a variety of open habitats including arid grasslands, marshes, and agricultural fields and winters in desert scrub and sagebrush habitats (Bosworth 2003). There are two records of the short-eared owl in the vicinity of the study corridors, but no breeding has been documented (UNHP 2009). Suitable short-eared owl breeding and foraging habitat is present and the species is likely to occur in the study corridors.

D.2.4.24 Song Sparrow (MIS)

The song sparrow (*Melospiza melodia*) is an MIS on the Fishlake National Forest. It is one of the most widespread, diverse, and geographically variable of all North American birds. It nests on the ground or in shrub, thicket, emergent vegetation, and small trees within four feet of the ground (Rodriguez 2006). The study corridors are located within the known range of the species and contain suitable breeding and foraging habitat. The song sparrow is likely to occur in the study corridors.

D.2.4.25 Southwestern Willow Flycatcher (Federally Endangered, BLM/State Sensitive)

Regulatory Status

The Southwestern willow flycatcher (*Empidonax traillii extimus*) was listed as an endangered species on February 27, 1995, primarily because of loss and modification of riparian habitats (60 FR 10693). Critical Habitat was later designated on July 22, 1997 (62 FR 39129). A court decision in 2001 resulted in a subsequent final rule on Critical Habitat on October 19, 2005 (70 FR 60885). The critical habitat includes a portion of the Virgin River in Washington County, Utah. A five-year review of the species completed by the FWS in 2005 found that classification as endangered was warranted (73 FR 14995).

A Recovery Plan for the Southwestern willow flycatcher was published in 2003. The recovery objective of the plan was to reclassify the species to threatened, leading to the ultimate delisting. Reclassification status includes increasing the total population to 1,950 geographically distributed territories, which must be maintained for five years before delisting can occur (FWS 2002).

Taxonomy and Life History

The Southwestern willow flycatcher was originally described by Audubon as Traill's flycatcher (*Muscicapa traillii*) from specimens obtained in wooded areas along the Arkansas River (Sedgwick 2000). Phillips (1948) described *E. t. extimus*, the Southwestern willow flycatcher, from specimens collected on the San Pedro River in southeastern Arizona. Depending on the author, there are four or five recognized subspecies of the willow flycatcher: *E. t. traillii*, *E. t. adastus*, *E. t. brewsteri*, *E. t. extimus*, and *E. t. campestris* as the outlier (Sedgwick 2000).

Southwestern willow flycatchers normally select nest sites in thickets of shrubs and trees between 4 and 7 meters (4 to 23 feet) in height, with dense foliage between ground level and 4 meters (13 feet) (FWS 2002; Ehrlich et al. 1988). The nest is an open, compact cup of plant bark, fiber, and grass, and is lined with a thin layer of fine grass and cottony and silky plant materials. There are frequently feathers in the rim, and the nest may have plant material dangling from the bottom (Harrison 1979). Nest trees are often rooted in or near water. Plant species diversity varies in nest territories. The Southwestern willow flycatcher will nest in native riparian species where available, but will also nest in monocultures of salt cedar (*Tamarix* sp.) or Russian olive (*Elaeagnus angustifolia*) (United States Geological Survey [USGS] 2008). Nest sites are commonly reported in Geyer willow (*Salix geyeriana*), Goodding willow (*S. gooddingii*), box elder (*Acer negundo*), and live oak (*Quercus agrifolia*) (Sogge et al. 1997). Southwestern willow flycatchers usually spend only three to four months on their breeding grounds, spending the rest of the year in migration or at wintering grounds (FWS 2002). Females lay a clutch of three to four eggs (FWS 2002). Nestlings fledge after 12 to 15 days (Ehrlich et al. 1988; FWS 2002).

Like most other flycatchers, the Southwestern willow flycatcher forages primarily by flying from a perch to capture flying insects (Ehrlich et al. 1988). It will use gleaning techniques when foraging for spiders, millipedes, and other flightless arthropods, and also when feeding on berries (Sedgwick 2000, Terres 1980). Food preferences of the Southwestern willow flycatcher are reported by Bent (1942), in documentation associated with the Alder flycatcher. These were considered a single species at the time the data were collected, and the sample set included both species. In the sampled diets, animal material made up 96 percent and vegetable material four percent of the food. The vegetable part of the diet included elderberries (*Sambucus* spp.), blackberries or raspberries (*Rubus* spp.), dogwood berries (*Cornus* spp.), juniper berries (*Juniperus* sp.), and unidentified fruits and seeds.

Distribution and Habitat Requirements

All subspecies of the willow flycatcher winter in Central America, from southwestern Mexico (Nayarit and Oaxaca) south to Panama and possibly northwestern Columbia (AOU 1998). Migration routes are relatively unknown (FWS 2002) and are believed to pass through the southern and southwestern parts of the United States, with the northern subspecies passing through the breeding areas of the Southwestern willow flycatcher (AOU 1998, Sogge et al. 1997). The normal spring migration period is from early May through early June, and the fall migration may extend from late July through September (Phillips et al. 1964). Historic breeding records exist for southern California, southern Nevada, southern Utah, Arizona, New Mexico, western Texas, southwestern Colorado, and northwestern Mexico (FWS 2002).

In the western United States, Southwestern willow flycatchers are often found on willow-covered islands, brush along watercourses, beaver meadows, and mountain parks, always in close association with riparian vegetation and lentic waters (FWS 2002). They may be found as high as 2,400 meters (7,875 feet), and they also follow willow- or cottonwood-lined streams out into desert regions (Terres 1980). Southwestern willow flycatcher territories and nest sites are usually located near open water, cienegas, marshy seeps, or saturated soils (Sogge et al. 1997). In the semiarid and arid parts of the Southwest, hydrologic conditions can vary radically both within a season and between years. Many sites have surface water or saturated soil only during the early part of the breeding season. Breeding habitat on the edge of a reservoir may have standing water during a wet year, or it may be farther from surface water during dry conditions (Sogge et al. 1997).

Four specific habitat types have been described as breeding areas for the Southwestern willow flycatcher (Sogge et al. 1997). The first of these types is monotypic high-elevation willow. This habitat consists of dense stands of willows 3 to 7 meters (10 to 23 feet) in height, with no distinct overstory. This community is often associated with sedges, rushes, or other herbaceous wetland plants. A second habitat type is monotypic exotic dense stands of salt cedar or Russian olive up to 10 meters (33 feet) in height. These species form a dense, closed canopy with no distinct understory layer (Sogge et al. 1997).

Native broadleaf-dominated communities form a third habitat type. This habitat may consist of a single species, such as Goodding willow, but often contains other broadleaf tree and shrub species, including cottonwood (*Populus* spp.), other willows, box elder ash (*Fraxinus* spp.), alder (*Alnus* spp.), and buttonbush (*Cephalanthus occidentalis*). The vegetation in this habitat type ranges in height from 3 to 15 meters (10 to 49 feet). There are trees of various size classes, and there is often a distinct overstory. The fourth and final habitat type is a mixture of native and exotic species, including those listed above. Within any particular area, the native and exotic species may be dispersed as patches dominated by natives or exotics, or they may be more evenly distributed throughout the area (Sogge et al. 1997).

Regardless of the species composition, all of these habitats share common structural characteristics. Occupied habitats always have dense vegetation in the patch interior, and dense patches are often interspersed with small clearings, open water, or areas of sparse shrubs. Habitat patches can vary in size and shape, with some occupied areas being relatively dense, linear, contiguous stands, and others being large, irregularly shaped mosaics of dense vegetation intermingled with open areas. Patch sizes can range from as little as 0.8 hectares (2.0 acres) to several hundred hectares (several hundred to a thousand acres). Southwestern willow flycatchers have not been found nesting in narrow riparian habitats less than 10 meters (33 feet) wide (Sogge et al. 1997).

Migration and wintering habitat may differ from breeding habitat. During migration, riparian habitat along major southwestern drainages is commonly used, but a close association with water may not always exist. These areas might be considered stopover areas and may be very important resources for the Southwestern willow flycatcher (FWS 2002).

Primary Threats to Survival

Two primary factors have been identified as serious threats to the continued existence of the Southwestern willow flycatcher (FWS 2002). These threats are the loss and degradation of riparian habitat and brood parasitism by brown-headed cowbirds (*Molothrus ater*). The primary causes for riparian alteration and degradation include urban and agricultural development, water diversion and impoundment, channelization, livestock grazing, off-road vehicles and other recreational use, and hydrological changes resulting from these uses (FWS 2002; Jones and Cahlan 1975).

The FWS (2002) believes the invasion of salt cedar is a factor in the loss and modification of habitat for the Southwestern willow flycatcher. Many other human activities, including livestock grazing, water diversion, channelization, and vegetation removal in riparian areas tend to favor the spread of salt cedar. The spread of salt cedar coincides with the decline of the Southwestern willow flycatcher, although the flycatchers have been documented to breed in dense salt cedar stands (FWS 2002).

Brown-headed cowbirds also are a threat to Southwestern willow flycatchers because of their reproductive strategy of brood parasitism. The spread of cowbirds into the range of the Southwestern willow flycatcher began in the late 1800s as settlers converted large tracts of land for agricultural and grazing use. The Southwestern willow flycatcher is a common host to cowbirds (Sogge et al. 1997; FWS 2002; Ehrlich et al. 1992). The flycatchers appear to be nearly incapable of rearing their own young if a cowbird chick is in the nest, and parasitism almost always leads to a complete failure of the nest (Sogge et al. 1997).

Occurrence in the Project Area

There is no designated critical habitat within or near the Project area. However, the Project area in Washington and southern Iron counties is within the breeding range of the Southwestern willow flycatcher (Sedgwick 2000). Four occurrence records exist in the vicinity of the Project area, but no breeding has been documented prior to 2010 resource surveys. The last observation of the species near the study corridors was 1982 (UNHP 2009). The BLM has identified suitable nesting and foraging habitat in the vicinity of Pinto and Little Pinto Creeks (Pontarolo 2010). During 2010, EPG surveys located the Southwestern willow flycatcher in 4 of 5 survey periods in areas of dense willow riparian vegetation behind Newcastle Reservoir. The Southwestern willow flycatcher is known to breed and forage in the study corridors.

D.2.4.26 Three-toed Woodpecker (BLM/State and USFS Sensitive)

The three-toed woodpecker (*Picoides tridactylus*) is a relatively uncommon species that inhabits high-elevation, montane coniferous forests in the south-central part of the state. Spruce-fir forests represent the primary breeding habitats for the three-toed woodpecker, and the species depends on recent burns and spruce bark beetle infestations to create foraging habitat (Parrish et al. 2002). The study corridors are located within the range of the species but does not contain suitable breeding habitat. Suitable foraging habitat is located within the study corridors and three-toed woodpeckers may occur in the study corridors.

D.2.4.27 Vesper Sparrow (MIS)

The vesper sparrow (*Pooecetes gramineus*) is an MIS on the Fishlake National Forest. It can be found in grassland, prairie, savanna, old fields, arid scrub, sagebrush, and woodland clearings (Rodriguez 2006).

The study corridors are located within the known range of the species and contain suitable breeding and foraging habitat. The vesper sparrow is likely to occur in the study corridors.

D.2.4.28 Western Bluebird (MIS)

The western bluebird (*Sialia Mexicana*) is an MIS on the Fishlake National Forest. It is found in open woodlands and pastures where cavities in old trees provide nesting sites. It is most abundant in open ponderosa pine forests of the Transition Zone, but may also be found in oak woodlands, pinyon-juniper, mixed-conifer, and subalpine forests (Rodriguez 2006). The study corridors are located within the known range of the species and contain suitable breeding and foraging habitat. The western bluebird is likely to occur in the study corridors.

D.2.4.29 Wild Turkey (MIS)

The wild turkey (*Meleagris gallopavo*) is an MIS on the Dixie National Forest. It is found in forested areas during the winter and mowed hay fields, grazed pastures, glades, or open woods during summer/fall (Rodriguez 2008). The study corridors are located within the known range of the species and contain suitable breeding and foraging habitat. The wild turkey is likely to occur in the study corridors.

D.2.4.30 Yellow Warbler (MIS)

The yellow warbler (*Dendroica petechia*) is an MIS on the Fishlake National Forest. It is found in moist thickets and riparian areas, especially along streams and swampy areas (Rodriguez 2006). The study corridors are located within the known range of the species, and contain suitable breeding and foraging habitat. The yellow warbler is known to occur in the study corridors.

D.2.4.31 Yellow-billed Cuckoo (Federal Candidate, BLM/State Sensitive, and USFS Sensitive)

Regulatory Status

The Western U.S. Distinct Population Segment (DPS) of the yellow-billed cuckoo became a Candidate species for listing as threatened or endangered under the Endangered Species Act of 1973, as amended, on October 30, 2001 (66 FR 54807).

Taxonomy and Life History

The yellow-billed cuckoo is one of six species of the family *Cuculidae* that breed in the United States (National Geographic Society [NGS] 2002). The yellow-billed cuckoo was first described by Linnaeus in 1758 as *Cuculus americanus*, with the western yellow-billed cuckoo being described in 1887 as *Coccyzus americanus occidentalis* by Ridgeway. However, since the late 1800s, debate has centered on whether the species should be split into eastern (*C. a. americanus*) and western (*C. a. occidentalis*) subspecies (FWS 2001). Those in favor of recognizing subspecies cited differences in morphology between eastern and western birds. Review and study of yellow-billed cuckoo taxonomy occurred in response to a petition in 1986 to list the yellow-billed cuckoo as endangered in California, Washington, Oregon, Idaho, and Nevada. In their response to a second petition, the FWS determined that there was not enough evidence to

consider the western population as a distinct subspecies, but the population did warrant listing as a DPS. The range of the western population of yellow-billed cuckoo was determined to be the area west of the crest of the Rocky Mountains (FWS 2001).

Western population of yellow-billed cuckoos breed in dense riparian woodlands, primarily of cottonwood (*Populus fremontii*), willow (*Salix* spp.), and mesquite (*Prosopis* spp.), along riparian corridors in otherwise arid areas (Hughes 1999). Dense undergrowth may be an important factor in selection of nest sites (Ehrlich et al. 1988). Western yellow-billed cuckoos appear to require relatively large tracts of riparian woodland. Several studies have reported western population of yellow-billed cuckoos nesting in tracts greater than 25 acres in size. They may be restricted to areas close to water because of humidity requirements for hatching eggs and rearing chicks (Laymon 1998).

Most western populations of yellow-billed cuckoos arrive on their breeding grounds in June (Laymon 1998). They construct an unkempt stick nest on a horizontal limb, often in shrubby vegetation (Ehrlich et al. 1988; Terres 1980). Nest heights range from 1.3 meters (4.3 feet) to, rarely, 30 meters (98 feet), and average below 6 meters (20 feet) (Laymon 1998).

Yellow-billed cuckoos lay 1 to 5 large eggs, which hatch after 9 to 11 days of incubation (Ehrlich et al. 1988). Nestlings fledge at 5 to 8 days, giving this species the shortest combined incubation/nestling period known for any bird. (Corman and Wise-Gervais 2005; Hughes 1999). They are occasionally brood parasites of other species (Hughes 1999). This behavior may be stimulated by high egg production resulting from abundant food supplies (Ehrlich et al. 1988).

Yellow-billed cuckoos forage primarily by gleaning insects from vegetation, but they may also capture flying insects (Ehrlich et al. 1988; Hughes 1999; Laymon 1998). They specialize in relatively large prey, including caterpillars, katydids, cicadas, grasshoppers, and tree frogs (Laymon 1998; Terres 1980). Their breeding season may be timed to coincide with outbreaks of insect species, particularly tent caterpillars (Hughes 1999; Ehrlich et al. 1988; FWS 2001). They also consume some wild berries and take small lizards and frogs, and occasionally bird eggs and young, as prey (Hughes 1999; Terres 1980).

Distribution and Habitat Requirements

The western population of yellow-billed cuckoo was formerly widespread and locally common in California and Arizona; locally common in New Mexico, Oregon, and Washington; and local and uncommon along drainages in western Colorado, western Wyoming, Idaho, Nevada, and Utah (66 FR 38613-38614).

The yellow-billed cuckoo breeds from interior California, southern Idaho, the Dakotas, and southern New Brunswick south to Baja California, southern Arizona, Chihuahua, the Gulf Coast, and the Greater Antilles. The breeding range formerly extended north to western Washington state (AOU 1998).

The western population of yellow-billed cuckoo prefers large stands of mature, dense willows typically associated with riparian corridors for nesting, but also selects a multi-storied canopy and dense shrubby vegetation that provides adequate invertebrate prey and cover for foraging juveniles (Corman and Wise-Gervais 2005). Water is required near the nesting site (Corman and Wise-Gervais 2005; Floyd et al. 2007). Dense vegetation may also be important in maintaining humidity in the nesting area (Corman and Wise-Gervais 2005).

Primary Threats to Survival

The primary threat to western populations of yellow-billed cuckoos is the loss of high quality riparian habitat suitable for nesting (Corman and Wise-Gervais 2005; Floyd et al. 2007). Riparian habitat throughout the western United States has been modified or destroyed by dams, stream channelization, livestock grazing, groundwater pumping, invasive exotic plants (especially saltcedar), and conversion to agriculture and other uses (FWS 2001).

There is widespread evidence that the population of yellow-billed cuckoos in the western United States has declined over the past century, and that their breeding range has contracted. The species may be extirpated from British Columbia, Washington, and Oregon (Hughes 1999).

Currently, the western population of yellow-billed cuckoo is very rare in scattered drainages in western Colorado, Idaho, Nevada, and Utah (NatureServe 2008).

Occurrence in the Project Area

The Project area is within the known range of the species and may contain suitable breeding and foraging habitat. There are no documented occurrences of the cuckoo in the Project area, although USFS biologists identified riparian corridors along Clear Creek as suitable habitat in 2011. Project surveys for the species were not performed for this Project.

D.2.5 Mammals

D.2.5.1 Allen's Big-eared Bat (BLM/State Sensitive)

Allen's big-eared bat (*Idionycteris phyllotis*) occurs in a wide range of habitats from lowland riparian woodlands and desert shrub to mountain brush and mixed forest at an elevation range of 760 to 2,395 meters (2,500 to 7,860 feet). It typically roosts in dead snags, but has also been observed using mines and caves. Little is known about the winter range of the species, but it appears to move to lower elevations (Oliver 2000). The study corridors are within the known range of the species, but there are no known occurrences. Suitable breeding habitat is lacking although individuals may forage in the study corridors. The Allen's big-eared bat may occur in the study corridors.

D.2.5.2 Big Free-tailed Bat (BLM/State Sensitive)

The big free-tailed bat (*Nyctinomops macrotis*) is associated with canyon lands and very rocky country. In Utah, it has been found in lowland riparian, desert shrub, and montane forests (Oliver 2000). The species primarily roosts on cliff faces, but occasionally has been found in buildings and caves (Bradley et al. 2006). The study corridors are within the known range of the species, but there are no known occurrences. Suitable breeding habitat is lacking although individuals may forage in the study corridors. The big free-tailed bat may occur in the study corridors.

D.2.5.3 Dark Kangaroo Mouse (BLM/State Sensitive)

The dark kangaroo mouse (*Microdipodops megacephalus*) is restricted to sand dunes, desert shrub, and sagebrush communities with fine, gravelly soils in the West Desert (Bosworth 2003). There are several

records of the species in the vicinity of the study corridors near the Black mountains in the Escalante Desert (UNHP 2009). The dark kangaroo mouse likely breeds and forages in the study corridors.

D.2.5.4 Fringed Myotis (BLM/State Sensitive)

The fringed myotis (*Myotis thysanodes*) is a widely distributed, but relatively rare species that is known to occur in central and northeastern Utah (Oliver 2000). The species forages in a variety of habitats, including desert shrub, sagebrush, pinyon–juniper, ponderosa pine, and montane forest and roosts in abandoned buildings, mines, and caves (Oliver 2000). The study corridors are within the known range of the species, but there are no known occurrences. Suitable breeding and roosting habitat is lacking. Foraging fringed myotis may occur in the study corridors.

D.2.5.5 Kit Fox (BLM/State Sensitive)

The kit fox (*Vulpes macrotis*) inhabits arid desert shrub and sagebrush communities in east-central and western Utah (Bosworth 2003). The kit fox has been observed infrequently in the study area over the past 30 years (UNHP 2009). Several dens were located during surveys for the Milford Wind Farm and heritage records exist throughout the Escalante Desert. The study corridors are located within the range of the species in Utah and contain suitable breeding and foraging habitat for the kit fox. The species is known to occur in the study corridors.

D.2.5.6 Mule Deer (MIS)

Mule deer (*Odocoileus hemionus*) is an MIS on both the Fishlake and Dixie National Forests. The species occupies foothill and montane habitats throughout the Project area. The study corridors contain several important seasonal habitats, including crucial winter range, crucial summer range, and crucial year-long range (UDWR 2009b). Crucial winter range is widely distributed throughout the study corridors with the exception of the Escalante Desert and lower elevations between the Black mountains and Antelope Range. Crucial summer range occurs in higher elevations along the I-70 corridor through the Tushar mountains and in the Bull Valley mountains between Central and Enterprise, Utah. Crucial winter and summer ranges have also been designated as fawning habitat. Crucial year-long range occurs in the vicinity of the Red Butte Substation. Mule deer are known to breed and forage in the study corridors.

D.2.5.7 Pygmy Rabbit (BLM/State and USFS Sensitive)

The pygmy rabbit (*Brachylagus idahoensis*) is a Great Basin endemic that is generally restricted to mature sagebrush habitats with deep friable soils. In September 2010 the FWS completed a 12 month finding on a petition to list the species under ESA and determined that it does not warrant protection (75 FR 60516). The species is patchily distributed across northern and western Utah (Bosworth, 2003), and the study corridors are within the known range of the species. There are several documented occurrences of the pygmy rabbit in the vicinity of the study corridors near Enterprise, Utah (UNHP 2009). Suitable breeding and foraging habitat for the species occurs within the study corridors. The pygmy rabbit may occur in the study corridors.

D.2.5.8 Rocky Mountain Elk (MIS)

The Rocky Mountain elk (*Cervus Canadensis*) is an MIS on both the Fishlake and Dixie National Forests. The species is common in mountain meadows and forests during the summer and in foothills and valley grasslands during the winter. The study corridors contain designated crucial elk habitats including crucial winter range, crucial summer range, and crucial year-long range (UDWR 2009b). Crucial elk summer range and calving habitat occur along the I-70 corridor through the Tushar mountains. Crucial elk winter range is located along the western foothills of the Tushar mountains generally between Cove Fort and Beaver. Crucial elk year-long range is located west of the I-15 corridor, generally between Cove Fort and Milford. The species is known to breed and forage in the study corridors.

D.2.5.9 Spotted Bat (BLM/State and USFS Sensitive)

The spotted bat (*Euderma maculatum*) is widely distributed across Utah, but is primarily associated with deep, rocky canyons in eastern and southern portions of the state (Oliver 2000). The species roosts in crevices on cliff walls and forages in open grassland, desert shrub, sagebrush, and mountain meadow communities. The study corridors are within the known range of the species, but there are no known occurrences and suitable breeding and roosting habitat is lacking. Foraging spotted bats may occur in the study corridors.

D.2.5.10 Townsend’s Big-eared Bat (BLM/State and USFS Sensitive)

The Townsend’s big-eared bat (*Corynorhinus townsendi*) is a relatively common species that roosts in caves and abandoned mines and forages in sagebrush, pinyon-juniper, mountain shrub, and mixed conifer communities throughout Utah (Oliver 2000). The Townsend’s big-eared bat is one of the few bat species known to winter in Utah. Hibernacula are located in the vicinity of the study corridors near Enterprise, Utah. Suitable breeding and roosting habitat is lacking but foraging Townsend’s big-eared bats are likely to occur in the Project area.

D.2.5.11 Utah Prairie Dog (Federally Threatened, BLM/State Sensitive)

Regulatory Status

Originally listed as endangered under ESA in 1968, the Utah prairie dog (*Cynomys parvidens*) was delisted in 1970. It was relisted as endangered on June 4, 1973 due to a substantial decline in population from 1970 to 1972 (Pizzimenti and Collier 1975). In 1979, the UDWR petitioned the FWS to remove the Utah prairie dog from the endangered species list. The FWS published a final rule on May 29, 1984 (49 FR 22330) to reclassify the Utah prairie dog as threatened with a special rule to allow regulated taking. A recovery plan for the Utah prairie dog was made available on September 9, 1991 (FWS 1991). In 2003, the FWS received a petition to reclassify the Utah prairie dog as endangered. In February 2004, the FWS received a Notice of Intent to Sue for failure to issue a 90-day finding for the petition. Eventually the petitioning party and the FWS reached a settlement agreement to make a 90-day finding on the petition by February 17, 2007. Published in the *Federal Register* on February 21, 2007, the FWS issued a notice of the 90-day petition finding that the petition failed to provide substantial scientific or commercial information to warrant the reclassification of the species to endangered status (72 FR 7843). With this determination, the FWS also initiated a five-year review of the species to determine whether or not the Utah prairie dog should be removed from the list or otherwise reclassified. In September 2010 the FWS released a revised draft recovery plan for the species (75 FR 57055).

In addition to its protected status under the Endangered Species Act of 1973, the Utah prairie dog is included on the UDWR Sensitive Species List (UDWR 2007a).

Taxonomy and Life History

Originally described by J.A. Allen (1905), the Utah prairie dog is one of five living species of the genus *Cynomys*, all native to North America with non-overlapping geographic ranges (Hoogland 2003). The genus is divided into two subgenera, members of which have either a black-tipped tail, subgenus *Cynomys*, or a white-tipped tail, subgenus *Leucocrossuromys* (Clark et al. 1971). The *Cynomys* group consists of the Mexican prairie dog (*C. mexicanus*) and black-tailed prairie dog (*C. ludovicianus*), while Gunnison's (*C. gunnisoni*), Utah (*C. parvidens*), and white-tailed prairie dog (*C. leucurus*) compose the *Leucocrossuromys* group.

Grasses are the preferred food of the Utah prairie dog in all seasons, in addition to forb flowers and seeds (especially alfalfa) (Pizzimenti and Collier 1975; FWS 1991). When cicadas are available, they are a preferred animal food item. The majority of weight gain and colony expansion occur when alfalfa or other cool season forage is available, a situation which occurs most frequently in those colonies located at low elevations in agricultural areas (FWS 1991).

As are other prairie dog species, the Utah prairie dog is a colonial, diurnal species. Females are capable of reproducing once a year, with average litter sizes of between three and six young (Pizzimenti and Collier 1975). Pups are born in April and May but don't emerge from their burrows until six weeks after birth (Messmer et al. 1998). Females are in estrus and sexually receptive for a single day during the breeding season, which occurs generally from mid-March through early April (72 FR 7843). Being true hibernators, most Utah prairie dog surface activity ceases during harsh winters (72 FR 7843).

Distribution and Habitat Requirements

Utah prairie dogs are the westernmost member of the *Cynomys* genus and have the most restricted range of all prairie dog species in the United States, being limited to the southwestern quarter of Utah (FWS 1991). Prior to implementation of control programs, the species' distribution at one time extended across the desert nearly to the Nevada-Utah state line (Pizzimenti and Collier 1975). As of 1991, the Utah prairie dog's principle population concentrations existed in only three areas, the Awapa Plateau, Paunsaugunt region along the East Fork and main stem of the Sevier River, and the West Desert region of eastern Iron County. A few other isolated colonies exist in mountain and desert valleys in western Iron and Beaver counties (Pizzimenti and Collier 1975; Seal 1987).

Historically the Utah prairie dog appears to have inhabited approximately 700 sections in 10 distinct areas in southern Utah (Pizzimenti and Collier 1975). From the 1920s to the 1970s, the Utah prairie dog experienced an estimated 87 percent decline in the number of occupied sections. Although there exist reports of Utah prairie dog as far north as Nephi, Utah, no specimens are on record to substantiate this. Because local residents commonly refer to Uinta ground squirrels (*Spermophilus armatus*) and Townsend's ground squirrel (*S. townsendii*) as prairie dogs, it is likely those reports of *Cynomys* occurrence were based on mistaken species identification. The northernmost verified record is 70 miles to the south of Nephi, from Salina Canyon in Sevier County (Pizzimenti and Collier 1975).

Northward expansion of the Utah prairie dog is presumably limited by competition with Uinta ground squirrel and/or the presence of dense vegetation. Expansion to the east and south of the present range is

limited by physical barriers and a lack of suitable habitat. There is past evidence of occupation through the Escalante Valley as far west as Modena near the Nevada state line (Pizzimenti and Collier 1975).

A denizen of high grass prairie, the Utah prairie dog is found at elevations between 1,500 and 3,000 meters (4,921 and 9,842 feet) (Hoogland 2006). Much of the species water requirement is met through plant ingestion resulting in a positive correlation between the amount of available moisture in vegetation and Utah prairie dog densities. They prefer swale formations where moist herbage is available even during times of drought (FWS 1991).

Soil characteristics are also important in that Utah prairie dogs require well-drained soils for their burrows, and they must be able to burrow deep enough (1 meter) to be protected from predators and insulated from environmental and temperature extremes (FWS 1991).

Colony population densities vary considerably, from less than 2.5/hectare to more than 74/hectare (6.25/acre to more than 185/acre). Habitat condition is the most likely influence on colony density, as evidenced by the higher densities found in areas with lush, yet not too tall, vegetation (Pizzimenti and Collier 1975).

Threats to Survival

Significant factors in the decline of the Utah prairie dog include deliberate poisoning, disease, and loss of habitat. The federal government sponsored prairie dog poisoning campaigns as early as 1880 to address damage to agriculture and ranching operations. The first report on prairie dog control measures within the historical range of the Utah prairie dog were made in a 1920 Annual Report of the FWS. Prairie dog population reductions have directly corresponded to intensive poisoning programs around 1933, 1950, and 1960. Although the species' population densities have recovered following each of these campaigns, some colonies have been completely eliminated (FWS 1991).

Habitat loss and degradation remains a significant range-wide threat to the Utah prairie dog. The majority of colonies are located on private lands. In 1977, 73 percent of all Utah prairie dog colonies and 81 percent of the animals were located on private lands, much of which was slated for farming or housing development (FWS 1991).

Disease is considered by some to be an important factor in population level declines in this species (Fisher et al. 1969). The FWS recognizes that in specific colonies, and throughout the range of Utah prairie dogs, transmission of the Sylvatic plague bacterium (*Yersinia pestis*) via fleabites has been, and will continue to be, a threat to this species (72 FR 7843). In recent years, research into the control of fleas in Utah prairie dog colonies with burrow infusions of Pyreperm has demonstrated that such efforts protect against plague (Hoogland et al. 2004).

Occurrence in the Project Area

Distribution records of the Utah prairie dog since 1983 show occurrences in Beaver, Iron, Millard, Sevier, and Washington counties (Bosworth 2003). The study corridors pass through the West Desert recovery unit defined in the 1991 and draft 2010 recovery plans. Protocol surveys for the Project completed in July and August 2010, identified one active colony surrounded by unoccupied habitat in the study corridors.

D.2.5.12 Western Red Bat (BLM/State Sensitive)

The western red bat (*Lasiurus blossevillii*) is extremely rare in Utah. The western red bat roosts in trees and foliage in low elevation, riparian cottonwood forests (Oliver 2000). There are no records of the species within or adjacent to the study corridors. Suitable breeding and roosting habitat is lacking, though the species may forage in the study corridors.