

Level 4 Potential Conservation Area (PCA) Report

Name Purgatoire River and Tributaries

Site Code S.USCOHP*27134

IDENTIFIERS

Site ID 2484 Site Class PCA
 Site Alias Withers Canyon

Network of Conservation Areas (NCA)

<u>NCA Site ID</u>	<u>NCA Site Code</u>	<u>NCA Site Name</u>
-		No Data

LOCATORS

Nation United States Latitude 372346N
 State Colorado Longitude 1033940W

<u>Quad Code</u>	<u>Quad Name</u>
37103-D8	Rock Crossing
37103-D7	Doss Canyon North
37103-D6	Johnson Canyon
37103-D5	Plum Canyon
37103-F7	Sheep Canyon
37103-F6	Packers Gap
37103-F5	Riley Canyon
37104-A1	Trinchera
37103-E7	Stage Canyon
37103-E6	O V Mesa
37103-E5	Beaty Canyon
37104-C1	Lambing Spring
37103-C8	Painted Canyon
37103-C7	Doss Canyon South
37103-C6	Humbar Spring
37103-C5	Villegreen
37104-B2	Patterson Crossing
37104-B1	Trinchera Cave
37103-B8	Trementina Canyon
37103-B7	Box Ranch
37103-B6	Miners Peak
37103-B5	Tobe

County

Las Animas (CO)
 Otero (CO)

<u>Watershed Code</u>	<u>Watershed Name</u>
11020010	Purgatoire

SITE DESCRIPTION

Minimum Elevation	4,345.00 Feet	1,324.36 Meters
Maximum Elevation	6,380.00 Feet	1,944.62 Meters

Site Description

The Purgatoire River and Tributaries site includes the Purgatoire Canyon and the side canyons of its tributaries. The canyon system is extensive and the views into the network of red sandstone canyons are often magnificent. Rising from the canyon floor to the top of the surrounding plateaus are river terraces of various size and steep rocky canyon walls and cliff faces. Within this setting are a series of mesas and inter-fluvial plateaus ranging from small to large. Numerous narrow side canyons dissect the mesas and plateaus and extend out away from the main canyons. While the main valley of the Purgatoire and Chacuaco rivers have long been used for human habitation, and now contain a number of non-native species, the deep side canyons are more inaccessible and typically contain communities of mostly native vegetation. The bottoms of the smaller side canyons often consist of exposed sandstone bedrock that support seasonally flooded pools which house numerous populations of the plains leopard frog. Surrounding the pools are open juniper woodlands

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with an abundance of bedrock and bare ground, cactus, yucca, and various native grasses. The exposed bedrock on the canyon floor, steep canyon sides, and cliffs provides extensive habitat for the rare ferns. The site contains numerous populations, both documented and un documented, of the state-rare ferns, plains leopard frogs, flathead chub, suckermouth minnow, and black-necked gartersnake.

Key Environmental Factors

The natural structure of the exposed bedrock and boulder fields, and the relative lack of non-native species within the smaller side canyons are the key environmental factors sustaining the populations of rare ferns. Although some non-native weedy species can be found in the side canyons, they are not widespread or prevalent. The dry rocky habitat and narrow recessed canyons create extensive habitat for the multiple fern species. The main environmental factor sustaining the plains leopard frog and fish populations is the natural flows of surface and ground waters. These flows are fairly intact, although there are some developed cattle ponds at the head of some canyons within the area and there are, scattered throughout the area, cattle tanks that are pumping ground water for livestock use. However, the canyon pools are still receiving substantial amounts of water, but during periods of drought water use might influence viability of the plains leopards frogs at this location.

Climate Description

The climate is semi-arid with precipitation averaging about 14 inches per year. About half of the yearly precipitation is received during the months of May through August. Winter average minimum temperatures are in the range of 16-20 °F, and summer average maximum temperatures in July and August are near or above 90 °F (HPRCC 2008).

Land Use History

Much of the following information regarding land use history is from Friedman 1985. The area of the Purgatoire Canyon is believed to have been inhabited by people for as long as 5,000 years, and many native tribes lived in or visited the area. The first people of European descent to enter the area were with the Coronado expedition of 1540. Although considered part of Spain, the area remained sparsely populated by Euro-Americans until about 1821 when Mexico received independence from Spain and trade began between Santa Fe and Missouri. Soon thereafter, Spanish émigrés began to colonize the larger canyons. They built small settlements and ranches and raised herds of goats and sheep. The Purgatoire Canyon itself became an alternate trade route, and European settlement increased to a peak of about 400 people in the canyon by the late 1880s. Cattle and sheep ranching dominated the area until around 1909 when dry-land-farming homesteaders fenced the land. In the 1920s and 1930s, the Purgatoire Canyon area was affected by the Dust Bowl and many abandoned their homes, leaving the area to sheep and cattle ranchers. While sheep grazing was mostly discontinued in the 1950s, cattle grazing continued on most private lands. The creation of the Department of the Army's Pinon Canyon Maneuver Site in the 1980s removed grazing from that site, however, cattle grazing continues as the primary land use on adjacent private lands.

Cultural Features

There are numerous archaeological and paleontological sites.

SITE DESIGN

Site Map P - Partial

Mapped Date 01/25/2010

Designer Sovell, J.R. and J.E. Stevens

Boundary Justification

The site was designed to contain the canyons of the Purgatoire and Chacuaco Rivers and the canyons of their tributaries. It uses a buffer of 300m on each side of the canyon to ensure inclusion of the channel, the canyon bottoms, and the canyon walls. The buffer is intended to protect the physical structure of the canyons that the population of rare ferns depend on, as well as the surface and groundwater flows that the population of plains leopard frogs are dependent upon. Protection of the rivers and their flows is necessary for sustaining the state rare fishes.

Primary Area 103,527.43 Acres

41,896.23 Hectares

SITE SIGNIFICANCE

Biodiversity Significance Rank B3: High Biodiversity Significance

Biodiversity Significance Comments

The biodiversity rank is based on a good (B-ranked) occurrence of the globally vulnerable (G3/S3) Fendler cloak-fern (*Argyrochosma fendleri*). Multiple occurrences of state rare plants also inhabit the site. These include excellent (A-ranked), good (B-ranked) and fair (C-ranked) occurrences of the state rare (G5/S1) ebonny spleenwort (*Asplenium platyneuron*), good (B-ranked) occurrences of the state rare (G5/S1)

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black-stemmed spleenwort (*Asplenium resiliens*), excellent (A-ranked) and good (B-ranked) occurrences of the state rare (G5?/S2) Eaton's lip fern (*Cheilanthes eatonii*), good (B-ranked) and fair (C-ranked) occurrences of the state rare (G5/S2S3) purple cliff-brake (*Pellaea atropurpurea*), a good (B-ranked) occurrence of the state rare (G5/S2) southern maiden-hair (*Adiantum capillus-veneris*), a fair (C-ranked) occurrence of the state rare (G4/S1) Standley's cloak fern (*Cheilanthes standleyi*) and a fair (C-ranked) occurrence of the state rare (G5T4?/S2) smooth cliff-brake (*Pellaea suksdorfiana*). In addition, the site supports occurrences of aquatic dependent animals. These include multiple good (B-ranked) to fair (C-ranked) occurrences of the state vulnerable (G5/S3) plains leopard frog (*Rana blairi*), an occurrence of the state rare (G5/S2) suckermouth minnow (*Phenacobius mirabilis*) and occurrences of the state vulnerable (G5/S3) flathead chub (*Platygobio gracilis*), which is listed as a species of special concern by the State of Colorado.

Other Values Rank V2 - High values

Other Values Comments

There are many archeological and paleontological sites within the boundary.

LAND MANAGEMENT ISSUES

Land Use Comments

The area was historically grazed, especially by cattle, but some sheep grazing also occurred. Some of the side canyons are inaccessible to cattle grazing and disturbance, as seen in the quality of the natural communities in these areas.

Natural Hazard Comments

The juniper uplands include steep slopes and cliffs and safety should be considered when hiking within these areas.

Exotics Comments

The introduction of exotic animals (e.g., fishes, bullfrogs) should be prohibited to prevent exposing the frog population to unnatural levels of predation and competition.

Offsite

No Data

Information Needs

There is a need to understand the historical hydrological regime. The long term effects of water regulation and diversion directly pertain to the viability of the plains leopard frogs.

ASSOCIATED ELEMENTS OF BIODIVERSITY

Element State ID	State Scientific Name	State Common Name	Global Rank	State Rank	Driving Site Rank
24856	<i>Juniperus scopulorum</i> / <i>Cercocarpus montanus</i> Woodland	Foothills Pinyon-Juniper Woodlands/Scarp Woodlands	G2	S2	No
20405	<i>Asplenium platyneuron</i>	ebony spleenwort	G5	S1	No
20884	<i>Cheilanthes standleyi</i>	Standley's cloak fern	G4	S1	No
20405	<i>Asplenium platyneuron</i>	ebony spleenwort	G5	S1	No
17355	<i>Pellaea atropurpurea</i>	purple cliff-brake	G5	S2S3	No
21939	<i>Pellaea suksdorfiana</i>	smooth cliff-brake	G5T4?	S2	No
20405	<i>Asplenium platyneuron</i>	ebony spleenwort	G5	S1	No
44140	<i>Populus deltoides</i> ssp. <i>wislizeni</i> / Disturbed Understory Woodland		GNR	SNR	No
17355	<i>Pellaea atropurpurea</i>	purple cliff-brake	G5	S2S3	No
17355	<i>Pellaea atropurpurea</i>	purple cliff-brake	G5	S2S3	No
17514	<i>Cheilanthes wootonii</i>	Wooton's lip fern	G5	S1	No
21564	<i>Asplenium trichomanes-ramosum</i>	green spleenwort	G4	S1	No
20405	<i>Asplenium platyneuron</i>	ebony spleenwort	G5	S1	No
17514	<i>Cheilanthes wootonii</i>	Wooton's lip fern	G5	S1	No
17355	<i>Pellaea atropurpurea</i>	purple cliff-brake	G5	S2S3	No
17626	<i>Epipactis gigantea</i>	helleborine	G4	S2S3	No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3	No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3	No

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20405	<i>Asplenium platyneuron</i>	ebony spleenwort	G5	S1 No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3 No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3 No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3 No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3 No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3 No
17355	<i>Pellaea atropurpurea</i>	purple cliff-brake	G5	S2S3 No
17355	<i>Pellaea atropurpurea</i>	purple cliff-brake	G5	S2S3 No
20405	<i>Asplenium platyneuron</i>	ebony spleenwort	G5	S1 No
22485	<i>Hybopsis gracilis</i>	Flathead Chub	G5	S3 No
21393	<i>Asplenium resiliens</i>	black-stemmed spleenwort	G5	S1 No
20405	<i>Asplenium platyneuron</i>	ebony spleenwort	G5	S1 No
22485	<i>Hybopsis gracilis</i>	Flathead Chub	G5	S3 No
22485	<i>Hybopsis gracilis</i>	Flathead Chub	G5	S3 No
22485	<i>Hybopsis gracilis</i>	Flathead Chub	G5	S3 No
21444	<i>Phenacobius mirabilis</i>	Suckermouth Minnow	G5	S2 No
21444	<i>Phenacobius mirabilis</i>	Suckermouth Minnow	G5	S2 No
17355	<i>Pellaea atropurpurea</i>	purple cliff-brake	G5	S2S3 No
24246	<i>Argyrochosma fendleri</i>	Fendler cloak-fern	G3	S3 Yes
21047	<i>Cheilanthes eatonii</i>	Eaton's lip fern	G5?	S1S2 No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3 No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3 No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3 No
21047	<i>Cheilanthes eatonii</i>	Eaton's lip fern	G5?	S1S2 No
21047	<i>Cheilanthes eatonii</i>	Eaton's lip fern	G5?	S1S2 No
21047	<i>Cheilanthes eatonii</i>	Eaton's lip fern	G5?	S1S2 No
21393	<i>Asplenium resiliens</i>	black-stemmed spleenwort	G5	S1 No
21393	<i>Asplenium resiliens</i>	black-stemmed spleenwort	G5	S1 No
21047	<i>Cheilanthes eatonii</i>	Eaton's lip fern	G5?	S1S2 No
23491	<i>Adiantum capillus-veneris</i>	southern maiden-hair	G5	S2 No
21637	<i>Rana blairi</i>	Plains Leopard Frog	G5	S3 No
17514	<i>Cheilanthes wootonii</i>	Wooton's lip fern	G5	S1 No

REFERENCES

Reference ID	Full Citation
195120	Friedman, Paul D. 1985. Final Report of History and Oral History Studies of the Fort Carson Pinon Canyon Maneuver Area, Las Animas, Colorado. USDI. National Park Service, Interagency Archaeological Services Branch, Rocky Mountain Regional Office, Denver, CO.
195121	HPRCC. 2008. High Plains Regional Climate Center Web Page. Based on data from automated weather stations operated by Colorado for southeastern Colorado area. High Plains Regional Climate Center Web Page: < http://www.hprcc.unl.edu >
195097	Stevens, J., J. Sovell, D. Culver, K. Decker, L. Grunau, A. Lavender, and C. Gaughan. 2008. Final Report: Southeastern Colorado Survey of Critical Biological Resources 2007. Colorado Natural Heritage Program, Fort Collins, CO.

ADDITIONAL TOPICS

Additional Topics

Original site design by Sovell, J.R. and J.E. Stevens. 2008-02-08.

VERSION

Version Date	01/28/2010
Version Author	Sovell, J.R. and J.E. Stevens

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