Level 4 Potential Conservation Area (PCA) Report

Name Buffalograss Playas **Site Code** S.USCOHP*21996

IDENTIFIERS

Site ID 2013 **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** 383941N

State Colorado **Longitude** 1041044W

Quad Code	Quad Name
38104-G3	Big Springs Ranch
38104-G2	Yoder
38104-G1	Rush
38104-F2	Truckton
38104-F1	Truckton NE
38104-E1	Truckton SE
38104-E2	Edison School

County

El Paso (CO)

Pueblo (CO)

Watershed Code	Watershed Name
11020005	Upper Arkansas-Lake Meredith
11020008	Horse

SITE DESCRIPTION

Minimum Elevation	5,315.00	**Feet**	1,620.00	**Meters**
Maximum Elevation	6,070.00	**Feet**	1,850.00	**Meters**

Site Description

In southeastern El Paso County, between the many low rolling hills of shortgrass prairie, are small flat-bottomed depressions. There are no surface channels draining the area, instead rainfall and runoff collect in these basins forming ephemeral wetlands. It is not clear whether these depressions are wind deflated playas (Bolen et al. 1989) or remnants of buffalo wallows (Uno 1989, F. Knopf, USGS, pers. comm.), both of which develop clay bottoms and collect runoff after heavy rainstorms. We have chosen to refer to these depressions as playas, fully acknowledging that their origin is not well understood. The area outlined by the site is estimated to contain over 300 playas, an average density of about three playas per square mile. The playas are generally circular to oval-shaped, oriented roughly north south, and range in size from about 0.5 to 10 acres (0.2 to 5 ha). These basins remain dry throughout most of the year and collect water only after heavy rainfall. In southeastern El Paso County, the heavy rains generally occur in the late summer and in many cases a series of storms are required in order for the playas to retain water (Weathers 2000, G. Paul, local landowner, pers. comm.). Runoff collecting in a dry playa infiltrates cracks in the clay bottom of the playa and swells the clay, effectively sealing the playa bottom (Zartman et al. 1994). After the clay has been wetted, subsequent storms can result in playa filling. The playas may hold water for periods ranging from days to weeks, depending on the size of the drainage basin and intensity of the rainstorm (Weathers 2000). In some cases, these playas may hold water from May to August (G. Paul, pers. comm., landowner) or in dry years may remain dry year round. The vegetation in the playas is shorter than the surrounding blue grama (*Bouteloua gracilis*) shortgrass prairie and consists of different species. The dominant species in the playas is the perennial warm-season grass buffalograss (*Buchloe dactyloides*). Growing with the buffalograss are the perennial forbs plains ambrosia (*Ambrosia linearis*) and short-ray prairie coneflower (*Ratibida tagetes*). The vegetation in the playas generally occurs in bands where the outermost rim often supports the highest density of plains ambrosia and coneflower. Other plants growing in the playas include a dryland sedge (*Carex eleocharis* ssp. *stenophylla*), prostrate vervain (*Verbena bracteata*), frog-fruit (*Phyla cuneifolia*), spreading yellow cress (*Rorripa sinuata*), greenthread (*Thelesperma megapotamicum, T. filifolium*), curly cup gumweed (*Grindelia squarossa*), and Russian thistle (*Salsola iberica*). Interestingly, buffalograss submerged during the growing season has been known to withstand more than five weeks of inundation (Porterfield 1945). In the playas that remain wet the longest, there may be a small bare ground portion in the center with very sparse cover that could include western wheatgrass (*Pascopyrum smithii*), spikerush (*Eleocharis palustris* and *E. acicularis*), goosefoot (*Chenopodium* sp.), or weedy annuals. Plains ambrosia is a shortgrass prairie species that is restricted to an area of about 100 miles by 50 miles (primarily in El Paso and Lincoln counties). Plains ambrosia requires a little more moisture than most upland plants and as such, the playas appear to be their native habitat as the clay soils of the playas retain moisture longer than the upland soils. Roadsides also appear to provide the extra moisture required by the plains ambrosia and, as such, plains ambrosia is very prevalent on the sides of many unpaved roads in the area. The playas in El Paso County are the best known occurrences for this species. Where the playas are most concentrated, the density can exceed 10 playas per square mile. The playas provide heterogeneity within a sea of shortgrass prairie which is important biologically to provide for the needs of a wide range of species (Knopf 1996a, Hoagland and Collins 1997). Other factors affecting grassland environmental and compositional heterogeneity include fire, soils, grazing, and prairie dogs. Because fire and grazing are heavily managed and prairie dogs have been greatly reduced in numbers, playas may serve as the primary source of heterogeneity in the region (Hoagland and Collins 1997). In late summer 2000, Mountain Plover (*Charadrius montanus*) were observed gathering for migration in dry playas. Mountain Plover is a declining shortgrass prairie species that is known to inhabit areas with low vegetation and a high percentage of bare ground such as prairie dog towns and heavily grazed shortgrass prairie (Knopf 1996b). Observations of concentrations of Mountain Plover exceeding 50 birds in the playas in late summer may indicate that playas may be another habitat attractive to Mountain Plover because of the low-growing vegetation. In addition, a breeding location for another shortgrass prairie bird that prefers low-growing vegetation, McCown's Longspur (*Calcarius mccownii*), was noted in the vicinity of playas (A. Versaw, pers. comm.). This may be the southernmost known current breeding location in Colorado for McCown's Longspur (Kingery 1998). The land within the site is primarily privately owned and used for cattle grazing. About 10 percent of the area is tilled for crops or developed for rural housing. Most of the southeast El Paso County playas have not been plowed and retain their native vegetation for the most part. The most common modifications of the playas are unpaved roads passing through or excavation of the center of the playa to retain water longer for livestock watering. More recently, development pressure is increasing and land is being subdivided, usually into 35-acre parcels. Within these subdivided properties, in some cases homes have been placed adjacent to or within playas.

Key Environmental Factors

The most common explanation for the origin of playas is deflation (wind erosion) though theories on playa formation are controversial (Osterkamp and Wood 1987). The consistent north-south orientation of the playas in southeastern El Paso County suggests deflation influenced their formation. As previously mentioned, these playas are also consistent with descriptions of buffalo wallows. Wallows are formed by bison pawing the ground, creating patches of bare ground in which to dust bathe (Uno 1989), or perhaps mud bathe to protect against biting insects or aid in shedding their heavy fur (Hornaday, 1887, F. Knopf, pers. comm. USGS). Active wallows range from 3 to 5 meters in diameter and merging of adjacent wallows can create wallows larger than about 0.5 acre (1,400 square meters) (Uno 1989, Knopf 1996a). Bison were extirpated from the area by 1875 (Hornaday 1889) but evidence of their wallows can remain evident on the landscape for more than a hundred years (Knopf 1996a). Perennial grasses invade wallows not used by bison (Uno 1989). It is possible that the southeast El Paso County playas result from of a combination of factors including deflation and buffalo wallowing.

Climate Description

In the U.S., the area typically described as the playa lakes region includes approximately 140,000 square miles (36.2 million ha) of southwestern Kansas, southeastern Colorado, the panhandle of Oklahoma, eastern New Mexico, and the panhandle and Southern High Plains of Texas (Haukos and Smith 1997). El Paso County is northwest of this area and its playas appear to differ from those further south. The El Paso County playas are smaller and are inundated at different times than the more southern playas. The more southern playas fill with rainwater during late winter and early spring and may remain flooded through summer and fall and as such are considered critical to the maintenance of waterfowl and shorebirds on the central flyway (Guthrey and Bryant 1982, Batt 1996). Though the El Paso County playas can fill during wet springs, they are more often inundated late in the summer and are dry during spring migration.

Land Use History

No Data

Cultural Features

No Data

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SITE DESIGN

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

Designer Doyle, G.A.

Boundary Justification

The site boundary includes the densest concentration of playas in El Paso and Pueblo counties. Playas continue for many miles north, south, and east of this site but not in the concentrations found within it. The entire site is underlain by Dwyer soils. Roadside occurrences of plains ambrosia extend for many miles beyond the boundary but these are not included because they are of lower conservation value.

Primary Area 55,350.48 **Acres** 22,399.63 **Hectares**

SITE SIGNIFICANCE

Biodiversity Significance Rank B2: Very High Biodiversity Significance

Biodiversity Significance Comments

This site contains the best known playa habitat for the globally vulnerable (G3/S3) plains ambrosia (*Ambrosia linearis*). It also includes the best known occurrences of a globally vulnerable (G3/S3) buffalograss playa community (*Buchloe dactyloides-Ratibida tagetes-Ambrosia linearis*). Over 300 playas occur within this site, most of which are in good condition. It is unique to find a high concentration of playas in relatively unaltered condition. Many playas in other playa lake regions have been plowed or otherwise altered. Plains ambrosia, though locally abundant, has a very limited global range (about 50 miles by 100 miles) and almost all of the habitat is privately owned.

Other Values Rank No Data

Other Values Comments

No Data

LAND MANAGMENT ISSUES

Land Use Comments

Most of the more southern playas are within areas of intense agricultural use and many have been plowed for crops, modified for collection of irrigation or feedlot runoff, or otherwise altered (Guthery and Bryant 1982, Bole et al. 1989, Haukos and Smith 1994). The El Paso County playas are primarily rangeland with little alteration by agriculture.

Natural Hazard Comments

No Data

Exotics Comments

No Data

Offsite

No Data

Information Needs

No Data

ASSOCIATED ELEMENTS OF BIODIVERSITY

Element State ID	State Scientific Name	State Common Name	Global Rank	State Rank	Driving Site Rank
24524	*Buchloe dactyloides - Ratibida tagetes - Ambrosia linearis Herbaceous Vegetation*	Buffalograss Playa	G3	S3	No
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24524	*Buchloe dactyloides - Ratibida tagetes - Ambrosia linearis Herbaceous Vegetation*	Buffalograss Playa	G3	S3	No
23164	*Ambrosia linearis*	plains ragweed	G3	S3	No
24524	*Buchloe dactyloides - Ratibida tagetes - Ambrosia linearis Herbaceous Vegetation*	Buffalograss Playa	G3	S3	No
23164	*Ambrosia linearis*	plains ragweed	G3	S3	No
24524	*Buchloe dactyloides - Ratibida tagetes - Ambrosia linearis Herbaceous Vegetation*	Buffalograss Playa	G3	S3	No
23164	*Ambrosia linearis*	plains ragweed	G3	S3	Yes
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23164	*Ambrosia linearis*	plains ragweed	G3	S3	No
24512	*Bouteloua gracilis* Herbaceous Vegetation	Blue Grama Short Grass Prairie	G4Q	S4	No
24524	*Buchloe dactyloides - Ratibida tagetes - Ambrosia linearis Herbaceous Vegetation*	Buffalograss Playa	G3	S3	No
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24524	*Buchloe dactyloides - Ratibida tagetes - Ambrosia linearis Herbaceous Vegetation*	Buffalograss Playa	G3	S3	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.

ADDITIONAL TOPICS

Additional Topics

No Data

VERSION

Version Date 09/15/2003

Version Author Spackman, S.C.

Disclaimer

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