14400

Tamaulipan Clay Grassland

BpS Model/Description Version: Aug. 2020

|  |  |  |  |
| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Lee Elliott | lelliott@tnc.org |  |  |
| Mitch Sternberg | Mitch\_Sternberg@tnc.org |  |  |
| Lisa Williams | lwilliams@tnc.org |  |  |

Vegetation Type

Herbaceous

Map Zone

36

Geographic Range

This Biophysical Setting occurs on clay prairies near the Gulf Coast and drier sites further inland, in Kleberg, Nueces, and parts of San Patricio counties, and inland to Victoria.

Biophysical Site Description

This Tamaulipan ecological system occurs on clay prairies near the Gulf Coast and drier sites further inland. Substrates are fine calcareous clays and clay loam. Occasional fires and root pruning from montmorillonitic clay limit shrub invasion, if the grassland is not overgrazed. If overgrazed, the land will convert to stable thornscrub dominated by honey mesquite (*Prosopis glandulosa*) and spiny hackberry (*Celtis pallida*).

Vegetation Description

Vegetation is dominated by perennial mid- and shortgrasses such as little bluestem (*Schizachyrium scoparium*), paspalums (*Paspalum* spp.), multiflower false Rhodes grass (*Chloris pluriflora*), buffalograss (*Buchloe dactyloides*), with other grasses such as silver beardgrass (*Bothriochloa laguroides* ssp. *torreyana*), sideoats grama (*Bouteloua curtipendula*), slimspike windmill grass (*Chloris andropogonoides*), Texas wintergrass (*Nassella leucotricha*), tumblegrass (*Schedonnardus paniculatus*), streambed bristlegrass (*Setaria leucopila*), and clumps of big bluestem (*Andropogon gerardii*) on less clayey sites. Honey mesquite or plateau oak (*Quercus fusiformis*) are often present as scattered mottes or are restricted to drainages. Texas pricklypear and wild tantan (*Desmanthus virgatus*) are often present (Johnston 1963).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| SCSC | *Schizachyrium scoparium* | Little bluestem |
| CHPL2 | *Chloris pluriflora* | Multiflower false rhodes grass |
| BUDA | *Buchloe dactyloides* | Buffalograss |
| BOLAT | *Bothriochloa laguroides ssp. torreyana* | Silver beardgrass |
| DEVI3 | *Desmanthus virgatus* | Wild tantan |
| PRGL2 | *Prosopis glandulosa* | Honey mesquite |
| QUFU | *Quercus fusiformis* | Plateau oak |
| OPENL | *Opuntia engelmannii var. lindheimeri* | Texas pricklypear |

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

Disturbance Description

Fire (lightning and anthropogenic) occurs on a frequent 2-5yr return interval. Bison may not have played the major role that the species played in other prairie types due to the lack of contiguity with more matrix prairie types to the north and west. This type is characterized by frequent replacement fires, both lightning and anthropogenic in origin (Stewart 1951; Lehmann 1965; Drawe 1980; Stewart 2002; Jurney et al. 2004). Fire was dependent on the availability of dry fine fuel sufficient to carry a fire. Both native grazing and wet/dry periods would have dictated whether sufficient dry, fine fuels were present to carry a burn. Therefore, this system strongly influenced the probable size of burn. Drought may shift composition and cause minor changes in herbaceous cover.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 3 | 99 |  |  |
| Moderate (Mixed) | 264 | 1 |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 3 | 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

Small patch due to limited nature of edaphic requirements for this system.

Adjacency or Identification Concerns

This type may be surrounded by Tamaulipan Mixed Thorn Shrubland and Woodland and Texas-Louisiana Coastal Prairie. This type is currently nonexistent due to conversion to cropland. In 1955, Johnston reported that discovering undisturbed occurrences of this system was not possible (Johnston 1955).

Issues or Problems

Native Uncharacteristic Conditions

Comments

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 | B | B | B |
| Herb | 0.5-1.0 | A | A | A | A | A | A | A | B | B | B |
| Herb | >1.0 | A | A | A | A | A | A | A | B | B | B |
| Shrub | 0-0.5 | C | C | C | C | C | C | C | C | C | C |
| Shrub | 0.5-1.0 | C | C | C | C | C | C | C | C | C | C |
| Shrub | 1.0-3.0 | C | C | C | C | C | C | C | C | C | C |
| Shrub | >3.0 | C | C | C | C | C | C | C | C | C | C |
| Tree | 0-5 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 5-10 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 10-25 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | 25-50 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Tree | >50 | C | C | 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 33 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| SCSC | Schizachyrium scoparium | Little bluestem | Upper |
| CHPL2 | Chloris pluriflora | Multiflower false rhodes grass | Upper |
| BUDA | Buchloe dactyloides | Buffalograss | Upper |
| DEVI3 | Desmanthus virgatus | Wild tantan | Upper |

Description

This class represents immediately post-fire and resprouts. The vegetation is regrowing perennials as mentioned in vegetation description. Grazing may have occurred in this class due to the "sweet" regrowth.

*Maximum Tree Size Class*  
None

Class B 63 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| SCSC | Schizachyrium scoparium | Little bluestem | Upper |
| CHPL2 | Chloris pluriflora | Multiflower false rhodes grass | Upper |
| BUDA | Buchloe dactyloides | Buffalograss | Upper |
| DEVI3 | Desmanthus virgatus | Wild tantan | Upper |

Description

This class is grassland with the same species mentioned in the vegetation description. Frequent replacement fire is the main disturbance type. Without regular fire, this class will succeed to a shrubland.

*Maximum Tree Size Class*  
None

Class C 4 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PRGL2 | Prosopis glandulosa | Honey mesquite | Upper |
| QUFU | Quercus fusiformis | Plateau oak | Upper |
| ACFA | Acacia farnesiana | Sweet acacia | Upper |
| CEPA8 | Celtis pallida | Spiny hackberry | Upper |

Description

This class occurs after several missed fire cycles, when shrubs start forming. Shrub species would include honey mesquite, spiny hackberry, plateau oak, and acacia spp. Herbaceous species would be the same as in the previous class. Fire is the main disturbance type for this class. Both mixed fire and replacement fire could occur, depending on fine fuel loads.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 1 |
| Mid1:CLS | 2 | Mid1:CLS | 999 |
| Late1:CLS | 6 | Late1:CLS | 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** |
| Alternative Succession | Mid1:CLS | Late1:CLS | 1 | 1 | Yes | 6 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.5 | 2 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:CLS | 0.1 | 10 | No | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.4 | 3 | Yes | 0 |

References

Drawe, D. Lynn. 1980. The role of fire in the Coastal Prairie. In: Hanselka, C. Wayne, ed. Prescribed range burning in the coastal prairie and eastern Rio Grande Plains of Texas: Proceedings of a symposium; October 16, 1980; Kingsville, TX. College Station, TX: The Texas A&M University System, Texas Agricultural Extension Service: 101-113.

Johnston, M.C. 1955. Vegetation of the Eolian plain and associated coastal features of southern Texas. PhD. Dissertation. University of Texas, Austin. 167 pp.

Johnston, M.C. 1963. Past and present grasslands of southern Texas and northeastern Mexico. Ecology. 44:456-466.

Jurney, D., R. Evans, J. Ippolito and V. Bergstrom. 2004. The role of wildland fire in portions of southeastern North America. In: R.T. Engstrom and W.J. de Groot (eds). 22nd Tall Timbers Fire Ecology Conf. Proceedings. Kanaskas, Alberta. Pages 95-116.

Lehmann, V.W. 1965. Fire in the range of Attwater’s prairie chicken. Proceedings Tall Timbers Fire Ecology Conference 4:127-143.

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

Stewart, O.C. 1951. Burning and natural vegetation in the United States. Geography Review 41:317-320.

Stewart, O. C. 2002. Forgotten fires, Native Americans and the Transient Wilderness. Edited by H. T. Lewis and M. K. Anderson. University of Oklahoma Press, Norman, OK. 364 pp.