Level 4 Potential Conservation Area (PCA) Report

Name Smith, Vogel and McMahon Canyons **Site Code** S.USCOHP*28119

IDENTIFIERS

Site ID 2697 **Site Class** PCA

Site Alias None

Network of Conservation Areas (NCA)

NCA Site ID	NCA Site Code	NCA Site Name
-		No Data

LOCATORS

Nation United States **Latitude** 374401N

State Colorado **Longitude** 1032537W

Quad Code	Quad Name
37103-G4	Higbee
37103-F3	Rock Canyon
37103-G5	La Junta SE
37103-F4	Corbin Canyon

County

Otero (CO)

Bent (CO)

Las Animas (CO)

Watershed Code	Watershed Name
11020010	Purgatoire
11020009	Upper Arkansas-John Martin

SITE DESCRIPTION

Minimum Elevation	4,180.00	**Feet**	1,274.06	**Meters**
Maximum Elevation	4,880.00	**Feet**	1,487.42	**Meters**

Site Description

The Smith, Vogel, and McMahon Canyons site includes Smith and Vogel Canyons and McMahon Arroyo, as well as parts of the Purgatoire River and some of their side canyons. A large portion of the site includes the broad valley bottoms of the Purgatoire River and Smith Canyon. Parts of the site rise from the canyon floor to the top of the surrounding plateaus that include river terraces of various size and steep rocky canyon walls. Within this setting are a series of mesas and inter-fluvial plateaus ranging from small to large. The areas within the main valley of the Purgatoire River and Smith Canyon have long been used for human habitation, and now contain a number of non-native species including cheatgrass and tamarisk, but there are also a number of native species present including blue grama, needle-and-thread grass, sand dropseed, sagebrush, rabbitbrush and greasewood. Cottonwood forests are also present along the Purgatoire River as are irrigated pasturelands. The deep side canyons are more inaccessible and typically contain communities of mostly native vegetation. The broad valley and the bottoms of the side canyons support seasonally flooded pools that house populations of Couch's spadefoot, green toad, and plains leopard frog. At the higher elevations of the site there are open juniper woodlands with an abundance of bedrock and bare ground, cactus, yucca, and various native grasses.

Key Environmental Factors

The important feature sustaining the amphibian populations is the natural flows of surface and ground waters. Couch's spadefoot and the green toad rely upon the summer monsoons that stimulate them to emerge from their subterranean estivation to breed in the temporary ponds created by the heavy runoff. These runoff flows are fairly intact, although there are some developed cattle ponds at the head of some canyons and there are, scattered throughout the area, cattle tanks that are pumping ground water for livestock use. However, the valley and canyon pools are still receiving substantial amounts of water. The developed ponds may actually create additional habitat for the green toad and Couch's spadefoot, 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 ºF, and summer average maximum temperatures in July and August are near or above

90 ºF (HPRCC 2008).

Land Use History

Much of the following information regarding land use history is from Friedman 1985. People have inhabited the Purgatoire Canyon and surrounding area 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 of the Purgatoire River by the late 1880s. Cattle and sheep ranching dominated the area until around 1909 when dryland farming homesteaders fenced the land. In the 1920s and 1930s, the Dust Bowl affected the Purgatoire Canyon and many abandoned their homes, leaving the area to sheep and cattle ranchers. While sheep grazing was mostly discontinued in the 1950s, cattle grazing continues today as the primary land use on most private lands of the site.

Cultural Features

There are numerous archaeological and paleontological sites in the canyons of the Purgatoire and Chacuaco River and probably in the canyons of the surrounding area including Smith Canyon.

SITE DESIGN

Site Map P - Partial **Mapped Date** 01/26/2010

Designer Sovell, J.R.

Boundary Justification

The site was designed to contain McMahon Arroyo and Smith and Vogel canyons and 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. Hydrology is particularly important to the elements found on the valley bottom, the buffer is intended to protect the surface and groundwater flows that the amphibian populations depend upon, but the site only nominally includes the sphere of hydrologic influence. Hydrologic modifications (e.g. groundwater pumping) have the potential to affect the site hydrology from outside the site boundary.

Primary Area 13,369.30 **Acres** 5,410.39 **Hectares**

SITE SIGNIFICANCE

Biodiversity Significance Rank B5: General Biodiversity Interest

Biodiversity Significance Comments

The site supports an occurrence of the state imperiled (G5/S1) Couch's spadefoot (*Scaphiopus couchii*), two occurrences of the state rare (G5/S2) green toad (*Bufo debilis*) and several occurrences of the state vulnerable (G5/S3) plains leopard frog (*Rana blairi*).

Other Values Rank V4 - No known values

Other Values Comments

Archeological and paleontological resources may occur within the boundary, but a lack of access to the area prevented acquiring any knowledge of such resources.

LAND MANAGMENT ISSUES

Land Use Comments

The current level of livestock grazing is compatible with the continued viability of the elements of concern.

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 unnatural levels of predation and competition. Management also needs to consider the expansion of exotic plants, especially cheatgrass (*Bromus tectorum*) and tamarisk (*Tamarix ramosissima*), which occur in the valley bottoms and along the stream banks. Short duration, intensive grazing in the canyon bottom may be used as a management tool for control of cheatgrass and other weedy species (Johnston and Reed 1991). The existence of tamarisk in the riparian area may be of concern. Tamarisk's ability to outcompete native

vegetation and its high rate of proliferation make it difficult to manage, and it will present long-term challenges to land managers (Johnston and Reed 1991).

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 amphibians occupying the site.

ASSOCIATED ELEMENTS OF BIODIVERSITY

Element State ID	State Scientific Name	State Common Name	Global Rank	State Rank	Driving Site Rank
22335	*Scaphiopus couchii*	Couch's Spadefoot	G5	S1	Yes
18880	*Bufo debilis*	Green Toad	G5	S2	Yes
18880	*Bufo debilis*	Green Toad	G5	S2	No
21637	*Rana blairi*	Plains Leopard Frog	G5	S3	Yes
21637	*Rana blairi*	Plains Leopard Frog	G5	S3	Yes
21637	*Rana blairi*	Plains Leopard Frog	G5	S3	Yes
21637	*Rana blairi*	Plains Leopard Frog	G5	S3	Yes

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>
166461	Johnston, Barry C. and Floyd Reed. 1991. Ecological inventory of Picketwire Canyonlands. USDA Forest Service, Comanche National Grassland. 22pp.
198519	Rondeau, R.J., J.R. Sovell, J.E. Stevens, D. Clark and L. Grunau. 2010. Final Report: Southeast Colorado Survey of Critical Biological Resources 2009. Addendum to the 2007 Survey. Colorado Natural Heritage Program, Fort Collins, CO.

ADDITIONAL TOPICS

Additional Topics

No Data

VERSION

Version Date 01/26/2010

Version Author Sovell, J.R.

Disclaimer

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