

# **Assessment of Riparian Vegetation and Wildlife Habitat Structure**

## **North Fork of the Gunnison River Tributaries and Lower Gunnison River Tributaries**

**Prepared by:  
Mary Damm and Joe Stevens  
Colorado Natural Heritage Program, Colorado State University  
254 General Services Building  
Fort Collins, Colorado 80523**

**Steve Boyle  
Bio-Logic Research  
828 North 2<sup>nd</sup> Street  
Montrose, Colorado 81401**

**Prepared for:  
Delta Soil Conservation District  
690 Industrial Blvd.  
Delta, Colorado 81416**

## EXECUTIVE SUMMARY

The Colorado Natural Heritage Program, together with Bio-Logic Research, conducted an evaluation of the natural communities and wildlife habitat present on the major tributaries to the North Fork of the Gunnison River and the Gunnison River. The objective of the study was to evaluate numerous riparian areas on the two rivers and assess their relative conservation value.

Twenty-one representative site locations were selected for field evaluation – twelve on tributaries to the North Fork of the Gunnison River, nine on tributaries to the lower Gunnison River. A CNHP field ecologist visited the sites and evaluated the quality of the native vegetation, while a wildlife biologist from Bio-Logic Research evaluated the sites for wildlife populations and habitat factors. This report documents the natural community and wildlife habitat conditions at the surveyed locations and provides a relative ranking of their conservation value.

A similar assessment was conducted at locations on the main stem of the North Fork of the Gunnison and lower Gunnison Rivers during the summer of 1999 (CNHP 2000). This report supplements the previous work conducted on the main stem by characterizing potential conservation sites on the major tributaries to those rivers.

This study utilized the same methods as were used for the evaluation conducted on the main stem rivers. Namely, natural communities were evaluated based on their global and statewide rarity using the CNHP methodology<sup>1</sup>. The sites were then given a relative vegetation rank based on the quality of the vegetation at the site, the size of the occurrence, and the landscape context of the site. Wildlife habitat was ranked on the basis of size, vertical diversity of plant communities, diversity of habitat types, ability to support a variety of wildlife species, and known or potential use by threatened or endangered species.

The study identified four sites along tributaries of the North Fork of the Gunnison with a riparian vegetation rank of A. The sites are located along Terror, Jay, upper Leroux, and upper Minnesota Creeks. Two additional A-ranked sites were identified along tributaries to the Lower Gunnison River. These are sites on Roubideau Creek at the Escalante State Wildlife Refuge, and the Smith Fork Creek. Six of the sites received a B-rank for riparian vegetation. None of the sites were A-ranked based on the wildlife habitat.

Of the A-ranked sites, the Terror Creek and Smith Fork sites have the most significant conservation value. One B-ranked site along Roubideau Creek also has high conservation value.

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<sup>1</sup> The CNHP methodology is described in detail in the previous report produced for the main stem rivers (CNHP 2000). In essence, the methodology assigns ranks to widely recognized community types (and species) based on the rarity of the type over its global range (G-rank), as well as its rarity over its statewide range (S-rank).

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## INTRODUCTION

The Delta Soil Conservation District contracted with the Colorado Natural Heritage Program (CNHP) and Bio-Logic Research to assess riparian habitat conditions on major tributaries to the North Fork of the Gunnison and lower Gunnison Rivers. The objective was to evaluate riparian areas and assess their relative conservation value. Twenty-one representative site locations were selected for field evaluation – twelve on tributaries to the North Fork of the Gunnison River, nine on tributaries to the lower Gunnison River. This report documents riparian vegetation and wildlife habitat conditions at the surveyed locations and provides a relative ranking of their conservation value.

A similar assessment was conducted at locations on the main stem of the North Fork Gunnison and lower Gunnison Rivers during the summer of 1999. This report supplements previous assessment work conducted on the main stem by characterizing the major tributaries.

## METHODS

Riparian assessment methods were developed to meet the following objectives:

1. Gain an understanding of the relative riparian condition on major tributaries to the North Fork of the Gunnison and lower Gunnison Rivers
2. Gain an understanding of riparian plant community and wildlife structure distributions within the tributaries
3. Identify tributaries that exhibit the greatest conservation value
4. Compare and integrate tributary riparian assessments with assessment work conducted on the main stem in 1999
5. Incorporate a wildlife habitat evaluation into methods developed in 1999

Riparian assessment methods used in this report followed similar procedures to those used in 1999 to assess riparian areas on the main stem of the North Fork of the Gunnison and lower Gunnison Rivers. Riparian assessment locations were initially identified by reviewing land ownership maps, resource attribute information, and aerial photographs. Field survey locations were then selected by assessing size of the area, hydrologic conditions, evidence of human modifications, character of the vegetation, and local knowledge of wildlife use. Twelve locations were surveyed on nine tributaries to the North Fork of the Gunnison River. Nine locations were surveyed on seven tributaries to the lower Gunnison River. Figure 1 displays the survey locations.

Field surveys were completed by a riparian ecologist and a wildlife biologist during the summer of 2000 field season. At each location, the following resource attributes were documented and are described in this report:

1. Location description including topography and elevations
2. Native vegetation communities observed including abundance and diversity
3. Non-native vegetation communities observed including abundance and diversity
4. Size and shape of the riparian area
5. Condition or disturbance of the riparian area



6. Landscape context
7. Stream hydrologic and morphological characteristics
8. Ability to support various wildlife species

To assess relative conservation value, a ranking system was developed for riparian vegetation and wildlife habitat conditions. Each site was assigned a relative riparian vegetation and wildlife habitat rank of A through D, with A representing an excellent location and D representing a poor location. Relative rankings were based on the following criteria:

#### Riparian Vegetation

- Abundance, diversity, and uniqueness of native vegetation
- Existence of non-native vegetation
- Size
- Level of disturbance
- Landscape context

#### Wildlife Habitat

- Size
- Vertical diversity of plant communities
- Diversity of habitat types
- Ability to support a variety of wildlife species
- Known or potential use of threatened or endangered species

Therefore, a site would receive riparian vegetation “A” rating if it was relatively large in size, contained diverse or unique native vegetation, contained limited non-native vegetation, showed limited disturbance, and exhibited limited impacts from surrounding land use. Similarly, a site would receive a wildlife habitat “A” rating if it was relatively large in size, displayed plant community and habitat type diversity, and demonstrated potential use or known use by threatened or endangered species.

Although these criteria and methodology are similar to the element occurrence ranking method of the Natural Heritage Program, they differ in that these locations do not necessarily represent element occurrences and therefore are not given actual element occurrence ranks. A description of the Natural Heritage Methodology is provided in the original 1999 report. Table 1 lists the plant community and rare plant and animal occurrences that are known to occur in the project area.

Table 1. CNHP plant associations and rare plant and animal occurrences within the project area

Scientific Name	Common Name	G-rank	S-rank	ESA	Federal Sensitive
Animals					
<i>Gambelia wislizenii</i>	Longnose leopard lizard	G5	S1		BLM
<i>Gila cypha</i>	Humpback chub	G1	S1	LE	
<i>Gila robusta</i>	Roundtail chub	G2G3	S2		BLM
<i>Hesperopsis libya</i>	Mohave sooty-wing	G5	S2		
<i>Ochlodes yuma</i>	Yuma skipper	G5	S2S3		
<i>Ptychocheilus lucius</i>	Colorado pikeminnow	G1T?Q	S1	LE	
<i>Rana pipiens</i>	Northern leopard frog	G5	S3		FS/BLM
<i>Spea intermontana</i>	Great basin spadefoot	G5	S3		BLM
<i>Xyrauchen texanus</i>	Razorback sucker	G1	S1	LE	
Plant Communities					
<i>Populus angustifolia/Alnus incana</i>	Montane riparian forest	G3?	S3		
<i>Populus angustifolia/Rhus trilobata</i>	Narrowleaf cottonwood/skunkbush	G3	S3		
<i>Populus deltoides</i> ssp. <i>wislizenii/Rhus trilobata</i>	Fremont's cottonwood forests	G2	S2		
<i>Sarcobatus vermiculatus/Suaeda torreyana</i>	Saline bottomland shrublands	G2G3	S2S3		
Plants					
<i>Centaurium arizonicum</i>	Arizona centaury	G5?	S1		
<i>Epipactis gigantea</i>	Helleborine	G4	S2		FS
<i>Lomatium concinnum</i>	Colorado desert-parsley	G2	S2		BLM
<i>Sclerocactus glaucus</i>	Uinta basin hookless cactus	G3	S3	LT	

Key to ESA and Federal Sensitive Ranks

**1. ESA Status:** U.S. Fish and Wildlife Service (58 Federal Register 51147, 1993) and (61 Federal Register 7598, 1996)

**LE** Endangered; species or subspecies formally listed as endangered.

**LT** Threatened; species or subspecies formally listed as threatened.

**2. Federal Sensitive**

**FS** U.S. Forest Service (Forest Service Manual 2670.5) **Sensitive** (noted by the Forest Service as "S"): those plant and animal species identified by the Regional Forester for which population viability is a concern as evidenced by:

a. Significant current or predicted downward trends in population numbers or density.

b. Significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

**BLM** Bureau of Land Management (BLM Manual 6840.06D) **Sensitive** (noted by BLM as "S"): those species found on public lands, designated by a State Director, that could easily become endangered or extinct in a state. The protection provided for sensitive species is the same as that provided for C (candidate) species.

**3. CNHP Status**

G rank indicates degree of imperilment over the species entire range (global rank). 1=most imperiled, 5=least imperiled

S rank indicates degree of imperilment over the species state range (state rank). 1=most imperiled, 5=least imperiled

# NORTH FORK OF THE GUNNISON RIVER - NORTHERN TRIBUTARIES

## Hubbard Creek

**Location Description:** The site is located near the mouth of Hubbard Creek and upstream of the Fire Mountain Canal. Hubbard Creek runs through a narrow canyon (approximately 250 feet wide) with moderately steep canyon walls. The gradient of the stream is low, but the creek is incised into the valley floor. At the time of the survey, water was present only in pools in the channel. The riparian vegetation forms a narrow band along the steep stream banks. Some riparian plants grow on the upper valley floor, but most of the valley floor is covered with the upland oak-juniper community. The elevation is approximately 5900 feet

**Communities Observed:** The riparian vegetation has considerable vertical structure with two canopies of trees overhanging a diverse shrub understory. Narrowleaf cottonwood (*Populus angustifolia*) forms an open, upper forest layer with boxelder (*Acer negundo*) and juniper (*Sabina* sp.) below. A number of shrub species are present, with no single species dominating. Shrubs include thinleaf alder (*Alnus incana*), serviceberry (*Amelanchier utahensis*), red-osier dogwood (*Cornus sericea*), chokecherry (*Prunus virginiana*), skunkbush (*Rhus trilobata*), and coyote willow (*Salix exigua*). Some non-native Russian olive (*Elaeagnus angustifolia*) is also present. The herbaceous layer has native and weedy species.

**Size:** The location is small in size, measuring 0.25 miles long by 250 feet wide. However, the riparian community likely extends an additional mile up the valley.

**Condition:** The area is somewhat disturbed near the canal and the adjacent canal maintenance road, but the condition of the channel and vegetation improves upstream. Weedy species are present, but comprise a small percentage of the vegetation cover.

**Landscape Context:** BLM land is adjacent to the site upstream and less than 0.25 miles to the east and west of the site.

**Wildlife Habitat:** This site provides a very narrow corridor of cottonwood and riparian shrub habitat, and lacks significant wetlands or large stream habitat. Wildlife species of concern include bald eagles (FT) which may occasionally use roost sites in tall cottonwoods, limited breeding habitat for northern leopard frogs (SC) and Great Basin spadefoot where stream flow is permanent.

The site lies within significant winter range for mule deer and elk, and provides a small area of browse and cover for deer and elk as well as cover and forage for black bears and mountain lions.

The well-developed cottonwood woodland and diverse shrub species enhance habitat quality for small mammals and tree and shrub-nesting birds, but the riparian area is small and the site lacks floodplain wetlands or large stream habitat features. Overall, wildlife species diversity is moderate to low. The regional context mostly enhances habitat quality, with extensive adjacent areas of BLM shrubland and pinyon-juniper woodland. Hay meadows, a residence, a highway, and railroad tracks

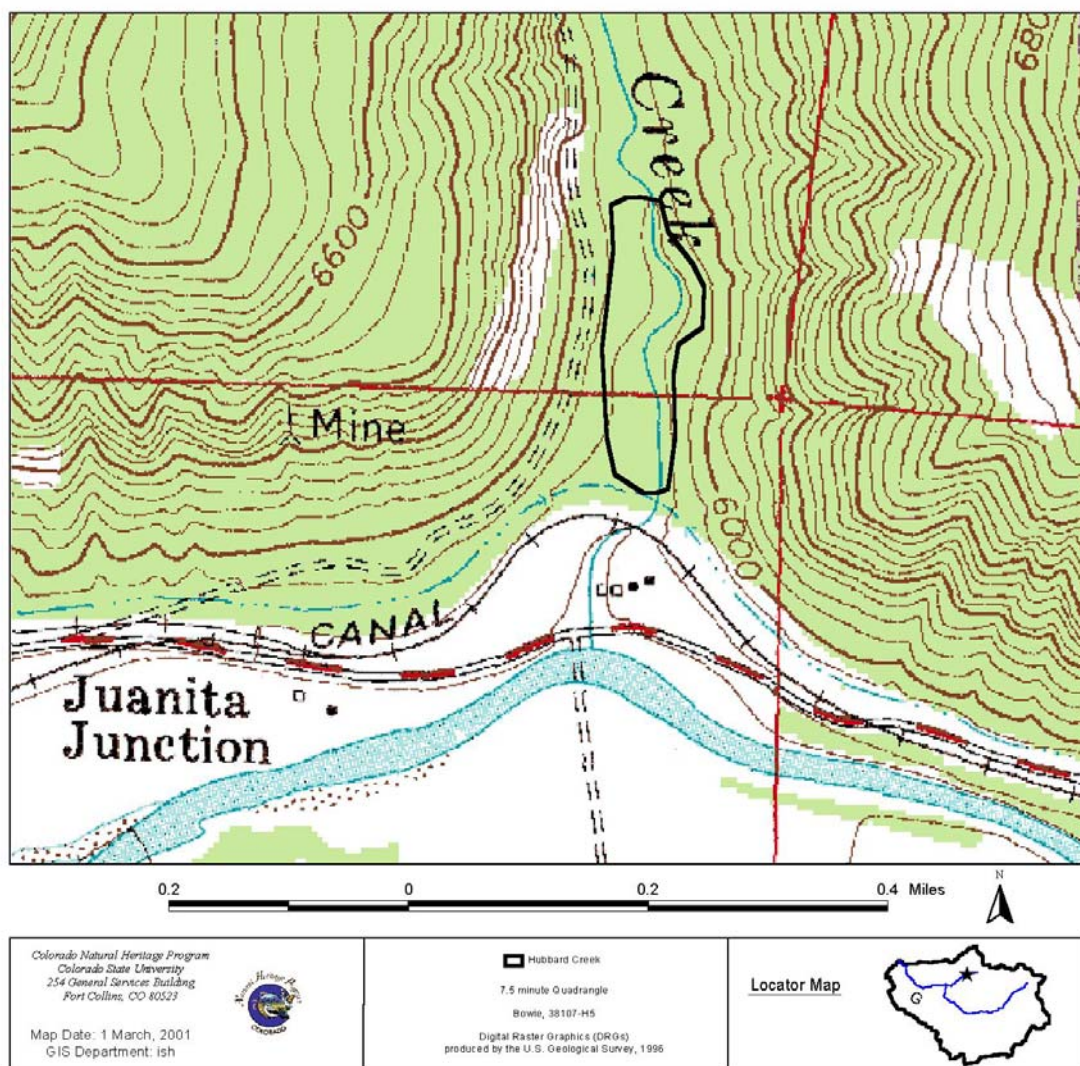
impinge on the riparian area at the mouth of Hubbard Creek and reduce habitat effectiveness for some species sensitive to human disturbance.

**Riparian Vegetation Rating: B**

**Wildlife Habitat Rating: C**

Location Map:

## Hubbard Creek Study Area





Representative Photo:



## Terror Creek

**Location Description:** The Terror Creek site occurs adjacent to the Fire Mountain Canal approximately 0.5 miles from the confluence with the North Fork of the Gunnison. Terror Creek is a low gradient stream that flows through a narrow canyon with moderately steep canyon walls. The streambed consists of basalt boulders and cobbles with some gravel. At the time of the survey, water was flowing in the stream. The riparian plant community grows close to the stream channel with some of the shrub species intergrading with the adjacent upland oak-juniper community. The elevation is approximately 5900 feet.

**Communities Observed:** Narrowleaf cottonwood (*Populus angustifolia*) forms an open forest canopy; Fremont's cottonwood (*Populus deltoides* var. *wislizenii*) individuals are present as well. The Terror Creek site supports the greatest number of shrub species of any of the tributaries on the north side of the North Fork valley. Eleven shrub species occur at the site and include thinleaf alder (*Alnus incana*), hawthorn (*Crataegus* sp.), chokecherry (*Prunus virginiana*), skunkbush (*Rhus trilobata*), coyote willow (*Salix exigua*), silver buffaloberry (*Shepherdia argentea*), and snowberry (*Symphoricarpos rotundifolius*). Silver buffaloberry (*S. argentea*) and coyote willow (*S. exigua*) are more common along the stream bank, while the other shrub species tend to grow further away from the water. A few escaped fruit trees are the only exotic woody plants at the site. Horsetail (*Equisetum* sp.), false Solomon's seal (*Maianthemum* sp.), and poison ivy (*Toxicodendron rydbergii*) are common native herbaceous species.

**Size:** The site is approximately the same size as the Hubbard Creek site (0.25 miles long and 250 feet wide). The foothills riparian community likely continues another 3 miles up the valley.

**Condition:** The vegetation is in very good condition a short distance upstream of the canal. The creek supports a large number of shrub species including silver buffaloberry (*S. argentea*), an uncommon riparian shrub in Colorado. Few weedy species are present and make up only a small proportion of the vegetation cover. Agricultural land in the floodplain may constrict the riparian community at the lower end of the site.

**Landscape Context:** BLM land borders the site upstream. There are no roads near the riparian area for approximately 3 miles up the valley.

**Wildlife Habitat:** This site provides habitat features very similar to Hubbard Creek described above, except that the riparian area is somewhat larger, the greater shrub species diversity provides more diverse structure and forage, and the roadless drainage leads to less human disturbance. As a result, habitat quality is enhanced for bald eagle (FT) roosting, deer and elk winter range, and black bear forage. Wildlife species diversity is likely to be moderate. Regional context is similar to the Hubbard Creek site.

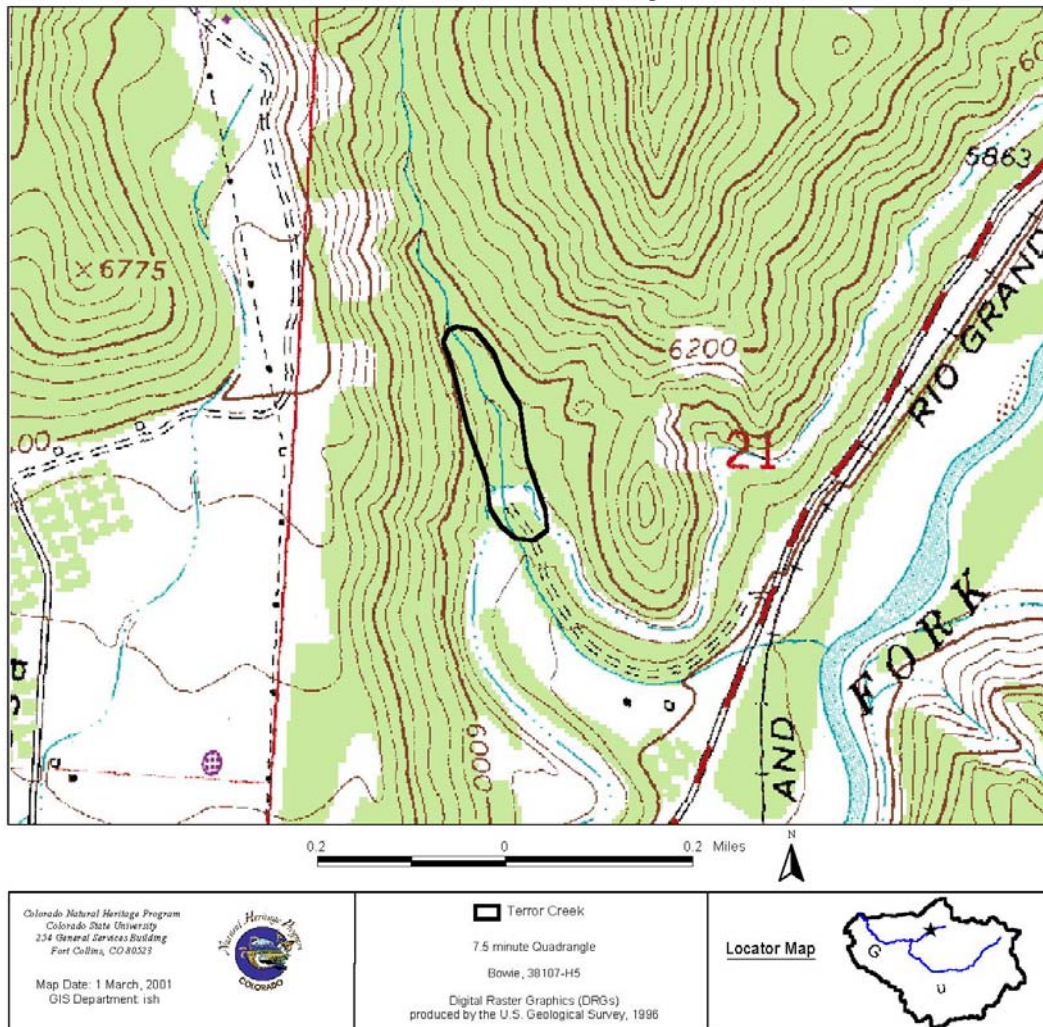
**Riparian Vegetation Rating:** A

**Wildlife Habitat Rating:** B



Location Map:

## Terror Creek Study Area



Representative Photo:





## Roatcap Creek (lower)

**Location Description:** The lower Roatcap Creek site is located adjacent to the Fire Mountain Canal approximately 1.5 miles from the confluence with the North Fork of the Gunnison. Roatcap Creek canyon is more open and less entrenched than Hubbard and Terror Creek canyons. Basalt cobbles and boulders form the streambed. The channel was completely dry the day of the survey. The elevation is approximately 5900 feet.

**Communities Observed:** Cottonwoods (*Populus angustifolia*, *P. deltoides* var. *wislizenii*, and *P. x acuminata*), boxelder (*Acer negundo*) and the non-native Siberian elm (*Ulmus pumila*) form an open canopy above a mixed native-exotic understory. Tamarisk (*Tamarix ramosissima*) is common, and the number of native shrub species is much less than the other North Fork tributaries. Serviceberry (*Amelanchier utahensis*), scrub oak (*Quercus gambelii*), skunkbush (*Rhus trilobata*), and rose (*Rosa woodsii*) are the native shrubs present at the site. The herbaceous layer is dominated by smooth brome (*Bromus inermis*).

**Size:** The location is long and narrow, measuring approximately 0.75 miles long by 200 feet wide. The foothills community is also found at the upper Roatcap site (discussion following) and likely forms a nearly continuous corridor between the two sites.

**Condition:** The vegetation is in fair condition. The number and abundance of weedy species is quite high. The vegetation improves somewhat away from the canal as cottonwoods (*Populus* spp.) replace elms (*U. pumila*) further downstream.

**Landscape Context:** The lower end of the site is fairly disturbed. The canal maintenance road runs adjacent to the creek for approximately 0.25 miles and agricultural lands located in the floodplain constrict the riparian vegetation. The site is also near the town of Paonia.

**Wildlife Habitat:** This site provides limited and partially disturbed cottonwood woodland habitat, and lacks floodplain wetlands or large stream habitat features. Special Status species include bald eagle (FT) potential roost sites, and limited potential breeding habitat for northern leopard frogs (SC) and Great Basin spadefoot.

The site lies within a wide region of mule deer and elk winter range, and vegetative cover and browse in the riparian corridor contribute to winter habitat quality. Cover and forage for black bears and mountain lions also occurs, although the surrounding agricultural areas preclude extensive use of lower Roatcap Creek by large carnivores. Pheasants occur in surrounding agricultural areas, and probably find cover in severe weather in Roatcap Creek.

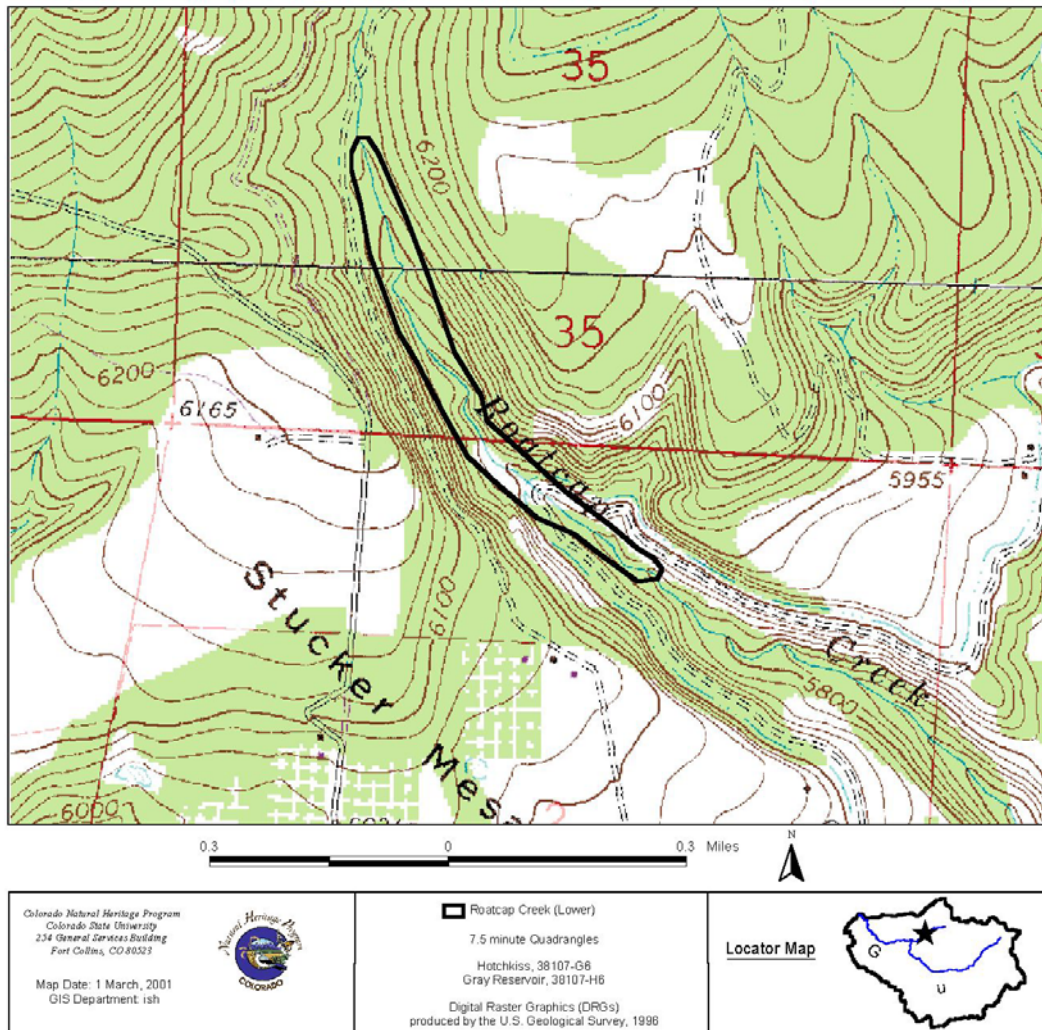
The site favors woodland and shrubland wildlife fairly tolerant of human disturbance. Weedy ground cover and low shrub species diversity reduce habitat effectiveness for many wildlife species, and animal species diversity is likely to be fairly low.

**Riparian Vegetation Rating:** C

**Wildlife Habitat Rating:** C

Location Map:

## Roatcap Creek (Lower) Study Area



Representative Photo: Not available

## Roatcap Creek (upper)

**Location Description:** The upper site is located on East Roatcap Creek above the Bowie #1 Mine and is approximately 5 miles from the North Fork of the Gunnison. East Roatcap Creek flows through an open canyon with the riparian corridor receiving more sunlight than the lower Roatcap site. On the day of the survey, water was present only in pools in the channel. The elevation of the site is about 7440 feet.

**Communities Observed:** Mature narrowleaf cottonwoods (*Populus angustifolia*) form an open overstory canopy above a diverse shrub canopy. Mountain maple (*Acer glabrum*), red-osier dogwood (*Cornus sericea*), hawthorn (*Crataegus* sp.), chokecherry (*Prunus virginiana*), and snowberry (*Symphoricarpos rotundifolius*) are present in near equal abundance.

**Size:** The site is 0.25 miles long by 200 feet wide. The foothills riparian community is also found at the lower Roatcap site (discussed above), and with the exception of the dam site downstream, likely forms a continuous corridor between the two sites. The distance between the sites is approximately 2.5 miles.

**Condition:** The vegetation at the site is mainly native, but the riparian area is constricted and impacted by a Forest Service road that parallels and crosses the creek.

**Landscape Context:** A large dam retains the water in the creek at the Bowie #1 Mine approximately 0.5 miles downstream of the site. BLM land is adjacent to the creek to the west.

**Wildlife Habitat:** This site provides a very small area of mid-elevation cottonwood woodland, and lacks wetland or large stream habitat features. No significant habitat for special status species occurs.

The area lies at the upper elevation limit of mule deer and elk winter range, and provides some value to mule deer as summer habitat and to migrating deer and elk as transitional range. The site also provides small areas of good cover and forage for black bears and mountain lions, enhanced by extensive BLM shrublands nearby. The site provides small amounts of habitat for cottontails, wild turkeys, and other small game.

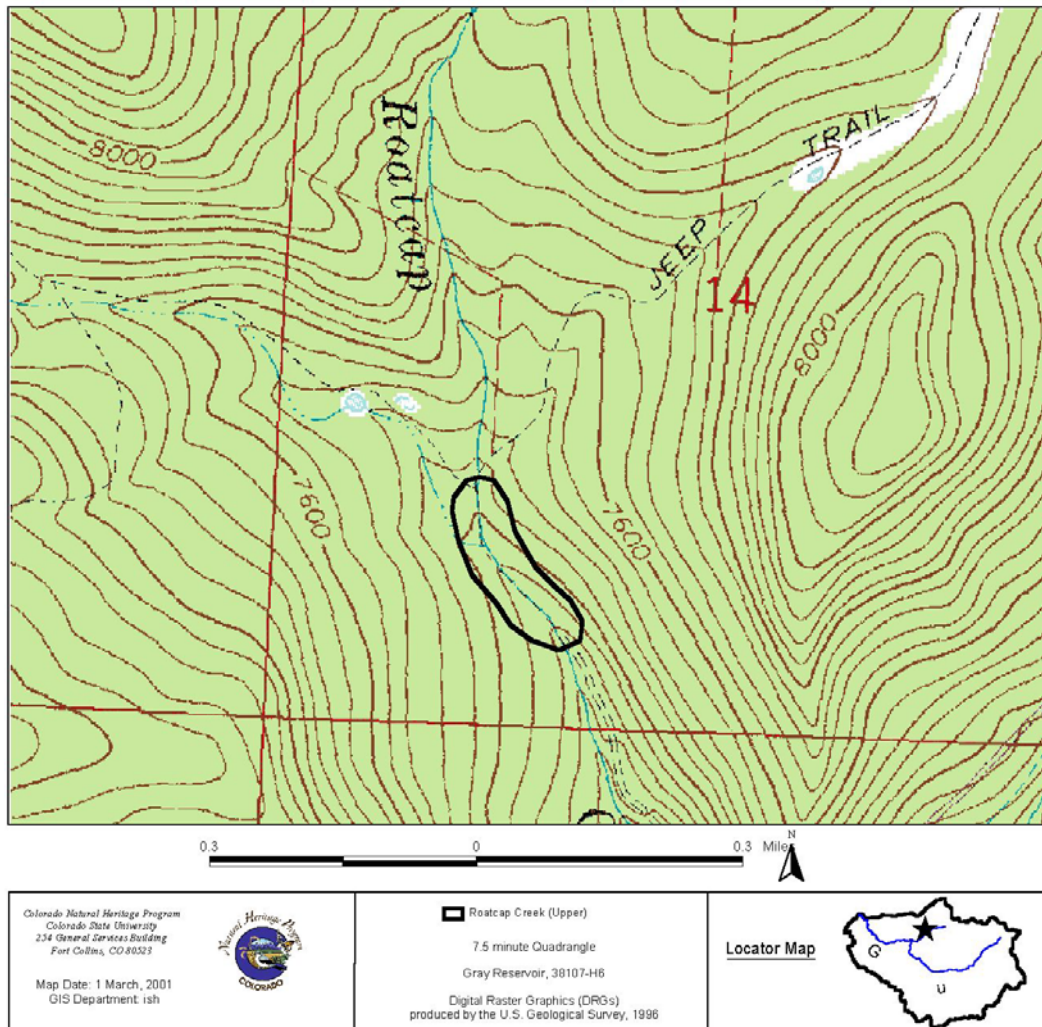
Habitat at the site favors wildlife species inhabiting Gambel's oak shrublands and generalist woodland species, due to the small size of the riparian area. Animal species diversity is likely to be moderate, with a strong influence from surrounding upland shrublands. The regional context mostly favors wildlife habitat, with extensive BLM lands and undeveloped private lands adjacent to the site. Disturbance from nearby coal mining and the small road through the area tend to decrease habitat value for species sensitive to disturbance.

**Riparian Vegetation Rating: C**

**Wildlife Habitat Rating: C**

Location Map:

## Roatcap Creek (Upper) Study Area





Representative Photo:



## Jay Creek

**Location Description:** The Jay Creek site is above the Fire Mountain Canal and 2 miles from the confluence of the North Fork of the Gunnison. Jay Creek is a low gradient stream that flows through an open canyon surrounded by gently sloping mesas. The creekbed consists mainly of smaller particles (silt and clay) than the tributaries further up the North Fork valley. The creekbed was dry when surveyed.

**Communities Observed:** Narrowleaf cottonwoods (*Populus angustifolia*) form an open canopy above a diverse assemblage of shrubs including serviceberry (*Amelanchier utahensis*), red-osier dogwood (*Cornus sericea*), hawthorn (*Crataegus* sp.), scrub oak (*Quercus gambelii*), skunkbush (*Rhus trilobata*), and coyote willow (*Salix exigua*). One non-native Siberian elm (*Ulmus pumila*) tree was observed at the site. The herbaceous vegetation is sparse and consists mainly of grass and aster family species.

**Size:** The location is relatively long and narrow, approximately 0.75 miles long by 150 feet wide. The foothills riparian community likely extends up the valley 2.5 miles to a similar elevation as Roatcap Creek.

**Condition:** The vegetation at the site is in very good condition upstream of the canal. Narrowleaf cottonwood (*P. angustifolia*) is regenerating; a number of saplings are present along the creek.

**Landscape Context:** BLM land is approximately 1 mile upstream and 0.5 miles on the mesas to the northeast and northwest. A small housing development is located to the west of the site on Powell Mesa. A reservoir is located on the headwaters of the creek.

**Wildlife Habitat:** This site provides fairly extensive and good quality cottonwood woodland habitat, but lacks floodplain wetlands and supports minimal large stream habitat features. Potential roost sites for bald eagles (FT) exist in tall cottonwoods, and possible breeding habitat occurs for northern leopard frogs (SC) in deeper pools at the lower end of the site.

The site lies within an extensive band of mule deer and elk severe winter range. The cottonwood woodland with dense shrub understory provides good cover, winter browse, and early spring forage for deer and elk, and contributes significantly to winter range quality in the area. Black bear and mountain lion habitat provided by the riparian corridor is similarly valuable. The site provides good habitat for small game including cottontails and wild turkeys, and pheasants occur near the lower end of the site adjacent to irrigated agricultural areas.

Wildlife species diversity at Jay Creek is likely to be fairly high, due to the extent of riparian woodland, high shrub species diversity, and proximity of the site to diverse and undeveloped upland communities.

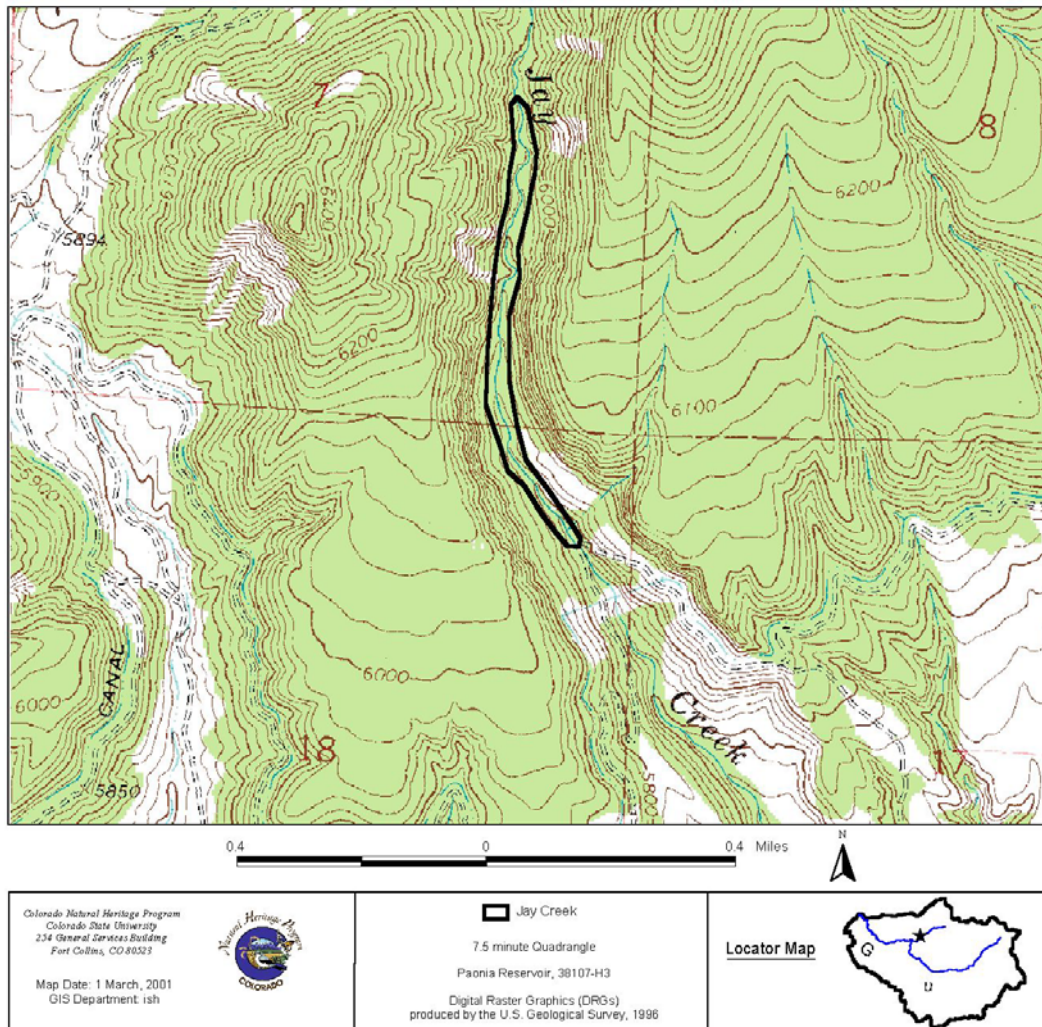
**Riparian Vegetation Rating:** A

**Wildlife Habitat Rating:** B



Location Map:

## Jay Creek Study Area





Representative Photo:





## Leroux Creek (lower)

**Location Description:** The lower Leroux Creek site is located adjacent to the Fire Mountain Canal and is approximately 4 miles from the confluence of the North Fork of the Gunnison. Leroux Creek is a low gradient stream that flows through a moderately open canyon. A gently sloping mesa is adjacent to the creek to the west, whereas a steeper hillslope is proximate to the east. The streambed is mainly bedrock with boulders scattered on top. The stream channel is wider than the drainages discussed above. Water was flowing in the stream the day of the survey.

**Communities Observed:** Mature and sapling narrowleaf cottonwoods (*Populus angustifolia*) form a moderately dense canopy over a mixed native-exotic shrub understory. The stream bank is lined with coyote willow (*Salix exigua*), tamarisk (*Tamarix ramosissima*), and one large silver buffaloberry (*Shepherdia argentea*) individual. Big sagebrush (*Artemisia tridentata*), skunkbush (*Rhus trilobata*), and rose (*Rosa woodsii*) are common shrubs away from the channel. The herbaceous layer is mainly exotic, with yellow sweetclover (*Melilotus officinale*) and mullein (*Verbascum thapsus*) common. There are a number of depressions in the floodplain that are filled with cattails (*Typha* sp.).

**Size:** The site is 0.25 miles long by 200 feet wide.

**Condition:** The stream channel and floodplain are highly disturbed possibly due to land alterations related to the canal. The site is more physically disturbed than any of the sites draining the north side of the North Fork. The vegetation is in fair condition; the shrub and herbaceous layers have a high percentage of weedy species.

**Landscape Context:** A small parcel of BLM land is located on the hillslopes east of the site. The remaining adjacent land is privately owned.

**Wildlife Habitat:** Habitat characteristics vary along Lower Leroux Creek. Wildlife habitat quality is greatest where the cottonwood woodland achieves the most width and vertical structure, adjacent lands are least disturbed, and where small floodplain wetlands occur. The site provides habitat for special status species including roost sites for wintering bald eagles (FT), limited potential breeding habitat for southwestern willow flycatchers (FE), and breeding sites for northern leopard frogs (SC) and the Great Basin spadefoot. More open sections of the streambed provide foraging habitat for great blue heron, and the western yellowbelly racer. Could occur in lower reaches.

The site lies within extensive winter range for mule deer and elk, and dense cover and browse contribute significantly to winter range quality. Vegetative structure and relatively undisturbed locations also encourage use of Leroux Creek by black bears and mountain lions. Good habitat exists for upland game including cottontails, wild turkeys, and bobcats.

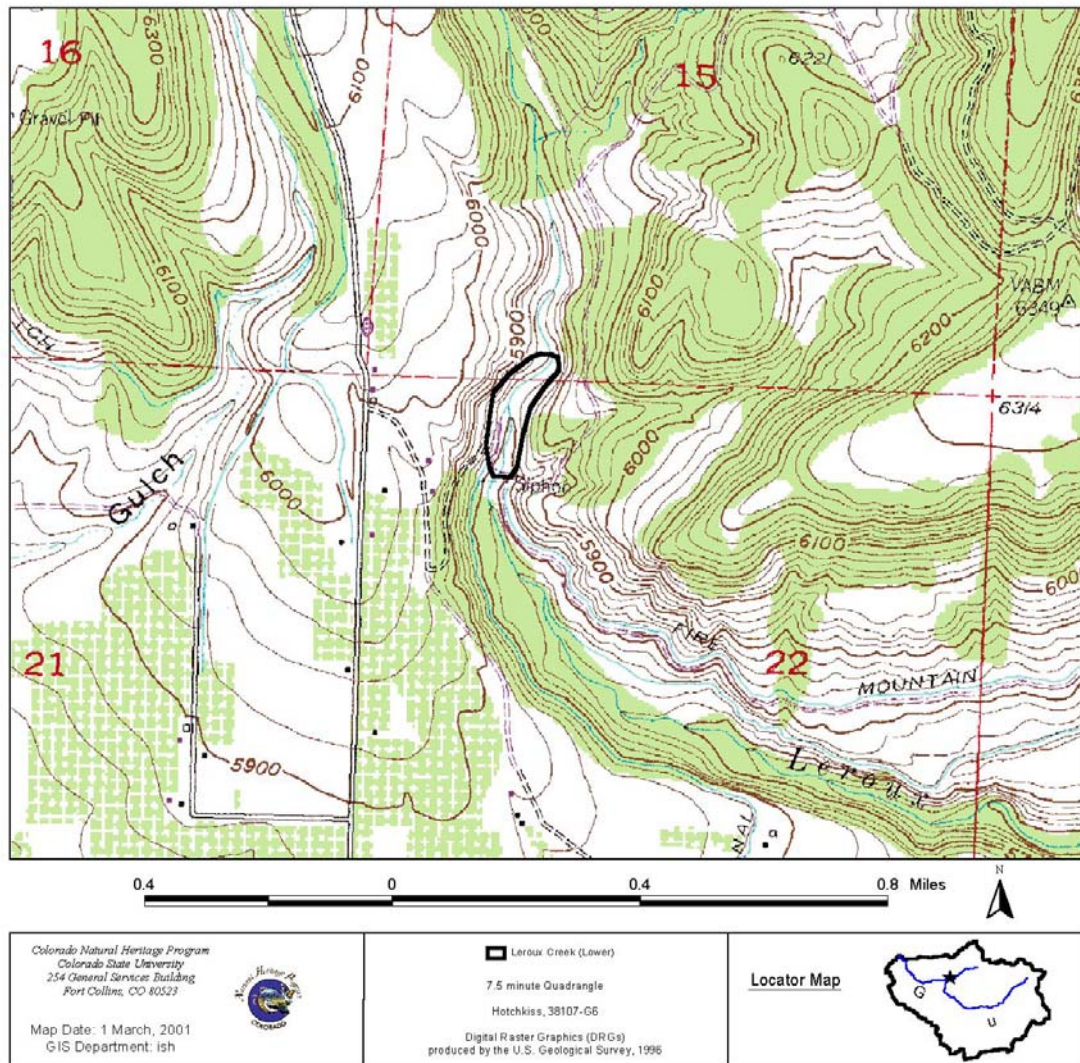
Wildlife species diversity in Lower Leroux Creek is expected to be fairly high, due to the length and width of the riparian woodland, fairly high shrub species diversity, permanent stream flow, the presence of small floodplain wetlands with emergent vegetation, and limited human presence in the floodplain area.

**Riparian Vegetation Rating: C**

**Wildlife Habitat Rating: B**

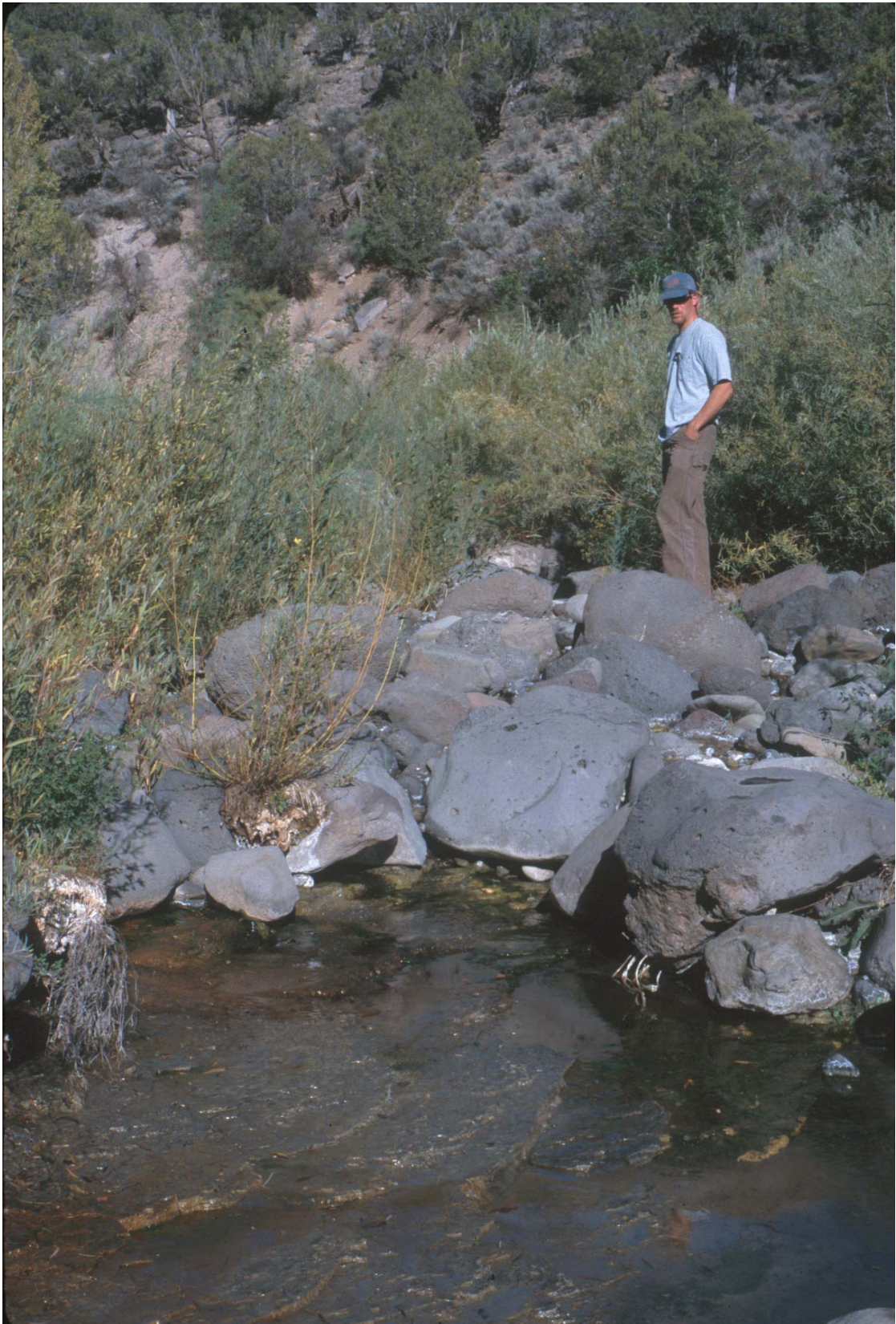
Location Map:

## Leroux Creek (Lower) Study Area





Representative Photo:



## Leroux Creek (upper)

**Location Description:** The upper Leroux Creek site is located just downstream of Grand Mesa National Forest and the Patterson Reservoirs at an elevation of 8120 feet. The site is approximately 10 miles upstream of the lower site. Leroux Creek is a low gradient stream that flows through an open canyon surrounded by gently sloping hillsides. The hillslopes are covered with oak (*Quercus gambelii*) shrublands and aspen (*Populus tremuloides*) forests. Water was flowing in the creek the day of the survey.

**Communities Observed:** Narrowleaf cottonwood (*Populus angustifolia*), aspen (*P. tremuloides*), and Colorado blue spruce (*Picea pungens*) form a moderately closed canopy over a shrub understory dominated by thinleaf alder (*Alnus incana*) and Drummond willow (*Salix drummondiana*). Mountain maple (*Acer glabrum*), serviceberry (*Amelanchier utahensis*), chokecherry (*Prunus virginiana*), raspberry (*Rubus idaeus*), and thimbleberry (*Rubus parviflorum*) are other shrub species present.

**Size:** The site is 0.75 miles long by 250 feet wide.

**Condition:** The site supports a nice stand of narrowleaf cottonwood-Colorado blue spruce/thinleaf alder (*P. angustifolia*-*P. pungens*/*A. incana*), a G4S4 ranked community by the CNHP. The community is common in montane valleys on the east and west slopes of Colorado. There are no weedy shrubs present at the site.

**Landscape Context:** Water from the creek is diverted into 3 small reservoirs upstream of the site; a road crosses the creek near the diversion. The creek and adjacent hillslopes immediately upstream of the site are on National Forest land with the exception of the property adjacent to the reservoirs.

**Wildlife Habitat:** This site represents high quality montane riparian habitat, although narrow. The site lacks floodplain wetlands, and heavily altered streamflow characteristics significantly reduce habitat quality for aquatic-related wildlife. Suitable foraging habitat for lynx (FT) exists. Potential breeding habitat for northern goshawk occurs in mature coniferous or aspen stands in surrounding forests.

The site provides good summer habitat for mule deer and elk. The riparian forest and associated shrubs and herbaceous vegetation provide very good fawning cover for deer, and good late spring through fall forage and browse for deer and elk. Cover and forage for black bears and mountain lions are abundant. The site provides habitat for upland game including blue grouse, cottontails, snowshoe hares, and bobcats.

Wildlife species diversity is probably fairly high at the site, due to the high ecological integrity of the riparian forest, extensive national forest to the north, and low level of human presence in the area.

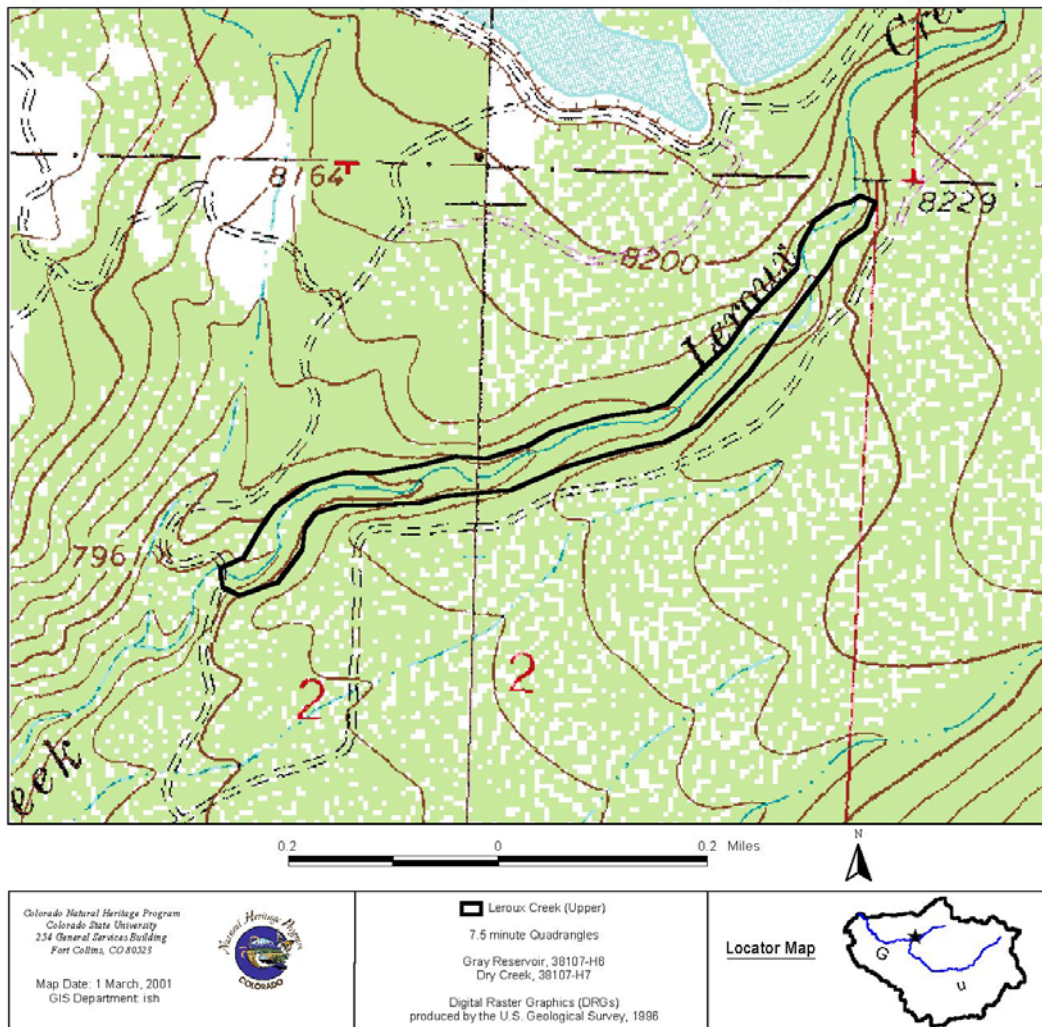
**Riparian Vegetation Rating:** A

**Wildlife Habitat Rating:** B



Location Map:

## Leroux Creek (Upper) Study Area



Representative Photo: Not available

## NORTH FORK OF THE GUNNISON RIVER – EASTERN TRIBUTARIES

### Muddy Creek

**Location Description:** The Muddy Creek site is located 0.25 miles upstream of Paonia Reservoir. Muddy Creek is a wide, low-gradient stream that flows through a medium-wide valley (400 feet). At the site, the hydrology of the creek is impacted by the reservoir. Natural boulder and cobble streambed material is mixed with red sand from the reservoir.

**Communities Observed:** The narrowleaf cottonwood-Colorado blue spruce/thinleaf alder (*Populus angustifolia*-*Picea pungens*/*Alnus incana*) grows on the higher stream banks of the creek. The two tree species form an open to closed canopy over a mixed shrub understory. Thinleaf alder (*A. incana*), serviceberry (*Amelanchier utahensis*), red-osier dogwood (*Cornus sericea*), hawthorn (*Crataegus* sp.), shrubby cinquefoil (*Pentaphylloides floribunda*), chokecherry (*Prunus virginiana*), and snowberry (*Symphoricarpos rotundifolia*) grow in the understory. This deciduous-evergreen riparian forest is ranked G4S4 by the CNHP.

Willow (*Salix* spp.) shrublands grow along stream banks closer to the water level. Coyote willow (*Salix exigua*), rocky mountain willow (*S. monticola*), and whiplash willow (*S. lucida* ssp. *caudata*) grow in a dense stand with non-willow species such as serviceberry (*A. utahensis*), hawthorn (*Crataegus* sp.), and snowberry (*S. rotundifolia*).

**Size:** The site is 0.5 mile long by 400 feet wide.

**Condition:** The vegetation at the site is in fair condition. Much of the floodplain vegetation has been removed for agricultural purposes, and the quality of the vegetation has been reduced by impacts from grazing. Colorado Hwy 133 runs through the riparian corridor at the lower end of the site.

**Landscape Context:** Private property extends upstream of the site a number of miles and on the lower hillsides above the creek.

**Wildlife Habitat:** This site features mid-elevation riparian gallery forest, partially altered by ranch activity. Wildlife habitat quality is enhanced by the forest's extensive area and diverse tree age classes, but reduced by extensive understory removal by grazing in some areas, partially entrenched streambed, and mostly complete development of the adjacent floodplain for agriculture. Habitat for special status species includes potential breeding sites for northern leopard frog (SC) in the stream channel.

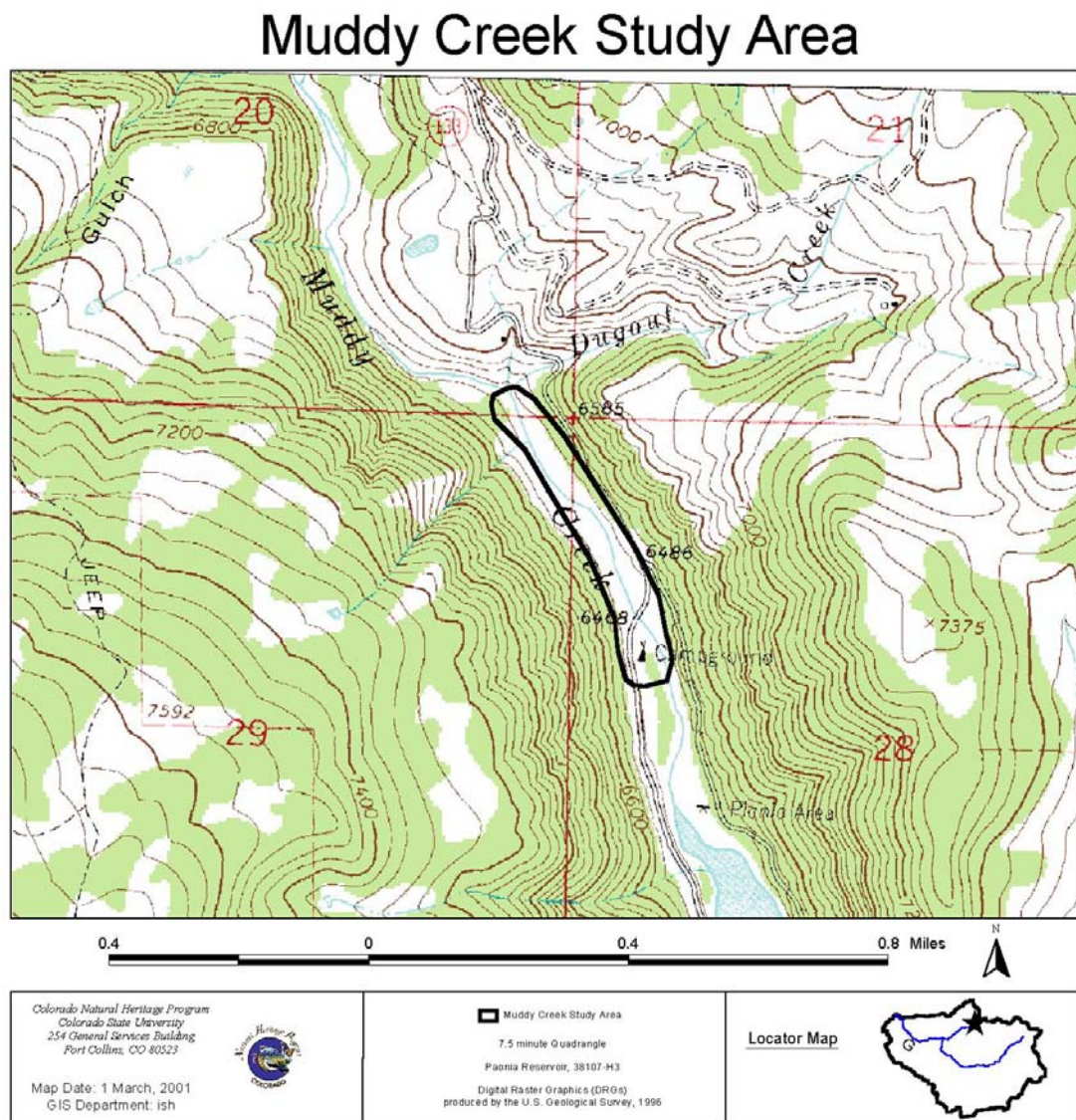
The site provides summer habitat for mule deer, and transitional habitat for mule deer and elk. Where the understory is intact, the riparian forest provides good cover and forage for deer, elk, black bears, and mountain lions. However, close proximity of the road and agricultural developments limits habitat quality for big game. The site supports small game including cottontails, red foxes, and wild turkeys.

Wildlife species diversity at the site is expected to be moderate. The mature cottonwood-conifer riparian forests with intact understory provide good habitat for many obligate riparian species, but heavily grazed understory areas and lack of floodplain wetlands reduces species diversity.

**Riparian Vegetation Rating: C**

**Wildlife Habitat Rating: C**

Location Map:





Representative Photo:





## Anthracite Creek

**Location Description:** The Anthracite Creek site is six miles upstream of the confluence with the North Fork. The site is located between a forest service campground and the mouth of the creek from a narrow canyon. At the site, Anthracite Creek runs through a deep canyon with a wide, valley floor (800 feet). The creek is a wide low-gradient, braided stream that appears to carry a moderate volume of water during peak flow. On the September sampling date, however, the water level was low and rocks were visible across the channel and on exposed point bars.

**Communities Observed:** The riparian vegetation is a patchwork of different-aged narrowleaf cottonwood (*Populus angustifolia*) forests. Narrowleaf cottonwood-Colorado blue spruce/thinleaf alder (*P. angustifolia*-*Picea pungens*/*Alnus incana*) is a mixed deciduous-evergreen forest that grows along stable streambanks and the valley floor. Mature trees form a moderately open canopy over a tall, mixed shrub understory. Thinleaf alder (*A. incana*), serviceberry (*Amelanchier utahensis*), red-osier dogwood (*Cornus sericea*), coyote willow (*Salix exigua*), rocky mountain willow (*S. monticola*), and whiplash willow (*S. lucida* ssp. *caudata*) are common shrub species. This montane riparian community is common in Colorado and is ranked G4S4 by the CNHP.

Along more recently flooded point bars, a younger, less diverse cottonwood community occurs. Narrowleaf cottonwood (*P. angustifolia*) forms an open canopy over thinleaf alder (*A. incana*) and coyote willow (*S. exigua*). The herbaceous layer is sparse and weedy with mullein (*Verbascum thapsus*) a common species. The CNHP tracks the narrowleaf cottonwood/thinleaf alder (*P. angustifolia*/*A. incana*) community as a G3S3.

**Size:** The site is 0.25 miles long by 800 feet wide; however, the communities extend the length of the valley downstream to the confluence with the North Fork.

**Condition:** The site is in good condition. A forest service campground and hiking trail are located in the riparian area at the lower end of the site, impacting the vegetation. Otherwise, the native communities are mainly intact. The site may be considered a reference reach for the two narrowleaf cottonwood communities.

Downstream, the condition of the riparian vegetation decreases to a "C" rank. Hay meadows, pastures, and homes encroach on the riparian area along much of the lower valley. There are several small patches of "B" grade habitat interspersed.

**Landscape Context:** The site is located in the Gunnison National Forest. The Raggeds Wilderness Area is 0.5 miles upstream of the site. Downstream, the majority of the valley floor and surrounding hillsides are private land.

**Wildlife Habitat:** Principal wildlife habitat features at this site are a mid-elevation cottonwood-coniferous gallery forest along a large stream with mostly intact hydrological characteristics. About 40% of the riparian forest is pristine, mostly on the southwest bank, and 60% altered by agriculture, lodges and residential development. Occasional willow carrs and backwater stream channels add considerable habitat diversity to the site. Habitat for special status species includes good potential breeding and migratory habitat for southwestern willow flycatchers (FE),

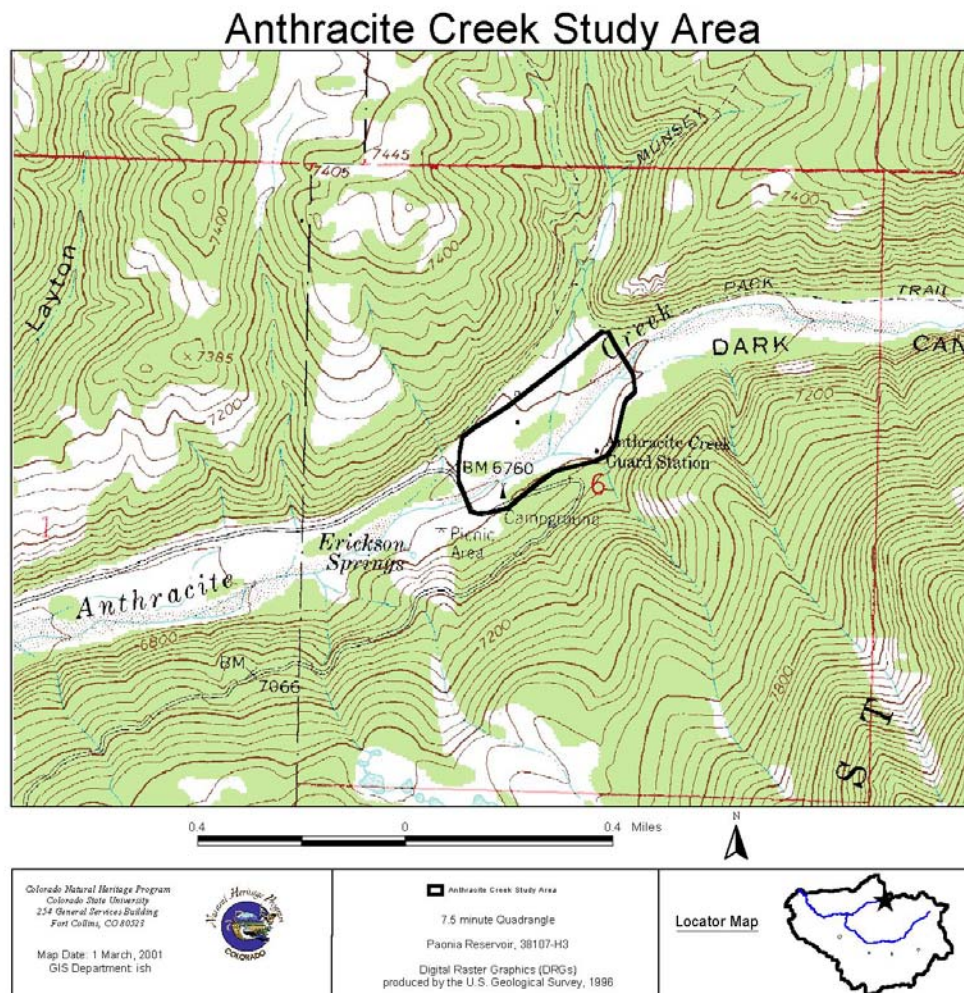
and breeding sites for northern leopard frogs (SC) in stream channels and manmade ponds. Suitable nesting and foraging habitat exists for northern goshawks in large forest stands free of significant human disturbance.

The site provides summer and transitional range for mule deer, elk, black bears, and mountain lions. The riparian forest provides good cover and forage as well as an important movement corridor for large animals. Extensive habitats exist for a variety of upland small game, and limited nesting or migratory habitat for puddle ducks and mergansers in the stream and manmade ponds. Wildlife species diversity at the site is expected to be moderate. The extensive and fairly intact riparian forest provides for a wide range of riparian wildlife species. Habitat is limited by high elevation, lack of significant off-channel floodplain wetlands, and significant human disturbance in some areas.

**Riparian Vegetation Rating: B**

**Wildlife Habitat Rating: B**

Location Map:



Representative Photo:



## NORTH FORK OF THE GUNNISON RIVER – SOUTHERN TRIBUTARIES

### Minnesota Creek (lower)

**Location Description:** The lower Minnesota Creek site is approximately 4 miles from the confluence with the North Fork of the Gunnison and 2 miles east of the town of Paonia. The site is located on the Jessen Ranch. Minnesota Creek is a low gradient stream that winds through a wide valley (600 feet) surrounded by adobe hillslopes. The creek is entrenched in the soft soil of the valley floor. The elevation of the site is 5960 feet.

**Communities Observed:** A gallery forest of trees and tall shrubs grow along Minnesota Creek in a medium-wide corridor. Agricultural crops fill the remainder of the valley floor. Cottonwoods (*Populus angustifolia* and *P. deltoides* ssp. *wislizenii*) form an upper canopy over a sub-canopy of boxelder (*Acer negundo*).

A number of shrub species grow in the understory. Dense stands of mature thinleaf alder (*Alnus incana*) and river birch (*Betula occidentalis*) alternate with patches of coyote willow (*Salix exigua*) along the elevated stream banks. Serviceberry (*Amelanchier utahensis*), virgin's bower (*Clematis ligusticifolia*), red-osier dogwood (*Cornus sericea*), skunkbush (*Rhus trilobata*) and Rocky Mountain willow (*Salix monticola*) are scattered across the floodplain further from the channel. Small groves of large, tall river birch (*B. occidentalis*) also grow on the floodplain. Tamarisk (*Tamarix ramosissima*) is established along the north stream bank which is cut into the lower edge of an adobe hillslope. Russian olive (*Elaeagnus angustifolia*) is also present. The CNHP tracks the boxelder-narrowleaf cottonwood/red-osier dogwood (*A. negundo*-*P. angustifolia*/*Cornus sericea*) as a G2S2 community.

**Size:** The site is small, measuring 0.25 miles long by 600 feet wide. The riparian community likely extends an additional 3 miles upstream to the upper Minnesota Creek site as part of a mosaic with willow (*Salix* spp.) shrublands.

**Condition:** The riparian community is in good condition. Some species are regenerating. Fremont's cottonwood (*P. deltoides* ssp. *wislizenii*) seedlings are present on moist, sandy point bars and boxelder (*A. negundo*) saplings grow in the understory of the larger trees. Only mature individuals of narrowleaf cottonwood (*P. angustifolia*) and river birch (*B. occidentalis*), however, were observed at the site. Weedy shrubs occur in relatively low abundance. The condition of the site may also improve with time; ranch animals are currently fenced out of the majority of the riparian area.

**Landscape Context:** Private property surrounds the site on all sides with BLM land located 0.25 miles away on the adjacent hillslopes to the north and south. Water is diverted from Minnesota Creek into two ditches not far upstream of the site.

**Wildlife Habitat:** This site features a relatively small corridor of mid-elevation riparian woodland habitat. Because of floodplain conversion to agriculture and stream diversion, the site lacks floodplain wetlands and some stream channel characteristics that contribute to wildlife habitat. Special status species habitat includes roost sites for wintering bald eagles (FT) and

potential but limited breeding habitat for northern leopard frog (SC). Foraging habitat exists for great blue herons along the stream channel, and agricultural areas in the adjacent floodplain provide foraging areas for northern harriers.

The site lies within an extensive winter range for mule deer and elk, and cover and browse along the creek contribute to winter habitat quality. Bordering agricultural fields also provide forage sites for wintering big game, and a small resident deer herd occupies the site year-round. Habitat for black bears and mountain lions occurs, but extensive human development of the area precludes all but transitory use by large carnivores. Small game habitat on the site includes dense cover and forage for cottontails, red foxes, and wintering wild turkeys.

Wildlife species diversity is expected to be moderate to fairly low at the site because of the small area of riparian woodland, lack of wetlands and natural stream features, and high level of human development.

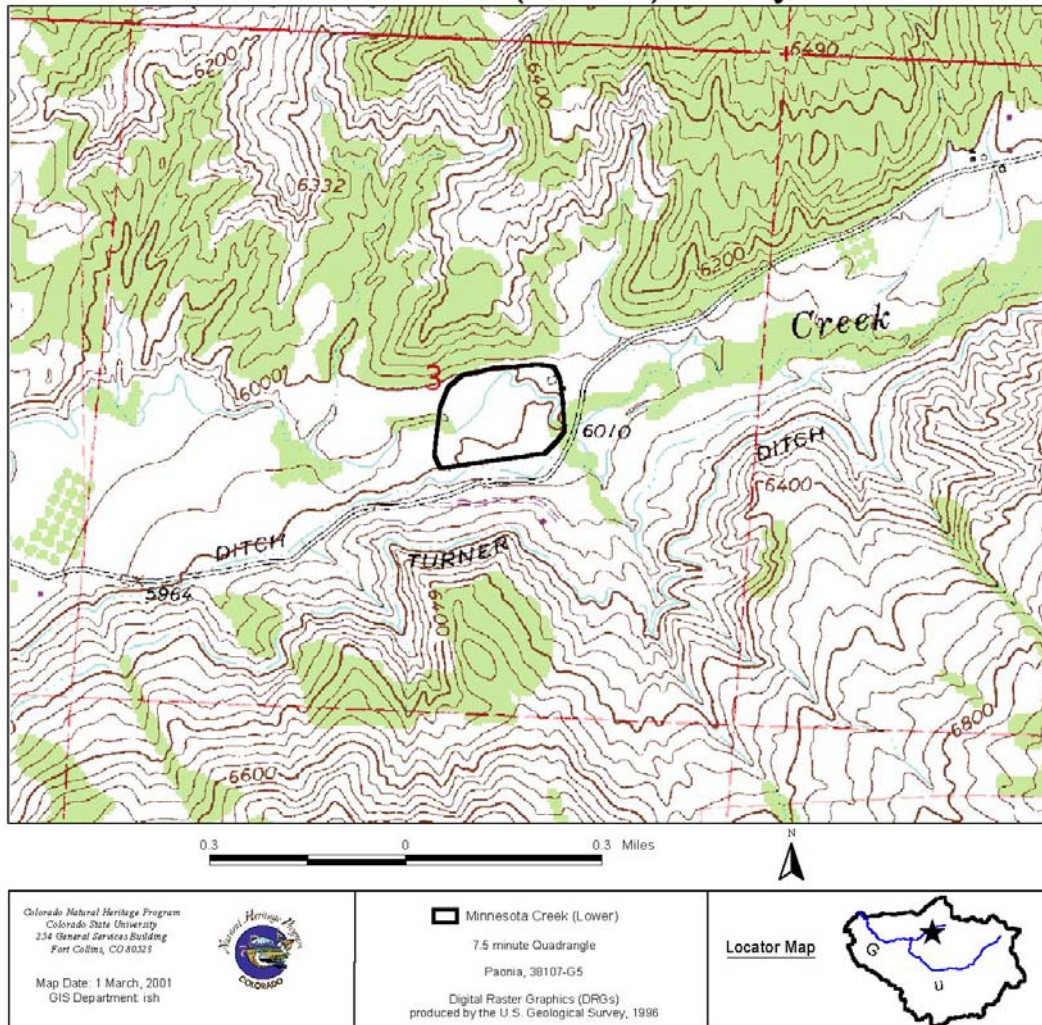
**Riparian Vegetation Rating: B**

**Wildlife Habitat Rating: C**



Location Map:

## Minnesota Creek (Lower) Study Area





Representative Photo:



## Minnesota Creek (upper)

**Location Description:** The site is approximately 3 miles upstream of the lower Minnesota Creek site and is just above the confluence of Dry Fork. The site is located on a small parcel of the Gunnison National Forest. The valley is narrower (400 feet) than at Jessen Ranch, but the creek is equally sinuous. Water flowed in the cobble and silt-covered stream channel the day of the survey; more water than at the lower site.

**Communities Observed:** The riparian vegetation is similar to the lower Minnesota Creek site, however, only narrowleaf cottonwood (*Populus angustifolia*) grows in the upper canopy and is much less abundant. Boxelder (*Acer negundo*) is the dominant tree species in a lower subcanopy.

Thinleaf alder (*Alnus incana*) is more common than river birch (*Betula occidentalis*) on the higher stream banks and alternates with stands of coyote willow (*Salix exigua*) on banks closer to the water level. Serviceberry (*Amelanchier utahensis*), virgin's bower (*Clematis ligusticifolia*), red-osier dogwood (*Cornus sericea*), Rocky Mountain willow (*Salix monticola*), and snowberry (*Symphoricarpos rotundifolius*) grow in the understory of the boxelder (*A. negundo*) further from the channel. Russian olive (*Elaeagnus angustifolia*) is the only weedy shrub present. The herbaceous cover is thick with native horsetail (*Equisetum* sp.) and non-native brome (*Bromus* sp.). The CNHP tracks the boxelder-narrowleaf cottonwood/red-osier dogwood (*A. negundo*-*P. angustifolia*/*C. sericea*) as a G2S2 community.

**Size:** The site is moderate in size, approximately 0.5 miles long by 400 feet wide.

**Condition:** The site is in very good condition with a relatively low number and abundance of weedy species. The site may be considered a reference reach for this uncommon, multi-layered deciduous riparian forest.

**Landscape Context:** The location is on national forest land. The watershed upstream is relatively intact with only two small reservoirs on the major tributaries.

**Wildlife Habitat:** This site provides a high-quality though narrow riparian woodland habitat, lacking floodplain wetlands. Stream channel characteristics remain relatively natural, but a steep gradient and small size of the stream limit aquatic habitat features for wildlife. Very limited breeding habitat may occur for northern leopard frog (SC). No significant habitat for other special status species occurs.

The area provides mostly summer range and transitional habitat for mule deer and elk; winter use may occur during mild weather. Riparian habitat features contribute somewhat to regional habitat for deer and elk, although cover and forage are abundant outside of the riparian area. Cover and forage for black bears are abundant at the site, and some habitat is also provided for mountain lions. Small game habitat includes brushy cover and forage for cottontails and other small mammals, and forage and roost sites for wild turkeys.

Wildlife species diversity at the site is expected to be moderate. The high quality of the cottonwood-boxelder woodland favors many riparian wildlife species, but the higher elevation and



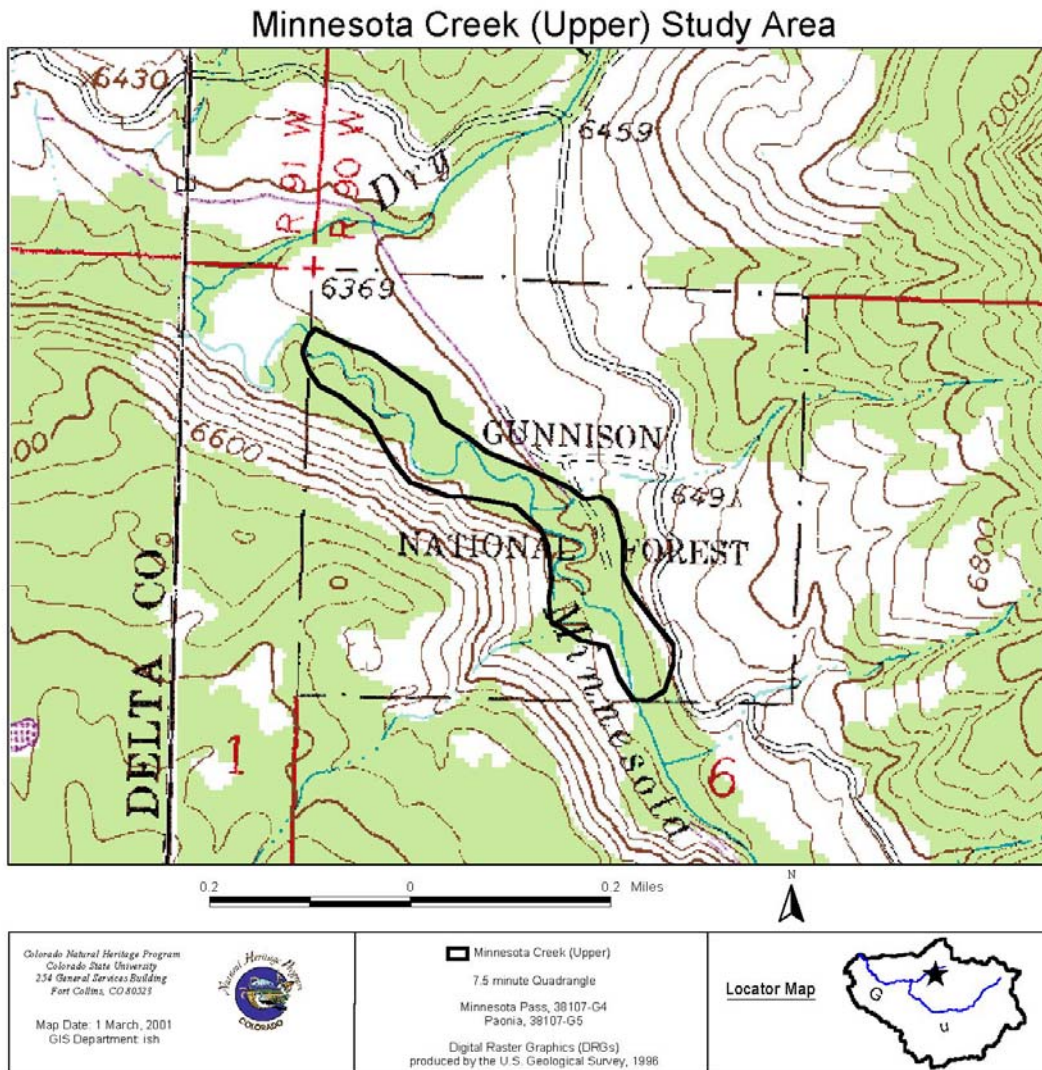
lack of wetland or large stream habitat features makes this site less suitable for many species compared to other sites in the project area.

**Riparian Vegetation Rating: A**

**Wildlife Habitat Rating: B**

Location Map:

Representative Photo: Not available



## Cottonwood Creek near Hotchkiss

**Location Description:** The site is located on Cottonwood Creek approximately 3 miles SE of Hotchkiss and the same distance from the North Fork of the Gunnison. Cottonwood Creek is a narrow, incised stream that runs through adobe hills. In places, the floodplain widens and the creek forms small meanders. The site is located at 5520 feet and is the lowest in elevation of the North Fork tributary sites.

**Communities Observed:** Tamarisk (*Tamarix ramosissima*) forms a solid stand at the upper end of the site where the stream channel is deeply incised. Downstream, coyote willow (*Salix exigua*) grows with the tamarisk (*T. ramosissima*) along the stream channel. Native graminoids, Baltic rush (*Juncus baltica*) and bulrush (*Scirpus pungens*) also grow along the water's edge. The community is likely a degraded stand of coyote willow (*S. exigua*)/mesic graminoid, a G5S5 ranked community by the CNHP.

Small stands of Siberian elm (*Ulmus pumila*) and Russian olive (*Elaeagnus angustifolia*) individuals grow in the floodplain away from the stream. The herbaceous vegetation in the floodplain is mainly weedy, but some native species are present such as goldenrod (*Solidago* sp.). Large patches of cattails (*Typha* sp.) grow in depressions in the floodplain.

**Size:** The site is 0.5 miles long by 150 feet wide.

**Condition:** The vegetation is in poor condition. With the exception of coyote willow, the shrubs and trees in the riparian corridor are exotic species. Tamarisk dominates the upper end of the site and will likely increase in number at the lower end. The senesced leaves of the shrub contain salts and alter the soil chemistry to favor regeneration of the Tamarisk. At present, cattle are fenced out of the riparian area, but the dominance of Tamarisk, not the presence of cattle, may be the main factor in preventing an increase in native vegetation.

**Landscape Context:** Private property surrounds the site on all sides.

**Wildlife Habitat:** The deeply incised streambed and high proportion of invasive vegetation at this site have significantly reduced the area and quality of riparian wildlife habitat. The site provides limited habitat for brush-favoring common wildlife species, although partially grazed wetlands from irrigation seepage on the terrace east of the drainage provide additional habitat for wetland species. Habitat for special status includes roost sites for wintering bald eagles (FT), limited breeding and migratory habitat for southwestern willow flycatchers (FE), and breeding sites for northern leopard frog (SC) and Great basin spadefoot, particularly in the terrace wetlands east of the stream. Emergent cattail stands there also provide migratory habitat for marsh wrens. Foraging habitat and limited breeding sites for northern harriers occurs in the surrounding area, and the drainage provides suitable habitat for western yellowbelly racers.

The site lies within an extensive area of mule deer winter range, and probably supports small numbers of resident deer. The narrow riparian area provides unexceptional cover and forage for deer. Elk, black bears, and mountain lions rarely use the area. The site provides good cover and forage for pheasants, Gambel's quail, mourning doves, cottontails, and red foxes, and adjacent pastures provide foraging sites for Canada geese.

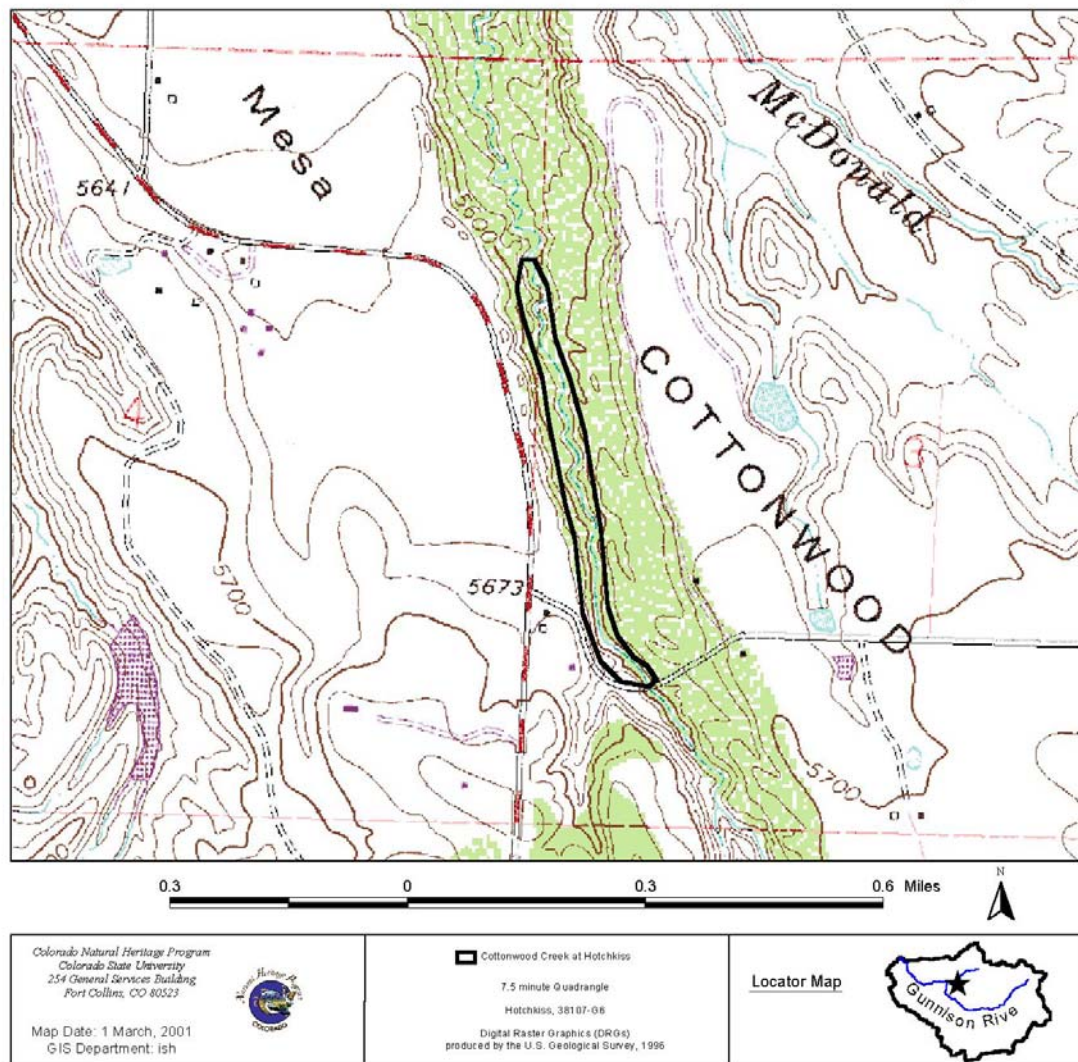
Wildlife species diversity at the site is expected to be fairly low compared to other riparian sites in the project area, due to lack of woodland and natural stream habitat features. The site mainly favors wildlife species common in agricultural and suburban areas.

**Riparian Vegetation Rating: D**

**Wildlife Habitat Rating: C**

Location Map:

## Cottonwood Creek near Hotchkiss Study Area





Representative Photo:



## LOWER GUNNISON RIVER TRIBUTARIES

### Smith Fork Creek

**Location Description:** The site is located on the Smith Fork Creek approximately 6 miles northeast of Crawford at an elevation of 7040 feet. The Smith Fork winds through a medium-wide valley on the western edge of the West Elk Mountains and is an active stream with a number of alluvial landforms present on the floodplain, including stream banks, point bars, and backwater channels. The riparian vegetation covers most of the floodplain at the site.

**Communities Observed:** The riparian area is a mosaic of cottonwood forests and willow shrublands. The boxelder-narrowleaf cottonwood/red-osier dogwood (*Acer negundo*-*Populus angustifolia*/*Cornus sericea*) community grows on elevated stream banks and across the floodplain and is the most common plant community at the site. Narrowleaf cottonwood (*P. angustifolia*) forms a tall, upper forest canopy over a sub-canopy of boxelder (*A. negundo*). The shrub layer is diverse and includes thinleaf alder (*Alnus incana*), river birch (*Betula occidentalis*), virgin's bower (*Clematis ligusticifolia*), red-osier dogwood (*Cornus sericea*), chokecherry (*Prunus virginiana*), and willow (*Salix*) species. The CNHP ranks the community G2S2.

The coyote willow (*Salix exigua*)/bare ground community grows on low point bars close to the water's edge. Young coyote willows (*S. exigua*) cover the point bar, but do not form a monotypic stand. Small narrowleaf cottonwood (*P. angustifolia*) saplings and mainly weedy forbs -- knapweed (*Centaurea* sp.), sweetclover (*Melilotus* sp.), and mullein (*Verbascum thapsus*) -- are scattered in the understory. The CNHP ranks the community G5S5.

A large willow carr grows away from the main channel along a backwater slough. The willows are tall (8-10 feet) and dense. The dominant species are Rocky Mountain willow (*Salix monticola*) and whiplash willow (*S. lucida* ssp. *caudata*).

**Size:** The site is short in length (800 feet), but wide (600 feet). Part or all of the riparian mosaic extends downstream to the town of Crawford.

**Condition:** The riparian vegetation is in very good condition at the site. The hydrology of the stream appears to be intact, creating and maintaining different alluvial landforms. Several plant communities occupy the different habitats, covering the entire floodplain in a mosaic of patches.

Downstream, the condition of the vegetation decreases. Parts of the valley floor have been converted to agriculture, and the floodplain communities -- the boxelder-narrowleaf cottonwood forest and the tall willow shrubland -- are reduced in size or eliminated. Near the Colorado Hwy 92 bridge at Crawford, the vegetation has a rank of "B". West of Crawford, the riparian vegetation has been reduced to a narrow corridor and has a rank of "C".

**Landscape Context:** With the exception of a USFS campground immediately upstream of the site, Smith Fork runs through private property for approximately 1 mile up and down the valley. Upstream of the private property, the creek and most of the tributaries are on USFS land. The mountain slopes to the south of the site are also USFS property.

**Wildlife Habitat:** from the Upper End to Highway 92 bridge, and “C” below the Highway 92 bridge. The upper Smith Fork features excellent mid-elevation riparian habitat for wildlife, including species favoring cottonwood woodlands, dense shrublands, willow carr, and montane stream environments. Besides extensive riparian woodlands, the site includes backwater channels, manmade ponds in the floodplain, and scattered wetlands including a large wetland with emergent cattails just above the Highway 92 bridge. Habitat for special status species includes roost sites and foraging areas for wintering bald eagles (FT), potential breeding habitat for southwestern willow flycatchers (FE), and close proximity to seasonally occupied peregrine falcon (SC) and golden eagle breeding sites on Needle Rock. Abundant breeding habitat occurs for northern leopard frog (SC). A small nesting colony of great blue herons occurs near the Highway 92 bridge, and the stream channel and developed ponds in the area provide sites for foraging herons. A small area of migration habitat exists in the cattail marsh for marsh wrens. Northern harriers are common in the area, and the Smith Fork riparian zone provides good nest sites in woodlands or shrub-dominated areas with dense ground cover.

The Smith Fork lies within an extensive area of mule deer and elk winter range, and provides year-round habitat for small numbers of mule deer. Cover and forage including winter browse are abundant. The site also provides excellent cover for black bears and mountain lions, particularly in the less disturbed upper reach.

The Smith Fork provides good habitat for many small game species, including cottontails, wild turkeys, bobcat, and limited summer and migratory habitat for puddle ducks, mergansers, and Canada geese. Pheasants occur in agricultural areas south of the Highway 92 bridge, and the riparian woodland and associated shrub stands provide good winter cover for pheasants.

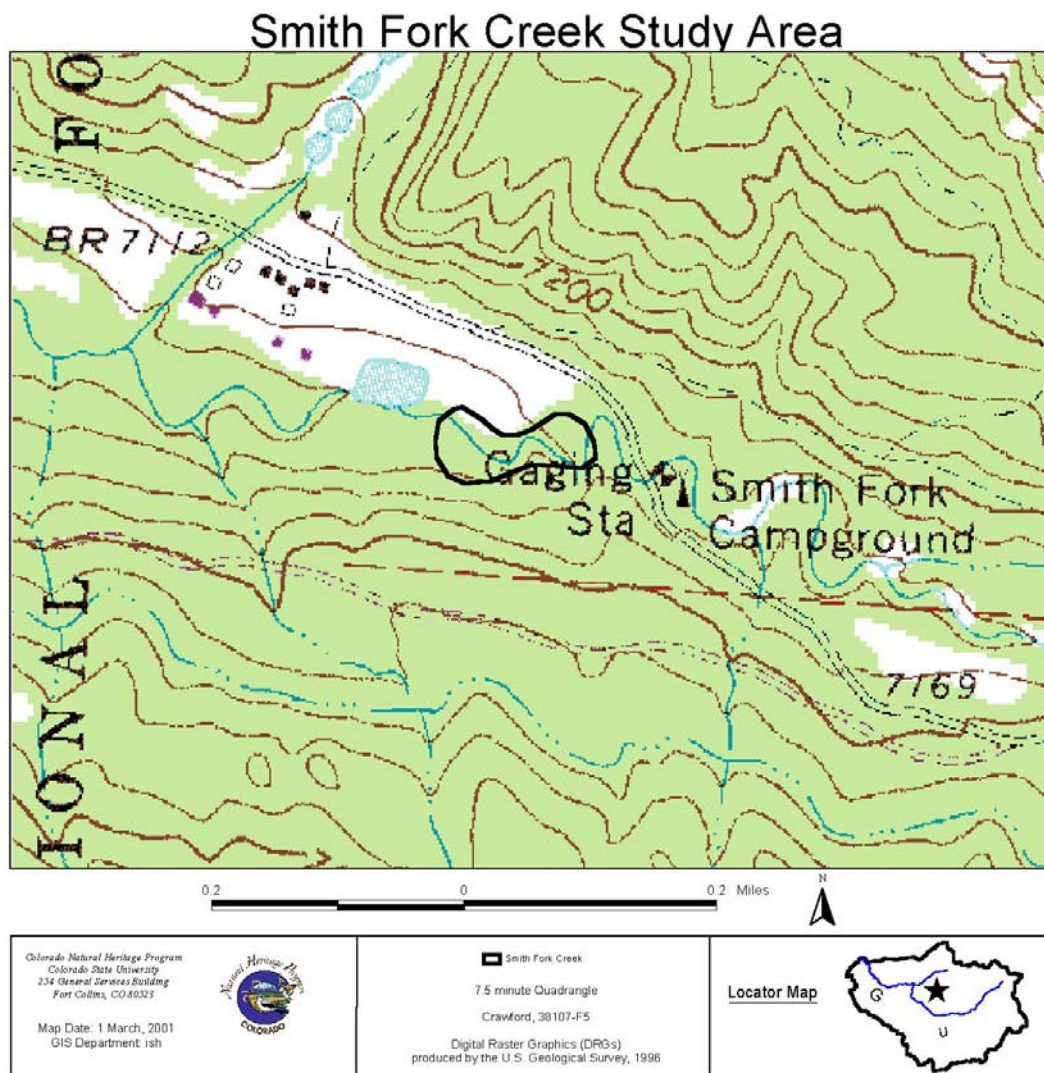
Wildlife species diversity at the Smith Fork is relatively high. The extensive high-quality riparian woodlands, high diversity of native shrub species, and wetland and stream features create a large number of niches and support species with a wide range of habitat requirements. Proximity to extensive national forest and BLM lands also contributes to habitat quality for large wide-ranging animals and species sensitive to human disturbance.

**Riparian Vegetation Rating: A**

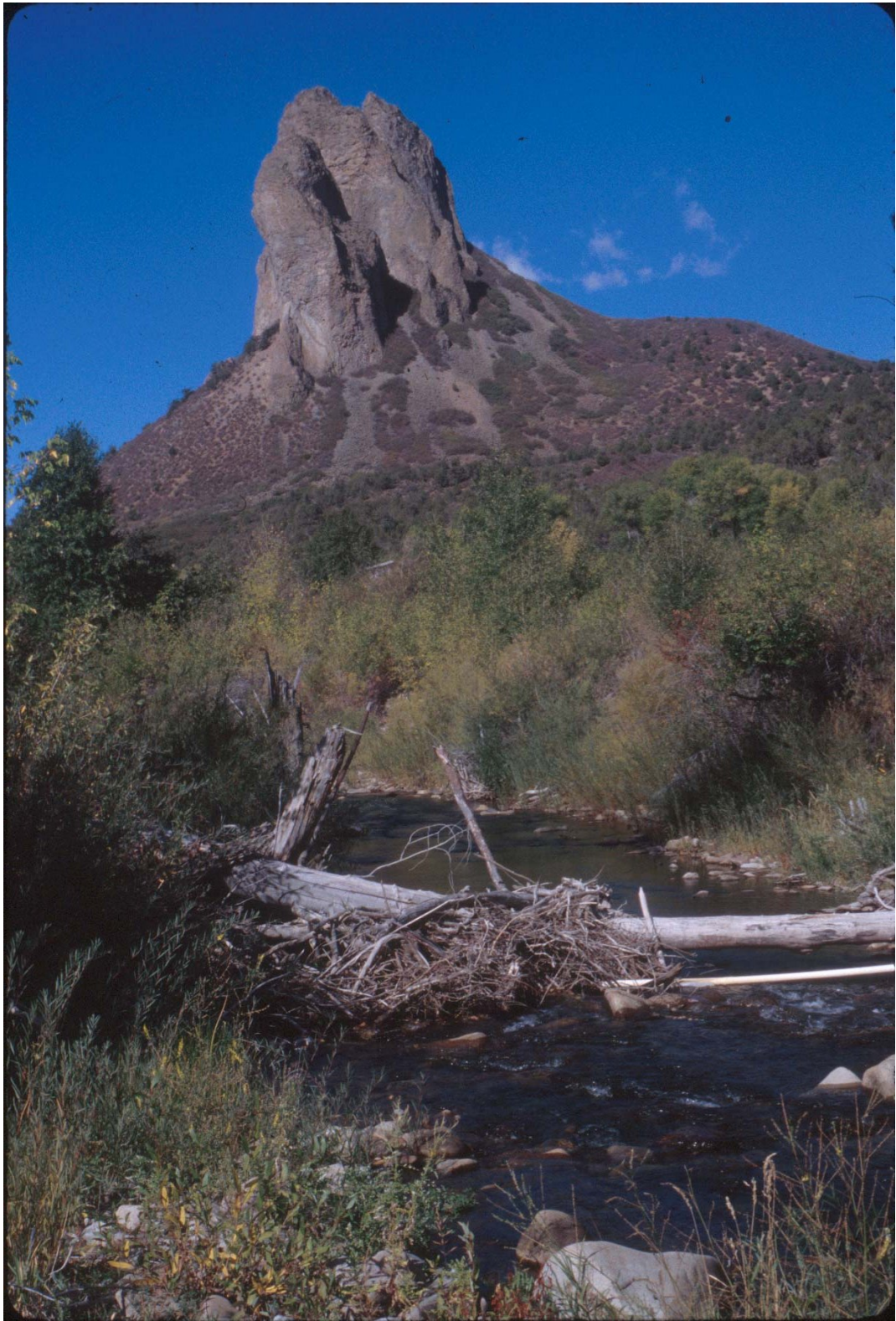
**Wildlife Habitat Rating: A**



Location Map:



Representative Photo:





## **Currant Creek (Upper)**

**Location Description:** The Currant Creek site is located 4.5 miles ESE of Cedaredge between Cedar and Redlands Mesas. The creek flows through a wide valley (>1000 feet), but the riparian corridor is much narrower (200 feet wide). The creek has an incised channel, and the riparian vegetation grows on the steep channel slopes and along the adjacent stream banks. Most of the valley floor has been converted to agriculture.

**Communities Observed:** Narrowleaf cottonwood (*Populus angustifolia*) grows in small stands on the stream banks and does not form a continuous forest along the creek. Shrubs, however, have a more continuous cover growing mainly in the incised channel. The most prevalent native species are hawthorn (*Crataegus* sp.), skunkbush (*Rhus trilobata*), and in places, willow (*Salix* sp.) individuals. The community is likely a degraded foothills riparian community that occurs along the other tributaries draining the north side of the North Fork and further upstream on Current Creek.

**Size:** The site is approximately 0.25 miles long by 200 feet wide.

**Condition:** The vegetation at the site is in fair condition. The riparian area has been constricted by agricultural development. Only some of the species comprising the natural community are present.

**Landscape Context:** The creek and the mesas adjacent to the site are private land. A BLM parcel lies 1 mile east of the site.

**Wildlife Habitat:** The narrow shrub-dominated riparian corridor provides valuable habitat for some wildlife, but partial disturbance by grazing and dominance of exotic plants in many areas reduces overall habitat quality. The stream is mainly incised, reducing aquatic habitat diversity. Habitat for special status species includes limited potential breeding and migratory habitat for southwestern willow flycatchers (FE), breeding sites for northern leopard frogs (SC) and Great Basin spadefoot, and habitat for western yellowbelly racers.

The area provides winter range and limited year-round range for mule deer. The small size and degraded condition of much of the riparian area limit its quality as deer habitat. Black bears and mountain lions may occasionally visit the area but habitat is limited. The site provides extensive habitat for upland small game including abundant cover for pheasants, Gambel's quail, cottontails, and red foxes.

Wildlife species diversity at the site is expected to be moderate, favoring brush-dwelling species and wildlife common to agricultural areas.

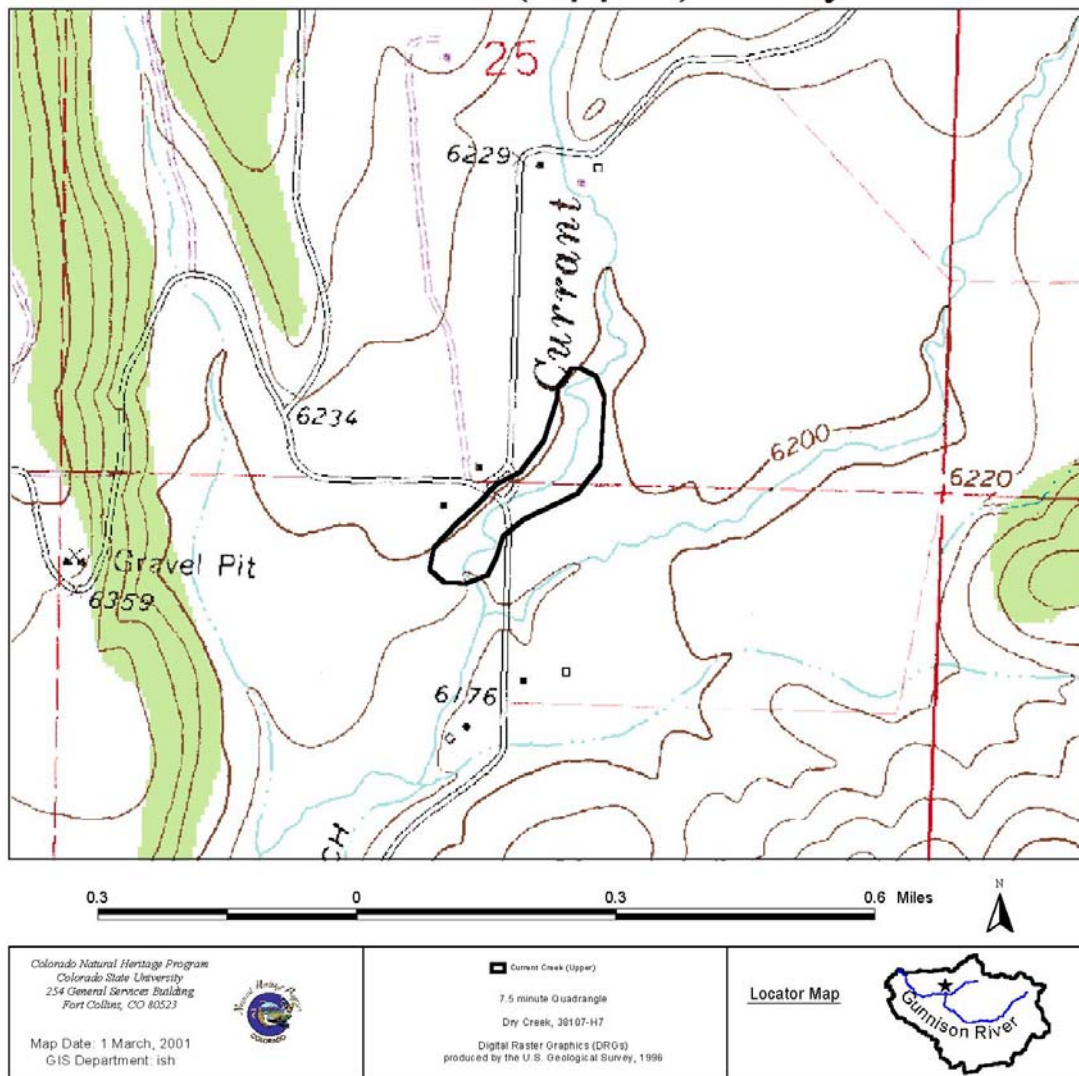
**Riparian Vegetation Rating:** C..

**Wildlife Habitat Rating:** C



Location Map:

## Currant Creek (Upper) Study Area



Representative Photo:



## Tongue Creek

**Location Description:** The site extends from the beginning of Tongue Creek at the confluence of Dirty George and Ward Creeks south about 6 miles to Cory Road. The Tongue Creek valley includes a narrow nearly level floodplain from ¼ to about 1 mile wide. The east slope rises steeply 100 to 200 feet to gently sloping mesas. The west slope features drier slopes and dissected badlands rising to adobe hills. Stream elevation is between about 5,100 and 5,800 feet. Tongue Creek flows year-round at about 10 to 100 cubic feet per second (cfs). The natural flow is highly altered by irrigation diversions and return water flows, and floods are infrequent and of lowered intensity. As a result the stream channel has narrowed and contains few deposition bars or braided channels. The stream gradient averages about 100 feet per mile, keeping flow velocities relatively slow through alternating pools and riffles. Significant stream downcutting has occurred in roughly 20% of the valley. In most places, the streambed remains relatively high with sloping or overhanging banks stabilized by considerable riparian vegetation.

The valley floor is mostly cleared for irrigated agricultural use, with a remnant riparian community in a band along the creek. Above the Oak Creek confluence, riparian vegetation along Tongue Creek is thin, discontinuous, and mostly shrubby. Below Oak Creek riparian vegetation is more continuous and contains areas of cottonwood gallery forest. The valley slopes support arid desert shrub communities on the west and complexes of mountain brush and riparian vegetation on the east where many springs emerge.

**Communities Observed:** Above the Oak Creek confluence riparian vegetation is primarily Gambel oak (*Quercus gambelii*), skunkbrush (*Rhus trilobata*), and coyote willow (*Salix exigua*) with scattered Fremont cottonwoods (*Populus deltoides* ssp. *wislizenii*). Tamarisk (*Tamarix ramosissima*) and Russian olive (*Elaeagnus angustifolia*) are infrequent. Below Oak Creek broad gallery forests alternate with shrub-dominated stands and areas of emergent wetland in low swales dominated by cattail (*Typha* sp.) and bulrush (*Scirpus* sp.). Where present, the overstory is dominated by Fremont cottonwood (*Populus deltoides* ssp. *wislizenii*) and scattered Siberian elm (*Ulmus pumila*) mixed with Gambel oak (*Quercus gambelii*), skunkbrush (*Rhus trilobata*), Wood's rose (*Rosa woodsii*), coyote willow (*Salix exigua*), Russian olive (*Elaeagnus angustifolia*), and tamarisk (*Tamarix ramosissima*). In many areas considerable vertical structure exists and the herbaceous layer is tall and dense; in roughly one third of the site excessive livestock grazing has removed substantial understory vegetation and the herbaceous layer is absent or primarily weedy. Vines including virgin's bower (*Clematis* sp.) and bittersweet nightshade (*Solanum dulcamara*) commonly spread over shrubs. Upland grasses are mainly introduced pasture species.

From Oak Creek south to Cory Road, tamarisk (*Tamarix ramosissima*) and Russian olive (*Elaeagnus angustifolia*) increase and sometimes dominate large areas. At the confluence of Surface Creek, a large contiguous stand of Fremont cottonwood (*Populus deltoides* ssp. *wislizenii*) forms an impressive gallery forest for almost a mile along Tongue Creek and extending up Surface Creek. The stand features all tree age classes including snags and dead and down woody debris. An understory of Russian olive (*Elaeagnus angustifolia*), tamarisk (*Tamarix ramosissima*), and Siberian elm (*Ulmus pumila*) is often dense, suggesting a progressive shift in dominance to exotic species.



**Size:** The entire site includes about 6 miles of Tongue Creek, and the more continuous riparian vegetation between Oak Creek and Cory Road includes about 5 miles. The riparian corridor varies from about 200 feet to 1,000 feet wide.

**Condition:** Most of the area has been disturbed by livestock grazing, although the extent of vegetation alteration varies widely. Particularly good condition gallery forest occurs near the Surface Creek confluence. Weedy forbs occur throughout but seldom dominate the herbaceous layer except on some riparian margins adjoining heavily grazed pasture. Residential development has occurred in a few places in the riparian zone.

**Landscape Context:** BLM land is adjacent to the site to the west. The Tongue Creek drainage below Cory Road includes more intact riparian gallery forests and emergent wetland stands, on private land protected in a conservation easement.

**Wildlife Habitat:** This site provides a mostly narrow corridor of cottonwood and riparian shrub habitat closely surrounded by significant agricultural and some residential development. Stream habitat features are poorly developed through most of the site because of low stream flow, water depletions, and site disturbance.

Wildlife species of concern include bald eagles (FT) which use winter roost sites in tall cottonwoods, and southwestern willow flycatcher (FE) which are not known to occur but suitable breeding habitat exists in dense shrub and willow stands. River otter (SE) are seen rarely in the creek, and sandhill cranes (SC) occur in agricultural fields adjacent to riparian areas during spring and fall migration. Good breeding habitat exists for northern leopard frogs (SC) and Great Basin spadefoot. Great blue heron are common along the stream, and northern harriers occur in the area and probably nest in the riparian zone. Suitable habitat exists for the northern yellowbelly racer.

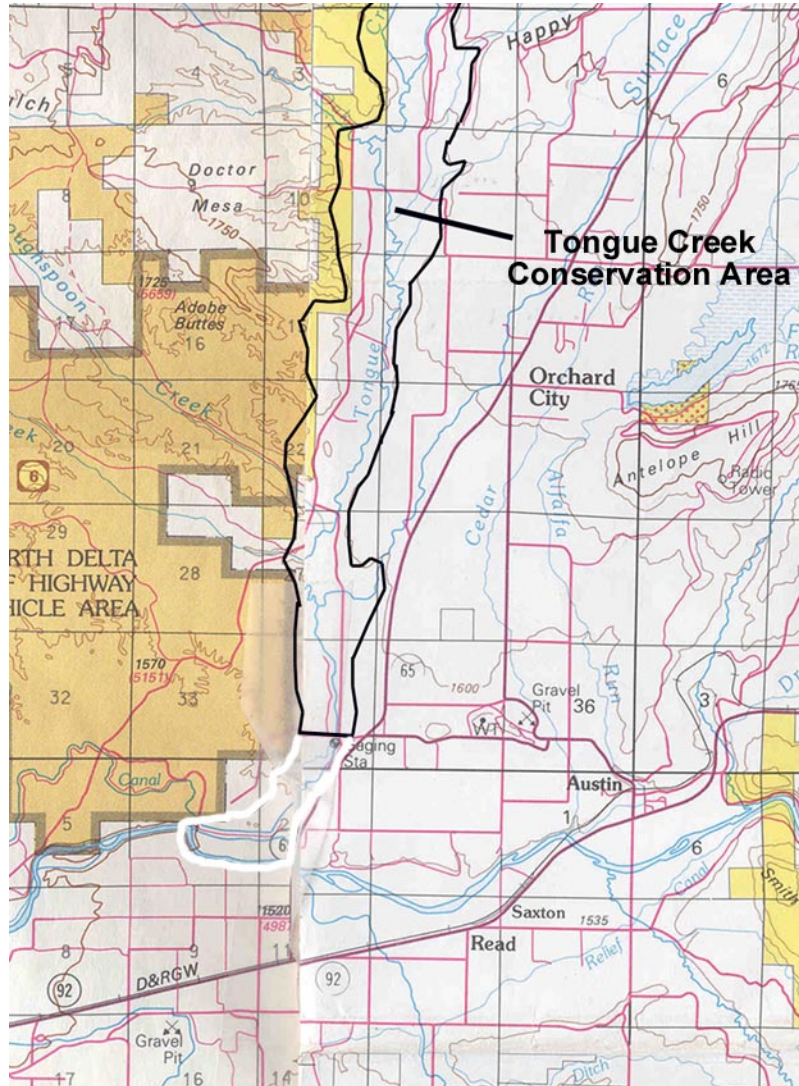
The site lies within significant winter range for mule deer, and elk occasionally winter there. Deer are also resident year-round, and very good cover and browse exists for deer in the denser riparian areas with good proximity to agricultural foraging areas.

The well-developed gallery forest areas and diverse shrub and wetland stands enhance habitat quality for small mammals and tree and shrub-nesting birds. Overall, wildlife species diversity is fairly high. Surrounding disturbance precludes significant use of the site by some species less tolerant of human disturbance, such as black bears or some breeding raptors.

**Riparian Vegetation Rating:** C.

**Wildlife Habitat Rating:** C.

Location Map:



Representative Photo: not available.

## Roubideau Creek at Escalante State Wildlife Area (Lower)

**Location Description:** The site is located on Roubideau Creek at Escalante State Wildlife Area. The site is above the confluence with the Gunnison River and just below Cottonwood Creek and the road leading to the Delta Correctional Facility. Roubideau Creek runs through a low, Tertiary alluvium-sandstone canyon with a medium-wide (approximately 500 feet) valley floor. The creek forms large meanders that extend across the valley floor.

**Communities Observed:** The riparian vegetation is a patchwork of willow shrublands and mature cottonwood forests. The coyote willow (*Salix exigua*)/bare ground community occurs on low point bars. Young coyote willows (*S. exigua*) cover the point bar, but do not form a monotypic stand. Dogbane (*Apocynum cannabinum*) is scattered across the point bar and reed canarygrass (*Phalaris arundinacea*) grows in clumps. Fremont's cottonwood (*Populus deltoides* ssp. *wislizenii*) seedlings are present on bare, moist, sandy areas on the point bar. Baltic rush (*Juncus balticus*) and bulrush (*Scirpus pungens*) grow along the water's edge. Tamarisk (*Tamarix ramosissima*) individuals are present at the upper end of the site near the state prison road. The CNHP tracks coyote willow (*S. exigua*)/bare ground as a G5S5 community.

Mature cottonwood (*P. deltoides* ssp. *wislizenii*) stands occur along the riparian corridor as patches on higher ground. A remnant stand of Fremont's cottonwood/skunkbrush (*P. deltoides* ssp. *wislizenii*/*Rhus trilobata*) grows along the west edge of the valley floor. Only mature individuals of both species are present. The CNHP tracks Fremont's cottonwood/skunkbrush (*P. deltoides* ssp. *wislizenii*/*R. trilobata*) as a G2S2 community. The two species grow uncommonly together in low elevation riparian areas of western Colorado.

**Size:** The location is large. The riparian vegetation extends from Cottonwood Creek to the Gunnison River (1.5 miles) and across the floodplain (500 feet).

**Condition:** The site is in very good condition. The native plant communities are mainly intact. There are some weedy species present, but the dominant willow and cottonwood species are regenerating. The hydrology of the stream appears to be intact as the stream flows across the entire floodplain; fresh sand on the point bar indicates recent flooding. The site may be considered a reference reach for the coyote willow (*S. exigua*) and Fremont's cottonwood (*P. deltoides* ssp. *wislizenii*) communities.

**Landscape Context:** The site is located in the Escalante State Wildlife Area and downstream of the recently established Delta Correctional Facility. There are no roads in the floodplain, but one road runs near the upstream boundary of the site. The adobe hills above the creek to the west are also part of the state wildlife area.

**Wildlife Habitat:** The extensive and high quality riparian woodlands and wetlands at this site provide suitable habitat for several Special Status species. Bald eagles (FT) occur regularly in winter, and potential breeding habitat exists at several locations for southwestern willow flycatchers (FE) known to breed in wetlands bordering the Gunnison River immediately across from the mouth of Roubideau Creek. Lower reaches of Roubideau Creek are visited by river otters (SE), which occasionally move from the Gunnison River into larger tributaries with good fish populations and well-developed streambank vegetation. A breeding population of northern leopard frogs (SC) was



observed at the site in 1997 (Lyon and Williams 1998).

The site also provides suitable habitat for the following 5 animal species tracked by CNHP as rare or imperiled in the state. A first Delta County record of the Great Basin spadefoot was found on the North Fork near Hotchkiss in 1977 (Lyon and Williams 1998), and riparian woodlands and wetlands on the extensive floodplain of Roubideau Creek are among the best remaining breeding habitat for these amphibians in the valley. Great blue herons frequently forage in this site, which lies less than ten miles from two nesting colonies along the Gunnison River (Dexter 1998). Suitable habitat for migrating marsh wrens occurs in emergent cattail wetlands in the floodplain, and nesting is possible there although not documented (Kingery 1998). Northern harriers frequently hunt over open areas of the floodplain and surrounding uplands, and extensive suitable nesting habitat exists in riparian woodlands and shrub patches with dense ground cover (Carter 1998). The western yellowbelly racer has been collected at sites near Roubideau Creek (Hammerson 1999) and is likely to occur there; excellent and extensive habitat exists in the floodplain riparian woodlands and surrounding brushy woodlands.

The site provides habitat for mule deer, black bear, and mountain lion; bighorn sheep and pronghorn use immediately adjacent uplands. Excellent year-round habitat exists for several dozen mule deer, including extensive cover for fawning and severe weather, and good summer forage and winter browse. Resident deer are augmented in winter by seasonal migrants descending from the Uncompahgre Plateau, and the floodplain provides some of the most extensive remaining undisturbed riparian habitat for deer. Black bears and mountain lions occur as occasional visitors, finding excellent cover and good food resources in the extensive riparian woodlands. Pronghorn (year round) and bighorn sheep (winter) use immediately adjacent uplands to the west, and may occasionally move in the floodplain for water.

The site provides the most extensive and highest quality habitat remaining in the valley for upland game including pheasants, cottontails, and Gambel quail, all of which are abundant in the floodplain riparian woodlands and associated shrublands. Breeding and migrating waterfowl are common at the site, including mallards and other dabbling ducks and Canada geese.

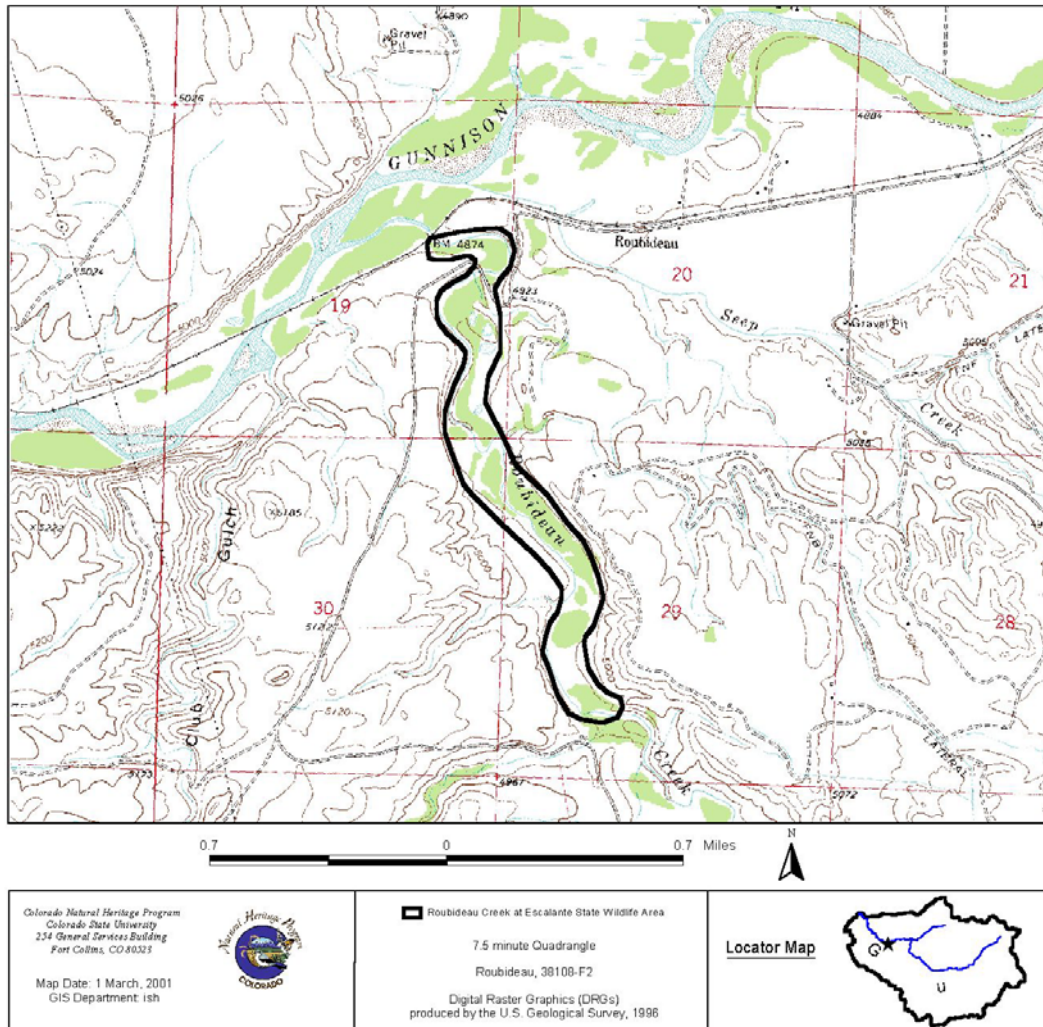
Habitat conditions at the site are noteworthy because of the large contiguous area of riparian woodland, the diversity of wetland, shrubland, and grassland areas present, and the naturally functioning hydrological regime and lack of human disturbance. As a result, wildlife species diversity and faunal integrity at the site are high and represent benchmarks against which other sites in the watershed can be compared. The regional context of the site mostly contributes to wildlife habitat quality, including CDOW management of the Escalante State Wildlife Area and extensive adjoining BLM lands, lightly developed private ranch lands, and close proximity to the best remaining riparian woodlands of the Gunnison River in the project area. Roubideau Creek provides a significant habitat corridor between forested uplands of the Uncompahgre Plateau and the Gunnison River riparian corridor. The Delta Correctional Facility reduces habitat quality of adjacent state wildlife area lands and partially interrupts the Roubideau Creek riparian corridor at the south end of the site.

**Riparian Vegetation Rating: A**

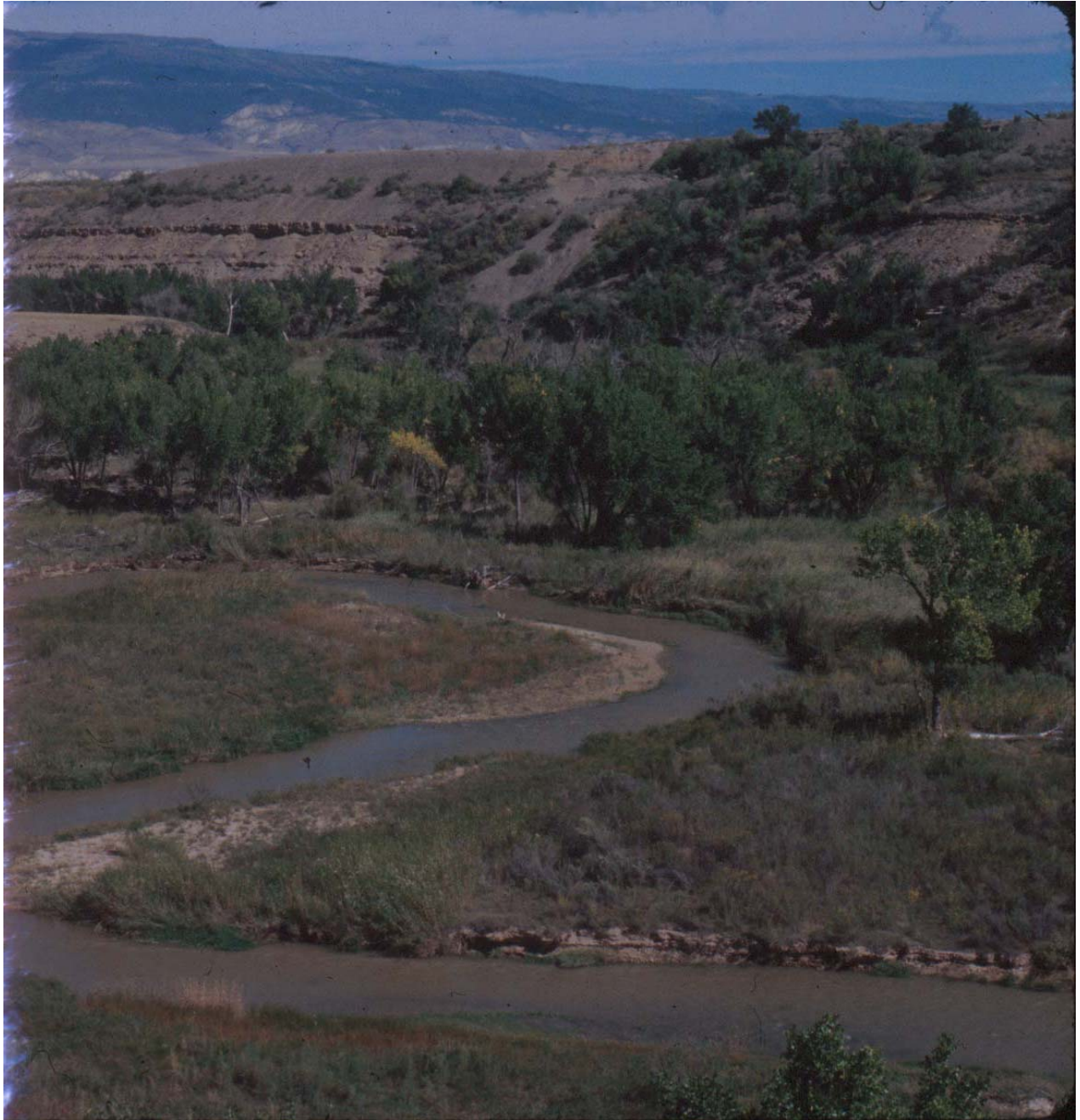
**Wildlife Habitat Rating: A**

Location Map:

## Roubideau Creek at Escalante State Wildlife Area



Representative Photo:





## Cottonwood Creek

**Location Description:** The site is located on Cottonwood Creek just above the confluence with Roubideau Creek and the road leading to the state prison. Cottonwood Creek is an intermittent stream in a narrow Tertiary alluvium canyon. The streambed is dry except for a few pools with standing water.

**Communities Observed:** The main plant community on the creek is Fremont's cottonwood/skunkbush (*Populus deltoides* ssp. *wislizenii*/*Rhus trilobata*). The community is located on the bench above the stream channel. The overstory canopy is dominated by Fremont's cottonwood (*P. deltoides* ssp. *wislizenii*), but some hybrid cottonwood (*Populus x acuminata*) individuals are also present. The skunkbush (*Rhus trilobata*) understory is very thick with few herbaceous species beneath. One sandbar has a large number of Fremont's cottonwood (*P. deltoides* ssp. *wislizenii*) seedlings. There is one patch of Russian olive (*Elaeagnus angustifolia*) and a few tamarisk (*Tamarix ramosissima*) present at the site.

**Size:** The Cottonwood Creek site is long and narrow, approximately 0.75 miles long by 250 feet wide.

**Condition:** The site supports a mature stand of Fremont's cottonwood/skunkbush (*P. deltoides* ssp. *wislizenii*/*R. trilobata*), a G2S2 ranked community by the CNHP. The vegetation at the site is in good condition, but may be on the decline. Fremont's cottonwood is regenerating; skunkbush, however, does not appear to be reproducing. The vegetation is stranded on a dry upper bench as the stream channel is becoming more incised. The present riparian community may not persist in the long term.

The site cannot be compared with other intermittent streams. Cottonwood Creek was the only intermittent stream visited; further field research should be conducted to determine the site's relative condition.

**Landscape Context:** The location is adjacent to the Roubideau Creek site described above; a road and two small parking areas separate the two sites. There is little residential or agricultural development on the adobe hills above the creek.

**Wildlife Habitat:** The site provides suitable habitat for one listed species. Bald eagles (FT) may roost in tall cottonwoods, although foraging sites are not present in the drainages. Limited breeding habitat for Great Basin spadefoot exists around intermittent pools in the stream bed. Nesting habitat for northern harriers exists in a few areas of dense brush, although the paucity of herbaceous ground cover or emergent wetland vegetation limits the quality of nesting habitat. The western yellowbelly racer has been recorded at nearby sites (Hammerson 1999) and may occur, although sparse ground cover probably reduces habitat effectiveness at the site for this mostly ground-dwelling snake.

The site supports mule deer, black bear, and mountain lion. Small numbers of mule deer occur year round, bolstered in winter by migrants from the Uncompahgre Plateau. Vegetation provides dense cover for fawning and shelter from severe weather, though limited in area. Deer forage is poor, with inadequate forbs in summer and marginal browse in winter. Bears and mountain lions may

occur as transients, with dense but limited cover and marginal food resources.

The site provides fairly good habitat for small game including Gambel's quail and cottontails. No significant habitat exists for pheasants or waterfowl.

Habitat conditions favor riparian wildlife species using older cottonwood stands (such as cavity-nesting birds and platform-nesting raptors), as well as species inhabiting dense brush. Species requiring permanent streamflow, wetlands, or a dense grass-forb layer would be sparse or absent from this site. As a result, wildlife species diversity is fairly low.

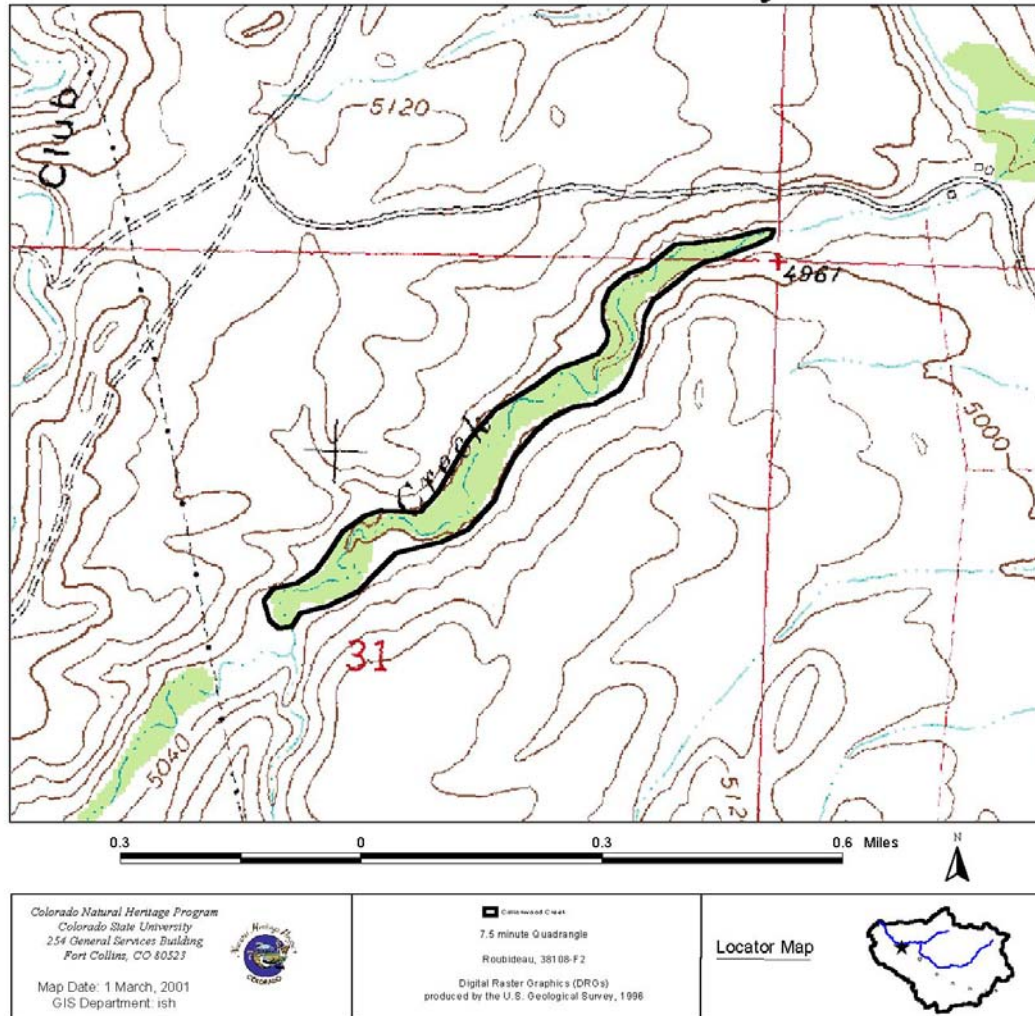
Adjacent development on the state correctional facility reduces the site's wildlife habitat quality, although mostly undeveloped rangeland surrounds the remainder of the site. Cottonwood Creek provides a discontinuous corridor of forest and brush habitat between similar habitats on higher elevations to the west and the Gunnison River riparian corridor.

**Riparian Vegetation Rating: B**

**Wildlife Habitat Rating: C**

Location Map:

## Cottonwood Creek Study Area





Representative Photo:



## Roubideau Creek (Upper)

**Location Description:** The site is located about 1 air mile upstream of the lower Roubideau Creek site and just below the confluence of Buttermilk Creek. The creek is located in a medium-wide (approximately 500 feet) sandstone canyon and flows along the east side of the valley below the sandstone canyon wall. The creek flows through private land and has one small dam across the channel. Some of the water is diverted to a hay meadow located in the floodplain.

**Communities Observed:** The riparian vegetation is a mosaic of willow shrublands and cottonwood forests, similar to the lower Roubideau site. The coyote willow (*Salix exigua*)/mesic graminoid shrubland grows close to the stream. Coyote willow (*S. exigua*) forms dense stands with individual shrubs approximately 8 feet tall. The understory is a thick cover of forbs and graminoids. Some of the dominants are native species, but exotics, such as smooth brome (*Bromus inermis*), occur in dense patches. Tamarisk (*Tamarix ramosissima*) is mixed in with the coyote willow. The CNHP ranks the coyote willow (*S. exigua*)/mesic graminoid community a G5S5.

Small stands of Fremont's cottonwood (*Populus deltoides* ssp. *wislizenii*) saplings also grow close to the water's edge. All individuals are approximately the same size and are probably the result of a single flooding event. Coyote willow (*S. exigua*) occurs in the understory. The CNHP tracks Fremont's cottonwood/coyote willow (*P. deltoides* ssp. *wislizenii*/*S. exigua*) as a GUS1S2 community.

Mature Fremont's cottonwood individuals form a gallery forest some distance from the stream channel. Scattered skunkbush (*Rhus trilobata*) individuals grow beneath the canopy. Tamarisk (*T. ramosissima*) is present in the understory as well. The CNHP tracks Fremont's cottonwood/skunkbush (*P. deltoides* ssp. *wislizenii*/*R. trilobata*) as a G2S2 community.

**Size:** The location is similar in size to the lower Roubideau Creek site (1.5 miles long by 500 feet wide). The Fremont's cottonwood/skunkbush (*P. deltoides* ssp. *wislizenii*/*R. trilobata*) community continues another several miles upstream (CNHP 2000).

**Condition:** The site is in good condition. There are some landform modifications with a dam and ditches that supply water to the floodplain hay meadows. There is also a ranch road that runs along the west side of the valley. Weedy shrub and herbaceous species are present at the site. However, the presence of regenerating cottonwood stands adds considerable conservation value to the site.

**Landscape Context:** The site is located upstream of a state prison and downstream of several miles of private property. At the upper end of the site, adjacent mesa tops to the east are irrigated, and subsurface water flow is creating unnatural wetlands near the canyon rim. Mesa tops to the west are BLM property.

**Wildlife Habitat:** This site provides overall excellent wildlife habitat similar in size and structure to the Lower Roubideau Creek site in the Escalante State Wildlife Area. Habitat is present for the same listed species. Bald eagles (FT) are present in winter, with extensive roost sites in mature cottonwoods and good foraging habitat. Suitable breeding habitat for southwestern willow flycatchers (FE) occurs in extensive willow and tamarisk patches at the north end of the site.

Transitory visits by river otters (SE) are possible but less likely at the site's distance several miles above the Gunnison River. Northern leopard frogs (SC) are likely to occur in the creek and in irrigation ditches. Good habitat similar to the lower Roubideau Creek site occurs for Great Basin spadefoot, great blue herons, willets, and western yellowbelly racers.

The site provides extensive big game habitat as described for the lower Roubideau Creek site, including year round and winter range for many mule deer, extensive transitory habitat and a movement corridor for black bears and mountain lions, and winter range on adjacent mesas for bighorn sheep. Upland game habitat is varied and extensive, including abundant pheasants, cottontails, and Gambel's quail. Breeding and migratory dabbling ducks and Canada geese are common, with good quality nesting habitat and extensive foraging areas in hay meadows.

The site's large size, well-developed riparian woodlands, and diverse woodland and shrub habitat types mixed with irrigated meadows provides for high wildlife species diversity. The regional context contributes to wildlife habitat quality, including adjacent BLM lands to the west and proximity to the extensive Escalante State Wildlife Area.

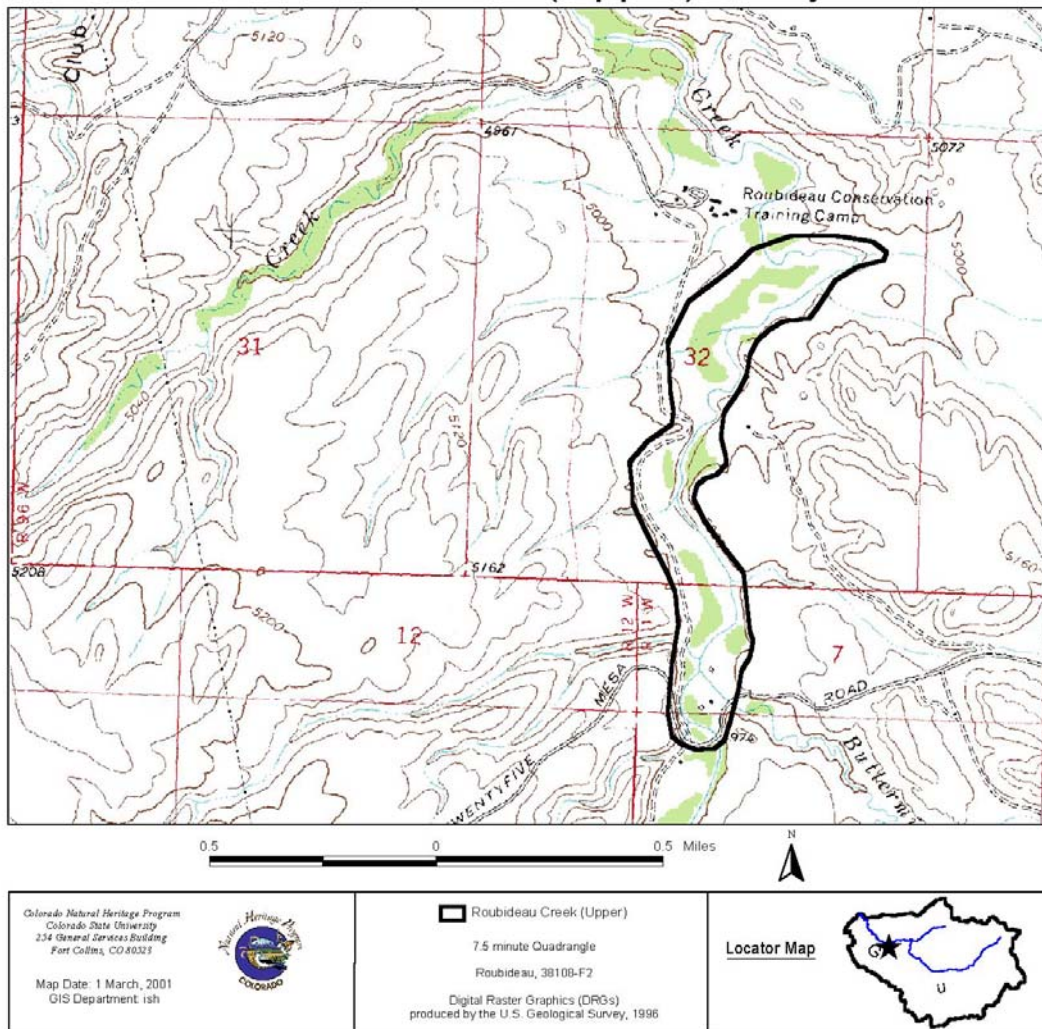
**Riparian Vegetation Rating: B**

**Wildlife Habitat Rating: A**



Location Map:

## Roubideau Creek (Upper) Study Area



Representative Photo:



## Escalante Creek

**Location Description:** The location on Escalante Creek is approximately 5 air miles above the confluence with the Gunnison River. Escalante Creek flows through a wide (800-1000 feet) valley surrounded by sandstone cliffs. The site is private property owned by the Escalante Cattle Company. The valley floor has been converted to agriculture -- hay meadows, orchards, and vegetable fields.

**Communities Observed:** The agricultural land extends almost to the edge of the creek, with only one row of mature cottonwoods remaining as a riparian corridor. The shrub layer is missing, but herbaceous plants are present under the cottonwoods. The community is probably a degraded stand of Fremont's cottonwood/skunkbush (*Populus deltoides* ssp. *wislizenii*/*Rhus trilobata*). The CNHP has located this community upstream of the site (CNHP 2000).

**Size:** The location is relatively large, measuring 1.5 miles long by 1000 feet at the widest point on the valley floor.

**Condition:** The riparian area is so constricted by agricultural development to be almost non-existent. Removing some of the agricultural crops to allow for a wider riparian zone could improve the site and potentially allow the natural riparian community to re-establish.

**Landscape Context:** The site is located between two parcels of Colorado Division of Wildlife land on Escalante Creek. The surrounding canyon walls and ridges are BLM property.

**Wildlife Habitat:** This site's wildlife habitat has been substantially reduced from its potential by the extent of floodplain conversion to agricultural fields and grazing impacts in the remaining riparian woodland. Limited roost sites and foraging areas exist for bald eagles (FT). Breeding habitat for northern leopard frogs (SC) may exist in irrigation ditches and in Escalante Creek, although livestock grazing has greatly reduced necessary streambank vegetation.

The site provides limited habitat for a few resident mule deer, providing forage in irrigated meadows and limited cover in remaining riparian woodland. The property is more valuable as winter range for migratory deer. Limited transitory habitat for mountain lions and black bears exists. Very extensive habitat for desert bighorn sheep exists on adjacent canyon slopes.

Upland game habitat includes fairly good pheasant and cottontail habitat, although reduced shrub and herbaceous layers limit habitat effectiveness. Limited habitat for dabbling ducks and Canada geese occurs in Escalante Creek with foraging areas in adjacent meadows.

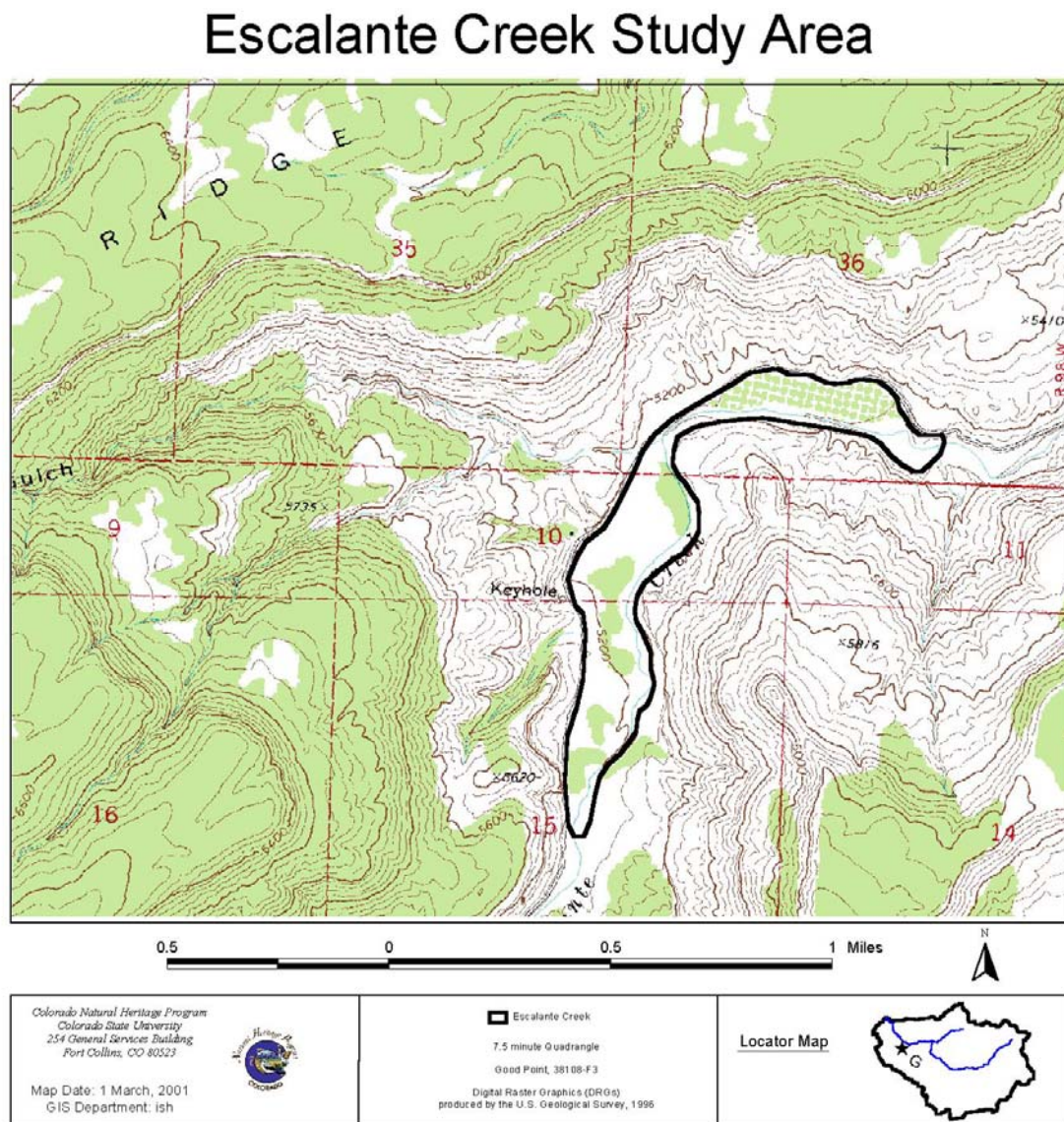
The site favors some wildlife species inhabiting cottonwood woodlands, irrigated meadows, and open dry fields. However, the reduced width of the riparian corridor and heavy grazing impacts on shrub and ground vegetation layers have likely reduced or eliminated some animal species, and wildlife species diversity is likely to be moderate or low compared to similar less disturbed areas. The regional context contributes to the site's overall habitat quality, including proximity to parcels of the Escalante State Wildlife Area upstream and downstream and BLM lands on surrounding uplands.



**Riparian Vegetation Rating: C**

**Wildlife Habitat Rating: C**

Location Map:



Representative Photo: Not available



## East Creek (Unaweep Canyon)

**Location Description:** The site is located on East Creek in Unaweep Canyon approximately 7 miles southwest of Whitewater on Colorado Hwy 141. The stream reach is located in a wide portion of the valley and is surrounded by sandstone canyon walls. The creek is narrow and low gradient, but has an incised streambed and lower floodplain below the main valley floor.

**Communities Observed:** The site has a narrow corridor of riparian vegetation that runs along a wide valley floor dominated by big sagebrush (*Artemisia tridentata*) and rubber rabbitbrush (*Chrysothamnus nauseosus*). The riparian communities at the site are the Fremont's cottonwood/skunkbrush (*Populus deltoides* ssp. *wislizenii*/*Rhus trilobata*) forest and a coyote willow (*Salix exigua*) shrubland. The Fremont's cottonwood (*P. deltoides* ssp. *wislizenii*) community occurs on the main valley floor, whereas the coyote willow (*S. exigua*) shrubland grows along the creek on the lower floodplain. Some Fremont's cottonwood saplings and tamarisk (*Tamarix ramosissima*) are mixed in with the coyote willow. There is an old hay meadow on the west side of the valley. The CNHP ranks the Fremont's cottonwood community a G2S2 and the coyote willow shrubland a G5S5.

**Size:** The site is long and narrow, approximately 2.5 miles long by 200 feet wide.

**Condition:** The vegetation at the site is in good condition. Some tamarisk (*T. ramosissima*) individuals are present, but Fremont's cottonwood (*P. deltoides* ssp. *wislizenii*) is regenerating along the lower floodplain. State Hwy 141 runs through the site, but does not impact the riparian area except at the upper end of the site. The surrounding sandstone canyon walls add considerable aesthetic value to the site.

**Landscape Context:** BLM land is adjacent to the site on all sides.

**Wildlife Habitat:** This site provides significant wildlife habitat, primarily for game species and other species inhabiting small riparian corridors and mid-elevation shrublands. Limited habitat for southwestern willow flycatchers (FE) exists in small willow patches at the east end of the site, probably more suitable for migration than nesting. Breeding habitat for northern leopard frogs (SC) and Great Basin spadefoot occurs where the stream is permanent at the upper end, and possibly in small cattail marshes at the east end if standing water exists.

Good habitat exists for mule deer, with dense cover for fawning in riparian brush and year round forage and browse in riparian areas and adjacent uplands. Cover and forage at the site provide good quality deer and elk winter range. Dense cover and adequate forage and prey as well as proximity to roadless areas of the Uncompahgre Plateau provide good habitat for black bears and mountain lions. Cottontails are probably abundant, but East Creek is too small to provide waterfowl habitat.

The site provides small but mostly good quality habitat for animal species favoring dense brush and narrow stringers of cottonwoods. Several cottonwood snags occur, providing cavity nesting sites and habitat for woodpeckers and other insect-gleaning wildlife. The diverse and patchy shrub communities encourage wildlife species diversity. However, the riparian strand is too narrow and discontinuous to support populations of some obligate woodland species, and animal species diversity is likely to be moderate. The extensive undeveloped mesas of BLM and national forest

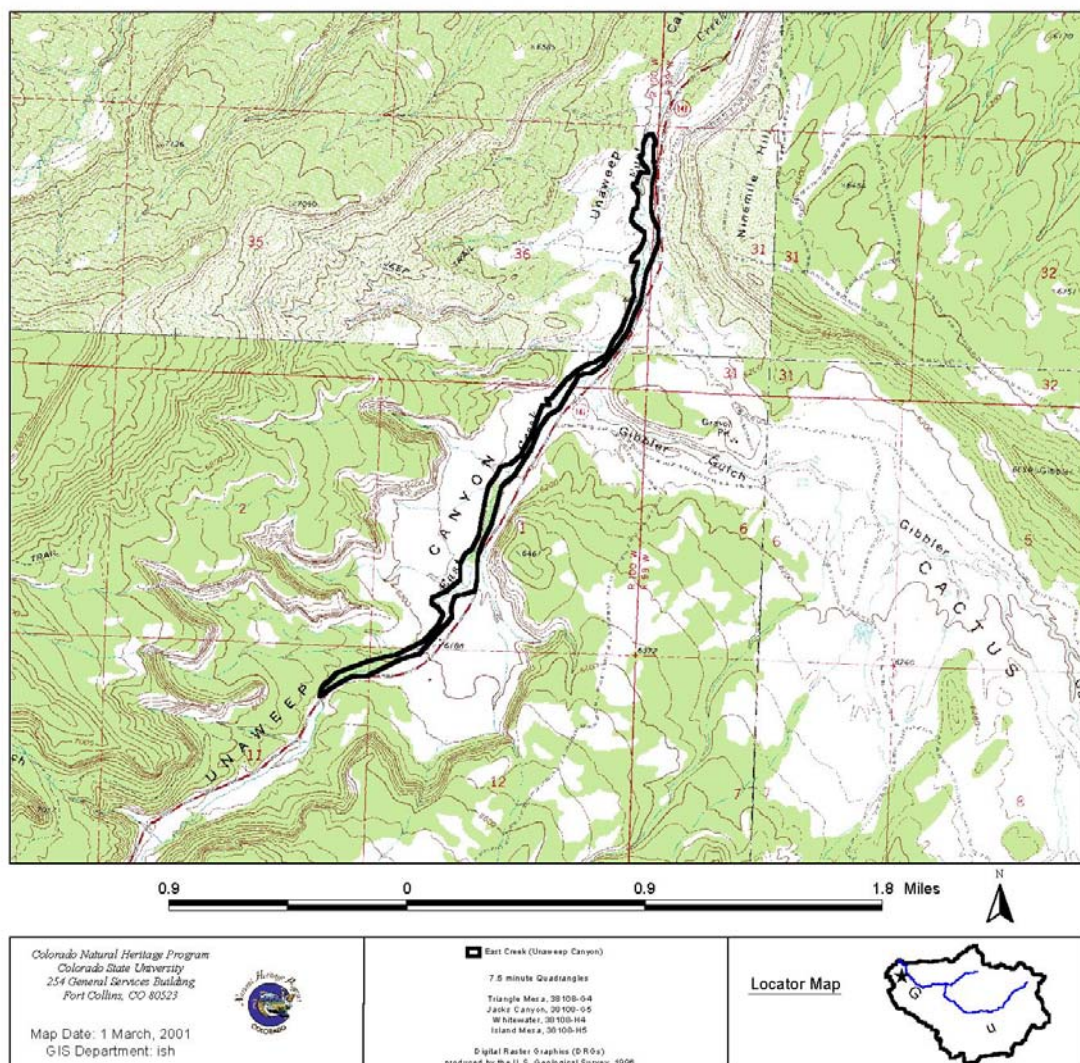
lands nearby improve wildlife habitat quality, especially for large wide-ranging species, but increasing residential and agricultural development in Unaweep Canyon and the close proximity of Highway 141 reduce habitat effectiveness of the site.

**Riparian Vegetation Rating: B**

**Wildlife Habitat Rating: B**

Location Map:

## East Creek (Unaweep Canyon) Study Area



Representative Photo: Not available

## DISCUSSION AND SUMMARY

This study evaluated and ranked the riparian vegetation and wildlife habitat characteristics of twenty-one sites on tributaries to the North Fork of the Gunnison and the Gunnison Rivers. Specific study sites and relative rankings are summarized as follows.

Site Location/Name	Vegetation Rank	Wildlife Rank
<i>North Fork of the Gunnison River, Northern Tributaries</i>		
Hubbard Creek	B	C
Terror Creek	A	B
Roatcap Creek (lower)	C	C
Roatcap Creek (upper)	C	C
Jay Creek	A	B
Leroux Creek (lower)	C	B
Leroux Creek (upper)	A	B
<i>North Fork of the Gunnison River, Eastern Tributaries</i>		
Muddy Creek	C	C
Anthracite Creek	B	B
<i>North Fork of the Gunnison River, Southern Tributaries</i>		
Minnesota Creek (lower)	B	C
Minnesota Creek (upper)	A	B
Cottonwood Creek near Hotchkiss	D	C
<i>Lower Gunnison River Tributaries</i>		
Smith Fork Creek	A	A
Current Creek	C	C
Tongue Creek	C	C
Roubideau Creek at Escalante State Wildlife Area (lower)	A	A
Cottonwood Creek	B	C
Roubideau Creek (upper)	B	A
Escalante Creek	C	C
East Creek	B	B

### Riparian Plant Communities

Eight major riparian plant communities are located along the tributaries of the main stem and the North Fork of the Gunnison. Fremont's cottonwood (*Populus deltoides* ssp. *wislizenii*) riparian forests occur along the sandstone canyons of the main stem, while narrowleaf cottonwood (*Populus angustifolia*) forests dominate the riparian corridors of the North Fork tributaries. Coyote willow (*Salix exigua*) shrublands are common throughout the lower Gunnison River drainage.

Fremont's cottonwood/skunkbush (*P. deltoides* ssp. *wislizenii*/*R. trilobata*) was found along all five of the main stem tributaries surveyed. The best stands of this riparian community are along Roubideau Creek. Although the community is common in the lower Gunnison basin, the community is not widespread. The Fremont's cottonwood/skunkbush community mainly occurs



along drainages in the Colorado Plateau region of western Colorado and along the Rio Grande in northern New Mexico (Kittel et al. 1999).

Fremont's cottonwood/coyote willow (*P. deltoides* ssp. *wislizenii*/*S. exigua*) is an early successional community with young, sapling-size trees common. The community occurs along stream reaches that have some flooding, allowing regeneration of the cottonwoods. The community was only found at the upper Roubideau Creek site.

The foothills riparian community grows along the narrow tributaries on the north side of the North Fork. The community is characterized by a narrowleaf cottonwood (*P. angustifolia*) overstory and a mixed shrub understory and has not been described by the CNHP. The community was found on all of the tributaries surveyed between 5780-7440 feet elevation; the stands along Terror and Jay Creeks are in the best overall condition.

On the south side of the North Fork, the boxelder-narrowleaf cottonwood/red-osier dogwood (*Acer negundo*-*P. angustifolia*/*Cornus sericea*) community grows along the broad floodplains of the major tributaries. This riparian community is only known to occur in Colorado and only one large, functioning stand has been found in the state (Kittel et al. 1999). The best examples in the lower Gunnison River drainage occur along the Smith Fork and upper Minnesota Creek.

The narrowleaf cottonwood-Colorado blue spruce/thinleaf alder (*P. angustifolia*-*Picea pungens*/*Alnus incana*) community occurs at higher elevations in the North Fork drainage. This community is common in montane riparian areas throughout Colorado (Kittel et al. 1999). The best stands of this community are located along upper Leroux Creek and along Anthracite Creek in the Gunnison National Forest.

The narrowleaf cottonwood/thinleaf alder (*P. angustifolia*/*A. incana*) community often grows adjacent to the above-mentioned community on active floodplains that have been recently flooded (Kittel et al. 1999). This community is also common in Colorado. The community was only found at the Anthracite Creek site.

Coyote willow (*Salix exigua*) shrublands are found throughout the lower Gunnison River drainage. The community is common throughout Colorado and the western United States (Kittel et al. 1999).

### Highly Ranked Conservation Sites

Four A-ranked sites were found along tributaries of the North Fork of the Gunnison. The sites are located along Terror, Jay, upper Leroux, and upper Minnesota Creeks. Two additional A-ranked sites were identified along tributaries to the Lower Gunnison River. These are sites on Roubideau Creek at the Escalante State Wildlife Refuge, and the Smith Fork Creek. The Terror Creek and Smith Fork sites have the most significant conservation value. One B-ranked site along Roubideau Creek also has high conservation value.

### A-ranked Sites

#### 1. Terror Creek

The best stand of the foothills riparian plant community is located along Terror Creek. The Terror Creek site supports the greatest number of shrub species of any of the tributaries on the north side of the North Fork valley. Eleven shrub species occur at the site including silver buffaloberry

(*Shepherdia argentea*), an uncommon riparian shrub in Colorado. The size of the community may be large (long and narrow), extending 3 miles upstream into BLM land. Another important feature of the site is its connection with the A-ranked site on the North Fork of the Gunnison at the mouth of Terror Creek. The wildlife habitat rank at this site is B.

## 2. Jay Creek

Jay Creek also has a very good stand of the foothills riparian plant community, but without silver buffaloberry (*S. argentea*). The size of the community is likely to be similar to Terror Creek; however, the condition is not as good. The Jay Creek site has more development than Terror Creek.

## 3. Upper Leroux Creek

Upper Leroux Creek has a very good stand of the narrowleaf cottonwood-Colorado blue spruce/thinleaf alder (*P. angustifolia*-*Picea pungens*/*Alnus incana*) community. However, this community is fairly common in the upper reaches of the North Fork drainage and in montane riparian areas throughout Colorado. The community is ranked G4S4 by the CNHP.

## 4. Smith Fork

The hydrology of the Smith Fork appears to be intact, with a number of alluvial landforms on the floodplain. Several plant communities occupy the different habitats, covering the entire floodplain. The boxelder-narrowleaf cottonwood/red-osier dogwood (*Acer negundo*-*Populus angustifolia*/*Cornus sericea*) community is the main plant community at the site. This riparian community is only known to occur in Colorado and only one large, functioning stand has been found in the state. The community is ranked G2S2 by the CNHP.

## B-ranked Site

The Roubideau Creek (Lower) site has a good stand of the Fremont's cottonwood/skunkbush (*P. deltoides* ssp. *wislizenii*/*R. trilobata*) community. The site is located upstream of and is nearly connected to the Escalante State Wildlife Area, a large site with the same cottonwood community. However, the Delta Correctional Facility is located on Roubideau Creek between the two sites. The community is restricted in distribution, occurring mainly along drainages in the Colorado Plateau region of western Colorado, and is ranked G2S2 by the CNHP.

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