

Level 4 Potential Conservation Area (PCA) Report

Name Big Spring and Big Arroyo Hills

Site Code S.USCOHP8*3282

IDENTIFIERS

Site ID 2046 Site Class PCA
 Site Alias Big Water Arroyo
 Site Alias Burson Camp
 Site Alias Pinon Canyon Maneuver Site
 Site Alias Southwest Pinon Canyon Maneuver Site
 Site Alias Sue Site at Pinon 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 372907N
 State Colorado Longitude 1040029W

Quad Code Quad Name

37103-C8	Painted Canyon
37104-D1	Brown Sheep Camp
37103-D7	Doss Canyon North
37103-E8	Lockwood Arroyo
37104-E1	Thatcher
37103-D8	Rock Crossing
37104-D2	Tyrone
37104-C1	Lambing Spring
37104-E2	Bates Lake
37104-C2	Model
37103-F8	Bloom
37103-E7	Stage Canyon

County

Las Animas (CO)
 Otero (CO)

Watershed Code Watershed Name

11020005	Upper Arkansas-Lake Meredith
11020010	Purgatoire

SITE DESCRIPTION

Minimum Elevation	4,790.00 Feet	1,459.99 Meters
Maximum Elevation	5,915.00 Feet	1,802.89 Meters

Site Description

This site is characterized by shale hills, escarpments, mesas, and outwash prairies embedded in the shortgrass prairie. The sedimentary units that comprise the hills are Carlile shale, Greenhorn limestone and Graneros shale, dark-gray shale, gray limestone, and gray shale (Johnson 1969 geologic map). The vegetation of the hills is tightly associated with the geology and is noticeably different than the surrounding prairie in that it is dominated by junipers and occasional pinons and generally has very little soil build up thus giving a white hue to the hills. The whiteness of the hills is due to the white-gray shale and limestone substrate. Dominant vegetation types include shortgrass prairie and scattered juniper woodlands (*Juniperus monosperma*). The prairie is in good to excellent condition despite military tank traffic. The understory varies from sparse to dense vegetation depending on slope, aspect, and grazing regime. The outwash areas are the bajadas of the hills and are comprised of colluvial soils derived from the eroding shale hills. These outwash areas are generally dominated by grasses and occasional shrubs, especially cholla (*Cylindropuntia imbricata*) and four-winged saltbush (*Atriplex canescens*). Typical grasses throughout the site are blue grama (*Bouteloua gracilis*), New Mexico feathergrass (*Hesperostipa neomexicana*), galleta grass (*Pleuraphis jamesii*), and threeawn grass (*Aristida purpurea*). Many of the sparsely vegetated slopes (barrens) are dominated by *Frankenia jamesii*, a species that is the only representative of its family (the Frankenia Family, or *Frankeniaceae*) in Colorado and relatively uncommon in Colorado. The shale breaks and associated colluvial

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outwash areas are particularly important because they support significant plants and plant communities. Several Colorado endemic plants that are globally rare are only associated with this habitat, specifically, Arkansas Valley evening primrose (*Oenothera harringtonii*), and rayless goldenweed (*Oenopsis foliosa* var. *monocephala*), both tightly associated with the colluvial outwash while Rocky Mountain bladder pod (*Lesquerella calcicola*) is more commonly found on the shale slopes and mesa tops. The juniper / New Mexico feathergrass (*Juniperus monosperma* / *Hesperostipa neomexicana*) community occurs on the mesa tops and is a rare community of interest that is tightly associated with grazing regimes. Additional dominant plant species include: *Gutierrezia sarothrae*, *Echinocereus reichenbachii*, *Melampodium leucanthum*, *Piptatherum micranthum*, *Achnatherum scribneri*, *Achnatherum hymenoides*, and *Bouteloua curtipendula*. Several animal species of concern also utilize this habitat, especially the triploid checkered whiptail and Texas horned lizard.

Key Environmental Factors

No Data

Climate Description

No Data

Land Use History

Area was grazed until 1983 and eliminated once it became a military base. Military training, especially with tanks, is the primary use today.

Cultural Features

No Data

SITE DESIGN

Site Map P - Partial

Mapped Date 02/01/2010

Designer Panjabi, S.S. and R.J. Rondeau

Boundary Justification

The boundary is drawn to include the known occurrences of rare plants in this area, and to provide additional potential habitat where individuals can become established over time. Boundary also includes examples of the mosaic of plant communities in this area. The boundary was digitized while referencing a one meter digital color orthophoto quad, a 1:100,000 digital quad, and a GIS model developed by CNHP that shows the probability of the presence of shale barren plants.

Primary Area 150,364.66 Acres

60,850.66 Hectares

SITE SIGNIFICANCE

Biodiversity Significance Rank B2: Very High Biodiversity Significance

Biodiversity Significance Comments

This site supports three high quality occurrences of the globally imperiled (G3G4T2/S2) rayless goldenweed (*Oenopsis foliosa* var. *monocephala*). These are amongst the best known locations for this taxon in the world. The site also supports three excellent (A-ranked) occurrences of a globally vulnerable (G3G4T2T3/S2) plant subspecies, dwarf milkweed (*Asclepias uncialis* ssp. *uncialis*). There are few known excellent occurrences of this species in Colorado. The globally imperiled (G2/S2) *Frankenia jamesii* / *Achnatherum hymenoides* plant community is abundant and in excellent (A-ranked) condition and there are excellent (A-ranked) and good (B-ranked) occurrences of the globally vulnerable (G3/S3) Arkansas Valley evening primrose (*Oenothera harringtonii*), as well as several high quality occurrences of globally rare and state rare natural communities.

Other Values Rank No Data

Other Values Comments

Great views of Mesa de Maya are off in the distance.

LAND MANAGEMENT ISSUES

Land Use Comments

Most of this site is currently a U.S. Army training area. Twice a year for 21 days about 1,500 tanks and other vehicles practice military activities here. A small fence enclosure was erected in 1995 to keep traffic off of a portion of one of the occurrences of *Asclepias uncialis* ssp. *uncialis*. The enclosure is about 1/2 acre or less.

Natural Hazard Comments

No Data

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Exotics Comments

No Data

Offsite

No Data

Information Needs

No Data

ASSOCIATED ELEMENTS OF BIODIVERSITY

<u>Element</u>			<u>Global</u>	<u>State</u>	<u>Driving</u>
<u>State ID</u>	<u>State Scientific Name</u>	<u>State Common Name</u>	<u>Rank</u>	<u>Rank</u>	<u>Site Rank</u>
23798	<i>Asclepias uncialis</i> ssp. <i>uncialis</i>	dwarf milkweed	G3G4T2T3	S2	No
23798	<i>Asclepias uncialis</i> ssp. <i>uncialis</i>	dwarf milkweed	G3G4T2T3	S2	No
23798	<i>Asclepias uncialis</i> ssp. <i>uncialis</i>	dwarf milkweed	G3G4T2T3	S2	No
40463	<i>Oenopsis foliosa</i> var. <i>monocephala</i>	rayless goldenweed	G3G4T2	S2	No
40463	<i>Oenopsis foliosa</i> var. <i>monocephala</i>	rayless goldenweed	G3G4T2	S2	Yes
40463	<i>Oenopsis foliosa</i> var. <i>monocephala</i>	rayless goldenweed	G3G4T2	S2	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
24880	<i>Frankenia jamesii</i> / <i>Achnatherum hymenoides</i> Shrubland	Foothills Shrubland	G2	S2	Yes
40463	<i>Oenopsis foliosa</i> var. <i>monocephala</i>	rayless goldenweed	G3G4T2	S2	No
17314	<i>Forsellesia planitierum</i>	Texas greasebush	G4	S2	No
17314	<i>Forsellesia planitierum</i>	Texas greasebush	G4	S2	No
17314	<i>Forsellesia planitierum</i>	Texas greasebush	G4	S2	No
17314	<i>Forsellesia planitierum</i>	Texas greasebush	G4	S2	No
17314	<i>Forsellesia planitierum</i>	Texas greasebush	G4	S2	No
17314	<i>Forsellesia planitierum</i>	Texas greasebush	G4	S2	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
20145	<i>Pascopyrum smithii</i> Herbaceous Vegetation	Western Slope Grasslands	G3G5Q	S2	No
44166	<i>Juniperus monosperma</i> / <i>Artemisia bigelovii</i> Woodland	Juniper / Sagebrush Woodland	G3?	S2	No
19476	<i>Oenothera harringtonii</i>	Arkansas Valley evening primrose	G3	S3	No
20399	<i>Bolophya tetraneuris</i>	Barney's fever-few	G3	S3	No
21031	<i>Lesquerella calcicola</i>	Rocky Mountain bladderpod	G3	S3	No
24800	<i>Artemisia bigelovii</i> / <i>Achnatherum hymenoides</i> Shrubland	Plains Escarpment Prairies (Limestone Breaks)	G3	S3	No

REFERENCES

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Reference ID

Full Citation

198530	Johnson, R.B. 1969. Geologic map of the Trinidad quadrangle south-central Colorado. Miscellaneous Geologic Investigations. Map 1-558. USGS.
195013	Neid, S., K. Decker, J. Handwerk, and S. Spackman Panjabi. 2007. Final Report: Rare Plant Surveys on Pinon Canyon Maneuver Site 2006-2007. Colorado Natural Heritage Program, Fort Collins, CO.
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.
194961	Spackman Panjabi, S. and K. Decker. 2007. Front Range Eco-regional Partnership Invasive Plant Species Strategic Plan. Unpublished report prepared for the U.S. Department of Defense by the Colorado Natural Heritage Program, Fort Collins, CO.

ADDITIONAL TOPICS

Additional Topics

Original site design by Culver, D.R. 1995-11-15. Updated by Panjabi, S.S. 2007-12-12.

VERSION

Version Date	02/01/2009
Version Author	Panjabi, S.S. and R.J. Rondeau

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