

## WESTERN GREAT PLAINS CLOSED DEPRESSION WETLAND



map not available

ELEOCHARIS PALUSTRIS SEASONALLY FLOODED HERBACEOUS ALLIANCE  
*Eleocharis palustris* Herbaceous Vegetation  
HORDEUM JUBATUM TEMPORARILY FLOODED HERBACEOUS ALLIANCE  
*Hordeum jubatum* Herbaceous Vegetation  
PANICUM OBTUSUM HERBACEOUS ALLIANCE  
*Panicum obtusum* - *Buchloe dactyloides* Herbaceous Vegetation  
PASCOPIRYUM SMITHII TEMPORARILY FLOODED HERBACEOUS ALLIANCE  
*Pascopyrum smithii* - *Eleocharis* spp. Herbaceous Vegetation  
*Pascopyrum smithii* - *Hordeum jubatum* Herbaceous Vegetation  
SCHOENOPLECTUS AMERICANUS SEMIPERMANENTLY FLOODED HERBACEOUS ALLIANCE  
*Schoenoplectus americanus* - *Eleocharis* spp. Herbaceous Vegetation

**Overview:** This system includes a variety of depressional wetlands or playas scattered throughout the eastern plains of Colorado and adjacent areas of the Central Shortgrass Prairie ecoregion. Occurrences are primarily upland depressional basins supporting freshwater wetland vegetation. These wetlands are small, shallow, and generally isolated in an extremely localized watershed, although they are typically part of a larger complex of depressional wetlands embedded in a terrestrial matrix system. The basins are typified by the presence of an impermeable layer such as a dense clay, and hydric soils. They are rarely linked to outside groundwater sources, and are instead dependent on rainwater and nearby runoff. Ponds and lakes associated with this system can experience periodic drawdowns during drier seasons and years, and are often replenished by spring rains.

**Characteristic species:** Species richness varies considerably among individual examples of this system. Commonly, *Eleocharis* spp., *Hordeum jubatum*, along with *Coreopsis tinctoria*, *Symphytotrichum subulatum* (= *Aster subulatus*), and *Polygonum pensylvanicum* (= *Polygonum bicornis*) are found in the wetter and deeper depression. Shallower depressions in rangelands commonly contain *Pascopyrum smithii* and *Buchloe dactyloides*.

**Environment:** This system is typified by upland depressional basins with an impermeable layer such as dense clay, and hydric soils. These basins are generally not recharged by groundwater, and depend on precipitation from storms and local runoff for replenishment.

**Dynamics:** Playas are characterized by irregular hydroperiods; many fill with water only occasionally and dry quickly. These fluctuations in water availability often promote diverse herbaceous plant growth, but the communities that develop will be shaped by the timing and length of inundation or dryness (Smith 2003). Hydrological changes, grazing and conversion to agriculture are the primary threats influencing this system. Many larger playas have been altered by the digging of pits to concentrate precipitation and irrigation runoff for pumping. The circulation of irrigation water through the playa alters the hydroperiod of the playa, making it more erratic and less able to support the

characteristic plant and invertebrate species. Playa filling as a result of soil erosion from adjacent tilled cropland also results in an altered hydroperiod. Playas are also likely to receive significant input of herbicides and fertilizers used on adjacent crop land or runoff from livestock production facilities. These anthropogenic inputs generally impair water quality and reduce the diversity and abundance of plants and invertebrates.

**Variation:** The processes that lead to the formation and maintenance of depressional wetlands in the Great Plains are not completely understood, and occurrences in different areas may be due to different factors, including wind deflation, animal wallowing, and carbonate dissolution processes.



S. Kettler

Smith, L.M. 2003. *Playas of the Great Plains*. University of Texas Press. Austin, TX

Rank:	A	B	C	D
<b>① CONDITION</b>				
<b>Natural hydrologic regime – periodic drying and innundation</b>	Intact. Native species diversity is maintained by natural hydrologic cycle.	Nearly intact.	Altered by local drainage.	Not restorable without significant resources.
<b>Exotic species</b>	No or very few exotic species present with no potential for expansion.	Few exotic species with little potential for expansion if restoration occurs.	May be widespread but potentially manageable with restoration of most natural processes.	May be dominant.
<b>Native spp. that increase with disturbance to changes in hydrology or nutrients</b>	Absent or low in abundance.	Absent, low in abundance, or restricted to high-nutrient microsites.	May be very prominent.	Prominent to dominant.
<b>Disturbance</b> (irrigation cycling by pitting and pumping, erosional filling, cultivation, livestock grazing, anthropogenic nutrient input, or other human impacts)	No or little evidence of alteration.	Alteration is easily restorable by ceasing such activities.	Alteration is extensive, but potentially restorable over several decades.	Playa may have been cultivated in the past. System remains fundamentally compromised despite restoration of some processes.
<b>② LANDSCAPE CONTEXT</b>				
<b>Surrounding land</b>	Occurrence is part of a larger system of depressionnal wetlands imbedded in a matrix of high quality native ecological systems. Uplands within one mile of the occurrence are largely unaltered by urban or agricultural uses (>90% natural), and include few to no roads, cropped fields, developments, or excessively grazed pastures.	Occurrence is part of a larger system of depressionnal wetlands imbedded in a matrix dominated by native ecological systems. Uplands within ¼ mile of occurrence with moderate urban or agricultural alteration (60 to 90% natural), but retaining much connectivity, or uplands are heavily managed.	Occurrence may be part of a highly altered system of depressionnal wetlands. Uplands surrounding occurrence are fragmented by urban or agricultural alteration (20 to 60% natural).	Occurrence may be isolated from the larger system of depressionnal wetlands. Uplands surrounding occurrence are mostly converted to agricultural or urban uses.
<b>Area hydrology</b>	No hydrological alterations are in place that pump groundwater or divert surface flows away from the wetland.	Some hydrological alteration may occur within the local watershed, but is at some distance (>1 mile) from the playa and has only minor influence on the natural hydrological cycles in the playa.		
<b>Natural processes</b> (hydrologic disturbance of flooding/drying cycles, fire, and species migration)	Connectivity of habitats allows natural processes to occur.	Natural processes have been altered but not significantly so from their historic frequency and intensity.	Natural processes have been eliminated or have had their frequency and intensity greatly altered. Restoration is feasible.	Almost nonexistent.
<b>Connectivity</b>	There are no unnatural barriers present either within or surrounding the occurrence that would inhibit movement of organisms and materials across systems boundaries.	Few unnatural barriers present between wetlands and uplands.	Some barriers are present.	Almost nonexistent.
<b>③ SIZE</b>				
<b>Acres</b> May include several playas in a complex of natural vegetation.	>20	5-20	2.5-5	< 2.5