

# **BIOLOGICAL EVALUATION**

## **PROPOSED RIO OXBOW LAND EXCHANGE**

### **I. INTRODUCTION**

A proposal, regarding the exchange of U.S. Forest Service administered Federal lands for private lands in Mineral County, Colorado, (Non-Federal lands) has been made by the owners of the Broadacres and Rio Oxbow Ranches (Non-Federal parties) to the Rio Grande National Forests (RGNF). The proposed action would involve the permanent transfer of approximately 468.78 acres of National Forest System lands (Federal lands) located in Mineral County from public to private ownership. The location of the Federal lands is more specifically described in Table 1. It would also result in the transfer of approximately 1,134.63 acres of private lands (Non-Federal lands) to federal ownership (Table 2).

As a part of the decision-making process USFS Directive FSM 2672.4, requires that a Biological Evaluation be performed to determine potential impacts to designated U.S. Forest Service (USFS)-Region 2 sensitive species, including U.S. Fish and Wildlife Service (FWS) candidate species. On November 18, 2003 the Regional Forester (R-2) issued Supplement No. 2600-2003-1 to become effective December 1, 2003. This supplement provides an updated sensitive species list for Region 2. Based on direction provided in Section 2672.11 of this supplement, the RGNF decided to use the previous list for this analysis. This section to the supplement states “For newly designated sensitive species, current or planned Forest Service actions that are well underway (or are completed) at the time an updated sensitive species list goes into effect are exempt from requirements to conduct a biological evaluation for that species. This exemption is intended to enable actions that have been planned using the previous sensitive species list to go forward.”.

### **II. PROJECT DESCRIPTION**

#### **PURPOSE AND NEED**

Due to the juxtaposition of private and public lands on both the Non-Federal lands and Federal lands involved in this exchange proposal, a high potential for administration conflicts exists between the Forest Service and associated private landowners. On the Federal lands, irregular or complicated boundaries, bisecting highways, and lack of public access make land management difficult or impractical for many of the subject properties.

Exhibit 3  
Biological Evaluation

**TABLE 1.**  
**GENERAL DESCRIPTION**  
**OF**  
**FEDERAL LANDS**

<b>PARCEL #</b>	<b>SIZE (AC.)</b>	<b>TOWNSHIP/RANGE</b>	<b>SEC. #</b>	<b>DESCRIPTION</b>	<b>LAND TYPE ASSOCIATION (LTA)</b>	<b>CURRENT LAND USE</b>	<b>ANTICIPATED LAND USE</b>
<b>N1</b>	37.82	T41NR1W	SEC. 3	SW¼ SE¼	LTA 9	Grazing, W/L Mgt.	SAME
<b>N2</b>	80.00	T41NR1W	SEC. 10	W½ NW¼	LTA 3, LTA 9	Grazing, W/L Mgt, Rec	SAME
<b>N4</b>	84.60	T40NR2W	SEC. 25	Portions W½ NW¼	LTA 3, LTA 9, LTA 10	Wildlife Mgt.	SAME
<b>N5</b>	15.00	T40NR2W	SEC. 36	Portions W½ NW¼	LTA 3, LTA 9	Wildlife Mgt.	SAME
<b>N6</b>	12.50	T40NR2W	SEC. 35 SEC. 36	Portions NE¼ SE¼ Portions SW½ SE¼	LTA 3, LTA 10	Wildlife Mgt.	SAME
<b>L1</b>	4.06	T40NR2W	SEC. 14	Portions SW¼ NE¼	LTA 10, LTA 12	Grazing, Wildlife Mgt.	SAME
<b>L2</b>	19.59	T40NR2W	SEC. 11	Portions SE¼ SW¼	LTA 10, LTA 12	Scenic Mgt., W/L Mgt.	SAME
<b>L3</b>	1.11	T40NR2W	SEC. 10	Portions E½ NW¼	LTA 10	Scenic Mgt. W/L Mgt.	SAME
<b>L4</b>	0.04	T40NR2W	SEC. 4	Portions SE¼ SE¼	LTA 10	Scenic Mgt., W/L Mgt.	SAME
<b>L5</b>	214.06	T40NR2W	SEC. 9 SEC. 14 SEC. 15 SEC. 16 SEC. 23	Portions S½ SE¼ Portions SW¼ Portions NE¼, SE¼, NW¼ Portions NE¼ NE¼ Portions N ½	LTA 2, LTA 3, LTA 10, L12	Wildlife Mgt., Scenic Mgt.,	Same over most of the parcel. Limited residential development (up to 5 units) on lower slopes with up to 5 acres of surface disturbance. Some grazing on lower slopes in open meadows.
<b>TOTAL FEDERAL LANDS 468.78 ACRES</b>							

Exhibit 3  
Biological Evaluation

**TABLE 2.**  
**GENERAL DESCRIPTION**  
**OF**  
**NON-FEDERAL LANDS**

PARCEL	SIZE (AC.)	TOWNSHIP RANGE	SEC. #	DESCRIPTION	LAND TYPE ASSOCIATION	CURRENT LAND USE	ANTICIPATED LAND USE
<b><u>Long Ridge</u></b>							
LR1	1.95	T40NR2W	Sec. 4	Portions SW¼ SE¼	LTA 9	Wildlife Mgt., Scenic	Same
LR2	11.44	T40NR2W	Sec. 10	Portions NW¼ SE¼, NE¼ SW¼	LTA 9	Wildlife Mgt., Scenic	Same
LR3	15.11	T40NR2W	Sec. 10	Portions N½ SE¼ SE¼	LTA 9	Wildlife Mgt., Scenic	Same
			Sec. 11	Portions SW¼ SW¼			
LR4	30.38	T40NR2W	Sec. 14	Portions NW¼ NE¼, Portions NE¼ NW¼	LTA 9	Wildlife Mgt., Scenic	Same
LR5	32.91	T40NR2W	Sec. 13	Portions SW¼ NW¼	LTA 9	Wildlife Mgt., Scenic	Same
<b><u>Bonafacio</u></b>							
B1	153.96	T38NR6E	Sec. 4 Sec. 5	SW¼ NW¼ SE¼ NE¼, N½ SE¼	LTA 6, LTA 9	Wildlife Mgt., Recreation	Same
B2	155.44	T38NR6E	Sec. 9	W½ W½	LTA 9	Wildlife Mgt., Rec.	Same
B3	153.15	T38NR6E	Sec. 8	W½ NE¼, NW¼ SE¼, N½ SW¼	LTA 9	Wildlife Mgt., Rec.	Same
B4	215.81	T38NR6E	Sec. 18	S½ N½, W½ SE¼	LTA 3,LTA 9	Wildlife Mgt., Rec.	Same
<b><u>Carson</u></b>							
Hays	133.87	T42NR5W	Sec. 24 Sec. 25	Portions S½ Portions N½	LTA 1, LTA 10	Wildlife Mgt., Rec	Same
Cont. Divide Claims	230.61	T41NR4W T41NR5W T42NR4W T42NR5W	Sec. 6 Sec. 1, 2 Sec. 31 Sec. 35 Sec.36	Portions Portions Portions Portions Portions	LTA 4	Wildlife Mgt., Rec	Same
<b>TOTAL NON-FEDERAL LANDS 1,134.93 ACRES</b>							

The Non-Federal lands, all of which are partially or completely surrounded by public lands, are at risk of becoming administrative problems due to differing land management goals and objectives of the Forest Service and the private landowners. This proposal would simplify current boundaries, reduce the amount private inholdings within the National Forest boundaries, secure public access, and generally reduce the overall potential administrative issues arising from the management of public lands adjacent to private lands. It would also facilitate long-term protection of resource values, such as wildlife, recreation and wetlands on the Non-Federal parcels by placing them under the administrative control of the USFS.

## **ALTERNATIVES**

### **Alternative 1 – Proposed Action**

The potential for a land exchange between Rio Oxbow Ranch and the United States was first raised in 1997 by Alan Lisenby, one of the Non-Federal Parties. In early 1999 the Non-Federal Parties submitted a comprehensive exchange proposal to the Rio Grande National Forest. The Forest Service carefully reviewed all aspects of this proposal. This process resulted in a number of modifications to the original proposal, including the elimination of some parcels associated with the Carson properties, the addition of the Bonafacio and Long Ridge properties, and a substantial reduction in the size of the L5 parcel. Following this preliminary review of the land exchange proposal, the Forest Service concluded that the proposed exchange was feasible and entered into an Amended Agreement to Initiate with the Non-Federal Parties, dated October 7, 2002. The Non-Federal Long Ridge properties were subsequently added to the exchange package in late 2001.

Under the exchange proposal that emerged from this collaborative process, the Non-Federal Parties proposed to convey 34 parcels of Non-Federal land totaling approximately 1,134.63 acres in exchange for 10 parcels of Federal land totaling approximately 468.78 acres. These Federal and Non-Federal parcels are further described in Tables 1 and 2.

### **Alternative 2-No Action**

Under this alternative the proposed land exchange would not occur. The National Environmental Policy Act (NEPA, 40 CFR 1502.14) requires that the “No Action” alternative be included as a viable option for the decision maker. This alternative is also used as a baseline against which action alternatives can be compared. This alternative would address all of the key issues identified in Section 2.2.2.1. However, the issues and opportunities described above in *Purpose and Need* would remain unresolved.

### **Alternative 3- Proposed Action Modified by Eliminating Parcel L3 and the Southeast Corner of Parcel N2**

Under this alternative Parcel L3 (1.11 acres) and the extreme southeast corner of Parcel N2 (that portion including the river and lands on the south side of the river, roughly 5 acres) would be eliminated from the proposal. This alternative would address the recreational issues concerning the loss of river and shore access that would occur through the conveyance of these properties from Federal to private ownership. It would also address

floodplains issues as they pertain to these parcels. Modifications under this alternative would reduce the total acreage moving from Federal to private ownership to approximately 467.18 acres.

#### **Alternative 4- Proposed Action Modified by Eliminating Parcel L3 and Parcel N2**

Under this alternative Parcels L3 and N2 would be removed from the exchange in their entirety. This alternative would address all of the river access concerns regarding the N2 and L3 parcels and would address floodplain issues as they pertain to these two parcels. It would also address wildlife concerns regarding elk migration and winter range in Parcel N2, the potential loss of access to the unique geologic features present in Parcel N2, the off-river recreational issues concerning the trail system in western portion of that parcel, and issues related to the potential loss of visual quality in Parcel N2. This alternative would reduce the total acreage moving from Federal to private ownership to approximately 392.18 acres.

### **PROJECT DESIGN AND MITIGATION**

The following covenants have been offered as mitigation by the Non-Federal parties to this proposal to minimize potential effects to the resources occurring on and adjacent to the Federal parcels through conveyance to private ownership. These covenants would be effective immediately upon conveyance of the Federal parcels to the Non-Federal parties. (Only mitigation measures pertinent to sensitive species and their habitats are presented below.)

**N2-Covenants** would prohibit all construction activities within the floodplain of the Rio Grande.

**N4, N5 and N6-Covenants** would prohibit development in any designated lynx habitat. This area would include essentially the entire forested portion of these parcels encompassing approximately 70 acres currently suitable lynx habitat. There would also be a prohibition of commercial timber harvest in the forested portion of these parcels. Additionally, no development or habitat disturbance would be permitted in wetland areas (approximately 3 acres) to address concerns regarding western boreal toad, as well as other wetlands issues. No development would be allowed within the Trout Creek floodplain, which would include 0.5 acres in Parcel N4 and 7.5 acres in Parcel N6.

**L1, L2, L3, and L4-Covenants** would prohibit disturbance to the wetlands within these parcels or to the hydrologic functioning of these wetland areas to protect boreal toad and other sensitive species habitat. All development activities would be prohibited within the floodplain of the river.

**L5-A** restriction would be included in the U.S. Government Patent, which prohibits any commercial timber harvesting in the forested portion of this parcel. Lynx habitat on all but a small portion of the parcel would also be protected from other habitat disruptive activities, such as residential and road development. It is the stated intention of the owner of Rio Oxbow Ranch, one of the Non-Federal Parties, to retain the right to develop up to a total of five residential dwellings on the ranch. To reduce visual impacts he would like to use the

forest edge as partial visual screening for any buildings that might be constructed. The exact location of these development sites has not been determined at this time but all may occur in what is currently the L5 or some may include sites on land currently owned by ranch. Therefore, covenants would limit the number of residential development sites to five units. It is estimated that each development site would result in a surface disturbance of approximately one acre. Additionally, the covenants would restrict disturbance to wetland areas.

### **III. DESCRIPTION OF AFFECTED ENVIRONMENT**

#### **HISTORIC, CURRENT AND ANTICIPATED FUTURE LAND USE**

##### ***Federal Lands***

The primarily historic use for the Federal lands, currently under USFS administration, has been livestock grazing (where topography and forage availability allowed). Some very limited timber harvesting has occurred, primarily in L5. Other uses have included the scenic byway transportation management along Highway 149 through parcels L1-L4. Recreational and other travel has been a use in the western portion of N2. Other dispersed forms of recreation such as hunting, fishing and hiking have occurred on the Federal tracts but has been limited by the landownership patterns, which impedes access to many of these parcels. Some commercial and private river rafting, as well as historic access to the river from the highway has occurred at Parcel L3. River recreational activities have also been provided along the river in the southern portion of Parcel N2. Water management structures (diversions) were constructed on Trout Creek in Parcel N6 and Woodfern Creek and Workman Creek in Parcel L5 to direct water to reservoirs located on private lands. The diversion on Trout Creek has been abandoned, at least for the present time. However, the diversions on Workman and Woodfern Creeks are currently still in use. Present land use on the Federal lands is essentially the same as historic land use.

There are no future actions planned by the RGNF for any of the Federal parcels. Future management of these lands is likely to follow past and present management direction, should the exchange proposal not be implemented. Most of the Federal parcels abut private lands contained in two ranches: Rio Oxbow Ranch and Broadacres Ranch. These lands have historically, and are currently being managed for livestock and forage production and, to a limited degree, very low-density residential development. There has also been a recent emphasis on improving the fish habitat within the Rio Grande and in Trout Creek, which flow through the private lands, and to a limited extent, the Federal lands. It is the stated intention of both of the Non-Federal parties involved in this proposal to continue the current land use into the foreseeable future. The Federal parcels would become part of these ranches through this exchange proposal, and their future management is anticipated to be that currently being practiced on the private lands.

##### ***Non-Federal Lands***

Long Ridge: The primary past use of this property has been grazing. The lower slopes of these parcels provide the right-of-way for the Highway 149 travel corridor. Apparently,

little active management has occurred on these lands during recent years. The management emphasis on the surrounding National Forest System lands is big-horned sheep habitat maintenance and improvement, which is consistent with the direction currently being followed on these private parcels. Due to the current development pressure being experienced in Mineral County, future use on these lands could include development of residential properties on suitable sites along Highway 149.

Bonafacio: Grazing has also constituted the primary past use of these parcels. Dispersed recreational pursuits, such as hunting have also occurred on these parcels although there are no records substantiating the type or of level of this use. Designated forest system roads (4-wheel drive) running through each of the tracts have provided public access to the adjacent National Forest System lands. However, there is no legal right of public access through these properties. These parcels are unfenced and are probably currently being grazed, to some degree, by the livestock managed under the Martinez-Underwood S&G Allotment. The area's current primary use is probably wildlife habitat and hunting. The public currently uses the existing road system for access to adjacent National Forest System lands for hunting, mountain biking and other dispersed forms of recreation. Development pressures experienced throughout the county may indicate a future potential for residential development on these lands, should the exchange proposal not be implemented.

Carson Properties: The Carson properties lie within a historic mining district and mining was the primary land use in the general area up until the early 1900's. Evidence of past mining is present on several of the Continental Divide patented mining claims but much of the area was apparently never actively mined. The Hays Placer does not appear to have been mined but the forest cover was lightly logged in some areas to provide materials for mine timbers or other mining-related structures. The remnants of an old structure, apparently a cabin, are situated in the northeast corner of the parcel. An old, low-standard road runs along the eastern edge of the parcel (FR 518), eventually crossing the Continental Divide and intersecting the mining claims. There does not appear to have been any active use of these properties in recent years. The Carson Road (FR 568) and Heart Lake Road (FR 518.1b) now serve as a popular route for 4-wheel drive and off-highway vehicle users, and for sightseers visiting the historic structures at the Carson town site. However, there is currently no legal right of public access through these properties. The area is probably also being used for some dispersed recreational activities such as hunting and off-trail hiking. Current management of these lands is consistent with management direction being applied to adjacent National Forest System lands. However, with the development occurring throughout Hinsdale County, residential (i.e., summer home) development could be a future use of these properties should the exchange proposal not be implemented.

## **INDIVIDUAL PARCEL DESCRIPTIONS**

### ***Federal Parcels***

The Federal parcels, which would move into private ownership as a result of this proposal, are comprised of eleven separate parcels located between 3 and 11 miles southwest of Creede, Colorado. (Appendix, Exhibit 1, Map 1, 2, 3) These tracts generally lie along the Rio Grande and Trout Creek, a major tributary to the river. Elevations of the Federal parcels

Exhibit 3  
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range from 8,800 to 9,200 feet. Private lands, owned predominantly by the Non-Federal parties to this proposal, share common boundaries with these parcels. The locations of the Federal parcels are more specifically described in Table 1. The following is a general description of the habitat characteristics found within each of the Federal tracts:

**N1** This parcel is comprised of approximately 37.82 acres situated ½ mile north of the Rio Grande at 8,800 feet in elevation (Map 3). The area is surrounded by private lands on its west, south and east sides. It lies on dry, south-facing slopes averaging 15% in gradient. Soils tend to be coarse, gravelly and shallow. The vegetative cover is relatively sparse with roughly 15% shrub cover, 40% grass and forb, and 45% bare ground. There is no tree cover on this site.

There are no perennial streams or water features on this site. Shallow Creek, a small perennial drainage lies approximately one-eighth mile from the southwest corner of the tract and a 7-8 acre and a 3-4 acre reservoir lie one-quarter mile south of its southern boundary. A shallow ephemeral drainage depression occurs in the eastern one-half of the area, which flows only as a result of snowmelt or significant precipitation events. There are no wetland or riparian habitats associated with this drainage feature.

**N2** This parcel is comprised of approximately 80 acres lying between 8,800 and 9,000 feet in elevation (Map 3). Private lands abut this parcel on three sides with USFS lands on its western side. Due to drainage patterns that run through or adjacent to this tract it has significant variation in its topographical and vegetative character. The general orientation of the area is to the southeast. The northern portion of the tract drains in to Shallow Creek, a small perennial stream flowing southwest, approximately 200 feet from the area's northeast corner. The general character of the northern two-thirds of the property is very similar to that observed in Tract N1, which lies approximately one-half mile to the northeast. This cover is comprised of approximately 10% shrubs, 40% grass/forb and 50% bare ground. There are no trees in this portion of the tract.

A relatively steep and incised intermittent drainage runs diagonally across the lower one-third of this parcel from west to east, joining the Rio Grande just outside its southeastern boundary. The channel cuts down to and through bedrock for much of its length through the property. The south-facing slopes on the northern side of this drainage pattern are similar in vegetative character to the northern portion of this tract, but tend to have a greater shrub and herbaceous cover. The steep (75%) northern-facing slope of the drainage is forest covered with an essentially pure stand of blue spruce roughly 4 acres in size. These trees are somewhat stunted by the harshness of the site (shallow soils) and show significant signs of decadence. Snag density is roughly 4-5/acre with low to moderate levels of coarse woody debris. Spiked tops are common.

On the opposite (southern) side of the ridge from this area the landform drops precipitously in the Rio Grande which flows through the extreme southern portion of the parcel. This forms a cliff structure approximately 150 feet in height, which continues down below the surface of the river. A small portion (approximate 2.5 acres) of the parcel extends across the

river to its southern side. This area lies within the floodplain of the river. Most of this area is in abandoned pasture occupied by a native and introduced grass/forb cover. An intermittent narrow band (<5 feet) of sparse riparian habitat lines the river in this area.

**N4** This 84.6-acre parcel is located along the western edge of the Trout Creek flood plain within an adjacent intermittent drainage to Trout Creek at an elevation of 9,000 feet (Map 2). This parcel is surrounded by private lands on three sides, which are characterized by open meadow in the Trout Creek floodplain. Approximately two-thirds of this parcel is covered in medium-aged, mixed-conifer upland forest. The average age of the larger trees is roughly 100 years. The forest cover is dominated by blue spruce (50-60% cover) mixed with aspen (25-30%) and Douglas fir (10%). Engelmann spruce and subalpine fir are also sparsely scattered through the canopy but generally do not comprise a significant portion of the overall canopy cover. The coniferous component is beginning to overtop the mature aspen, which is beginning to breakup as a result of this competition. Coarse woody debris is typically low to moderate in concentration over most of the area. Snag densities average between 3-5/acre. Slope gradients within the forested area range from 15-45% with an average of approximately 25%. The remaining one-third of the parcel is comprised of open meadow dominated by upland grass/forb with scattered low shrubs (potentilla and rabbitbrush) on gently sloping southeast-facing hillsides. The soils here are typically rocky with gravel present on the surface. The eastern edge of the parcel lies within a drainage depression and includes a small 2-acre natural pond with surrounding riparian/wetland habitat dominated by dense sedge (*Carex aquatilis*) and occasional willow (*Salix* spp) up to 15 feet in height. The pond is relatively shallow, averaging roughly 2.5 feet in depth and less than 4 feet at its deepest point. It did not appear to support a fish population at the time of the survey.

**N5** This 15-acre tract lies immediately above the western edge of the Trout Creek flood plain (Map 2). Slopes range in gradient from 5-40% with a highly variable orientation due to drainage patterns, which dissect the parcel. An intermittent, moderately incised drainage cuts through the center of the area flowing from the southwest corner toward the northeast. The northern arm of an approximately 10-acre reservoir borders the extreme southeastern corner of this tract. This reservoir was recently breached (2000) and it is unknown if it will be refilled in the future. The vegetative cover on this parcel is very diverse, varying with slope orientation and position. The south-facing slopes are generally grass/forb meadow dominated by fescue and muhly with a patchy and discontinuous shrub and tree component. These slopes exhibit poorly developed, shallow rocky soils and are dry due to the soil composition and exposure. The more moist north-facing slopes and gently sloping ridgetops have a moderately dense intermediate-aged (<100 year) forest cover comprised of a mix of primarily blue spruce and aspen. Douglas fir and Engelmann spruce are also present but do not comprise a significant portion of the overall canopy. The aspen is becoming overtopped by the conifer component and is beginning to breakup in some areas. Snag densities average approximately 3/acre within the forested habitat with low to moderate levels of coarse woody debris. A narrow band of riparian habitat, dominated by dense sedge and willow,

borders the shore of the reservoir. Residential dwellings and outbuildings associated with an adjacent ranch lie at the eastern edge of the property.

**N6** This 12.5-acre parcel lies predominantly within the Trout Creek floodplain at an elevation of approximately 9,000 feet (Map 2). Trout Creek bisects this tract, entering at its western edge and exiting on its north-central boundary. A large portion of this tract is comprised of riparian habitat. Large, mature cottonwood and blue spruce line much of the stream channel. Moderately dense stands of willow (*Salix sp.*) and alder (*Alnus incana*) lie along the stream beneath the tree canopy with a variety of wetland obligate and facultative herbaceous species well represented in the ground cover. Approximately one acre of wetland meadow extends into the extreme northwest corner of the tract. This area is occupied by dense sedge. The southern edge of this parcel rises abruptly out of the floodplain at an approximately 40% gradient. This north-facing upland area covers approximately 4.5 acres and is dominated by uneven-aged blue spruce with an associated mix of Douglas fir, Engelmann spruce and subalpine fir. The overall snag density within this parcel is roughly 3/acre with moderate levels of coarse woody debris.

**L1** This 4.06-acre triangular-shaped parcel lies directly adjacent to Highway 149 at an elevation of approximately 8,900 feet (Map 1). Private lands surround this parcel on its western and southern boundaries with Hwy 149 forming the eastern boundary. With the exception of the road berm, the entirety of this parcel lies within the floodplain of the Rio Grande. Although the site lies on the edge of the floodplain, much of the area is relatively dry due to coarse rocky soils and a slight southern orientation. With the exception of the slope of the road berm, the slope gradient of this parcel is generally less than 5%. The vegetative cover on the site is dominated by a grass/forb herbaceous component (65-75% of total cover). Approximately 10% of the cover is comprised of shrubs (mostly low shrubs such as potentilla, rabbitbrush and wood rose) and 15% is bare ground and cobble. A few larger shrubs (willow and currant) are scattered across the site, especially along a ditch at the bottom of the roadbed. There is no tree cover on this parcel. A small drainage pattern runs diagonally through the area. This drainage has an intermittent flow and rarely contains surface waters. Several small wetland depressions lie within this shallow drainage, which also have surface water only during short periods after snowmelt or as a result of significant precipitation events.

**L2** This triangular 19.59-acre parcel lies directly adjacent to Highway 149 at an elevation of approximately 8,900 feet (Map 1). With the exception of the road berm that runs along its eastern edge, the entirety of this parcel lies within the Rio Grande floodplain. A channel to the river enters the tract roughly in the middle its western boundary and exits the tract in its southeast corner, approximately 100 feet above its confluence with the river. The channel is fed by a spring originating on adjacent private lands and is dammed on these lands just west of the parcel boundary. Wetlands line both sides of the channel through the parcel. This channel appears to be slow moving throughout the year as evidenced by its shallow bankfull depth (<1 foot) and the absence of any appreciable bank structure. The channel did not appear to be inhabited with fish at the time of the survey. Another wetland pocket was present along the northeastern edge of the parcel bordering the highway berm.

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This wet area appears to be fed by subsurface flow derived from a drainage entering the north portion of the property from the opposite side of the highway. Wetlands found within this parcel total approximately 7.9 acres.

The vegetative cover of this parcel is comprised primarily of pasture grasses and forbs on the drier ground and a mix of wetland obligate and wet facultative graminoids and forbs in wetter areas. A discontinuous shrub component, generally associated with the wetter areas is present, particularly on the eastern edge tract below the road berm. This shrub component, which is relatively dense locally, is comprised primarily of willow (*Salix sp.*) and alder (*Alnus incana*).

**L3** This 1.11-acre triangular parcel also lies directly adjacent to Highway 149 at an elevation of approximately 8,900 feet (Map 1). It is surrounded by private lands on its western and southern boundary and borders the highway on its northern boundary. With the exception of the road berm and an approximately 0.1-0.2 acre highway turnout, the entire tract lies within the floodplain of the Rio Grande. Approximately 250-300 feet (outside curve) of the river channel bisects the southern edge of the parcel and comprises roughly half of its total area. Approximately 200 feet of the northside bank is covered in large diameter riprap material. The extreme western corner of the parcel on the northside of the river is wetland, which lies between the bottom of the highway berm and the river's edge. This approximately 0.1 acre wetland area is dominated with a mature willow (*Salix sp.*) overstory with discontinuous herbaceous cover of wetland, wet facultative and upland facultative species.

**L4** This small 0.04-acre parcel lies directly adjacent to Highway 149 at an elevation of approximately 8,900 feet (Map 1). This triangular parcel is surrounded by private land on its western and southern edges with the highway forming its northeastern boundary. Practically all of the tract area lies within the highway right-of-way and most of it is incorporated into the highway berm. A very small area in the southwest corner of this tract lies within the river's flood plain.

**L5** This 214.06-acre parcel lies along the southwestern border of the Rio Oxbow ranch (Map 1). Most of this tract is situated on steep, forested northeast-facing slopes. The corners of the three triangular areas in the north extend into the meadowland that lies in or directly above the Rio Grande flood plain. The very southern end of this parcel also extends into the open floodplain. The slopes on which most of this parcel is located are characterized by varying slope gradients ranging from rock cliffs to gently rolling hillsides and narrow gently sloping floodplains. The slope gradients range from 80% to 2% with an average probably exceeding 35%. Several cliffs and rock outcrops occur intermittently throughout this parcel. These vary significantly in size and character. The largest cliff face is roughly 40 feet in height

Roughly 80% of this parcel is forested. The forest cover is highly variable and includes areas dominated mixed-conifer comprised of Douglas fir, Engelmann spruce, blue spruce and aspen, as well as clumps of mature and immature aspen with coniferous understories.

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Age classes and densities are also highly variable with essentially all age and density classes represented. The shrub layer beneath the forest canopy is moderately well represented with buffaloberry (*Shepherdia canadensis*), common juniper (*Juniperus communis*), serviceberry (*Amelanchier alnifolia*), kinnickinick (*Arcostaphylos uva-ursi*), Oregon grape (*Mahonia repens*) and wild rose (*Rosa woodsii*). The herbaceous layer is well represented with red columbine (*Aquilegia elegantula*), meadowrue (*Thalictrum fendleri*), strawberry (*Fragaria sp.*), geranium (*Geranium sp.*), mules ear (*Wyethia amplexicaulis*), sagewort (*Artemisia franserioides*), bedstraw (*Galium septentrionale*), false Solomon's seal (*Maianthemum amplexicaule*) and fern leaf lousewort (*Pedicularis bracteosa*). The distribution of coarse woody debris is highly variable but quite heavy in some areas. Standing dead trees of all species are present at moderate levels but are not evenly distributed within the forest cover.

As mentioned above, small areas of open wet and dry meadows are found on the lower slopes in the northern and extreme southern end of the parcel. Typical moist and dry site pasture grasses dominate the dry meadows. The wet meadows are occupied primarily by sedge (*Carex sp.*) and tufted hairgrass (*Deschampsia cespitosa*). The total wetland area is approximately 3.6 acres.

Two perennial streams flow through this parcel, Woodfern Creek and Workman Creek. These are both direct tributaries to the Rio Grande. These streams flow through the second and third triangles from the northern end of the parcel. Both of these streams are characterized by moderately steep gradients, which decrease significantly toward the floodplain of the river. The flow of Workman Creek is completely diverted to the approximately 23-acre reservoir located on the Rio Oxbow ranch. An irrigation channel runs along the bottom of the slope, most of which is located on private lands. A portion of the flow of Woodfern Creek has also been diverted, via a natural stream course, to this irrigation channel. The remainder of the Woodfern flow follows the natural channel through L5, into the floodplain. Seeps from the irrigation channel and ground saturation from the lake have formed a wetland area that lies directly west of reservoir and encompasses both public and private lands.

### ***NON-FEDERAL PARCELS***

The private lands offered for exchange to the USFS are located in three distinct areas. These are the Long Ridge (LR) properties located on the north side of Highway 149 above the Federal tracts L1-L5 (Map 1 & 4), the Bonafacio properties located approximately 10 miles southwest of Monte Vista, Colorado (Map 5) and the Carson properties located near the Continental Divide approximately 24 miles west of Creede (Map 6). Table 2 more specifically describes the location of these lands.

### **LONG RIDGE PROPERTIES:**

The Long Ridge properties consist of five triangular tracts currently forming the northern boundary of the Rio Oxbow Ranch (Appendix, Map 4). These lands lie north of the Highway 149 and border the highway on their southern boundaries. These tracts are surrounded by National Forest System lands on at least two sides. The entirety of these

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lands lies within 1/8-mile of the highway. The separate tracts and adjacent National Forest System lands are very similar general character and vegetative composition and probably function similarly in the habitat attributes available to wildlife and plant species.

The general orientation of these parcels is south-southwest. The landform is similar across the area with the lower slopes above the highway ranging in gradient from 5-20% increasing to 30-50% on upper slopes. No cliff structures are present within the parcels, but are found on the upper slopes of the adjacent National Forest System lands. However, rock outcrops and large boulders sloughed from adjacent areas are present intermittently across Long Ridge tracts. No significant drainage features are present within the tracts, but shallow, poorly defined drainage patterns are present in some areas. There are no wetlands associated with the Long Ridge parcels and all of the area lies above the floodplain of the Rio Grande

Graminoids form the dominant vegetative cover across the Long Ridge area and adjacent lands. Tree cover is essentially absent, except for a sparse blue spruce (*Picea pungens*) component found in very local areas. A shrub cover (5%) is present and moderately well-distributed over much of the area, generally decreasing from west to east. The dominant shrub is wax currant (*Ribes cereum*), and also includes wood rose (*Rosa woodsii*), rabbitbrush (*Chrysothamnus spp.*), shrubby cinquefoil (*Pentaphylloides floribunda*), and snowberry (*Symphoricarpus rotundifolius*).

### **BONAFACIO PROPERTIES**

The Bonafacio properties lie in four separate tracts located within 2½ miles of each other and all located approximately 10 miles southwest of Monte Vista (Map 5). The total area of the four tracts is 678.36 acres. These tracts are similar in many respects but differ in elevation, aspect and to a lesser degree in vegetative composition. Each of the parcels is completely surrounded by National Forest System lands on all sides. Elevations range from 8,600 (B1) to 9,800 feet (B4). With the exception of B1, the parcels are joined by a common road (FR 267). Access to B1 is provided by FR 268 to which FR 269 is an arterial. All of these parcels lie within the Nicomodes drainage system. The historic use of this property has been grazing, and since these areas are not fenced, they are occasionally grazed by livestock run on the adjacent Forest Service allotment.

**B1** This approximately 153.96-acre parcel lies at an average elevation of 8,700 feet. Nicomodes Creek, a perennial stream is a central feature, bisecting the property in its northern half. The lower slopes on the north and south side of the creek form a gently sloping terrace (5-15% gradient) approximately 150-250 feet wide across the valley. The landform then rises abruptly on both sides of the drainage at 30-50% slope to the ridge top. No significant rock features or cliffs are found within this parcel.

Nicomodes Creek lies within an old channel that shows significant signs of past erosion, probably resulting from past heavy grazing activity. The old channel averages roughly 35 feet in width. The new channel, which has formed within the old channel, averages 1-2 feet in bank full width and averages roughly 1 foot in depth. A significant wetland corridor

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borders the creek on both sides through the property. This wetland corridor is occupied by a variety of wetland obligate and facultative wet plant species including sedges (*Carex aquatilis*, *Carex sp.*), rushes (*Juncus sp.*), fieldmint (*Menta arvensis*), tufted hairgrass (*Deschampsia cespitosa*), cattail (*Typha sp.*) and scattered willows (*Salix sp.*). Natural dams have formed in a few places within the channel, creating impoundments of surface water up to 20'x20'.

The slopes above the drainage are dry and somewhat rocky and support a dry-site vegetative cover. These upland slopes contain a sparse pinyon-juniper component with trees generally less than 15 feet in height. Shrubs are moderately well represented and include rabbitbrush (*Chrysothamnus sp.*), currant (*Ribes sp.*), broom snakeweed (*Gutierrezia sarothrae*), yucca (*Yucca baccata*) and prickly pear cactus (*Opuntia sp.*) Forbs are poorly to moderately represented and include paintbrush (*Castilleja sp.*), yellow sweet clover (*Melilotus officianalis*), fleabane (*Erigeron sp.*), fringed sage (*Artemisia frigida*), cinquefoil (*Potentilla hippiana*), penstemon (*Penstemon sp.*) and bee plant (*Cleome serrulata*). Grasses are very well represented and include blue grama (*Chondrosium gracile*), Indian ricegrass (*Stipa hymenoides*), western wheat (*Pascopyrum smithii*), squirreltail (*Elymus elymoides*), and muhly (*Muhlenburgia sp.*).

**B2** This 155.44-acre parcel exhibits a landform somewhat similar to that found in B1. The area is bisected by two intermittent streams that merge in the center of the property, flowing generally to the northeast. The slopes rise from of the drainage at a moderate gradient ranging from 25-40% to relatively broad ridge tops on both the southern and northern portions of the property.

The vegetative cover on this tract is also somewhat similar to B1 with notable exceptions. The cover reflects a moderately dry site, although it appears slightly moister than B1. The pinyon-juniper component is absent and no other tree cover is present, with the exception of a narrow band of cottonwoods on the northern edge of the tract. Additionally, the shrub cover is much sparser and dominated by currant and rabbitbrush. The grass cover is well represented and very similar in composition to B1, except the blue grama and Indian ricegrass components tend to be much less prevalent.

There is little or no riparian habitat associated with the drainage pattern within the central portion of the parcel. However, a small perennial stream (Bonafacio Creek), located on the extreme northern edge of area, does exhibit riparian/wetland features. The stream lies within an old eroded channel roughly 35 feet in width. The newly formed channel is one-two feet in bankfull width and averages one foot in depth. Wetlands border both sides of the new channel and an approximately 0.4 acre wetland has formed in the extreme northwestern corner of the parcel. This area is dominated by sedge in association with a variety of other wetland obligate and wet facultative species, similar to those found in wet areas of B1.

**B3** This parcel comprises approximately 153.15 acres. Bonafacio Creek, a small perennial stream, bisects the center of this parcel flowing generally toward the northeast. The slopes rising out of the stream are typically gentle to moderate in gradient ranging from 10-35%.

However, slopes on the south side of the creek in the northwest corner may approach 50% locally. There are no significant rock or cliff features found within the parcel.

The perennial stream lies within an old eroded stream channel averaging roughly 30 feet in width. The newly formed channel is bordered by wetlands on both sides. The channel averages approximately 1-½ feet in bankfull width and 1 foot in depth. The channel and the bordering wet areas form a strip of riparian habitat averaging roughly 15 feet in width. The riparian vegetation is similar to that found in B1 with the exception that there is no riparian shrub component. However, the outer edges of the riparian corridor are intermittently lined with currant. The vegetative cover on the upland slopes is similar to that found in B2. A few scattered ponderosa pines occur on the upper slopes but tree cover is absent over most of the area.

**B4** This approximately 215.81-acre tract lies within the Bonafacio Creek drainage at an elevation averaging roughly 9,600 feet. This parcel is bisected by two intermittent drainages creating a landform dominated by moderately steep and narrow valleys interrupted by narrow ridges. Due to the drainage patterns, the slope aspect is highly variable with a general northerly orientation. The increased elevational position of this tract creates a moister site condition, especially on north-facing slopes. The vegetative cover is diverse and generally characterized by open shrub and grasslands interspersed with clumps of forest cover. Shrub densities are typically low and are dominated by currant (*Ribes sp.*) and rabbit brush (*Chrysothamus sp.*). The forest cover is a mix of mixed conifer/aspen and clonal aspen stands. The herbaceous layer is dominated by grasses, including fescue and muhly.

### **CARSON PROPERTIES**

The Carson properties are located near the Continental Divide approximately 24 miles west of Creede and 12 miles south of Lake City (Map 6). All of the parcels comprising the Carson Properties are patented mining claims held in private ownership. These properties are comprised of the 133.87-acre Hays Placer, which lies on the Gunnison National Forest and 25 small patented mining claims ranging in size from 4 to 10.33 acres and totaling 230.61 acres, referred to collectively as the Continental Divide Claims. The Continental Divide Claims lie within the boundaries of the Rio Grande National Forest. These parcels range in elevation from approximately 11,200 to 12,400 feet. The Hays Placer and the mining claims (as a group) are surrounded, either partially or completely by National Forest System lands.

**Hays Placer** This 133.87-acre parcel lies on the west side of the Continental Divide at an average elevation of 11,600 feet. The area lies on the toe of a ridge extending toward the northeast from the summit of Bent Peak with the general orientation of the landform toward the north-northeast. The northern portion of the property is part of a relatively large gently sloping wetlands complex and its southern two-thirds is characterized by moderately sloping forested hillsides ranging in gradient from 10-50%.

The northern portion of this parcel is occupied by an open wetland dominated by moderately dense stands of willow (*Salix spp.*) interspersed with small wet openings. The dominant

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vegetation in the openings is sedge (*Carex spp.*) with a broad association of other upper-elevational wetland obligate and wet facultative plant species. This area is part of a larger wetland complex that lies between the West Fork and Main Fork of Wager Creek that extends into National Forest System lands to the north. The soil surface is saturated over most of this area during normal years and surface water is present in local areas. The hydrologic flow to the wetlands appears to be associated with both surface and sub-surface water movement. The wetland area extends to the edge of, and in some cases, into the forested cover to the south. The Main Fork of Wager Creek runs along the eastern edge of the tract flowing generally from south to north. This stream is very variable in width, depending on confinement, but averages approximately 6-8 feet in bankfull width. It also has a variable gradient ranging from gentle to moderately steep. Wetland areas, dominated by willow, border the creek intermittently on its course through the tract. The West Fork of Wager Creek flows along the western border of this parcel. It is very similar in character to the main fork in terms of size and gradient and is also lined intermittently with willow-dominated wetlands.

The southern portion of the tract is occupied by a moderately dense, mature/old growth spruce-fir forest cover with older trees at least 250 years in age. Engelmann spruce (*Picea engelmannii*) dominates the canopy over the subalpine fir (*Abies lasiocarpa*). Levels of coarse woody debris are high to moderately high over much of this area and standing dead trees are well-represented throughout the forest cover. The shrub layer varies from poor to moderately well represented and includes currant (*Ribes sp.*), elderberry (*Sambucus microbotrys*), and Rocky Mountain whortleberry (*Vaccinium myrtillus*). Herbaceous cover is moderately-well represented on the lower slopes decreasing with elevation. Typical forb cover includes heartleaf arnica (*Arnica cordifolia*), arrowleaf groundsel (*Senecio triangularis*), lousewort (*Pedicularis sp.*), bluebells (*Mertensia sp.*), strawberry (*Fragaria virginiana*) and little gentian (*Gentianella acuta*). The very top of the landform on the southern edge of the tract features a 4-5 acre opening covered in coarse scree.

**Continental Divide Mining Claims** These claims comprise a total of approximately 230.61 acres. They are located on the Continental Divide ranging in elevation from 11,800 feet to 12,800 feet and average roughly 12,400 feet. With the exception of 10-15 acres, the area lies on the south side of the divide in the Rio Grande watershed. The general orientation of the landform is toward the east-southeast in the northern portion of the area, shifting to a predominantly southern orientation in the southern portion. Slopes tend to be gentle and rolling in the northern portion averaging 15% in gradient but become significantly steeper in the lower portion of the area, approaching 50-60%, locally. The only significant drainage feature within the area is an intermittent stream, located roughly in the center of the property flowing from west to east. Due to the exposure and southern orientation, the area is relatively dry for an alpine-subalpine setting. With the exception of some rock outcropping at the divide, there are no significant rock or cliff features.

The vegetative cover on the property is typical of alpine habitats of this exposure. There is no tree cover, even though the lower areas lie below timberline. Intermittent stands of willow are found along the divide in the northern portion of the area. Planeleaf willow (*Salix planifolia*), short-fruit willow (*S. brachycarpa*) and snow willow (*S. reticulata*) were

identified in this area. The shrub component diminishes significantly on lower slopes. The herbaceous component is well-represented over much of the area except in local areas of gravelly soils. Forbs identified during field investigations include paintbrush (*Castilleja sp.*), alpine avens (*Acomastylis rossii*), columbine (*Aquilegia coerulea*), pussytoes (*Antennaria sp.*), bistort (*Bistorta bistortoides*), fleabane (*Erigeron sp.*), and arctic gentian (*Gentianodes algida*). Grasses found in the area include fescue (*Festuca sp.*), muhly (*Muhlenbergia sp.*), alpine bluegrass (*Poa alpina*), joint grass (*Calamagrostis sp.*) and mountain hairgrass (*Vahlodea atropurpurea*).

#### **IV. PRE-FIELD REVIEW AND FIELD INVESTIGATIONS**

A pre-field checklist of sensitive plant and wildlife species (Table 3) that are known to occur or potentially occur on the RGNF was developed with the aid of Forest wildlife and botany specialists and Colorado Division of Wildlife personnel. The general description of the preferred habitat of each individual species was compared to existing habitat conditions within the analysis area using maps, aerial photos and the surveyor's general knowledge of the area. Species whose preferred habitat might be present on the Federal and Non-Federal parcels were noted and given emphasis during the field examination of the area.

Field surveys of the project area were conducted in September 1999 and August 2001 to determine habitat potential and evidence of habitation for those plant and wildlife species indicated by the pre-field investigations. Although the sites were examined for direct evidence of occupancy of the indicated individual species, the greatest emphasis during the survey was placed on determining presence/absence of the overall habitat conditions for these species. Table 3 lists the species that were determined to have suitable habitat within or in proximity to the project area. The potential impacts of the proposed land exchange to these species were evaluated through this assessment.

If a determination was made that no suitable habitat is present within the analysis area for a particular Forest sensitive species, it was not evaluated further in this assessment. Those plant and wildlife species that might have suitable habitat within the Federal lands and Non-Federal lands, or which could be potentially affected by this proposal are listed in Table 3 and analyzed in the following evaluation.

Sensitive wildlife species that were considered but not evaluated in detail due to lack of suitable habitat include Mountain plover (*Charadrius montanus*) (Proposed), Black swift (*Cypseloides niger*), Burrowing owl (*Cypseloides niger*), Flammulated owl (*Otus flammeolus*), Lewis' woodpecker (*Melanerpes lewis*), White-faced ibis (*Plegadis chihi*), and Gunnison sage grouse (*Centrocercus minimus*) (Candidate). The Federal lands lie outside of the suspected historic range for the Gunnison sage grouse but the Non-Federal Bonafacio properties lie within the historic but not current known range for this species. It was determined that there would be no impact to these species through implementation of the proposed action.

Sensitive plant species that were considered but not evaluated further due to lack of suitable habitat include Ripley's milk vetch (*Astragalus ripleyi*), Smith's whitlow grass (*Draba smithii*), Brandegee wild-buckwheat (*Eriogonum brandegei*), rock-loving aletes

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(*Neoparrya lithophila*) Beardtongue gilia (*Gilia penstemonoides*) and Arizona willow (*Salix arizonica*). It was determined that there would be no impact to these species through implementation of the proposed action. Habitat for Altai cotton-grass (*Eriophorum altaicum var. neogaenum*) is present on the Non-Federal lands (Hay's Placer) but this species was not observed during field surveys in this area. Therefore, it was determined that there would be no impact to this species as a result of the proposed action.

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**Table 3**  
**SPECIES INDICATED BY PRE-FIELD  
INVESTIGATIONS AS HAVING POTENTIAL SUITABLE HABITAT  
ON THE FEDERAL AND NON-FEDERAL LANDS**

SPECIES	STATUS	PARCELS WITH POTENTIAL HABITAT
<u>Ambystonia tygrinum</u> Tiger Salamander	Sensitive	<b>Federal:</b> N4, N6, L2, L5 <b>Non-Federal:</b> Hays, B1, B2, B3
<u>Bufo boreas boreas</u> Boreal Toad	Candidate	<b>Federal:</b> N4, N6, L2, L5 <b>Non-Federal:</b> Hays, B1, B2, B3
<u>Rana pipiens</u> Northern Leopard Frog	Sensitive	<b>Federal:</b> N4, N6, L2, L5 <b>Non-Federal:</b> Hays, B1, B2, B3
<u>Oncorhynchus clarki viginalis</u> Rio Grande Cutthroat Trout	Sensitive	<b>Federal:</b> L5 <b>Non-Federal:</b> Hays (CO. cutthroat)
<u>Gulo gulo luscus</u> Wolverine	Sensitive	<b>Federal:</b> N4, N5, N6, L5 <b>Non-Federal:</b> Hays, C.D. Claims, B1, B2, B3, B4
<u>Martes americana</u> American Marten	Sensitive	<b>Federal:</b> N4, N6, L5 <b>Non-Federal:</b> Hays
<u>Sorex nanus</u> Dwarf Shrew	Sensitive	<b>Federal:</b> All <b>Non-Federal:</b> All
<u>Corynorhinus townsendii</u> Townsend's Big-Eared Bat	Sensitive	<b>Federal:</b> N2, N4, N5, N6, L5 <b>Non-Federal:</b> Hays, Continental Divide Claims
<u>Falco peregrinus</u> Peregrine Falcon	Sensitive	<b>Federal:</b> N2 <b>Non-Federal:</b> None
<u>Buteo regalis</u> Ferruginous Hawk	Sensitive	<b>Federal:</b> N1 and N2 <b>Non-Federal:</b> B1, B2, B3, B4
<u>Pandion haliaetus</u> Osprey	Sensitive	<b>Federal:</b> N5, N6, L5 <b>Non-Federal:</b> None

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**TABLE 3 (Cont.)**

<b>SPECIES</b>	<b>STATUS</b>	<b>PARCELS WITH POTENTIAL HABITAT</b>
<u>Accipiter gentilis atricapillus</u> Northern Goshawk	Sensitive	<b>Federal:</b> N4, N5, N6, L5 <b>Non-Federal:</b> Hays
<u>Contopus borealis</u> Olive-side Flycatcher	Sensitive	<b>Federal:</b> N2, N4, N5, N6, L5, <b>Non-Federal:</b> Hays, B4
<u>Passerella iliaca</u> Fox Sparrow	Sensitive	<b>Federal:</b> N6, L1, L2, L3, L4, L5 <b>Non-Federal:</b> Hays, B1
<u>Aegolius funereus</u> Boreal Owl	Sensitive	<b>Federal:</b> N4, N6, L5 <b>Non-Federal:</b> Hays, B4
<u>Lanius ludovicianus</u> Loggerhead Shrike	Sensitive	<b>Federal:</b> N1, N2 <b>Non-Federal:</b> LR2, B1, B2, B3, B4
<u>Picoides tridactylus</u> Three-toed Woodpecker	Sensitive	<b>Federal:</b> N2, N4, N5, N6, L5 <b>Non-Federal:</b> Hays, B4
<u>Regulus satrapa</u> Golden-crowned Kinglet	Sensitive	<b>Federal:</b> N4, N5, N6, L5 <b>Non-Federal:</b> Hays, B4
<u>Sitta pygmaea</u> Pygmy Nuthatch	Sensitive	<b>Federal:</b> N4, N5, N6, L5 <b>Non-Federal:</b> None
<u>Botrychium echo</u> Reflected Moonwort	Sensitive	<b>Federal:</b> None <b>Non-Federal:</b> Hays, C.D. Claims
<u>Botrychium pallidum</u> Pale Moonwort	Sensitive	<b>Federal:</b> None <b>Non-Federal:</b> Hays, C.D. Claims
<u>Machaeranthera coloradoensis</u> Colorado Tansy-aster	Sensitive	<b>Federal:</b> N1, N2, N4, N5 <b>Non-Federal:</b> C.D. Claims, B1-B4, LR1-LR5

## V. SPECIES DESCRIPTION AND PROJECT EFFECTS

This section discusses the current status, distribution, biology and typical habitat requirements for those species identified during the pre-field investigations as potentially occurring within the analysis area. It also describes the current habitat conditions for those species as determined during the field examination of the area. Also addressed are the potential direct, indirect and cumulative effects that could be anticipated as a result of implementation of this proposal on these species and their habitats. The determinations of these effects are based on Alternative 1 (Proposed Action). This alternative would represent the highest potential for effects to individual species since it would include highest amount of Federal acres moving to private ownership. Implementation of the other "action" alternatives (i.e., Alternatives 3 & 4) would result in the same determinations for each of the sensitive species examined, but may, in some cases, result in a slightly lower level of potential impact to these species.

### **WESTERN BOREAL TOAD**

*(Bufo boreas boreas)*

**Status and Distribution:** The western boreal toad is currently classified as a Region 2 sensitive species. In 1995 the U.S. Fish and Wildlife Service determined that the toad was "warranted" for listing but precluded by species of higher priority. The Colorado Natural Heritage Program (2002) ranking is G4T1/S1 which means that while the species is apparently secure globally, the subspecies is critically imperiled both globally and within the state.

The western boreal toad ranges throughout much of western North America except the arid Southwest. It occurs throughout the mountainous portion of Colorado, with the exception of the Sangre de Cristo Range, Wet Mountains, and Pikes Peak region. These toads are most commonly between 8,500-11,000 feet, and have only rarely been found as low as 7,000 ft (Hammerson 1986). Occupied sites have recently been identified on the Divide District including the Trout Creek drainage and Jumper Creek drainage, a tributary to Trout Creek (Gomez, USFS, pers. comm.). These locations lie upstream of the Federal lands.

**Life History:** According to Goettl (1997), the habitat requirements for the toad can be described as: "Distribution is restricted to areas with suitable breeding habitat in spruce-fir and alpine meadows. Breeding habitat includes lakes, marshes, ponds, and bogs with sunny exposure and quiet, shallow water. Rarely are toads known to lay eggs in streams. Breeding occurs soon after ice melt in the breeding area. Young toads are restricted in distribution and movements by available moist habitat, while adults may move up to several miles to reside in marshes, meadows or forested areas. Hibernation takes place in hibernacula which may be chamber burrows deep enough to prevent freezing and having soil moisture high enough to prevent desiccation. Most toads are in hibernation by early October, but association with the hibernacula may begin in late August."

Toads will feed both day and night on a wide variety of invertebrates such as ants, snails, carabid beetles, spiders, and mosquitoes. Natural predators of the toad include, but are not

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restricted to, the common raven, gray jay, western garter snake, tiger salamander, badger, and spotted sandpiper Goettl (1997).

**Habitat Conditions within the Federal Lands:** Suitable habitat for the boreal toad is found within localized portions of Parcels N4, N5, N6, L2 and L5. The small pond located in N4 would provide good habitat opportunities for this species. The slow moving channel and adjacent wet pockets in L2 would also provide good potential habitat. The reservoir bordering N5 and N6 provides some habitat potential for the boreal, primarily in the backwater portions of the lake on its southern edge. Slow moving waters at the edges of Trout Creek would provide some suitable habitat in N6, but this would not be considered quality breeding habitat. The slow moving channel and adjacent wet pockets in L2 would also provide good potential habitat. In L5, isolated wet pockets associated with Woodfern Creek and its diversions, as well as the wetland area west of the reservoir on the Rio Oxbow Ranch may provide some habitat opportunities but the overall quality of breeding habitat in these areas would be low.

**Habitat Conditions within the Non-Federal Lands:** Suitable habitat for the boreal toad on the Non-Federal lands is found within the Hays Placer, B1 and B2. The surface waters found within the wetlands areas of the Hays Placer would provide good habitat opportunities for breeding and foraging. There may be additional habitat found in and along the Main and West Forks of Wager Creek. The small natural water impoundments in the stream channel of B1 would also provide good habitat. The wet areas found within the extreme northwest corner of B2 would provide some limited opportunities for the boreal toad but this area would generally be of marginal quality for breeding activities.

**Factors of Concern:** Any affect to the natural hydrological flow could negatively impact potential habitat for western boreal toad. Habitat disruptions can have localized impacts on boreal toad adults through direct mortality and forced emigration. Heavy grazing in and adjacent to the wetland areas could affect the overall quality of the habitat by reducing hiding and foraging cover. Activities adjacent to breeding sites can result in increased insolation, higher water temperatures, increased sediment loads, and reduced instream coarse woody debris, which can have a significant adverse impact to boreal toad habitat.

**Direct and Indirect Effects:** Covenants would protect all wetlands on the Federal lands from direct habitat disruptive activities. Regardless of ownership and restrictions, any activities that would impact wetlands would still have to adhere to the standards set by the Clean Water Act in regards to wetlands. Grazing has been, and continues to be a use on the adjacent private lands, and periodically, portions of the Federal tracts. Individuals could suffer direct mortality from being trampled by cattle. However, numerous, well-distributed watering opportunities should reduce the risk of potential impacts associated with herd congregation. Considering these factors, loss of administrative control on the Federal lands is not likely to result in a loss of suitable habitat or a significant degradation of this habitat.

**Cumulative Effects:** : Due to the covenants protecting wetlands, it is unlikely that a change in the overall amount or quality of suitable habitat would occur as a result of this exchange. Any potential losses in the quantity or quality of existing boreal toad habitat that might

occur through the loss of administrative control of the Federal lands would be offset, to some degree, by the protective status that would be gained over suitable habitat found within the Non-Federal tracts, especially on the Hays Placer. There are currently no proposed Forest Services activities that would adversely affect suitable boreal toad habitat within the Trout Creek drainage or in the general area of the Federal tracts. There are no known plans for habitat disruptive activities on private lands. Therefore, implementation of this proposal is unlikely to result in an overall cumulative loss in suitable habitat for the boreal toad.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

### **NORTHERN LEOPARD FROG**

*(Rana pipiens)*

**Status and Distribution:** The leopard frog is classified as an R-2 sensitive species. The Colorado Natural Heritage Program (1997) ranking is G5/S3. This indicates that even though it is considered globally secure, it is vulnerable in the state due to low levels of occurrence.

The leopard frog is found throughout northern North America and southern Canada except on the West Coast (Behler and King 1979). It is found throughout Colorado except in the southeastern portion of the state south of the Arkansas River.

**Life History:** According to Hammerson (1986) the northern leopard frog prefers the banks and shallows of marshes, ponds, lakes, reservoirs, beaver ponds, streams and other permanent bodies of water, especially those with rooted vegetation. Wetland/riparian areas play an essential role throughout the year. Typical breeding ponds had a maximum depth of 59 to 78 inches, contain no predatory fish, and dried up every few years. Calling, breeding and egg deposition occur in the warmest portions of a pond, usually in less than 16 inches of water and on the north sides where there is maximum sun exposure (Gilbert et al. 1994, Merrell 1977).

Once breeding is complete, leopard frogs inhabit grassy meadows within a jump or two of escape into water (Gilbert et al. 1994, Merrell 1977). Adults are highly mobile, moving at night or when vegetation is wet. Roads can be readily crossed, but road kills can be substantial during mass migration. Although herbaceous cover is critical, there is a negative relationship with litter thickness. A thick litter lay may interfere with the individual's contact with moist soils and increase the likelihood of desiccation. Vegetative structure rather than composition regulates habitat quality. Grasses 6 to 12 inches in height are preferred possibly because insect prey is abundant, visible, and accessible (Merrell 1977).

Leopard frogs overwinter submerged in lakes, ponds, wetlands and streams (Cunjak 1986, Merrell 1977). Winter sites must not freeze completely, therefore shallow ponds or streams may be unsuitable (Merrell 1977).

Exhibit 3  
Biological Evaluation

Since the 1960s populations have declined dramatically, or become locally extinct (Gilbert et al. 1994, Beauregard and Leclair, Jr. 1988). Two major factors have been implicated, overexploitation and habitat deterioration (Gilbert et al. 1994). The first is due to the harvesting of animals for research purposes and for fish bait (Merrell 1977). The second is related to the decline in riparian/wetland habitats throughout its range. Reductions in wetland abundance have had a direct effect. Introductions of predator fish, such as trout, may also be a related factor in declines due to tadpoles' vulnerability to predation (Merrell 1977).

**Habitat Conditions within the Federal Lands:** Within the Federal tracts Parcels N4, N5, N6, L2, L5 would have suitable habitat for the northern leopard frog. Within N4 the small, natural pond and adjacent wetlands would provide good habitat for this species. N5 has some marginal habitat opportunities in the riparian zone on the southeastern edge of the tract bordering the reservoir. The lake, which has historically supported a predatory fish population, would probably be unsuitable for leopard frog habitation. N6 has limited opportunities for habitat along Trout Creek in areas of slow moving water. The fast-moving stream would probably be limited in its ability to provide suitable breeding habitat. The wetlands and slow-moving water found in the channel dissecting L2 would provide good habitat opportunities for the leopard frog. Several areas in L5 contain suitable habitat. These include the wet pockets and slow-moving water associated with Wood Fern Creek and its diversions, the wetland area immediately west of the reservoir, and marginally, the wet areas in the southeastern corner of the parcel.

**Habitat Conditions within the Non-Federal Lands:** Habitat opportunities for the northern leopard frog within the Non-Federal tracts include the Hays Placer, B1, B2 and B3. In the Hays Placer, the large wetland area in the northern portion of the property has well-distributed pockets of surface water that would provide good habitat for this species. Additionally, slower moving water adjacent to the channels of the main and west forks of Wager Creek would be considered suitable habitat. The stream channels and associated wetlands found in B1, B2 and B3 would also provide suitable habitat to this species. Habitat quality would be highest in B1, which has well-defined impoundments of water within the channel. B2 and B3 would offer some habitat opportunities but breeding habitat would be limited due to the general absence of pools or other pockets of surface water.

**Factors of Concern:** Any affect to the natural hydrological flow could negatively impact potential habitat for northern leopard frogs. Heavy grazing in and adjacent to the wetland areas could affect the overall quality of the habitat by reducing hiding and foraging cover. Traffic on roads near suitable habitat can result in mortality of individuals.

**Direct and Indirect Effects:** Covenants would protect all wetlands from direct habitat disruptive activities on the Federal parcels. Regardless of ownership and restrictions, any activities that would impact wetlands would still have to adhere to the standards set by the Clean Water Act in regards to wetlands. Grazing has been, and continues to be a use on the adjacent private lands, and periodically, portions of the Federal tracts. Individuals could suffer direct mortality from being trampled by cattle. However, numerous, well-distributed

watering opportunities should reduce the risk of potential impacts associated with herd congregation. Considering these factors, loss of administrative control on the Federal lands is not likely to result in a loss of suitable habitat or a significant degradation of this habitat.

**Cumulative Effects:** Due to the covenants protecting wetlands, it is unlikely that a change in the overall amount or quality of suitable habitat would occur as a result of this exchange. Any potential losses in the quantity or quality of existing leopard frog habitat that might occur through the loss of administrative control of the Federal lands would be offset, to some degree, by the protective status that would be gained over suitable habitat found within the Non-Federal tracts. Considering this and the low likelihood that significant habitat disruptive activities would occur on the Federal lands it is unlikely that the implementation of this proposal would result in a cumulative effect to the leopard frog.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

### **TIGER SALAMANDER**

*(Ambystoma tigrinum)*

**Status and Distribution:** The tiger salamander is classified as an R-2 sensitive species. There is no Colorado Natural Heritage Program ranking for this species. The tiger salamander ranges throughout much of North America. It occurs throughout Colorado at elevations up to 12,000 ft. in all but tundra and alpine habitats (Hammerson 1986). This salamander has been found in numerous locations across the Forest and is considered fairly common.

**Life History:** Tiger salamanders occur in virtually any habitat, provided there is a body of non-flowing water nearby for breeding. Cold flowing water is generally avoided by this species (Hammerson 1999). They inhabit ponds, lakes, natural and man-made reservoirs ranging in size from 10 ft across to several acres. They will survive in a variety of water conditions such as clear, glacial water bodies or turbid stock ponds, badly polluted with cow manure (Hammerson 1986). Sunny mud-bottomed ponds at least 18-24 inches deep with a shallow beach-like shore seem to be preferred. Vegetation may or may not be present. However, tiger salamanders are typically absent from waters inhabited by predatory fish, bullfrogs, turtles and crayfish.

Metamorphosed salamanders usually spend their winter underground in rodent burrows. They will occasionally dig their own burrows in loose soil but are less likely to overwinter in these shallower burrows.

In water, metamorphosed salamanders eat snails, bugs, beetles, larval mayflies, dragonflies, caddisflies, and midges. In their adult terrestrial form they are adapted to terrestrial predation feeding on earthworms, insects, small mammals, and amphibians (Whiteman et al. 1994).

**Habitat Conditions within the Federal Lands:** Potential habitat for the tiger salamander within the Federal lands would be found in Parcels N4, N5, N6 L2 and L5. The small pond located in N4 would provide good habitat opportunities for this species. The reservoir at the southeastern edge of N5 may provide some habitat but predatory fish populations may make this feature unsuitable for breeding habitat. In Parcel N6, wetland pockets in the northwest corner would provide some habitat potential, but the relatively fast-flowing Trout Creek would generally not be considered effective habitat for this species. The slow moving channel and adjacent wet pockets in L2 would also provide good potential habitat. In L5, isolated wet pockets associated with Woodfern Creek and its diversions and the wetland area west of reservoir would provide some habitat opportunities.

**Habitat Conditions within the Non-Federal Lands:** Suitable habitat for the tiger salamander on the Non-Federal lands is found within the Hays Placer, B1 and B2. The intermittent surface water found within the wetlands areas of the Hays Placer would provide good habitat opportunities. The small natural water impoundments in the stream channel of B1 would also provide good habitat. The wet areas found within the extreme northwest corner of B2 would provide some limited opportunities for the tiger salamander but this area would generally be of marginal quality for breeding activities. The wetland zone bordering the stream channels along Bonafacio Creeks in Parcels B2 and B3 generally lack pools or other pockets of water that would provide suitable structure for salamander habitat.

**Factors of Concern:** Any activities that occur in or adjacent to breeding sites that cause increased insolation, higher water temperatures, increased sediment loads, and reduced instream coarse woody debris would adversely impact their habitat (Corn and Bury 1989). The latter two conditions can have long-term implications on salamanders. In addition, soil compaction adjacent to breeding sites could impact rodent burrows, where salamanders tend to overwinter. This might cause direct mortality.

**Direct and Indirect Effects:** Covenants would prohibit habitat-altering activities within wetlands that provide suitable habitat for the tiger salamander. Regardless of ownership, any site impacting activities would still have to adhere to the standards set by the Clean Water Act in regards to wetlands, which would further protect these areas. Grazing in suitable habitat could have some effect on this species. Individuals could suffer direct mortality from being trampled by cattle. However, the general grazing approach currently employed by the proponents and the presence of numerous well-distributed watering opportunities, should minimize the overall risks of degrading suitable habitat.

**Cumulative Effects:** Due to the covenants protecting wetlands, it is unlikely that a change in the overall amount or quality of suitable habitat would occur as a result of this exchange. Any potential losses in the quantity or quality of existing tiger salamander habitat that might occur through the loss of administrative control of the Federal lands would be offset, to some degree, by the protective status that would be gained over suitable habitat found within the Non-Federal tracts. Considering this and the low likelihood that significant habitat disruptive activities would occur on the Federal lands, it is unlikely that the implementation of this proposal would result in a cumulative effect to the tiger salamander.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

### **RIO GRANDE CUTTHROAT TROUT**

*(Oncorhynchus clarki virginalis)*

**Status and Distribution:** This species is classified by the USFS as Sensitive in Region 2. The Colorado Natural Heritage Program (1997) ranks the Rio Grande cutthroat trout (RGCT) as G4T3 globally and S3 within the state. This indicates that it is apparently secure on a global basis but quite rare in parts of its range, especially on the periphery and that it is vulnerable within Colorado. The State of Colorado considers the RGCT a species of “special concern”.

The historic range of the Rio Grande cutthroat is not entirely known. It was probably found in all waters presently capable of supporting trout in the Rio Grande drainage. Surveys in Colorado waters found eighty-one populations of the subspecies. Of these, sixty-five are listed as being at a genetic purity level "A"(based on morphometric analyses) (Alves et al. 2002). The distribution of the Rio Grande cutthroat trout is presently limited primarily to headwater tributaries within the subspecies' native range (Sublette et al. 1990). This subspecies is known to occur on the RGNF.

**Life History:** The RGCT is one of several subspecies of cutthroat trout. It typically inhabits clear, cool mountain streams, as well as lakes that do not completely freeze during the winter. Population size is determined primarily by stream size and morphology, wintering habitat, stream productivity, and summer cover for predator avoidance. Presently, most populations of cutthroat trout in the state, especially Rio Grande cutthroat, are restricted to headwater systems (Sublette et al. 1990).

RGCT feed primarily on insects and other invertebrates but also will prey on smaller fish and amphibians. Aquatic invertebrates are most abundant and diverse in riffle areas and the trout will feed heavily in, and especially downstream of these areas (Sublette et al. 1990).

**Habitat Conditions within the Federal Lands:** Potential suitable habitat for the RGCT occurs in N6 and L5. Trout Creek, which bisects N6, was probably historically inhabited by this subspecies, but is now occupied by non-native trout species. Woodfern Creek and Workman Creek in L5 would also have some potential for the RGCT. However, surveys by the Colorado Division of Wildlife did not detect any individuals in these stream systems. Additionally, they classified these streams as too steep to support populations of RGCT (Alves, CDOW 2001, pers. comm.)

**Habitat Conditions within the Non-Federal Lands:** None

**Factors of Concern:** The great reductions in RGCT populations are primarily due to the introduction of non-native fish species and habitat losses. Interbreeding with non-native

trout has resulted in hybridized populations in areas formerly occupied by pure strains of the subspecies. Additional impacts have occurred through over-harvest by anglers. Habitat alterations resulting from cattle grazing, road building, timber harvest and stream de-watering have destabilized stream channels, changed flow regimes and blocked migration routes.

**Direct and Indirect Effects:** Since this species is currently not known to occur within the Federal tracts, this proposal would result in no direct or indirect effects to the RGCT.

**Cumulative Effects:** Implementation of this proposal would result in no cumulative effects to this subspecies.

**Determination:** It has been determined that implementation of this proposal would result in no impact to the Rio Grande cutthroat trout.

### **WOLVERINE**

*(Gulo gulo luscus)*

**Status and Distribution:** The wolverine is classified as an R-2 sensitive species. In 1997 the Colorado Natural Heritage Program (CNHP) ranked this species G4/S1, indicating that wolverine was considered globally secure but might be critically imperiled in the state due to its extreme rarity. However, the CNHP (2002) no longer tracks this species.

The distribution of the wolverine is circumpolar occupying the tundra, taiga, and forest zones of North America and Eurasia (Wilson 1982). In North America it extends as far south as California and Colorado and as far east as Labrador. The presettlement geographic range of this species extends through the montane ecoregions to Arizona and New Mexico (Hash 1987) but it is not known whether these southern occurrences represented reproducing populations or dispersers. At the southern edge of their distribution, they are limited to montane boreal regions, with conspicuous gaps in the Basin and Plains ecoprovinces (Wilson 1982). A northward retreat of wolverine distribution began in 1840 (Hash 1987) and today the wolverine occurs in Montana, Idaho, Wyoming, Colorado, Washington, Oregon and California (Ruggiero et al. 1994).

In Colorado there are a number of old records of wolverine sightings, but very few can be substantiated (Armstrong 1972). Wolverines may never have been historically common in Colorado and current numbers may not be self-sustaining (Nead et al. 1985). The CDOW conducted an inventory using bait stations and remote cameras over 500 sq. miles from 1992-95 to obtain evidence of wolverines. The RGNF was included in this survey. According to the biologist who ran the study, wolverines were not identified at any of the survey stations (Dave Kenvin, DOW biologist, pers comm).

**Life History:** The home range of the wolverine is typically large, varying with geographic location, sex and season. Males range as far as 800 mi<sup>2</sup> while females range 150-200mi<sup>2</sup>. This species uses a wide variety of habitats. "Habitat is best defined in terms of adequate

Exhibit 3  
Biological Evaluation

year-round food supplies in large, sparsely inhabited wilderness areas, rather than in terms of particular types of topography or plant associations" (Kelsall 1981). Carrion of large mammals is a major component in the diet of the wolverine. Small mammals are preyed upon only when this food source is unavailable (Banci 1987). Prey base includes snowshoe hares, porcupines, marmots, ground squirrels and red squirrels. They will also pursue larger prey, primarily ungulates, under conditions, which make these animals vulnerable, such as during deep snows or during calving (Ruggerio et al. 1994).

The wolverine generally maintains a solitary existence except during the breeding season and when females are with young. Den sites are highly variable and selection seems to be associated with the ease to which the site can be adapted for that purpose. These will include hollowed out trees, holes under fallen logs, old bear dens, abandoned beaver dams, root balls, creek beds, caves and boulders. Wolverines generally mate in the fall and young are raised over the winter months. This process can be delayed in the absence of a suitable food base. (Ruggerio et.al.1994)

**Habitat Conditions within the Federal Lands:** N4, N5, N6 and L5 would provide limited opportunities for wolverine habitat. Human presence within proximity to these lands may, however, diminish the overall quality of this habitat for denning and other activities.

**Habitat Conditions within the Non-Federal Lands:** The Hays Placer, B1, B2, B3 and B4 would provide suitable habitat for the wolverine. All of these tracts lie within a large expanse of relatively remote landscape. Breeding habitat would be available in the Hays Placer, and to a limited extent, in B4. All of these areas would provide suitable foraging habitat.

**Factors of Concern:** Habitat fragmentation is a major concern for this species. Wolverines do not appear to tolerate land-use activities that permanently alter habitats, such as agricultural and urban or rural development. These activities may create barriers to movement within the wolverine's habitat.

**Direct and Indirect Effects:** The potential for habitat disruptive activities for the wolverine on the Federal tracts would generally be limited to the periphery of suitable habitat. Covenants would prohibit disturbance to most of the forested area found within these lands. Therefore, any disruptive activities are unlikely to result in habitat fragmentation. The overall suitability of the habitat within the Federal tracts is limited by its proximity to existing human disturbance factors. Occupied residential properties on private lands within the valley and clearcuts and roads that lie above N4, N5 and L5 further diminish the overall quality of this habitat. Due to the extreme rarity of this species in Colorado and the overall low quality of suitable habitat, it is unlikely that wolverine inhabits the Federal tracts. Due to the low likelihood of occurrence and restrictions to disturbance within most of the suitable habitat, it is unlikely that this proposal would result in direct or indirect affect to this species.

**Cumulative Effects:** The Non-Federal tracts provide suitable habitat that is of much higher quality and of larger area than that Non-Federal by the Federal lands. The potential effects relating to a loss of administrative protection in suitable habitat on the Federal lands would

be offset by protection that would be gained over the Non-Federal lands. Considering this, as well as the low probability of wolverine presence on the Federal tracts, implementation of this proposal is unlikely to result in cumulative effects to this species.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

### **AMERICAN MARTEN**

*(Martes americana)*

**Status and Distribution:** The American marten is classified as an R-2 sensitive species. There is no Colorado Natural Heritage Program ranking for this species.

The marten is broadly distributed in North America. It extends from the spruce-fir forests of northern New Mexico to the northern limit of trees in arctic Alaska and Canada, and from the southern Sierra Nevadas of California to Newfoundland Island. In Canada and Alaska, its distribution is vast and continuous, but in the western contiguous United States, its distribution is limited to mountain ranges that provide preferred habitat (Buskirk and Ruggiero 1994).

Martens have been observed throughout the RGNF within the spruce-fir zone and occasionally in other forest types. There have been some inventories conducted across the Forest. In 1992 winter tracking was conducted in the Trout Mountain and Del Norte Peak areas. While no density estimates could be generated, of the two areas, there were more tracks found in the Trout Mountain area, a relatively undisturbed area. The CDOW conducted an inventory from 1992-95 using bait stations and remote cameras over 500 mi.<sup>2</sup>, to obtain evidence of wolverines. Portions of the RGNF were included in the survey. According to the biologist who ran the study, marten were seen on about 80% of the stations (Dave Kenvin, CDOW biologist, pers comm).

**Life History:** In most studies of habitat use, martens were found to prefer late-successional stands of mesic coniferous forests, especially those with complex physical structure near the ground. Xeric forest types and those that lack structure near the ground are used little or not at all (Buskirk and Ruggiero 1994). On the Forest, the mesic conditions can be found in the spruce-fir and mixed conifer forest types.

Complex physical structure, especially near the ground, appears to address three important life needs of martens. It provides protection from predators, it provides access to subnivean space where most prey are captured in the winter, and it provides protective thermal microenvironments, especially in winter (Buskirk and Ruggiero 1994). Structure near the ground may be contributed in various ways. These include coarse woody debris recruited by gradual tree death and fall, coarse woody debris recruited en masse by fire, the lower branches of living trees, rock fields in forests, talus fields above timberline, shrubs, herbaceous plants, squirrel middens, and combinations of these (Buskirk and Ruggiero 1994).

Martens generally avoid habitats that lack overhead cover. These habitats include prairies, herbaceous parklands and meadows, clear-cuts, and tundra (Buskirk and Ruggiero 1994). The size of opening that martens have been observed to cross varies from 10 m to 100 m (33-330 ft) and they have been found in talus fields 3.2 km (2 miles) from the nearest forest (Buskirk and Ruggiero 1994). Fitzgerald et al. (1994) felt that at least 30% canopy cover was necessary for suitable habitat, with an optimum of 40% to 60% for resting and foraging. Clark et al. (1989) described optimum habitat as having 30+% canopy cover in mature old-growth spruce-fir communities with a well-established understory of fallen logs and stumps, and lush shrub and forb vegetation.

The most important prey of martens in the West in winter are forest-dwelling species (red-backed voles (*Clethrionomys* spp.) and squirrels (*Tamiascus* spp.) and herbaceous or riparian species (*Microtus* spp.). In the western United States in winter, the distribution and abundance of these species provide some measure of the value of habitats for foraging. Deer mice and shrews are generally eaten less than expected based on their numerical abundance (Buskirk and Ruggiero 1994).

**Habitat Conditions within the Federal Lands:** Suitable habitat for the marten on Federal tracts would be found in Parcels N4, N6 and L5. However, since martens are most commonly associated with spruce-fir forest in this portion of their range, this would probably not be considered optimal habitat. The forested portions of N2 and N5 represent fragmented or isolated habitat that would probably not sustain or be preferable this species. Due to the relatively early seral stage of the forest in N4, this area would be considered marginal in its suitability for marten at this time. However, as these forests mature, habitat conditions would improve. The mixed conifer forests found on the upland slopes above Trout Creek would provide suitable habitat for this species in N6. L5 comprises a mix of early and late seral conifer forest intermixed with clumps of aspen. The overall structural quality of marten habitat within this tract is fair to good, although significant portions of the area would be considered marginal habitat, at this time, due to their structural characteristics.

**Habitat Conditions within the Non-Federal Lands:** The late seral spruce-fir forest cover found in the Hays Placer would provide excellent marten habitat. The combination of mature forest with high canopy closure and high levels of coarse down woody debris would provide the preferred structural characteristics of breeding, foraging and concealment habitat for the marten.

**Factors of Concern:** Activities such as timber harvesting, road building or development can result in a reduction in coarse woody debris and reduce or eliminate overhead cover, which could reduce the suitability of the habitat for martens. The increase in human access and activity could cause a shift in how a particular habitat is used.

**Direct and Indirect Effects:** Covenants, designed to protect designated lynx habitat, would prohibit disturbance to most of the forested habitat found within the Federal lands. However, some development is possible at the periphery of suitable habitat (L5). Some

slight disturbance to potential marten habitat could occur through implementation of this proposal but overall potential for direct and indirect effects would be limited.

**Cumulative Effects:** The Non-Federal tracts, particularly the Hays Placer, provide suitable habitat that is of much higher quality than that Non-Federal by the Federal lands. The potential effects relating to loss of administrative protection in suitable habitat on the Federal lands would be offset, to some degree, by protection that would be gained over suitable habitat on the Non-Federal lands. Therefore, considering the limited potential for significant habitat disruption on the Federal tracts and the protection that would be gained on the Non-Federal tracts, it is unlikely that this proposal would result in cumulative effects to the American marten.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

#### **DWARF SHREW**

*(Sorex nanus)*

**Status:** The Colorado Natural Heritage Program (1997) ranking for this species is G4/S2, which indicates that it is apparently secure globally, but may be imperiled in the state. The dwarf shrew is classified as Region 2 Forest sensitive species.

**Distribution:** The dwarf shrew is Colorado's smallest mammal. The species' range is confined to the Rocky Mountain Region, from Montana to southern New Mexico. In Colorado, the species is known to inhabit elevations above 5,500 ft (1,680 meter) in the southern mountains and collections have been made along the Arkansas River, in Mesa Verde National Park, and near Durango, Colorado.

**Life History:** Very little is known about the ecology, behavior, or reproductive cycles of this species in Colorado (Fitzgerald et al., 1994). The dwarf shrew has been collected in a variety of habitat types from the edges of alpine and subalpine rockslides; spruce-fir bogs; coniferous forests; sedge marsh; dry, brushy hillsides; and open woodland (Fitzgerald et al. 1994). Apparently the shrew can tolerate arid conditions, as some captures were 0.5 mile from water.

Although little is specifically known about the dwarf shrew, there are some common life history traits shared by the Soricidae family. Besides sharing many physical attributes, all Colorado shrews are terrestrial. They typically live in shallow tunnels or create runways in the litter on the surface of the soil (Fitzgerald et al. 1994). They may use the tunnels of other moles or voles. Shrews seldom live more than 1 year. Their high metabolic rate requires that they feed almost constantly, and they will eat practically any animal matter available. This includes small mammals, but generally consists of insects and other small invertebrates.

**Habitat Conditions within the Federal Lands:** Considering the general nature of habitat preferences for the dwarf shrew, all of the Federal tracts would offer some suitable habitat for this species.

**Habitat Conditions within the Non-Federal Lands:** Considering the general nature of habitat preferences for the dwarf shrew, all of the Non-Federal tracts would offer some suitable habitat for this species.

**Factors of Concern:** Given the absence of information for this species, factors of concern, as they relate to habitat disruptive activities, are not well understood. Activities causing compaction could affect tunnel structures. Actions that would affect the amount and distribution of litter and coarse woody debris, could affect available hiding cover. In general, any management activity, which reduces the complexity and diversity of vegetation and woody debris in an area, will reduce the diversity of insects, the primary food source for dwarf shrew.

**Direct and Indirect Effects:** Habitat disruptive activities that could occur on the Federal lands as a result of this proposal include residential and road development and increased grazing. However, these activities would be limited to a relatively small proportion of the overall suitable habitat for this species. Covenants would limit the overall potential for habitat disruptive activities that could occur on the Federal tracts within the forested areas, wetlands and floodplains. It is not anticipated that the current grazing approach currently used on the adjacent private lands would change significantly so negative effects of cattle, such as trampling and compaction would be not expected to increase substantially as a result of this proposal. However, individuals and relatively small portions of existing habitat could experience some negative effect.

**Cumulative Effects:** The Non-Federal tracts provide a significantly greater area of potential shrew habitat than that found on the Federal lands. The protective status that would be gained over these lands through this proposal would tend to offset potential habitat loss and degradation on the Federal tracts. Considering the protection that would be gained on the Non-Federal tracts and the low potential for habitat disruptive activities over most of the Federal tracts this proposal is unlikely to result in cumulative effects to the dwarf shrew.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

#### **TOWNSEND'S BIG-EARED BAT**

*(Corynorhinus/Plecotus townsendii)*

**Status and Distribution:** The Colorado Natural Heritage Program (2002) classified this bat at the global level as G4T4, which means that it is widespread, abundant and apparently secure globally, though it may be quite rare in parts of its range, especially at the periphery. Within Colorado, it is ranked S2, which indicates populations within the state are rare or uncommon or that it is imperiled throughout its state range because of specific factors.

Exhibit 3  
Biological Evaluation

Townsend's big-eared bat (TBEB) occurs throughout the west, and is distributed from the southern portion of British Columbia south along the Pacific coast to central Mexico and east into the Great Plains, with isolated populations occurring in the south and southeastern United States. The presence of this species has been documented sporadically across the western and southeastern portions of Colorado. Armstrong (1994) does not indicate records of occurrence in any of the counties involved in this proposal. However, occurrence has been documented in surrounding counties.

**Life History:** Biotic communities inhabited by the TBEB are diverse and include coniferous forest and woodland, deciduous riparian woodland and semi desert and montane shrublands. Physical habitat, especially the presence of caves or mines suitable for day and night roosting and for hibernation, is probably more important than the vegetative characteristics of habitat. (Armstrong 1994) Roosting habitat consists most frequently of caves and abandoned mines but also includes buildings, bridges, rock crevices, hollow trees, and beneath the bark of damaged or dead trees. Trees serve primarily as temporary roosts or daytime roosts for non-breeding bats. (WBWG 1998)

TBEB breeds in late fall and winters in mixed-sex colonies ranging in size from a single individual to colonies of several hundred. Females exhibit "delayed fertilization" in which conception is delayed for several months after breeding has occurred. Gestation lasts 50 to 60 days and a single young is born in May or June. Females assemble into nursery colonies of a few to several hundred individuals, forming dense clusters to take advantage of shared metabolic heat. Warm nursery sites are essential for reproductive success (Humphrey and Kunz 1976). At summer roosts, individuals do not hide in cracks or crevices, but rather hang exposed from the roof or walls of the chamber, taking flight if disturbed.

TBEBs are very sensitive to fluctuations in temperature and humidity and move in response to them. Hibernacula with the appropriate stable temperature and humidity appear to be a limiting resource for this bat. Both males and females lose half their body weight before spring, leading to the suggestion that winter mortality may be an important factor limiting populations (Humphrey and Kunz 1976). Furthermore, they are easily disturbed and will leave caves or mines where human harassment occurs.

These bats are late flyers, generally emerging from the roost well after dark. It is a moth specialist with over 90% of its diet composed of moths (WBWG 1998). Caddis flies also appear to be a staple of their diet (Freeman 1984). This species often forages over water along the margins of vegetation and over sagebrush (Fitzgerald et al. 1994).

**Habitat Conditions within the Federal Lands:** There are no known caves or mines located within the Federal lands so suitable hibernacula and preferred breeding and roosting habitat is probably absent. Suitable roosting habitat within the analysis area would be limited to hollow trees and snags, which are found in N2, N4, N5, N6 and L5. Rock structures located in N2 and L5 may contain natural caves but were not apparent during field surveys of these areas. The riparian corridor and forested habitat would provide suitable foraging areas for this species.

**Habitat Conditions within the Non-Federal Lands:** The structural characteristics of TBEB habitat are present on the Carson Properties (trees at the Hays Placer and mining structures at the Continental Divide Claims). However, these areas lie above the typical elevational limit for this species.

**Factors of Concern:** The primary threat is almost certainly disturbance or destruction of roost sites due to such activities as recreational caving, mine reclamation, and renewed mining in historic districts. Additionally, the removal of snags could eliminate potential roost sites. This species is very sensitive to disturbance events and has been documented to abandon roost sites after human visitation. Both roosting and foraging habitat may be impacted by timber harvest practices. Pesticide spraying in forested and agricultural areas may affect the prey base (WBWG 1998).

**Direct and Indirect Effects:** Due to the absence of primary roosting structures, such as caves and mines, roosting habitat would be limited to temporary and day use sites offered primarily by trees. No known breeding habitat is present on the Federal lands. Most of the forested habitat within the Federal lands will be protected from disturbance by covenants designed to minimize impacts to lynx habitat. Some slight alteration of the forest cover (approximately 3 acres) could occur on the lower slopes of the L5 parcel. This could result in the removal of some snags or hollow trees and may result in a potential for some increased human activity within proximity to potential roost sites. It is unlikely the proposed action would result in changes that would represent a significant loss of roosting habitat or foraging habitat.

**Cumulative Effects:** The proposed land exchange may result in a slight decrease in overall temporary and summer roosting habitat for the TBEB.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

#### **AMERICAN PEREGRINE FALCON**

*(Falco peregrinus anatum)*

**Status:** The U.S. Fish and Wildlife Service (FWS) listed the American peregrine falcon as endangered in October of 1970. Due to success in recovery it was de-listed in 1999. It is currently classified as an R-2 Forest sensitive species

**Distribution:** The peregrine falcon historically bred in nearly every state in the Union. It thrived for many decades in North America and in the Old World despite extensive persecution by man and human trespass against its habitat. But in the early 1950's the breeding populations throughout much of the Northern Hemisphere began an unprecedented and precipitous decline. Three subspecies of peregrine have been described for North America. The American peregrine falcon, which occurs from Mexico north to the arctic

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tundra, has shown the most drastic decline (USDI 1984). Peregrine falcons use all forested ecosystems in Colorado during spring, summer and fall, but are still relatively rare in the State. There are active peregrine eyries on the RGNF. However, none of these occur on the Federal or Non-Federal tracts, nor do they lie within the foraging range of any known nesting site.

**Life History:** Peregrine habitat may be divided into (1) nesting sites--the cliff or substrate upon which the eggs are laid and the young are reared; (2) hunting sites--the area where the food is obtained; and (3) migration and wintering areas. Peregrines in the Rocky Mountain and Southwest region now persist mainly on dominant cliffs, typically exceeding 200 feet in height. Nests are situated on open ledges or potholes and a preference for a southern exposure increases with latitude (USDI 1984). On the RGNF, peregrines nest in the mid to upper elevational ranges.

The peregrine falcon preys on a wide range of avian species. It hunts over any forest type and uses large hunting territories, extending to a radius of 12 to 15 miles from the nest sites. The falcon does not require a forest cover. It uses cliffs, rock outcroppings, or other steep rocky areas for resting cover. A peregrine's hunting range is often skewed to favor watercourses (Towry 1984). Preferred hunting habitats include such areas as cropland, meadows, river bottoms, marshes, and lakes because of the abundant bird life typically found there (USDI 1984).

Pairs are usually present on the nesting cliff by mid-March. The young remain in the area several weeks after fledging in mid-June to mid-July, during which time they are fed and defended by both adults (USDI 1984). Because peregrines are extremely sensitive to disturbance during the egg-laying, incubation, and brood-rearing periods, protection from disturbances is essential to reproductive success (Towry 1984).

A variety of predators are known or suspected to prey on peregrines or their eggs in North America. These include great horned owls, prairie falcons, raccoons, coyotes, foxes, golden eagles, ravens and crows, gray wolves and arctic ground squirrels, ringtails, striped skunks, bobcats, opossums, black snakes, and possibly ospreys (USDI 1984).

**Habitat Conditions within the Federal Lands:** The cliffs found above the Rio Grande in N2 would provide the structural characteristics for breeding habitat for this species. However, the proximity to the highway and other disturbance regimes, such as anglers and boaters, would probably make this area generally unsuitable for the peregrine. All of the Federal lands would provide some suitable foraging habitat for this species.

**Habitat Conditions within the Non-Federal Lands:** No nesting habitat is present on any of the Non-Federal tracts. Suitable foraging habitat is found within most of these lands.

**Factors of Concern:** Significant alterations in vegetative structure can have an impact on avian species richness and density. This could result in lowering the potential prey base for

the peregrines. Peregrines are extremely sensitive to human disturbance in proximity to active nests and can result in abandonment of eggs or nestlings.

**Direct and Indirect Effects:** This proposal is unlikely to have any effect on suitable breeding habitat for the peregrine. Covenants limiting disturbance in forested cover and wetlands would substantially reduce the potential for any adverse effects to foraging habitat. Considering these factors and the absence of known eyries in proximity to the Federal lands, this proposal is unlikely to result in direct or indirect effects to this species.

**Cumulative Effects:** Due to the absence of suitable breeding habitat on the Federal lands and the low potential for adverse effects to foraging habitat, there would be no cumulative effects to the peregrine falcon as a result of this proposal.

**Determination:** It has been determined that implementation of this proposal would result in no impact to the peregrine falcon.

#### **FERRUGINOUS HAWK**

*(Buteo regalis)*

**Status:** The ferruginous hawk is classified as a R2 Forest sensitive species. The Colorado Natural Heritage Program (2002) ranking for this species is G4/S3B, S4N which indicates that this species is apparently secure globally, and rare with respect to breeding and secure with respect to non-breeding within the state. BBS data indicates an increasing population trend on both a statewide and continental scale. However, because of the large degree of variance, it is unknown how big an increase there might be (Colorado Bird Observatory 1997).

**Distribution:** This species breeds from eastern Washington, southern Alberta, and southern Saskatchewan south to eastern Oregon, Nevada, northern and southeastern Arizona, northern New Mexico, north-central Texas, western Oklahoma, and Kansas. It winters primarily from the central and southern parts of breeding range south to Mexico (DeGraaf et al. 1991). For Colorado, Andrews and Righter (1992) considered the species a resident that was common in winter in eastern plains, and rare or uncommon in northeastern Colorado and the San Luis Valley. There are no recorded sightings of the ferruginous hawk on the Divide Ranger District. There are several recorded fall and winter sightings at several locations on the Pagosa District of the San Juan National Forest, which lies adjacent to the Divide District.

**Life History:** The ferruginous hawk is the largest hawk in North America. Adult females may be up to one-and-a-half times larger than the males. They are found in grasslands and semi-desert shrublands, and rare in piñon-juniper woodlands. Breeding birds nest in isolated trees, on rock outcrops, structures such as windmills and power poles, or on the ground.

Ferruginous hawks depend on only a few prey species. In the western states, their diet includes prairie dogs, cottontails, black-tailed hares, ground squirrels, and pocket gophers.

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Some bird species are captured during the breeding season and fed to the nestlings. Winter residents concentrate around prairie dog towns, which are a primary prey for this species in Colorado. Winter numbers and distribution fluctuate greatly according to the availability of prairie dogs (Andrews and Righter 1992).

Ferruginous hawks hunt throughout the day, though in some areas they are crepuscular (active at dusk and dawn) because the diurnal patterns of prey species (Johnsgard 1990). They use a variety of hunting methods including: perch and pounce, hunting from a perch with short flights to capture prey; and ground ambush. Occasionally, these hawks hunt while in flight or while hovering into the wind. In addition to communally roosting in the winter, the ferruginous hawk is known to hunt communally.

The breeding season begins with nest building or refurbishing in March or April. Nests consisting of old twigs, stems, branches of sagebrush, and litter from the ground, including dried manure, and often measure greater than about 1 meter (3.28 ft) in diameter and height. Nests are located at various heights, from ground level to greater than 19.8 m (65 ft) above the ground. This species prefers elevated nest sites, such as boulders, low cliffs, haystacks, utility structures, artificial nesting structures, and trees. In areas where elevated sites are not available, they will nest on level ground. (Bechard and Schmutz, 1995)

**Habitat Conditions within the Federal Lands:** The structural characteristics of suitable habitat are present in N1 and N2. However, records do not indicate that the general area lies within the typical range of this species.

**Habitat Conditions within the Non-Federal Lands:** B1, B2, B3 and B4 lie in large expanses of grassland and shrubland that would be considered suitable habitat for the ferruginous hawk. However, there are no records that indicate the use of the general area by this species. Ferruginous hawks have been reported in the San Luis Valley so occasional use might occur. No evidence of prairie dogs was found during field surveys of these areas.

**Factors of Concern:** Agricultural development is considered the most serious threat to this species. Any activities that would affect the availability of prairie dogs and other prey species would impact the quality of habitat for the ferruginous hawk. Individuals are also sensitive to human disturbance in proximity to nesting areas.

**Direct and Indirect Effects:** Neither the Non-Federal or Federal tracts associated with this proposal lie within the normal or active breeding range for this species. These areas may receive some casual use during the non-breeding season and during winter migrations. Activities that could occur on the Federal lands may potentially affect species that would be considered prey. However, due to the probable low frequency of use by the ferruginous hawk, it is unlikely that this proposal would result in any direct or indirect effects.

**Cumulative Effects:** Considering the low probable frequency of use by this species on the Federal lands and the offsetting suitable habitat that would gain administrative protection from habitat disruption of the Non-Federal lands, there would be no cumulative effects to the ferruginous hawk.

**Determination:** It has been determined that implementation of this proposal would result in no impact to the ferruginous hawk.

### **OSPREY**

*Pandion haliaetus*

**Status and Distribution:** The osprey is a Forest sensitive species. The Colorado Natural Heritage Program (1997) classifies the osprey as globally secure (G5), but is ranked vulnerable (S3) in Colorado based on the small number of actual breeding localities and small population sizes. BBS data indicates an increasing population (considered reliable since there is a low variance involved) on a continental scale; there is no statewide trend information (Colorado Bird Observatory 1997).

Ospreys are Neotropical migrants that winter in the southern U.S., Mexico and south to Chile and northern Argentina (DeGraaf et al. 1991). They breed from northwestern Alaska and northern Yukon to central Labrador and Newfoundland, south locally to Baja California, central Arizona, southern Texas, the Gulf Coast and southern Florida.

As of 1992 there were at least 15 confirmed or probable breeding records in Colorado at an elevation range of 8,000 to 10,000 feet (Andrews and Righter 1992). These sites are in the mountains nearly statewide, but concentrated in the northern half of the state. The largest concentration is at reservoirs in eastern Grand County. Ospreys have been observed at larger reservoirs on the Forest (e.g., Rio Grande Reservoir) but no breeding or foraging activities have not been reported on the Rio Grande or the relatively small reservoirs in proximity to the Federal lands involved in the exchange proposal.

**Life History:** Osprey are closely associated with rivers and lakes where there is adequate supplies of fish. They do not maintain large exclusive breeding territories and defend only the immediate area around the nest site thus enabling high nest densities in some cases (Dobkin 1992). Ospreys nest primarily in large trees (either live or dead). These trees typically exhibit broken tops. Nests are typically located 60 feet or more above ground to provide good visibility and security. They also nest on human-built structures, and occasionally on cliff ledges. The nest may be a considerable distance from foraging areas. Nests may be reused for decades with new material added annually, often resulting in very large structures (Terres 1991).

Osprey feeds nearly exclusively on fish, captured by hovering over water and then diving, or by snatching prey directly from water following low flight. They rarely take rodents, birds or other small vertebrates and crustaceans. A brood of 3 requires approximately six pounds of fish daily (Ehrlich 1988).

**Habitat Conditions on the Federal Lands:** Potential foraging habitat for the osprey is present along the Rio Grande through the analysis area, as well as on the approximately 23-acre reservoir on Rio Oxbow Ranch (adjacent to Parcel L5) and the approximately 10-acre

reservoir located near Parcels N5 and N6. Nesting structures along the Rio Grande are generally absent with the exception of the cliffs located in the southeast corner of N2. The forest cover found on Parcels N5, N6 and L5 would provide potential nesting opportunities for this species.

**Habitat Conditions on the Non-Federal Lands:** None

**Factors of Concern:** Removal of large trees, live or dead, near lakes could reduce potential nesting sites. Although osprey have a demonstrated tolerance to human activity, human harassment or disturbance near the nest during nesting can result in losses of egg viability or mortality to young by keeping adults off the nest for extended periods of time (Zarn 1974).

**Direct and Indirect Effects:** There are no historic or recent reports of osprey using the general project area for breeding, roosting or foraging activities. It is, therefore, unlikely that the proposed action would affect any existing osprey territories or foraging areas. However, the habitat quality for future utilization of the general area by osprey could be slightly diminished. Covenants designed to protect wetlands and floodplains, would minimize potentially adverse disturbance regimes along the river that might disrupt foraging activities. These covenants would also minimize potential disturbances to possible future breeding activities on the cliff structures in Parcel N2. Although most of the forest cover associated with the Federal lands, in proximity to suitable habitat, would be protected by covenants, disturbance to suitable nesting sites could occur on Parcel N5 and the lower slopes of L5. The forested areas on N5 would not be protected by covenants. However, the general commercial quality of the timber is low and most of the forest cover is located on steep slopes generally unsuitable for logging. Therefore, there is little likelihood of disturbance to this forest cover. Disturbances on the lower slopes of L5 would be limited to 5 residential sites, which could potentially affect an estimated 3 acres of forest cover. The vast majority of the forest edge along the L5 parcel would be subject to little future disturbance and would continue to provide suitable nesting opportunities. Therefore, based on the low potential for significant disturbance of existing habitat and the apparent absence of current use of the project area by osprey, it is unlikely that this proposal would result in direct or indirect effects to this species.

**Cumulative Effects:** Since there are no current or historical records of use by this species on the affected lands and there is little likelihood of habitat loss, it is unlikely that implementation of this proposal would result in cumulative effects to the osprey.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

**NORTHERN GOSHAWK**

*(Accipiter gentilis atricapillus)*

**Status and Distribution:** The goshawk is currently classified as an R-2 sensitive species. In the fall of 1997 the FWS initiated a status review of the species with the intent of making

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a determination by the summer of 1998 about the need for listing. The Colorado Natural Heritage Program (1997) ranking is G5/S3B, which indicates it is demonstrably, secure globally, but is considered vulnerable in the state during the breeding season. There is no trend information for Colorado and the national data indicates a possible downward trend. However, the data is unreliable because of high statistical variance (Colorado Bird Observatory 1997).

The goshawk is Holarctic in distribution. In North America, it occurs from central California, Arizona, northern New Mexico, north and northeast through New Mexico, Colorado, and South Dakota, east across the southern Lake States and south into the Appalachian Mountains to North Carolina (Braun et al. 1996). This subspecies occurs from the northeastern U.S. across the boreal forests of Canada to Alaska, and southward through the upland forests of western U.S. (Reynolds et al. 1992). In Colorado, it is considered a rare to uncommon resident in foothills and mountains (Andrews and Righter 1992). It has been observed throughout the RGNF in a variety of forest cover types.

**Life History:** Reynolds et al. (1992) called the species a forest generalist because it occurs in all major forest types (coniferous, deciduous, and mixed). They also noted that because of its relatively large body size and wingspan, the goshawk seldom uses young dense forests. The reasoning was there would be few large trees in which the goshawk could place its nests, and there would be insufficient space in and below the canopy to facilitate flight and capture prey.

Reynolds et al. (1992) identified three components of a goshawk's nesting home range: nest area, post fledging-family area (PFA), and foraging area. Nest areas have a relatively high tree canopy cover and a high density of large trees. They range in size from 20-25 acres and are either on slopes with northerly exposures or in drainages or canyon bottoms protected by such slopes. Shuster (1980) looked at nests in Colorado and concluded the following with respect to nest site preference: there appears to be a preference for nesting on gentle north or east facing slopes or benches, basal area for aspen should be 99-152 square feet/acre and for pine 52-88. The understory is typically sparse and nests are seldom found below 2300 m. (8250 ft.) elevation. However, a number of nests have been located on the San Juan National Forest at lower elevations. He also found that nests are seldom further than 275 m (907 ft) from water.

Shuster (unpubl.) also surveyed 28 nesting sites on the San Juan NF during the 1980s. He found that 22 of them were in aspen stands, generally in trees greater than 14" in diameter. Six of the nests were in ponderosa pine stands, only one of which was in a large "yellowbark" tree and the others were in younger and smaller pine trees (14-24" in diameter). He seldom found a nest in a stand that had any significant amount of understory, including sapling tree species or shrubs. For this area he found the basal area for aspen to be 120-160 square feet/acre and 90-110 feet for pine. Of the identified goshawk nests on the Rio Grande National Forest, seven of eight are located in aspen stands and one in a spruce-fir stands (Gomez 2003, pers. comm.).

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Beyond the nest area is an area described as the PFA (Reynolds et al. 1992). It appears to correspond to the territory of a goshawk pair, and represents an area of concentrated use by the family from the time the young leave the nest until they are no longer dependant on the adults for food. The PFA consists of a mosaic of large trees, large snags, mid-aged forests, small openings with a herbaceous understory, and large, downed logs (Graham et al. 1994). The size of the PFA in the literature has ranged from 120-240 ha (300-600 ac.) (Graham et al. 1994). Unfortunately, none of the work on this aspect has been done in Colorado so it is unknown what the size of the typical PFA might be on the Forest.

The foraging area lies beyond the PFA and consists of forests in older age classes that are relatively open (40-60% canopy cover) with well-developed herbaceous and shrubby understories. Large tree components (live trees, snags, and downed logs) are scattered throughout the foraging area (Reynolds et al. 1992). The literature suggest a foraging area ranging in size from 2000-2400 ha (5000-6000 ac.) (Graham et al. 1994). Since none of this research was performed in Colorado it is not known if this accurately reflects the typical foraging territory in southwest Colorado.

Goshawks are predators of forest birds and mammals (e.g., robins, flickers, squirrels, and cottontails). While there are variances between regions on type of prey, the common prey species tend to reside on the ground or in the lower portions of the tree canopy (Reynolds et al. 1992). The implications of this are that in areas that have tall and very dense understories, goshawk populations may be effectively diminished since there would be more cover for the potential prey species to hide and escape (Reynolds et al. 1992).

**Habitat Conditions within the Federal Lands:** Suitable goshawk habitat is present within all the forested habitats located in N4, N5, N6 and L5. However, suitable nesting habitat may be limited to localized areas within these tracts.

**Habitat Conditions within the Non-Federal Lands:** The Hays Placer may have some limited opportunity for goshawk habitat. This species is known to use spruce-fir in portions of its range, but typically in association with aspen, which is generally absent within this tract.

**Factors of Concern:** Given the goshawks preference for denser, late-successional forest stands for nesting, a change in the structure could have a negative impact on nesting success. These late-successional stands also play a role in the habitat needs for the prey species, which could also be negatively impacted by changes in the forest structure. Goshawks also tend to favor habitats where human disturbance is minimal.

**Direct and Indirect Effects:** Most habitat disruptive activities, such as residential development or timber harvesting, within suitable goshawk habitat would be prohibited on the Federal lands through covenants. Some limited disturbance could occur on the edge of suitable habitat on the lower slopes of Parcel L5 with the construction of up to five residential dwellings. It is estimated that approximately 3 acres of surface disturbance within suitable habitat could occur here with additional disturbance occurring through increased human presence. Considering the goshawks large territory size this could

potentially affect one breeding territory, but would not eliminate breeding opportunities within the general area.

**Cumulative Effects:** Considering past, present and future activities within the planning area, implementation of this proposal may result in small additional loss of suitable breeding and foraging habitat for the northern goshawk.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

### **OLIVE-SIDED FLYCATCHER**

*(Contopus borealis)*

**Status and Distribution:** The olive-sided flycatcher is currently classified as an R-2 sensitive species. It is also currently listed as Species of Management Concern in each of the seven regions of the U.S. Fish and Wildlife Service. The olive-sided flycatcher was previously listed as a Federal Candidate (Category 2) species prior to discontinuance of the Category 2 list. The Partners in Flight Conservation Priority Score for this flycatcher is 24 (very high priority). BBS data show significant declines for all continental, national and regional analyses and for most state and physiographic region analyses (Altman 1997). Continental declines have been significant (4%), with extremely low variance (Colorado Bird Observatory 1997). BBS trend data for Colorado is inconclusive because of high variance. The Colorado Natural Heritage Program (1997) rank was “watch-listed” but CNHP does not currently track this species (CNHP 2002).

This flycatcher breeds only in North America. The western North America breeding range extends south from south central Alaska eastward through Canada to north central Manitoba. It extends south in the Rocky Mountains to the higher elevations of northeastern Arizona, northern New Mexico, and western Texas, and the Sierra Nevada Mountains south to northern Baja California (Altman 1997). The primary wintering range of the olive-sided flycatcher, a long-range neotropical migrant, is Panama and the Andes Mountains of north and western South America (Fitzpatrick 1980).

In Colorado, the olive-sided flycatcher is a montane summer resident at elevations of 7,000 to 11,000 ft. (Andrews and Righter 1992). It occurs on all districts of the Rio Grande National Forest. There have been no structured Forest-wide inventories conducted specifically for this species.

**Life History:** Olive-sided flycatcher breeding habitat in the west is primarily mature spruce-fir, Douglas fir and, less often, other coniferous forests, montane and foothill riparian and aspen forests in the 7,000 to 11,000 feet elevational range (Andrews and Righter 1992). Within these habitats it occurs primarily (Altman, 1997):

- 1) Within forest burns where snags and/or tall, residual live trees remain

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- 2) Near water along the wooded shores of streams, lakes, rivers, beaver ponds, bogs and muskegs, often where standing dead trees are present
- 3) At forest edges near natural or man-made openings in the forest
- 4) In open or semi-open forest stands with a low percentage of canopy cover, rather than in the forest interior or beneath the forest canopy.

Additional important habitat in the western mountains includes scree or talus slopes with forest patches or clumps of tall trees and steep canyon walls with tall perches providing wide-ranging vistas above the surrounding forest canopy. Tall trees, trees with spiked tops or high conspicuous dead branches and dead snags, as well as adequate live trees for nesting sites, are important components of all nesting habitats. The affinity for unusually large trees for perching may be a limiting factor in its abundance and distribution (Finch 1992). During migration it occurs in all types of wooded habitats. In Northern New Mexico they return in mid-April and are usually gone by early September (Ligon 1961).

The nest site and large territory is aggressively defended by both sexes against natural enemies and man. It will drive away many other species of birds from its territory (Terres 1991 and The Nature Conservancy 1995). Selater (1912) described the olive-sided flycatcher as being never very abundant. Its quarrelsome and unsociable nature and its aggressive behavior may account for its large territories and subsequent low densities. Altman (1997), in a summary of 53 situations, found nesting pairs to be well spaced within their suitable habitats and that a relatively large territory was required. He also found that though territory size was variable, most were in the 20-40 acre range, with the larger territories being 90 to 100 acres.

In west central Colorado, the olive-sided flycatcher occurred in higher densities in stands with low overstory canopy, and was absent as the overstory coverage approached 100 per cent (Scott and Crouch 1988). A 1994 spruce/fir habitat-relationship study on the Rio Grande National Forest found that the flycatcher did not respond to particular patch sizes, shapes, or structural stages (Carter 1995). It was assumed that the presence of snags was the most important habitat attribute.

Nests have been reported at forest edge but none have been described as occurring within the forest interior (Hutto 1995 and Altman 1997). Nests are well hidden in a cluster of needles and twigs on a horizontal branch of a live conifer, well away from the trunk and usually high off the ground (Ehrlich et al. 1988). Nest heights in western North America are usually 4 to 67 feet (Altman 1997). It is a rare cowbird host (Ehrlich et al. 1988). Limited data indicates strong site fidelity at the wintering and breeding grounds (Altman 1997).

The olive-sided flycatcher is an aerial insectivore that forages from a high prominent perch mostly at the top of a snag or the dead tip or uppermost branch of the tallest trees where it flies out (sallying or hawking) to capture a flying insect, and then returns to the same or another prominent perch. Unlike other flycatchers it is entirely restricted to sallying or hawking for prey (Eckhardt 1979). Its foraging behavior requires exposed perches and unobstructed air space, thus tall trees and open canopy provide a better environment than closed canopy forest. Bees, wasps and flying ants make up a high percentage of their diet.

**Habitat Conditions within the Federal Lands:** Suitable habitat for the olive-sided flycatcher on Federal lands is found within localized areas on the Federal lands in N2, N4, N5, N6 and L5. The forest edge within the isolated blue spruce stand in N2 would provide some suitable habitat. However, it is not known if the isolated nature of this forest cover would limit its use by this species. The forest edge in N4 and N6 would provide habitat opportunities for the olive-sided flycatcher, but the low snag densities found along the edge between forest and openings would limit current habitat quality. The interior forest within these tracts has a relatively dense forest cover that may diminish the overall quality of habitat in these areas. The open forest cover in N5 would provide good foraging habitat but may be limited somewhat by the general low density of snags. Suitable habitat in L5 would be limited primarily to the lower slopes at the edges of the forest cover. Snag densities are intermittently high in the forest interior but much less prevalent at the forest edge, where the stand age tends to be lower.

**Habitat Conditions within the Non-Federal Lands:** Suitable habitat for the olive-sided flycatcher is found along the forest edge in the Hays Placer and in B4. The general absence of perching opportunities in the other Non-Federal parcels would make them generally unsuited to this species.

**Factors of Concern:** Loss of preferred perches such as tall snags, spiked tops or high conspicuous dead branches in the overstory could reduce the suitability of habitat. Reductions of habitat with a low percentage of canopy cover or edges where there is a juxtaposition of late and early successional forest may be harmful to this species.

**Direct and Indirect Effects:** Patent restriction would protect most of the suitable olive-sided flycatcher habitat on the Federal lands. However, activities such as development, occurring at the edge of forest and open habitat could disrupt breeding and foraging activities. Due to the low level of anticipated disturbance it is unlikely that this proposal would result in abandonment of the area, but may result in alterations in current usage patterns by individuals of this species.

**Cumulative Effects:** Implementation of this proposal may result in a slight decrease in suitable habitat within the Federal lands. Potential losses in habitat would be offset, to some degree, by the administrative control that would be gained over suitable habitat found on the Non-Federal lands in the Hays Placer and in B4.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

#### **FOX SPARROW**

*(Passerella iliaca schistacea)*

**Status and Distribution:** The fox sparrow is classified as an R-2 sensitive species. There is no Colorado Natural Heritage Program ranking for the species. According to BBS trend

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data, the population on the continental scale is considered stable (Colorado Bird Observatory 1997) and an increasing trend in Colorado (Sauer 2001).

The fox sparrow is widely distributed throughout Alaska, Canada, and as far south as southern California. In Colorado, two field identifiable forms are recognized (Andrews and Righter 1992). The Rocky Mountain form, subspecies *P.i. schistacea*, inhabits the RGNF.

**Life History:** This sparrow breeds in riparian willow shrublands and wet, willow-grown meadows and occasionally other shrubby habitats at elevations ranging from 7,500 to 11,000 feet (Potter and Roth 1998). In migration and during winter, it will occur in wooded riparian areas, as well as upland habitats (Andrews and Righter 1992). It has nonspecific nesting requirements, needing only dense shrubbery undergrowth (DeGraaf et al. 1991). Nests are usually in shrubs near the ground (less than 6 feet high), but may be on the ground or as much as 20 feet up in the canopy.

Males sing from tops of small trees, usually young conifers when available, and other perches projecting above the shrubby areas in which they nest. (Grinnell et al. 1930, Grinnell and Miller 1944, Rising 1996). Females will give broken-wing display near a nest (Rising 1996), and adults will sometimes use the same defense strategy in defense of young fledglings (Ehrlich et al. 1988). Feeding occurs on the ground and consists primarily of seeds, but insects also are consumed (DeGraaf et al. 1991, Terres 1991). Movement within their territories occurs through leaf litter and brush-covered alleyways. No reference to territory size was found, but it is assumed to be a few acres in size, similar to other sparrows.

**Habitat Conditions within the Federal Lands:** Suitable habitat for the fox sparrow is found in N6, L2, L3, L4 (adjacent to Highway 149), and L5 primarily in shrubby habitat dominated by willow in riparian areas. There is some limited potential for habitat in L1 and B4, but the sparse and discontinuous shrub component would provide only marginal breeding habitat for this species.

**Habitat Conditions within the Non-Federal Lands:** Suitable habitat on the offer lands is found along the stream corridors on B1, B2, B3 and in the northern 1/3 and eastern and western edges Hays Placer. The willow dominated wetlands and stream edges in the Hays Placer offer a relatively large expanse of suitable habitat for this species.

**Factors of Concern:** Any impact to shrub dominated riparian areas is of concern due to the potential degradation of both nesting and foraging habitat.

**Direct and Indirect Effects:** Covenants would prohibit disruption of the wetlands and floodplains found on the Federal lands from activities such as development. There would be little incentive for the landowners to alter the current suitable habitat available for habitation. Therefore, it is unlikely that significant adverse direct and indirect effects would occur to the fox sparrow as a result of this proposal.

**Cumulative Effects:** Covenants would eliminate most of the potential for loss of riparian habitat that might occur through the proposed land exchange. Additionally, shrubby riparian

habitat found on the Non-Federal lands would gain administrative protection through the exchange. The suitable habitat found on the Non-Federal lands comprises an area greater than that found on the Federal lands. Therefore, considering the low likelihood of loss of habitat on the Federal lands and the added protection given to habitat on the Non-Federal lands there would be no cumulative effects to the fox sparrow.

**Determination:** It has been determined that implementation of this proposal would result in no impact to the fox sparrow due to protection provided by covenants, low likelihood of any type of disturbance occurring in the exchanged parcels and net gain in Federally managed potential Fox Sparrow habitat due to the exchange.

### **BOREAL OWL**

*(Aegolius funereus)*

**Status and Distribution:** The boreal owl is classified as an R-2 sensitive species. The Colorado Natural Heritage Program (1997) classified this owl as G5S2, which indicates that the species appears secure at the global level, but imperiled in the state due of rarity. There is no population trend available because Breeding Bird Survey (BBS) does not survey this species.

The boreal owl's distribution is circumboreal, extending across the northern regions of North America, Europe and Asia (Hayward and Hayward 1989). Prior to 1981, the owl's North American range was believed limited to Canada and Alaska. Since then, however, breeding populations have been documented throughout the northern Rocky Mountains in eastern Washington, Idaho, Montana, Wyoming and Colorado. Other sightings are documented in Washington Cascades and northern New Mexico.

The first confirmed breeding records for Colorado were in 1981 and 1982 (Andrews and Righter 1992). The boreal owl is widely distributed in the proper habitat and elevations, with records from most of the higher ranges of the state. This species is known to occur in suitable habitats on the RGNF.

**Life History:** The boreal owl inhabits spruce-fir zone forests throughout its range (Clark et al. 1989) but may occasionally be found in other lower elevational habitats. As year-round residents they use similar habitats during all seasons. Mature forests are necessary for nesting because they require large nesting cavities with a 3-inch diameter opening and a 15-inch diameter tree at the cavity. The owls frequently use pole-sized stands for hunting. They will also use openings where perches are available at the forest edge. This is especially true in spring when snow cover is still present under the forest canopy but openings have melted. They appear to tolerate human and machine noise and have nested within 100 feet of a major highway in Colorado. There is no evidence that disturbance is an important factor in nest loss or owl movements (Hayward and Hayward 1994).

Males defend a small area around the nest, but otherwise home ranges may overlap extensively (Clark et al. 1989). In Colorado, home ranges of two males encompassed 3400 acres and 3900 acres and overlapped one another by >90% (Palmer 1986). They are very

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mobile predators and frequently traverse much of their home range in the course of 2-3 days or weeks (Hayward et al. 1993). In Colorado, roosts used on consecutive days averaged 215 feet apart (Palmer 1986). Forest structure in the Colorado study had 44% canopy cover with 6 trees/acre >15 inches dbh and 2.5 snags/acre. Generally roosting occurs next to the bole of a tree. They move little during the day but will frequently change to nearby roost trees. Winter roosts show little pattern, but summer roosts usually occur in cool microsites and there may be movement to higher elevations (Clark et al. 1989).

The boreal owl is a secondary cavity nester and is dependent upon woodpecker cavities and, to a lesser extent, natural cavities in large trees for nesting. Spruce-fir is the preferred forest cover type but cavities have been found in Douglas fir, lodgepole, aspen, and high-elevation ponderosa pine (Hayward et al. 1994). These alternate forest types are generally used only during periods of owl abundance when niches in spruce-fir are fully occupied (Palmer 1986). Cavities are not used for roosting.

Boreal owls forage using “sit and wait” tactics from perches, as opposed to pursuit hunting (Hayward et al. 1993). In Idaho they usually attacked prey within 33 feet of their hunting perch. The prey base is composed primarily of small mammals, especially the red-backed vole, which makes up 25-50% of their diet (Clark et al. 1989). They are opportunistic hunters, and their summer diet is varied, including insects, jumping mice, chipmunks, birds, pocket gophers, shrews, deer mice and voles. They are primarily nocturnal birds but they will opportunistically capture prey during the day and will actively hunt in daylight if bad weather has hampered nocturnal foraging. The peak of their activity occurs within two hours of sunset and sunrise. Prey is cached in the nest cavities prior to nesting and during nesting (Norberg 1987).

Marten are the most important predator of owlets and adult females at the nest site (Hayward and Hayward 1994). Cooper’s hawks, northern goshawks and great horned owls are also important predators of young and adults (Reynolds et al. 1990).

**Habitat Conditions within the Federal Lands:** Suitable nesting, foraging and roosting habitat for the boreal owl is present within the forested portions of the Federal lands in N4, N6 and L5. All of the forest cover found on these tracts is comprised of mixed-conifer forest cover, which is generally considered less than optimal (secondary habitat) for this species. The forest cover in N4 is currently in a mid-successional stage of development, which may currently limit breeding and foraging habitat. However, this habitat will improve as the forests age. The cool north-facing slopes of L5, particularly in areas of mature conifer cover, would provide habitat for nesting, foraging and roosting.

**Habitat Conditions within the Non-Federal Lands:** The late successional spruce-fir forest found in the Hays Placer would provide good foraging and breeding habitat for the boreal owl. Forested portions of B4 would also provide some habitat opportunities but may be limited due to natural fragmentation of the forest cover.

**Factors of Concern:** Primary concerns would relate to the maintenance of mature and old-growth forest structures on a landscape level to provide breeding, roosting and foraging

habitat. Activities that significantly reduce the mature canopy cover and remove large snags and coarse down woody debris would reduce habitat suitability for this species and its favored prey.

**Direct and Indirect Effects:** Covenants, designed to protect lynx habitat, would prohibit habitat disruptive activities in most of the mature forest cover found within the Federal tracts. Some limited habitat loss could occur on the lower slopes of the L5 parcel, as a result of residential development. However, most of the forest cover would remain intact. Some individuals could be temporarily affected by habitat alteration but these individuals would be able to relocate to adjacent unaffected areas. This species has a tolerance to human presence, so increased activity adjacent to occupied habitat is not likely to result in a reduced use or abandonment of these areas. Considering that the forest cover on the Federal tracts is dominated by mixed-conifer and aspen (secondary habitat) and that covenants would prohibit most site disruptive activities, it is unlikely that this proposal would result in significant direct or indirect effects to the boreal owl.

**Cumulative Effects:** A small amount (<3 acres) of suitable habitat could be lost on the Federal lands as a result of this proposal. However, this potential loss would be offset, to a degree, by the administrative control gained over the Hays Placer, which provides roughly 85 acres of quality boreal owl habitat in mature and old-growth spruce-fir forest.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

#### **LOGGERHEAD SHRIKE**

*(Lanius ludovicianus)*

**Status:** The loggerhead shrike is classified as a Region 2 Forest sensitive species. The Colorado Natural Heritage Program (1997) ranking for this species indicates that this species is apparently secure on a global basis but is “watchlisted” within the state. The BBS data shows a strong continental decline in excess of 3% per year. Colorado data indicate declines may also be occurring at the state level, as well (Sauer 2001).

**Distribution:** This shrike generally occurs across the U.S., from central Washington, the Canadian prairies and Virginia in the north, to the southern states and central plains (except for heavily forested higher mountains and higher portions of the desert) (Yosef 1996). The southern range extends to Baja California and Mexico, at elevations of 1500-2400m. (4920-7880 ft). According to Carter (1998), the southern states and central plains, not including eastern Colorado, support the highest densities. The northern populations are migratory, where as the southern populations tend to be resident (Yosef 1996). These birds winter from Nevada and Virginia to southern Mexico.

In Colorado, The Breeding Bird Atlas (Carter 1998) indicates a distinct concentration of loggerhead shrikes in the eastern portion of the state, and a few breeding pairs were confirmed in isolated pockets in the south-central, western and northwestern regions of the

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state. Breeding was confirmed on the Grand/Summit county line at 7,900 ft elevation; and breeding was considered possible at higher elevations (8,500-8,900 ft) in Chaffee, western Boulder and Saguache counties. The Atlas confirms breeding records in southwestern Montezuma County, Rio Grande County, Conejos County, Alamosa County, Costilla County and Saguache County. The Atlas also compared the presence of the loggerhead shrikes in different habitats throughout Colorado, finding 38% occupied rural habitats versus 16-22% in lowland/riparian, short-grass prairie and pinyon/juniper stands.

There have been no structured Forest-wide inventories conducted specifically for this species.

**Life History:** Non-breeding habitat is characterized by open country from prairies and agricultural lands to montane meadows. Nesting habitat includes sagebrush, desert scrub, piñon-juniper woodlands and woodland edges (Johnsgard 1986). Breeding birds are usually near isolated trees or large shrubs. Trees or shrubs with thorns and a good degree of cover appeared to be chosen first for nest sites, rather than a particular species of tree. When trees or shrubs are lacking, shrikes will also build nests in brush piles and tumbleweeds (Yosef 1996). The nests are bulky and cup-shaped and located in trees or large shrubs, 3-30 ft. high. (Ehrlich et al. 1988). Nests are well below the crown in a crotch or large branch and are typically well hidden. The males have a strong fidelity to breeding territory and return to the same area each year. Foraging habitat must be generally less than 328 feet from nesting sites (Yanishevsky and Petring-Rupp 1998). Sexes have separate territories in non-breeding season.

Loggerhead shrikes migrate from areas where snow is on the ground for 10-30 days/yr to areas where snow is lacking. Fall migration generally ranges from August to late October, and occasionally as late as November (Dechant et al. 2001). Most birds winter south of latitude 40° North. Winter foraging habitat does not appear to differ from summer habitat.

The diet of the loggerhead shrike is comprised mostly of insects (83 percent) with the remainder made up of small mammals, birds and reptiles. Sometimes it hawks for aerial insects, but takes most of its prey as it dives to the ground from an elevated perch such as fence posts or utility lines (Degraaf et al. 1991). It may pursue birds in rapid, sustained flight, knocking them to the ground with a blow from the beak.

**Habitat Conditions within the Federal Lands:** Parcels N1 and N2 may provide suitable foraging and non-breeding habitat, but generally lacks large shrubs or trees for nesting structures. These parcels lie at the upper elevational limit for this species.

**Habitat Conditions within the Non-Federal Lands:** Suitable habitat for this species is found in B1, B2, B3 and B4 and in very limited areas of the Long Ridge properties. The scattered forest and woodland cover found in B1 and B4 would provide both nesting and perching opportunities for this species. Additionally, the shrub component found in B2 and B3 may also provide the vegetative structural characteristics associated with this species. A small portion of the Long Ridge property has a scattered tree component, which would also provide some limited habitat similar to that found in Parcels N1 and N2. All of these parcels would provide suitable foraging habitat.

**Factors of Concern:** Removal of scattered trees and large shrubs in open country could have negative impact on nesting and perching needs of this species. Grazing poses a direct threat to nests and foraging habitat (i.e. rubbing against trees and knocking down nests, trampling grasses), especially since livestock tend to congregate around suitable nesting structures. Construction of roads through suitable shrike habitat increases the risk of mortality due to vehicular collisions, which is a major source of mortality for this species.

**Direct and Indirect Effects:** Due to the general absence of tree and large shrub cover, potential for impacts to suitable breeding habitat would be limited on the Federal lands. Since primary foraging habitat occurs in relative close proximity to the nest site, the potential for impacts to foraging habitat would also be limited.

**Cumulative Effects:** The suitable habitat found in the Bonafacio and Long Ridge would gain administrative protection under this proposal and offset potential losses of suitable habitat on the Federal lands. Considering the protection gained on these lands and the overall marginal quality of suitable habitat on the Federal lands, this proposal is unlikely to result in cumulative effects to the loggerhead shrike.

**Determination:** It has been determined that implementation of this proposal would result in no impact to the loggerhead shrike.

### **THREE-TOED WOODPECKER**

*(Picoides tridactylus)*

**Status and Distribution:** The three-toed woodpecker (THWO) is a rare or very locally uncommon year round resident of Colorado coniferous forests (Andrews and Righter 1992). It is classified as a Forest sensitive species in Region 2. There have been no structured Forest-wide inventories but sightings have occurred in spruce-fir and other forest types across the Forest. The Colorado Natural Heritage Program (1997) classified this woodpecker as secure at the global level, though quite rare in parts of its range, especially at the periphery. Its state classification was watch-listed. However, this species is not currently (2002) tracked by CNHP. BBS data indicates a decreasing population trend but is unreliable because high variance (Sauer 2002).

The THWO, relatively uncommon throughout its range, is circumboreally distributed (Clark et al. 1989). It occurs from Scandinavia to Siberia in Eurasia, south locally to southern Europe and western China, and in North America from northwestern Alaska to Newfoundland, south locally to southeastern Oregon, northern New England, and in the Rocky Mountains to south-central New Mexico and central Arizona (Clark et al. 1989, DeGraaf et al. 1991). This species is known to inhabit mid-upper elevation coniferous forests on the RGNF.

**Life History:** The THWO is one of the most elusive and poorly understood woodpeckers. It is known to be opportunistic and abundant during and after bark beetle outbreaks, but is usually uncommon and relatively inconspicuous (Bock and Bock 1974). Bent (1939)

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reported it to be not common anywhere, nor evenly distributed throughout its range and confined to certain rather limited and favorable localities. The numerical response of THWO to beetle infestations exceeds those of all other sympatric woodpeckers (Koplin 1972). This woodpecker had been considered to be indigenous to the spruce-fir but recently this species has been observed in the montane zone as well (Schmid and Frye 1977).

Its summer elevational range is 8,000 to 11,500 feet and during the winter it can be found at 6,000 to 11,500 feet. It is primarily found in spruce-fir forests but may be observed in ponderosa pine, Douglas-fir and lodgepole pine forests when insect populations are high (Andrews and Righter 1992). In Utah, they have also been found nesting in aspen (Smith 1992). According to Bock and Bock (1974), although this woodpecker is highly opportunistic, reservoir populations are dependent upon spruce and are capable of surviving where spruce is the only conifer found. At all seasons and elevations, this species is only common in years and areas of high bark beetles populations.

Pair bonding, courtship and territorial drumming begin in mid to late April and nest cavities being excavated by mid May (Clark 1989). Nest cavities are excavated in trees with heartrot, typically recently dead trees. Night roosts, during the breeding season, are in cavities in very decayed, broken topped dead trees. Roosting habitat during winter has not been documented. Home ranges for three birds during the breeding season were estimated, using radio-telemetry, as 750, 350 and 130 acres in mixed conifer in Oregon. During favorable conditions, these woodpeckers may nest in loose colonies. Snags at least 12 inches in dbh and at least 15 feet in height are preferred (Towry 1987, Bull 1980). Snag densities of 5 to 7/acre are desirable. Clumping of snags in small patches seems to enhance habitat for this species (Thomas et al. 1979). Nest cavities excavated by three-toed woodpeckers are used by a wide variety of secondary cavity-nesting birds long after the woodpeckers have left the area.

Approximately 75% of the summer diet consist of insects, especially beetles and wood-boring larvae while the winter diet is 99% insects, primarily spruce beetle larvae (Towry 1984). Other foods include ants, insect larvae, fruits, mast and cambium. They may require at least 1,200-2,200 larvae per day in winter to satisfy its caloric needs when air temperatures are at freezing (Koplin 1969). They primarily feed by scaling bark rather than pecking which account for their preference for conifers with bark scales (Clark 1989, Villard 1994).

Habitat Conditions within the Federal Lands: The forested portions of the Federal lands in Parcels N2, N4, N5, N6 and L5 offer suitable foraging and nesting habitat for the THWO. Since this species appears to prefer spruce-fir, the mixed conifer habitat found on the Federal lands would generally be considered secondary habitat for the THWO. The isolated nature of the forest cover in N2 may further limit its overall habitat suitability. The quality of habitat found in Parcels N4, N5 and portions of L5 may be further diminished by the relatively early successional structure and overall low snag densities. However, habitat conditions in these areas would improve over time.

**Habitat Conditions within the Non-Federal Lands:** Suitable habitat for this species is found on the Hays Placer and in limited areas of B4. The late successional spruce-fir forest with associated high snag densities on the Hays Placer would provide quality habitat for the THWO. Forested portions of B4 may provide some habitat opportunities for this species but this habitat may be too fragmented to sustain viable populations.

**Factors of Concern:** This species is dependent upon snags for nesting and an adequate food source such as bark beetles or woodborers. Spruce beetle larvae are a critical food source during the winter. Without significant numbers of bark beetles the THWO is uncommon throughout its range, particularly in intensively managed forests.

**Direct and Indirect Effects:** Covenants designed to protect lynx habitat would prohibit most disruptive activities in suitable habitat on the Federal tracts, which would minimize the potential for degradation of suitable breeding and foraging habitat. Residential development could result in some limited loss of habitat on the lower slopes of L5. However, much of this area is dominated by aspen and early to mid-successional mixed conifer. Some limited loss of snags and overall tree cover could occur but this is unlikely to result in significant losses (<3 acres) of potential habitat.

**Cumulative Effects:** The proposed action could result in a slight loss of suitable habitat for the THWO on the Federal lands. However, this loss would be offset by the administrative protection gained on the Hays Placer, which has approximately 85 acres of quality (mature spruce-fir) habitat. Therefore, implementation of this proposal would not likely result in cumulative effects to the THWO.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

#### **GOLDEN-CROWNED KINGLET**

*(Regulus satrapa)*

**Status and Distribution:** The golden-crowned kinglet is classified as a Forest sensitive species. The BBS data indicates there might be a declining trend in the population on a continental scale (Colorado Bird Observatory 1997). There is no Colorado Natural Heritage Program ranking for this species.

Golden-crowned kinglets have a fairly large range of occurrence. They breed from southern Alaska to northern Alberta, southern Quebec, and Newfoundland south in the coastal and interior mountains to southern and eastern California, southern Utah, south-central New Mexico, Mexico, Guatemala, and east of the Rockies to southern Manitoba, north-central Michigan, New York, eastern Tennessee, western North Carolina, northern New Jersey, and southern Maine. This species winters from south-coastal Alaska and southern Canada south to northern Baja California, through the breeding range to Guatemala, the Gulf Coast, and central Florida (DeGraaf et al. 1991).

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Within Colorado, golden-crowns are considered residents of higher mountains; uncommon to fairly common in summer and rare in the winter (Andrews and Righter 1992). It seems to be more common west of the continental divide than to the east. This species has been observed throughout the Forest within the spruce-fir zone.

**Life History:** The golden-crowned kinglet breeds primarily in mature, dense spruce-fir forest, and rarely in limber pine and Douglas fir. In winter, it occurs in coniferous forests (especially Douglas fir and ponderosa pine) but also in other types such as pinyon-juniper woodlands, foothill and lowland riparian forests, and in planted conifers in parks, cemeteries, and residential areas in the lowlands. In migration, it is found in most wooded habitats (Andrews and Righter 1992). It seems to be tolerant of ecological change in its winter and migratory habitat but is intolerant to disturbances on its nesting grounds (Ryder, 1977). No limiting factors have been documented for the golden-crowned kinglet except for disturbances in local nesting habitat.

Carter (1995) studied the relationship between bird species of the spruce-fir type and landscape patterns on the Forest. One of the findings from the study confirmed that golden-crowns were strongly correlated with late-successional spruce-fir forests. They were found in areas that had a range of canopy cover from 30-93% with a mean of 55-60% (Carter and Gillihan, Colorado Bird Observatory biologists, unpub. rpt.).

The species forages over leaves, branches, and trunks, feeding almost exclusively on insects and their eggs (bark beetles, scale insects) and especially plant lice. In summer, they feed mainly on flying insects (DeGraaf et al. 1991).

Legrand and Hall (1989) felt that the golden-crowns would have very small territories, presumably only several acres at best. They also felt that at least 10 acres of suitable habitat might be necessary to support one pair, if the habitat is surrounded on all sides by open land. In addition the authors felt that 100 acres of habitat could possibly support a dozen or more pairs.

**Habitat Conditions within the Federal Lands:** The forested portions of the Federal lands in N4, N6 and L5 offer suitable foraging and nesting habitat for the golden-crowned kinglet. However, the forest cover on the Federal lands is comprised primarily of mixed conifer and would, therefore represent primarily secondary habitat for this species. The overall quality of much of this habitat may be additionally diminished by its relatively early successional structure in some areas. The roughly 5-acre patch of blue spruce found in Parcel N2 is probably too disconnected from other suitable areas to provide effective habitat for this species.

**Habitat Conditions within the Non-Federal Lands:** Suitable habitat for this species is found on the Hays Placer and in limited areas of B4. The late successional spruce-fir forest on the Hays parcel would provide quality habitat for the golden-crowned kinglet. Forested portions of B4 may provide some habitat opportunities for this species but this habitat may be too fragmented to sustain viable populations.

**Factors of Concern:** As a late-successional spruce-fir forest species that feeds on insects, this species could be negatively impacted with the removal of trees that would reduce the canopy cover and subsequently reduce the amount of insects. Based upon the work of Carter (1995), it would appear that a reduction below 40% canopy cover might cross the canopy cover threshold and create a negative impact on the species.

**Direct and Indirect Effects:** Covenants will protect most of the forest cover on the Federal lands from habitat disruptive activities. There is a potential that some forest cover would be lost on the lower slopes of L5 to residential development, but overall losses would not significantly affect suitable habitat within these areas or result in significant fragmentation of undisturbed suitable habitat. Considering that little forest cover is likely to be affected by this proposal and most of the forest cover on the Federal lands is mixed conifer, which is sub-optimal for this species, it is unlikely that significant direct or indirect effects would occur to the golden-crowned kinglet through the implementation of this proposal.

**Cumulative Effects:** Implementation of this proposal could result in a slight loss of suitable breeding and foraging habitat for this species on the Federal lands within the Planning area. However, potential losses to the golden-crowned kinglet would be offset, to a degree, by the administrative protection that would be gained over suitable habitat in the Hays Placer and in B4.

**Determination:** It has been determined that implementation of this proposal would result in no impact to the golden-crowned kinglet.

### **PYGMY NUTHATCH**

*(Sitta pygmaea)*

**Distribution and Status:** The pygmy nuthatch is classified as an R-2 sensitive species. BBS data at the continental scale may indicate a slightly increasing population trend (Colorado Bird Observatory 1997). BBS data for Colorado between 1966 and 2000 indicates a stable or slightly decreasing population trend but this data has a relatively low level of statistical reliability (Sauer 2000). There is no Colorado Natural Heritage Program ranking for this species.

The pygmy nuthatch ranges from southern British Columbia, northern Idaho, western Montana, central Wyoming, and southwestern South Dakota, south to Baja California, Mexico, southern Nevada, central and southeastern Arizona, central New Mexico, western Texas and western Oklahoma (DeGraaf et al. 1991). The geographical distribution mostly coincides with ponderosa pine throughout the west and south through most of Mexico.

**Life History:** This gregarious cavity nester inhabits mature ponderosa pine communities (Scott 1979, Scott 1977), preferring open park-like stands with 40 to 70% crown cover (Rosenstock 1996, Clark et al. 1989). Population densities correlate directly with snag density and foliage volume and inversely with trunk volume (Kingery and Ghalambor 2001). This would indicate a need for heterogeneous forests stands with a mix of well-

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spaced, mature and older pines interspersed with more vigorous intermediate aged trees (ibid.). Scott (1979) found that populations declined in thinned stands when snags were eliminated, but that there was no population decline in adjacent thinned stands where snags were retained or in a non-harvested control. Pygmy nuthatches will also use aspen for nesting and will wander less often to spruce-fir, mixed conifer (Douglas-fir), pinyon-juniper woodlands and lowland riparian forests (Andrews and Righter 1992, Towry 1987). For nest sites they will shift from snags to live pines or oaks in low snag-density areas (Cunningham et al. 1980). Pygmy nuthatches travel in small family flocks after nesting in the summer but congregate in large numbers by fall and winter (Terres 1991). Each breeding pair occupies a territory of about 5 acres (Clark et al. 1989).

Pygmy nuthatches nest and roost in natural cavities or those excavated by other birds. Cavities tend to be located at the top of a snag or on the underside of a dead branch (Degraaf et al. 1991). They usually use existing holes but are capable of making their own holes in very soft wood (Scott et al. 1980). When not nesting they roost communally in tree cavities, with as many as 167 using the same cavity (Sydeman and Guntert 1983). The winter cavity is the central focus of wintering nuthatches, and they rely on a cavity with suitable characteristics for winter survival. The number of birds roosting together is dependent on temperature and snow. They winter-forage in smaller groups of 4-20 or more that jointly defend a group territory from conspecifics (Sydeman and Guntert 1983). In the late afternoon, birds gather and travel to a cavity within their territory to spend the night. In Arizona, nuthatches foraged as far as 1.1 miles from their winter roost (Sydeman and Guntert 1983).

The largest and tallest snags, preferably with bark directly around the cavity entrance, are selected for nest and winter-roost sites. Larger trees and bark provide more insulation than smaller or barkless trees. Snags that have been dead from 5 to 20 years are the most heavily used (Scott 1978, Cunningham et al. 1980). They utilize a higher percentage of broken-topped snags for nest sites than other species. Broken-topped snags have a higher potential of being a soft snag because of having heartrot. Live trees with cavities including large oaks are used in low snag density areas (Cunningham et al. 1980). The average diameter of pine snags in Arizona studies ranged from 15-28 inches for nesting and 27-28 for winter roosts (Cunningham et al. 1980 and Hay and Guntert 1983). In Colorado nest cavities may be found 8-60 feet above the ground with the majority 10-20 feet (Towry 1987). Rosenstock, (1996) found that breeding populations were most abundant in stands with more than one snag/acre and increased in stands with a greater proportion of large diameter snags (>18 in dbh). They also increased in proportion to tall snags (>32.8 ft.) and were most abundant in stands where 30% of the snags were greater than 32.8 feet in height.

This nuthatch is primarily insectivorous, gleaning prey from bark surfaces, but will also eat conifer seeds (Degraaf et al. 1991, Scott et al. 1977, Balda 1975). It feeds on branches, outermost twigs, trunks, and pine cones (Terres 1991). Bark and leaf beetles are important dietary components (Clark et al. 1989).

**Habitat Conditions within the Federal Lands:** The mixed conifer and aspen forest cover found in N4, N5, N6 and L5 would provide some structurally suitable habitat for the pygmy

nuthatch. However, since this species is predominantly an inhabitant of mature ponderosa pine forest, the habitat found on the Federal lands would be considered secondary habitat. The overall quality of this habitat for this species would be further diminished by the mid-successional forest condition found within much of this forest cover.

**Habitat Conditions within the Non-Federal Lands: Marginal secondary habitat present only due to absence of ponderosa pine.**

**Factors of Concern:** Snag practices, which do not provide an adequate range in snag abundance and/or cavity quality, may affect the overall biology of the nuthatch, its survivorship, and reproduction (Hay and Guntert 1983). Therefore, any actions that remove snags could potentially reduce the quality of nuthatch habitat. The suppression of low-intensity ground fires has resulted in increased dense stands of smaller diameter stands lacking the structural characteristics preferred by this species.

**Direct and Indirect Effects:** Considering the absence of ponderosa pine within the forest cover found on the Federal lands, any habitat within the project area would be considered secondary or marginal pygmy nuthatch habitat. With the exception of the forest cover in Parcel N5 (approx. 8 acres) and approximately 3 acres on the lower slopes of Parcel L5, covenants offered by the Non-Federal parties would limit most potentially disruptive activities in marginal secondary pygmy nuthatch habitat present on the Federal lands. Considering the general low quality or secondary nature of the available habitat and the overall low potential for significant disruption of the available habitat it is unlikely that the proposed exchange would result in direct or indirect effects to the pygmy nuthatch.

**Cumulative Effects:** Considering the secondary nature of the suitable habitat found on the Federal lands, in relation to pygmy nuthatch and the low potential for significant physical disruption of this habitat, it is unlikely that the proposed exchange would result in cumulative effects to the pygmy nuthatch.

**Determination:** It has been determined that implementation of this proposal would result in no impact to the pygmy nuthatch.

**REFLECTED MOONWORT/PALE MOONWORT**

*(Botrychium echo/Botrychium pallidum)*

**Status and Distribution:** The Colorado Natural Heritage Program (2002) ranking for reflected moonwort is G2/S2, which means they are imperiled globally and in the state. The ranking for pale moonwort is G3/S2, which indicates that it is vulnerable on a global basis and imperiled in the state. The reflected and pale moonworts are classified as Region 2 sensitive species.

The reflected moonwort is known to occur in northern Utah, northern Arizona and in Colorado on the western slope. The pale moonwort is found in southern Canada, Maine, Michigan and Colorado. These species have been found sporadically across the western

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slope including the GMUG. Field surveys for the project area were conducted too late in the year to detect the presence of these species within the project area.

**Life History:** The reflected and pale moonworts are presented together due to their similarities in habitat and biological characteristics. They occur in the subalpine zone ranging in elevation from 9,500-12,000 feet. Typical habitat is characterized by gravelly soils, rocky hillsides, grassy slopes and meadows (Spackman et.al.1997). They are often found on disturbed areas such as old roadsides and old mine sites (Root 1997, unpublished report).

The moonworts are a group of long-lived, perennial primitive ferns. They have a two-generation life cycle. The aboveground portion is the sporophyte. They produce one leaf each year. Spores produced on this structure germinate to form an underground gametophyte, which produces egg and sperm leading to the formation of the new sporophyte. The life cycle takes at least ten years. The plants are mycorrhizal and require the presence of a fungus to grow. (Root 1997, unpublished report) Spore production occurs in July and August. The aboveground portion may be visible for only a few weeks during spore formation and dispersal. Because of this short period and the plants small stature (2-4 cm) these species are difficult to locate and are often overlooked.

**Habitat Conditions on the Federal Lands:** None

**Habitat Conditions on the Non-Federal Lands:** Suitable habitat for these species is present on the Continental Divide Claims and in very localized areas of the Hays Placer.

**Factors of Concern:** Activities that cause a disruption beneath the soil surface could adversely affect the gametophytic structures from which the sporophytes form. A light disturbance of the surface may have an adverse effect on the sporophyte, depending on the time of year, but would generally not affect the ability of the gametophyte to produce future sporophytes.

**Direct and Indirect Effects:** The administrative protection that would be gained through the transfer of the associated Non-Federal tracts to Federal ownership would provide a greater level of protection to these species from habitat altering activities.

**Cumulative Effects:** Overall moonwort habitat under the protection of Forest Service guidelines would increase to cover the suitable habitats found on the Continental Divide Claims and the Hays Placer.

**Determination:** It has been determined that implementation of this proposal may result in a beneficial impact to the reflected and pale moonworts.

**COLORADO TANSY-ASTER**  
*Machaeranthera coloradoensis*

**Status and Distribution:** The Colorado tansy-aster is classified as a sensitive species in Region 2 of USFS and on the Rio Grande National Forest. The Colorado Natural Heritage Program ranks this species as G2S2, which indicates it is imperiled on both a global and state basis due to extreme rarity and its vulnerability to extirpation from the state.

The Colorado tansy-aster is endemic to south-central Wyoming and Colorado. It has been identified in Colorado in Gunnison, Hinsdale, La Plata, Lake, Mineral, Pitkin, Saguache, and San Juan Counties. (Spackman et al. 1997).

**Life History:** The Colorado tansy-aster is distinguished from other members of the genus by its deep purple flowers, short stems and toothed leaves. It typically occurs in gravelly areas in mountain parks, slopes and rock outcrops up to dry tundra at elevations ranging from 8,500 to 12,500 feet. (ibid.) Flowering occurs in July and early August with fruits produced in August.

**Habitat Conditions on the Federal Lands:** Suitable habitat for this species on the Federal lands is present in N1, N2, and localized areas of N4 and N5. No individuals of this species were identified during field surveys conducted on the Federal lands.

**Habitat Conditions on the Non-Federal Lands:** Suitable habitat for this species is found on the Non-Federal lands in the Long Ridge properties, the Continental Divide Claims, and the Bonafacio properties. In regards to the Bonafacio properties it is unknown if this species has been identified in Rio Grande County.

**Factors of Concern:** Any activity that would displace individuals or existing populations of this species would be of concern.

**Direct and Indirect Effects:** Most of the suitable habitat for the Colorado tansy-aster found on the Federal lands would be vulnerable to site disruptive activities, such as residential development, road building, grazing, etc. Although no individuals of this species were observed during field surveys its presence could have been overlooked. Although it is unlikely that a significant portion of this habitat would be subjected to site disruption, it is likely that suitable habitat would be lost through the implementation of this proposal.

**Cumulative Effects:** Although suitable habitat for this species could be adversely affected through this exchange proposal on the Federal lands, a substantially larger area of suitable habitat on the Non-Federal lands would gain the administrative protection of Forest Service management guidelines for this species.

**Determination:** It has been determined that implementation of this proposal may impact individuals, but is not likely to result in a loss of viability on the Planning Area, nor cause a trend toward federal listing or a loss of species viability range-wide.

## **VI. SUMMARY OF DETERMINATIONS**

The following is a summary of the determinations made for the sensitive and candidate species that have been indicated through this analysis as having potential for effects through the implementation of the proposed land exchange:

<b><u>SPECIES</u></b>	<b><u>DETERMINATION</u></b>
Northern Leopard Frog	May impact individuals but not likely to affect pop. viability
Western Boreal Toad	May impact individuals but not likely to affect pop. viability
Tiger Salamander	May impact individuals but not likely to affect pop. viability
Rio Grande Cutthroat Trout	No Impact
Wolverine	May impact individuals but not likely to affect pop. viability
American Martin	May impact individuals but not likely to affect pop. viability
Dwarf Shrew	May impact individuals but not likely to affect pop. viability
Townsend's Big-eared Bat	May impact individuals but not likely to affect pop. viability
Peregrine Falcon	No Impact
Ferruginous Hawk	No Impact
Osprey	May impact individuals but not likely to affect pop. viability
Northern goshawk	May impact individuals but not likely to affect pop. viability
Olive-side Flycatcher	May impact individuals but not likely to affect pop. viability
Fox Sparrow	No Impact
Boreal Owl	May impact individuals but not likely to affect pop. viability
Loggerhead Shrike	No Impact
Three-toed Woodpecker	May impact individuals but not likely to affect pop. viability
Golden-crowned Kinglet	No Impact
Pygmy Nuthatch	No Impact
Reflected Moonwort	May have a beneficial impact
Pale Moonwort	May have a beneficial impact
Colorado Tansy-aster	May impact individuals but not likely to affect pop. viability



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## **APPENDIX**

**MAPS:** Maps 1-6

**TABLES:** : Pre-field Review- Checklist for R-2 Sensitive  
Wildlife and Plant Species

Exhibit 3  
Biological Evaluation

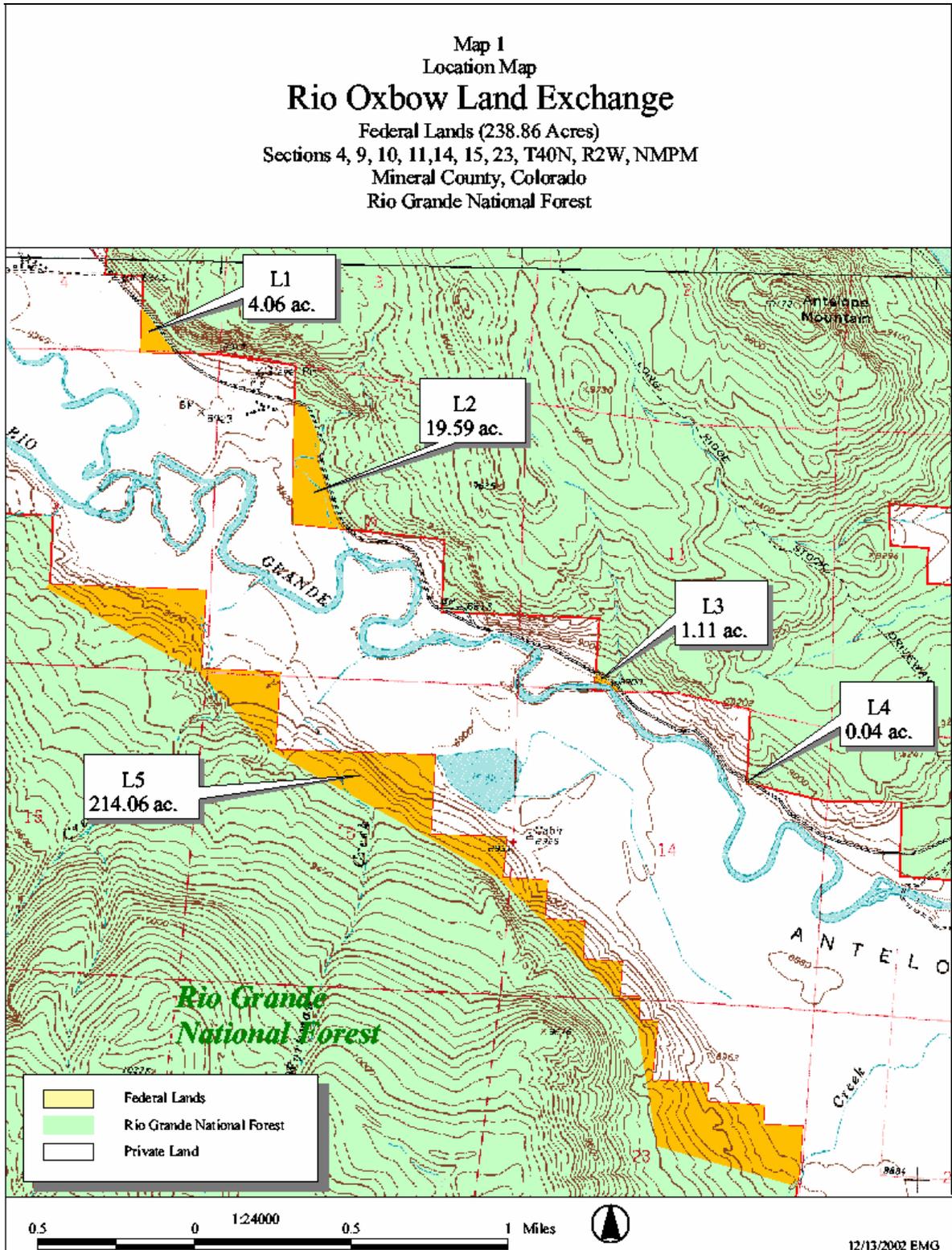


Exhibit 3  
Biological Evaluation

Map 2  
Location Map  
**Rio Oxbow Land Exchange**

Federal Lands (112.1 Acres without N-3)  
Sections 25, 35, & 36, T40N, R2W  
Section 30, T40N, R1W, NMPM  
Mineral County, Colorado

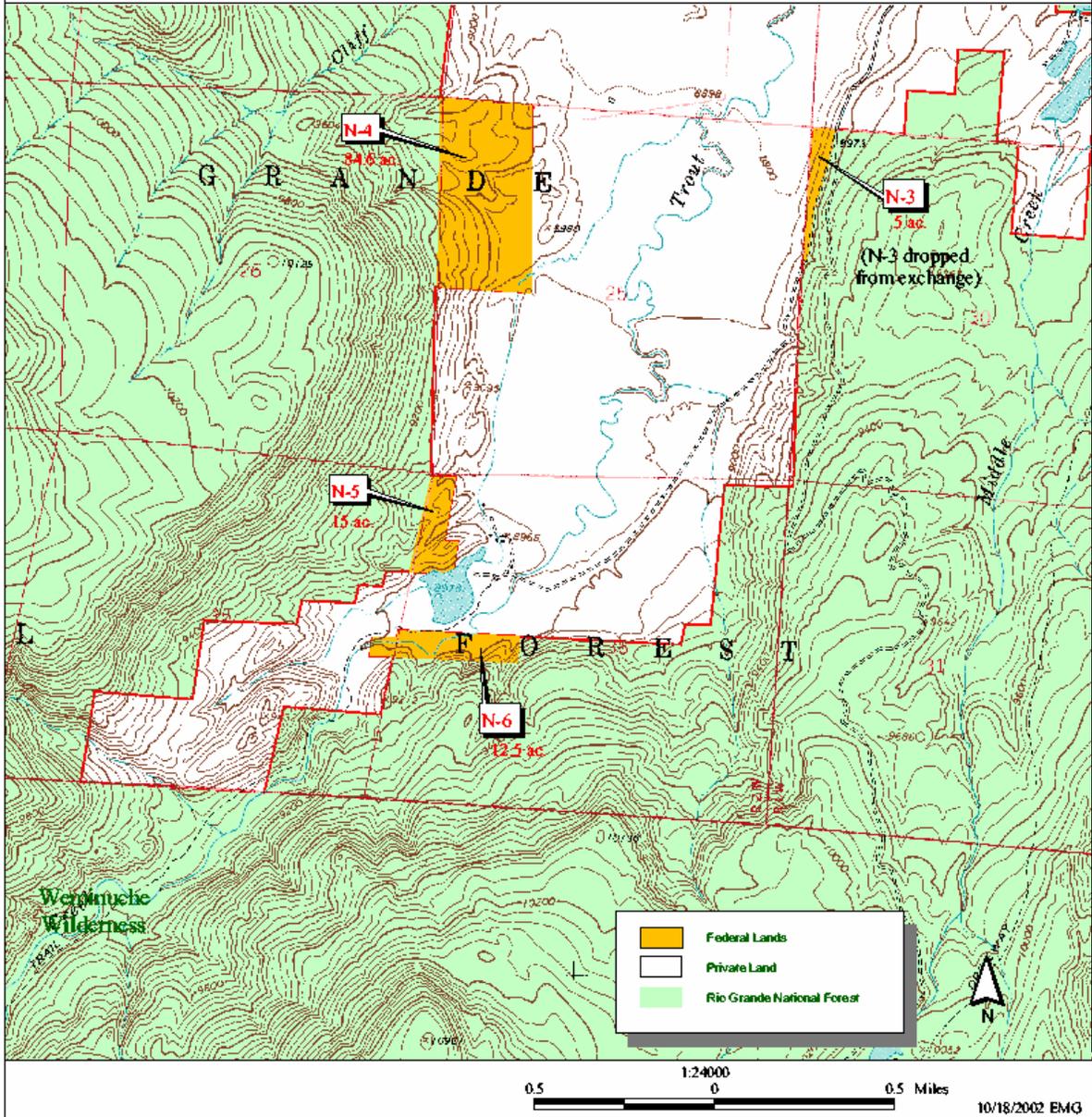


Exhibit 3  
Biological Evaluation

Map 3  
Location Map  
**Rio Oxbow Land Exchange**

Federal Lands (117.82)  
Sections 3 & 10, T41N, R1W, NMPM  
Mineral County, Colorado

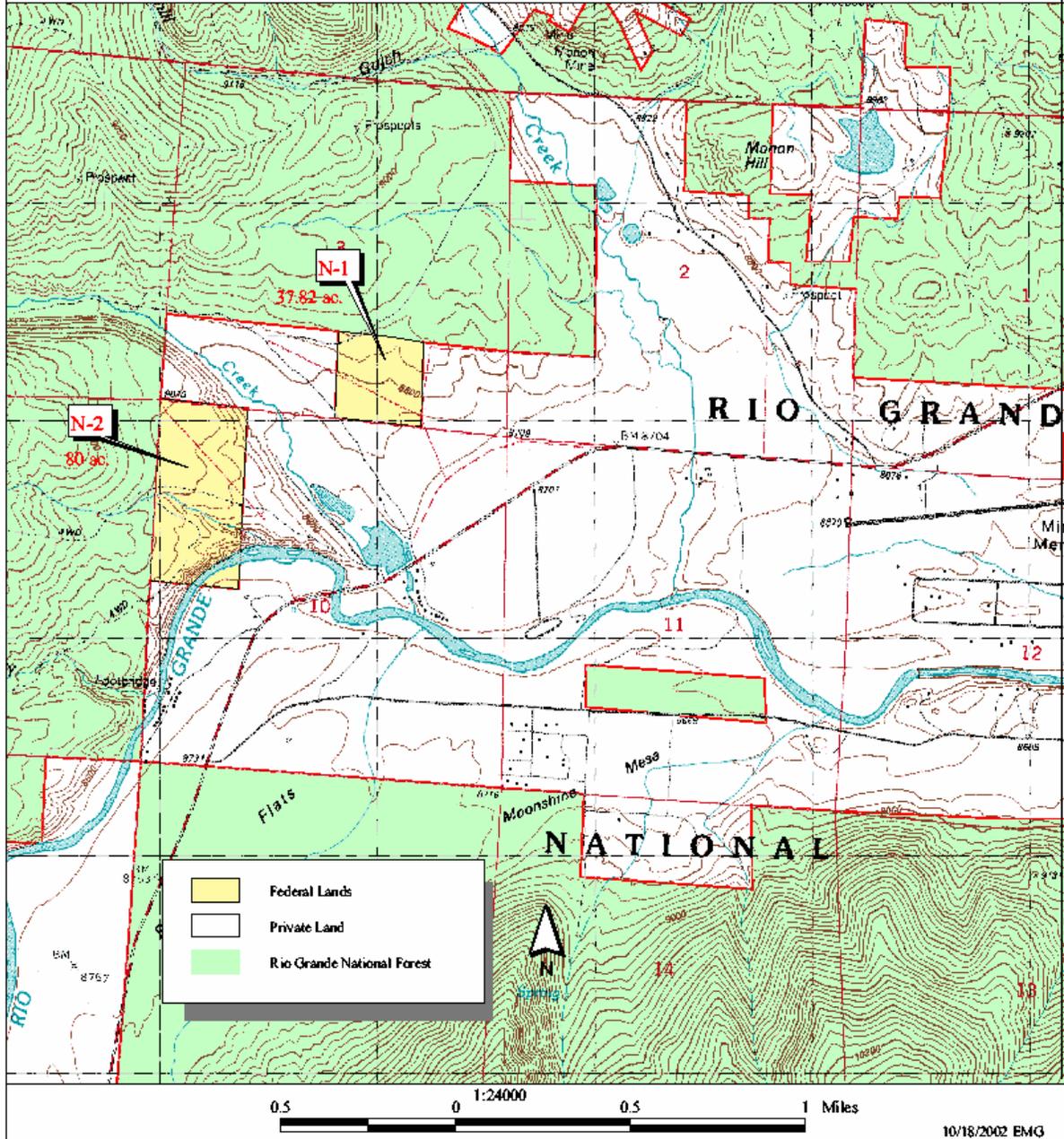


Exhibit 3  
Biological Evaluation

**Map 4**  
**Amended Location Map**  
**Rio Oxbow Land Exchange (non-Federal Land)**

Longridge (91.79 Acres)  
Sections 4, 10, 11, 13, & 14, T40N, R2W, NMPM  
Mineral County, Colorado

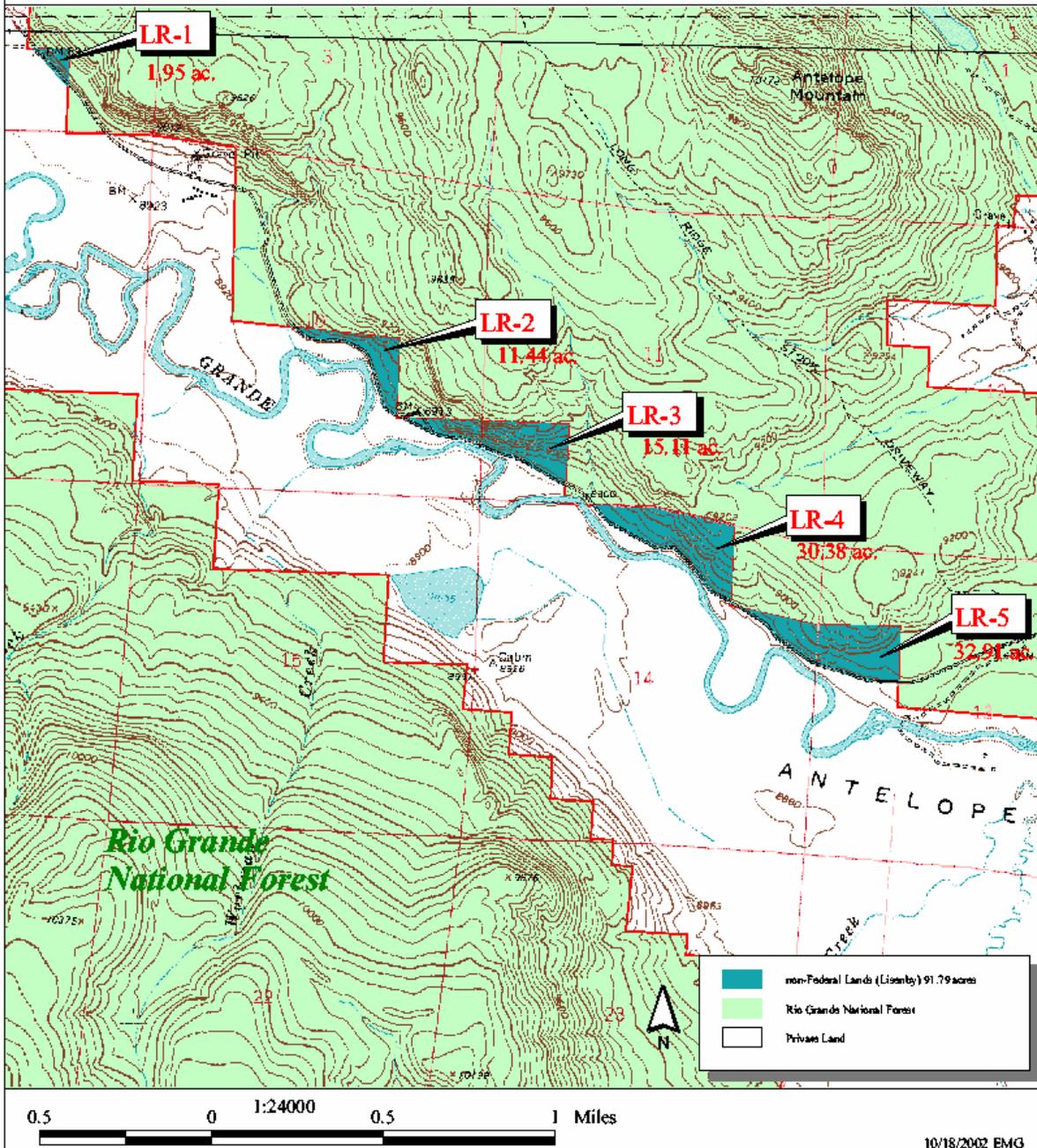


Exhibit 3  
Biological Evaluation

Map 5  
Location Map  
**Rio Oxbow Exchange (Non-Federal Lands)**

Bonafacio - Approx. 678.36 Acres  
Sections 4, 5, 8, 9, 18, T38N, R6E, NMP  
Rio Grande County, Colorado

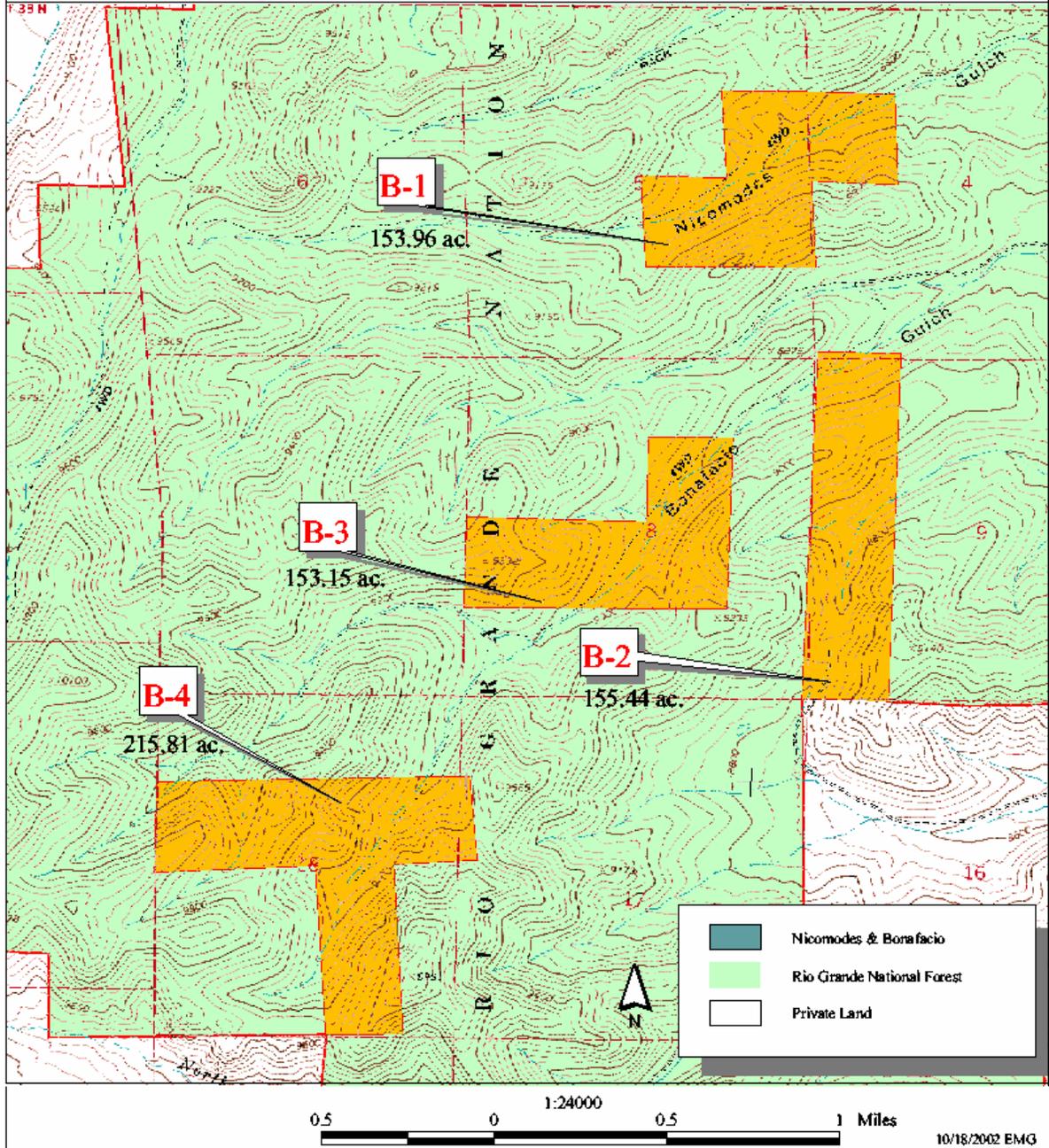
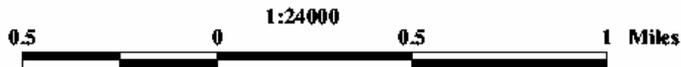
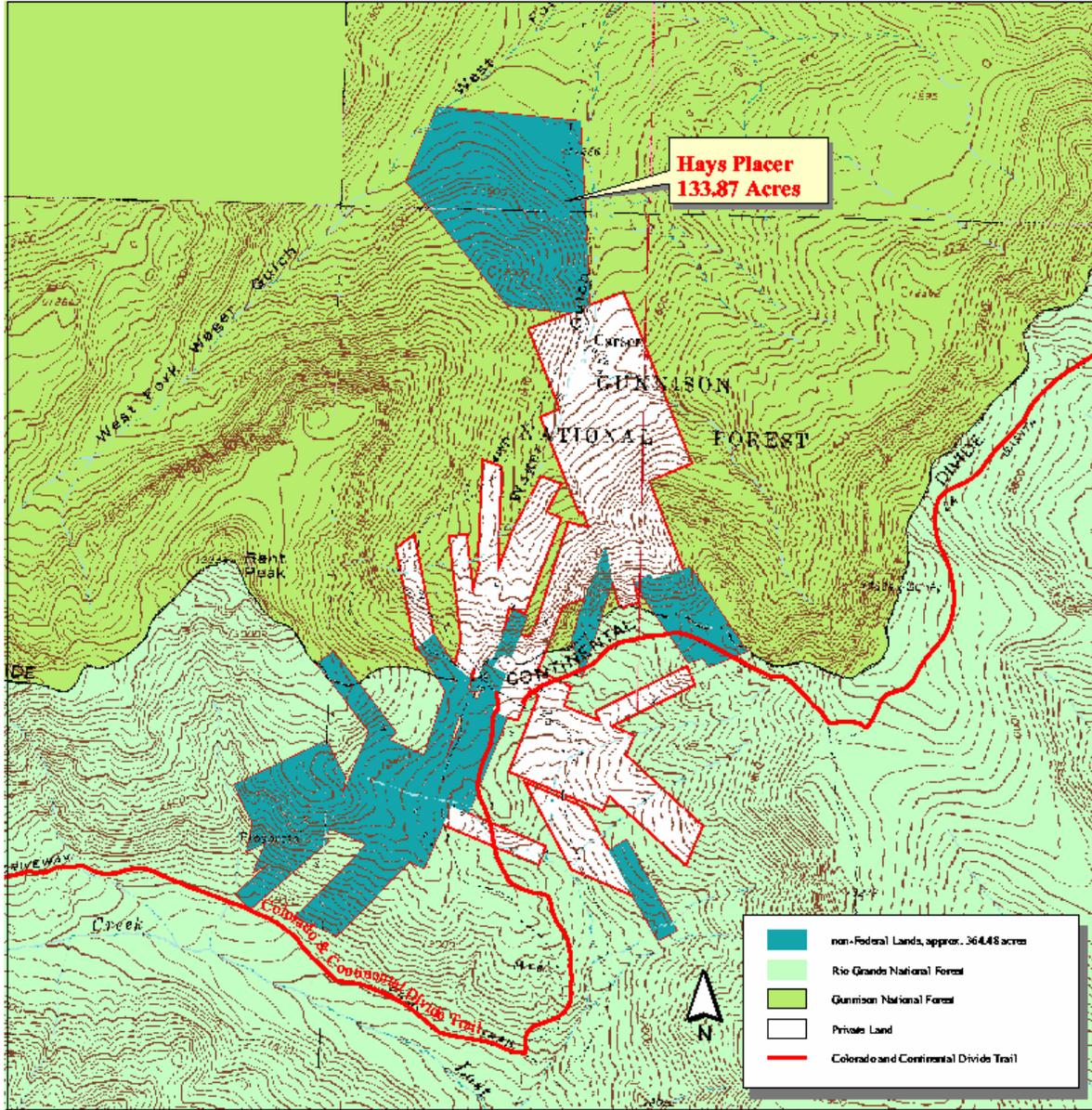


Exhibit 3  
Biological Evaluation

Map 6  
Amended Location Map

# Rio Oxbow Exchange (non-Federal Land)

Carson Mining Claims - Approx. 364.48 acres  
T42N, R5W - T41N, R5W - T42N, R4W - T41N, R4W  
Hinsdale County, Colorado



10/18/2002 EMG

**TABLE 1A**  
**RIO OXBOW LAND EXCHANGE**  
**BIOLOGICAL EVALUATION PRE-FIELD**  
**CHECKLIST FOR R-2 SENSITIVE WILDLIFE SPECIES**

<b>SPECIES</b>	<b>POTENTIAL HABITAT OR CONFLICT</b>	<b>DESCRIPTION OF TYPICAL OR PREFERRED HABITAT.</b>
<b>FISH</b>		
<u>Oncorhynchus clarki virginalis</u> Rio Grande Cutthroat Trout	YES	Running streams, riparian habitat.
<b>AMPHIBIANS</b>		
<u>Ambystonia tygrinum</u> Tiger Salamander	YES	Riparian/wetland. Must have non-running body of water for breeding.
<u>Bufo boreas boreas</u> Boreal Toad	YES	Riparian/wetland between 7,000 and 12,000 feet.
<u>Rana pipiens</u> Northern Leopard Frog	YES	Inhabits margins and shallows of a variety of water bodies.
<u>Gulo gulo luscus</u> Wolverine	YES	Mid-upper elevational forest and tundra. May be extirpated from southwestern Colorado.
<u>Martes americana</u> American Marten	YES	Mature upper mixed conifer and spruce-fir forest.
<u>Corynorhinus townsendii</u> Big-eared Bat	YES	Caves and mines at moderate elevations.
<u>Sorex nanus</u> Dwarf Shrew	YES	Variety of habitats from lower montane to rocky areas of alpine/sub-alpine life zones.

Exhibit 3  
Biological Evaluation

**TABLE 1A (Cont.)**

SPECIES	POTENTIAL HABITAT OR CONFLICT	DESCRIPTION OF TYPICAL OR PREFERRED HABITAT
<b>BIRDS</b>		
<u>Accipiter gentilis</u> Northern Goshawk	YES	Mature ponderosa pine, aspen and mixed conifer forest.
<u>Aegolius funereus</u> Boreal Owl	YES	Mature spruce-fir forest between 9,000 and 11,000 feet in elevation.
<u>Athene cunicularia</u> Burrowing Owl	NO	Semi-desert shrubland, grassland and open PJ woodlands.
<u>Buteo regalis</u> Ferruginous Hawk	YES	Semi-desert shrubland, grassland and prairie.
<u>Contopus borealis</u> Olive-side Flycatcher	YES	Typically in aspen and spruce-fir forest but also occasionally in pine type.
<u>Cypseloides niger</u> Black Swift	NO	Nest in cliffs near or behind waterfalls in the spruce-fir life zone.
<u>Falco columbarius</u> Merlin	NO	Winter migrant through riparian/wetland zones.
<u>Melanerpes lewis</u> Lewis Woodpecker	NO	Primary cavity nester in ponderosa pine/gambel oak communities up to 7,000 feet.
<u>Lanius ludovicianus</u> Loggerhead Shrike	YES	Open semi-desert shrublands and agricultural lands.
<u>Otus flammeolus</u> Flammulated Owl	NO	Secondary cavity nester in ponderosa pine/mixed-conifer forest. P.Pine nearly always a component.

Exhibit 3  
Draft Biological Evaluation

**TABLE 1A (Cont.)**

SPECIES	POTENTIAL HABITAT OR CONFLICT	DESCRIPTION OF TYPICAL OR PREFERRED HABITAT
<u>Pandion haliaetus</u> Osprey	YES	Nests in snags near large lakes and reservoirs.
<u>Passerella iliaca</u> Fox Sparrow	YES	Typically found in or near riparian/wetland areas between 8,000 and 10,000 feet elevation.
<u>Picoides tridactylus</u> Three-toed Woodpecker	YES	Typically found in the spruce-fir zone but may be found at lower elevations during beetle outbreaks.
<u>Plegadis chihi</u> White-faced Ibis	NO	Riparian/wetland areas.
<u>Regulus satrapa</u> Golden-crowned Kinglet	YES	Nests primarily in upper elevational zones but may winter in ponderosa pine type.
<u>Sitta pygmaea</u> Pygmy Nuthatch	YES	Primarily an inhabitant of mature ponderosa pine forests but occasionally in aspen, mixed conifer and PJ.
<u>Charadrius montantus</u> Mountain Plover	NO	Primarily short-grass prairies of Great Plains (east-slope) but also drier mountain parks with short grass and widely-spaced and stunted shrubs.
<u>Centrocercus minimus</u> Gunnison Sage Grouse	YES	Flat to gently rolling sagebrush communities up to approximately 9,200 feet elevation in southwestern Colorado south of Colorado River.

**TABLE 1B**

**RIO OXBOW LAND EXCHANGE  
BIOLOGICAL EVALUATION PRE-FIELD  
CHECKLIST FOR R-2 SENSITIVE PLANT SPECIES**

<b>SPECIES</b>	<b>POTENTIAL HABITAT OR CONFLICT</b>	<b>DESCRIPTION OF TYPICAL OR PREFERRED HABITAT.</b>
<u>Astragalus ripleyi</u> Ripley's milk-vetch	NO	Volcanic substrates in open ponderosa pine and edges of mixed conifer dominated by Arizona fescue at elevations of 8,200-9,200 feet. (Conejos County)
<u>Botrychium echo</u> Reflected Moonwort	YES	Gravelly soils in spruce-fir communities and above between 8,500 and 11,000' elevation.
<u>Botrychium pallidum</u> Pale Moonwort	YES	Gravelly soils in spruce-fir communities and above between 8,500 and 11,000' elevation.
<u>Draba smithii</u> Smith's whitlow-grass	NO	Talus slopes, crevices in shaded protected sites from 8,000-11,000 feet.
<u>Eriogonum brandegei</u> Brandegee wild-buckwheat	NO	Open sagebrush or PJ in limestone or shales from 5,700-7,600 feet elevation in south-central Colorado.
<u>Eriophorum altaicum v.neogaicum</u> Altai Cotton-grass	YES	Riparian/wetlands in the sub-alpine/alpine lifezones.
<u>Gilia penstemonoides</u> Beardtongue Gilia	NO	Endemic to Colorado (Gunnison, Hinsdale, Mineral and Montrose Co.). Cracks on vertical walls, narrow ledges and cliff rims in gneiss, schist and shale at elevations of 6,800-9,000 feet.
<u>Machaeranthera coloradoensis</u> Colorado Tansy-aster	YES	Gravelly soils in higher mountain parks and dry tundra at 9,000-11,000' elevation.
<u>Salix arizonica</u> Arizona Willow	NO	Widely disjunct populations. Grows in subalpine seeps, wet meadows and stream - sides. Probably restricted to elevations between 10,300-10,700 on RGNF.