Level 4 Potential Conservation Area (PCA) Report

Name Chico Creek **Site Code** S.USCOHP*8522

IDENTIFIERS

Site ID 274 **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** 382506N

State Colorado **Longitude** 1042425W

Quad Code	Quad Name
38104-D4	Bar JH Ranch
38104-D3	North Avondale NE
38104-C3	North Avondale
38104-C4	Devine
38104-E4	Hanover
38104-E3	Hanover SE

County

Pueblo (CO)

El Paso (CO)

Watershed Code	Watershed Name
11020004	Chico
11020005	Upper Arkansas-Lake Meredith

SITE DESCRIPTION

Minimum Elevation	4,580.00	**Feet**	1,396.00	**Meters**
Maximum Elevation	5,200.00	**Feet**	1,585.00	**Meters**

Site Description

The Chico Creek watershed reaches from the Black Forest to the Arkansas River, encompassing over 580 square miles in El Paso and Pueblo counties. Chico Creek and its tributary, Black Squirrel Creek, are ephemeral throughout most of their length and surface flow reaches the Arkansas River only after heavy precipitation events. In the southern portion of the watershed, various seeps and springs create an extensive Great Plains wetland and riparian complex with perennially ponded portions. Surface water is extremely rare in the basin and the wetlands formed by these seeps and springs are the most significant hydrologic feature of the entire basin (Romero 1992). The Chico Creek Site encompasses these wetlands and riparian areas. The range of wetland and riparian plant communities supported by the seeps and springs is extensive. The largest wetland complex covers about 2,700 acres in the Black Squirrel Creek basin. Within the surrounding community of greasewood with alkali sacaton (Sarcobatus vermiculatus/Sporobolus airoides) occur wetter portions vegetated with a mosaic of wetland communities including Nebraska sedge (Carex nebrascensis), spikerush (Eleocharis palustris), softstem bulrush and hardstem bulrush (Scirpus tabernaemontani-Scirpus acutus), clustered sedge (Carex praegracilis), and prairie cordgrass (Spartina pectinata). Another interesting wetland complex occurs as a broken band of seeps along bluffs above the eastern bank of Chico Creek. The vegetation on the seeps varies considerably but generally includes common threesquare (Scirpus pungens) at up to about 20 percent cover. Other portions of the seeps support a community of alkali sacaton (Sporobolus airoides). Other plants present on the seeps include mixed sedges (Carex nebrascensis, C. praegracilis, C. lanuginosa, C. hystericina), spikerush (Eleocharis palustris, E. acicularis, E. quinqueflora), rushes (Juncus balticus), cattail (Typha latifolia), bulrush (Schoenoplectus acutus), and western wheatgrass (Panicum virgatum). Certain small areas of the seeps have unstable histic soil horizons floating on discharging groundwater that gives the wetlands a spongy feel. Two species of lobelia, not previously known from Pueblo County (Lobelia cardinalis ssp. graminea and L. siphilitica var. ludoviciana) were common on the southern seeps during the 2000 field season. In some areas, the bluff top above the seeps has a white crust of alkaline salts with sparse cover of saltgrass (Distichlis spicata). Portions of Chico Creek support cottonwood riparian woodlands. Many native species are still present including coyote willow (Salix exigua), alkali sacaton (Sporobolus airoides), western wheatgrass (Pascopyrum smithii), and vine mesquite (Panicum obtusum). The riparian plant community can be characterized as cottonwood/alkali sacaton (Populus deltoides/Sporobolus

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airoides) with patches of cottonwood/western wheatgrass-vine mesquite (Populus deltoides/Pascopyrum smithii-Panicum obtusum). Control of tamarisk would greatly improve the quality of these occurrences and is being considered by the land managers. Spring-fed pools in Black Squirrel Creek and a spring-fed tributary to Chico Creek support Arkansas darter (Etheostoma cragini), a small plains fish listed as threatened in the state of Colorado (Colorado Division of Wildlife 2001c). These populations were discovered by Colorado Division of Wildlife in 1998 (Colorado Division of Wildlife 2001c). Arkansas darters are native to small clear streams tributary to the Arkansas River and can survive in scattered pools that undergo evaporative concentration, high temperatures, and low dissolved oxygen concentrations (Nesler et al. 1999). The fish likely distribute between perennial portions of the creeks during high flow events (G. Dowler, pers. comm., CDOW) therefore, it is likely that all the perennial reaches and pools are potential habitat for this fish. Other native fishes present in the creeks include white sucker (Catostomus commersoni), fathead minnow (Pimephales promelas), red shiner (Cyprinella lutrensis), sand shiner (Notropis stramineus), plains killifish (Fundulus zebrinus), and stoneroller (Campostoma anomalum) (Melby 1998). Some tributaries to Chico Creek in the northern portion of the site have surface impoundments for irrigation and recreational use. The population of Arkansas darter on Chico Creek occurs above an impoundment on a tributary (Melby 1998). The ponds likely result in a decrease of native fishes in the drainage by decreasing the amount of available water in the creek (evaporation and agricultural use) and reducing the native fish habitat (Melby 1998). Other wildlife observed within Black Squirrel and Chico Creek wetlands include plains leopard frogs (Rana blairi), northern leopard frogs (Rana pipiens), Red-winged Blackbirds, and Common Snipe. The pools also support a wide range of aquatic invertebrates. Sampling of pools on Black Squirrel Creek and the adjacent Burnt Creek resulted in collection of over 45 species of aquatic insects including 26 species of aquatic beetles (Durfee and Kondratieff 2000). Wildlife noted using Chico Creek riparian area include typical shortgrass prairie species including pronghorn antelope, white-tailed deer, mule deer, coyote, desert cottontail, jackrabbit, American Kestrel, Horned Lark, Lark Bunting, Lark Sparrow, Sage Thrasher, Great Horned Owl, western rattlesnake, and Woodhouse's toad. Also noted were big brown bat, common porcupine, northern leopard frog, Red-tailed and Swainson's Hawks, Northern Flicker, Western Kingbird, and Tree Swallow (Gionfriddo 2001). Small mammal trapping on Chico Creek revealed white-footed mice (Peromyscus leucopus), deer mouse (P. maniculatus), Ord's kangaroo rat (Dipodomys ordii), western harvest mice (Reithrodontomys megalotis), silky pocket mouse (Perognathus flavus), hispid cotton rat (Sigmodon hispidus), woodrat (Neotoma sp.), and voles (Microtus sp.) (Schorr 1999, Gionfriddo 2001). Two beaver (Castor canadensis) were relocated to the PCD portion of Chico Creek in 1997. Hydrologic investigations by Romero (1992) indicate that the water discharging from the seeps and springs and supporting the perennial pools in the creeks is shallow alluvial groundwater recharged by precipitation over the entire watershed. The wetlands and creeks are surrounded by large expanses of relatively natural lands. Upland vegetative communities include sandsage prairie (Artemesia filifolia/Andropogon hallii) and blue grama shortgrass prairie (Bouteloua gracilis-Hilaria jamesii) (see Signal Rock Sandhills, Olney Prairie, and Midway Prairie PCAs). Bird surveys by Rocky Mountain Bird Observatory tally over 200 species on the 86,000-acre Chico Basin Ranch (S. York, pers. comm., Chico Basin Ranch). Mountain Plover, a shortgrass prairie species that is proposed for federal listing as a threatened species, is known on and around the Chico Creek Site, generally associated with black-tailed prairie dog colonies. The size and context of the natural landscape suggest that species assemblages are relatively complete and natural ecological processes are intact or restorable.

Key Environmental Factors

The creek undergoes natural flooding regimes as evidenced by the presence of cottonwood saplings and flood debris suspended in the riparian vegetation. A large flood in April/May 1999 resulted in scouring of the channel and subsequent sprouting of cottonwood seedlings. On the Pueblo Chemical Depot, the April/May 1999 flood resulted in widening of the Chico Creek stream channel by three times (M. Canestorp, pers. comm., PCD).

Climate Description

According to water balance calculations, about 90 percent of precipitation falling on the basin evaporates or is transpired by plants and the remaining 10 percent infiltrates and becomes shallow alluvial groundwater (Romero 1992). The groundwater moves southward toward the Arkansas River and discharges as a broken band of seeps along about five miles of the bluff above the east bank of Chico Creek and as seeps and springs within Chico and Black Squirrel Creeks. The groundwater discharges where the creek has removed the alluvium and the underlying impermeable Pierre Shale bedrock is exposed. Similar seeps that are part of the same system but not included in this site occur along Boone Creek on the Pueblo Chemical Depot and south of Pueblo Chemical Depot on bluffs east of the town of North Avondale.

Land Use History

The Chico Basin has been used for livestock grazing for more than 100 years. Several hundred acres (less

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than half of one percent of the ranch) has been used for hay production. There is one center-pivot irrigation field in the Black Squirrel Creek basin near the northern boundary of the ranch. Water impoundments have been built in several places on tributaries to Chico Creek. The entire ranch has several ranch compounds, but most are in disrepair.

Cultural Features

No Data

SITE DESIGN

Site Map Y - Yes **Mapped Date** 06/15/2001

Designer Doyle, G.A.

Boundary Justification

The boundary encompasses the northerly extent of the Black Squirrel Creek Arkansas darter population documented by the Colorado Division of Wildlife and the wetland and riparian communities supported by the seeps and springs. Although this site boundary incorporates the element occurrences, management at the watershed scale is important for their persistence. Conservation attention could include a greater proportion of the groundwater recharge area believed necessary to maintain the seeps and springs supporting the Arkansas darter population and the wetland and riparian plant communities.

Primary Area 21,580.05 **Acres** 8,733.17 **Hectares**

SITE SIGNIFICANCE

Biodiversity Significance Rank B3: High Biodiversity Significance

Biodiversity Significance Comments

This site contains a good and fair (B to C-ranked) occurrence of the globally vulnerable (G3) Arkansas darter (Etheostoma cragini), an extant (E-ranked) occurence of a vulnerable (S3) Plains loepard frog, a good (B-ranked) occurrences of three globally vulnerable (G3) wetland communities, and fair (C-ranked) occurrences of two imperiled (G2S2 and GNRS2) cottonwood riparian woodlands. The large acreage and wide range of wetland communities present in the site are unusual for the central shortgrass prairie.

Other Values Rank No Data

Other Values Comments

No Data

LAND MANAGMENT ISSUES

Land Use Comments

The site is moderately to heavily grazed.

Natural Hazard Comments

No Data

Exotics Comments

Tamarisk (Tamarix ramosissima), an exotic invasive shrub, has colonized much of Chico Creek crowding out native species. Several other mesic weeds are present, but none appears to be a serious problem. Non-native fishes introduced to the Chico Creek ponds for recreational fishing include large-mouth bass (Micropterus salmomides), and bluegill (Lepomis macrochirus), both potential predators on native fish populations. Large-mouth bass have also been collected downstream on the Pueblo Chemical Depot portion of Chico Creek. Non-native bullfrogs (Rana catesbeiana) have been present on the PCD portion of Chico Creek (M. Canestorp, pers. comm., PCD).

Offsite

Impoundments, wells, and diversions north of the site will affect the elements on the site.

Information Needs

No Data

ASSOCIATED ELEMENTS OF BIODIVERSITY

Element State ID	State Scientific Name	State Common Name	Global Rank	State Rank	Driving Site Rank
19429	*Sporobolus airoides* Southern Plains Herbaceous Vegetation	Great Plains Salt Meadows	G3Q	S3	No
21637	*Rana blairi*	Plains Leopard Frog	G5	S3	No
16738	*Spartina pectinata* Western Herbaceous Vegetation	Prairie Slough Grass	G3?	S3	No

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18654	*Schoenoplectus pungens* Herbaceous Vegetation	Bulrush	G3G4	S3	No
19162	*Phragmites australis* Western North America Temperate Semi-natural Herbaceous Vegetation	Western Slope Marsh	G5	S3	No
24486	*Sarcobatus vermiculatus / Sporobolus airoides* Sparse Vegetation	Saline Bottomland Shrublands	G3?	S2	Yes
24564	*Schoenoplectus acutus - Typha latifolia - (Schoenoplectus tabernaemontani)* Sandhills Herbaceous Vegetation	Great Plains Marsh	G4	S2S3	No
18593	*Carex praegracilis* Herbaceous Vegetation	Clustered Sedge Wetland	G3G4	S2	No
16738	*Spartina pectinata* Western Herbaceous Vegetation	Prairie Slough Grass	G3?	S3	Yes
18593	*Carex praegracilis* Herbaceous Vegetation	Clustered Sedge Wetland	G3G4	S2	Yes
18783	*Eleocharis palustris* Herbaceous Vegetation	Emergent Wetland	G5	S4	No
20664	*Etheostoma cragini*	Arkansas Darter	G3G4	S2	No
24641	*Populus deltoides / Sporobolus airoides Forest*	Plains Cottonwood / Alkali Sacaton	G3	S2	No
24641	*Populus deltoides / Sporobolus airoides Forest*	Plains Cottonwood / Alkali Sacaton	G3	S2	No
44145	*Populus deltoides / Pascopyrum smithii - Panicum virgatum* Woodland		GNR	S2	Yes
22403	*Carex nebrascensis* Herbaceous Vegetation	Wet Meadows	G4	S3	No
20664	*Etheostoma cragini*	Arkansas Darter	G3G4	S2	No

REFERENCES

Reference ID	Full Citation
169085	Doyle, G.A. 2000. Colorado Natural Heritage Program Field Survey of Wetland and Riparian Areas in Pueblo and El Paso Counties.
162855	Doyle, G.A., J. Gionfriddo, D. Anderson, and D. Culver. 2000. Final Report: Survey of Critical Wetlands and Riparian Areas in El Paso and Pueblo Counties, Colorado. Colorado Natural Heritage Program, Fort Collins, CO.
169858	Kettler, S.M., D. Clark, R.J. Rondeau, and J. Sanderson. 1997. Colorado Natural Heritage Program Field Survey to Chico Basin Ranch, April 2-4, 1997.
171442	Kittel, G. et al. 1998. Colorado Natural Heritage Program Riparian Survey of the Lower Arkansas River Watershed.

ADDITIONAL TOPICS

Additional Topics

No Data

VERSION

Version Date 09/14/2003

Version Author Spackman, S.C.

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