14950

Western Great Plains Depressional Wetland Systems

BpS Model/Description Version: Aug. 2020

Update 6/22/2018

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| **Modelers** |  | **Reviewers** |  |
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Vegetation Type

Herbaceous Wetland

Map Zones

35

Geographic Range

Occurs on the Eldorado Plateau of the western part of map zone (MZ)35. Some larger occurrences of this wetland system are found in Crocket, Reagan, Schlichter, Irion, and Sterling counties in the northwest Edwards Plateau.

Biophysical Site Description

These are closed, internally draining depressions on uplands. In that way they resemble Western Great Plains Closed Depression Wetlands. Edwards Plateau Upland Depressions result from solution of underlying Cretaceous limestone in relatively xeric portions of Edwards Plateau. They are variable in size and variable in inundation.

Vegetation Description

Dominant vegetation includes both graminoids and forbs tolerant of wet periods but not necessarily wetland-dependent. Dominant species may include tobosagrass (*Pleuraphis mutica*), buffalograss (*Buchloe dactyloides*), widowscross (*Sedum pulchellum*), yellow stonecrop (*Sedum nuttallianum*), poverty dropseed (*Sporobolus vaginiflorus*), whiteray leastdaisy (*Chaetopappa bellidifolia*), nailwort (*Paronychia* spp.) and the alga Nostoc commune.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PLMU3 | *Pleuraphis mutica* | Tobosagrass |
| BUDA | *Buchloe dactyloides* | Buffalograss |
| CHBE2 | *Chaetopappa bellidifolia* | Whiteray leastdaisy |

Species names are from the NRCS PLANTS database. Check species codes at http://plants.usda.gov.

Disturbance Description

Fire occurs in this system at the same frequency as the surrounding landscape but has little effect on the community. Fluvial events (increased rainfall over the normally dry circumstances) may increase diversity and productivity at the site.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 7 | 100 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 7 | 100 |  |  |

Fire interval is expressed in years for each fire severity class and for all types of fire combined (All Fires). Average FI is the central tendency modeled. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

Generally small, but may be up to 100s of acres.

Adjacency or Identification Concerns

This system is structurally and hydrologically similar to playa lakes of the Great Plains, but the two types differ in the dominant geomorphic process leading to their development. The Edwards Plateau Upland Depressions are karst features, developing from solution of upland limestones. From the perspective of vegetation structure, these types are also similar.

Issues or Problems

Native Uncharacteristic Conditions

Comments

This model description was developed for MZ35 but the VDDT model was adopted without changes from biophysical setting 1495 in MZ34.

Succession Classes

**Mapping Rules**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Upper Layer Lifeform** | **Height (m)** | **Canopy Cover (%)** | | | | | | | | | |
| **0-10** | **11-20** | **21-30** | **31-40** | **41 - 50** | **51-60** | **61-70** | **71-80** | **81-90** | **91-100** |
| Herb | 0-0.5 | A | A | A | A | A | A | A | A | A | A |
| Herb | 0.5-1.0 | A | A | A | A | A | A | A | A | A | A |
| Herb | >1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 0-0.5 | A | A | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | >3.0 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 0-5 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 5-10 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 10-25 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 25-50 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | UN | UN | UN | UN | UN | UN | UN | UN | UN | UN |

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

**Description**

Class A 100 Early Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PLMU3 | Pleuraphis mutica | Tobosagrass | Upper |
| BUDA | Buchloe dactyloides | Buffalograss | Upper |
| CHBE2 | Chaetopappa bellidifolia | Whiteray leastdaisy | Upper |

Description

Depending on water conditions the vegetation varies widely. Rainfall is variable, and storm tracks may control filling of these depressions. Replacement fire occurs in this system. The fire interval depends on the surrounding matrix and the presence or absence of standing water. Pluvial events increase diversity for some time. Pluvial cycles may result from local scale climate processes such as storm tracks.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:OPN | 0 | Early1:OPN | 999 |

Probabilistic Transitions

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Disturbance Type** | **Disturbance occurs In** | **Moves vegetation to** | **Disturbance Probability** | **Return Interval (yrs)** | **Reset Age to New Class Start Age After Disturbance?** | **Years Since Last Disturbance** |
| Replacement Fire | Early1:OPN | Early1:OPN | 0.15 | 7 | Yes | 0 |
| Optional 1 | Early1:OPN | Early1:OPN | 0.2 | 5 | No | 0 |

Optional Disturbances

Optional 1: pluvial events

References

NatureServe. 2007. International Ecological Classification Standard: Terrestrial Ecological Classifications. NatureServe Central Databases. Arlington, VA, U.S.A. Data current as of 10 February 2007.