14420

South Texas Sand Sheet Grassland

BpS Model/Description Version: Aug. 2020

|  |  |  |  |
| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Tim Reinke | tim.reinke@tx.usda.gov |  |  |
| Wade Harrell | wharrell@tnc.org |  |  |
|  |  |  |  |

Vegetation Type

Herbaceous

Map Zone

36

Model Splits or Lumps

This Biophysical Setting (BpS) is lumped with 1443.

Geographic Range

This system occurs on the ridge-and-swale topography on deep eolian sands of the South Texas Sand Sheet. Shifting dunes are found on this BpS with up to 15% slopes. Primary ECOMAP subsections in MZ37 include 315Ea, 315Eb, and 315Ef (Cleland et al. 2007).

Note: This site is lumped with BpS 1443, South Texas Dune and Coastal Grassland, but it does not include Padre Island (lumped into BpS 1437: Central and Upper Texas Coast Dune and Coastal Grassland).

Biophysical Site Description

These grasslands were formed on deep sandy eolian deposits (USDA-NRCS 2007). In 1834, Jean Luis Berlandier referred to a region where the site is prevalent as a “wilderness of plains” that was “covered with small forests of oaks.”

Vegetation Description

The historic climax community was grassland with scattered live oak mottes. Shore little bluestem (*Schizachyrium littorale*) dominated the site. Gulfdune paspalum (*Paspalum monostachyum*), switchgrass (*Panicum virgatum*), and brownseed paspalum (*P. plicatulum*) were important associated grasses. Pan American balsamscale (*Elyonurus tripsacoides*) replaced gulfdune paspalum in importance >25-30mi from the coast. On drier sites away from the coast, Pan American balsamscale, thin paspalum (*P. setaceum*), and arrowfeather threeawn (*Aristida purpurescens*) were dominant, whereas shore little bluestem dominated more mesic sites. The climax community supported a diverse understory community of perennial legumes and other forbs. These grasslands occur intermixed with woodlands dominated by live oak (*Quercus virginiana*) and honey mesquite (*Prosopis glandulosa*).

Note: This vegetation description is taken from NRCS ecological site description, 2007.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| SCLI11 | *Schizachyrium littorale* | Shore little bluestem |
| PAMO4 | *Paspalum monostachyum* | Gulfdune paspalum |
| ANGE | *Andropogon gerardii* | Big bluestem |
| MUCA2 | *Muhlenbergia capillaris* | Hairawn muhly |
| SONU2 | *Sorghastrum nutans* | Indiangrass |
| PAPL3 | *Paspalum plicatulum* | Brownseed paspalum |
| QUVI | *Quercus virginiana* | Live oak |
| HECO10 | *Heteropogon contortus* | Tanglehead |

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

Disturbance Description

Historically, fire maintained the site in a grassland state. Both anthropogenic and lightning-started fires were likely important in this type, with some question as to return interval. White-tailed deer (*Odocoileus virginianus*) and pronghorn (*Antilocapra americana*) were the major large herbivores on this site at the time of colonization by Europeans. The extent to which bison (*Bison bison*) used this site is unknown.

Note: Taken in part from NRCS ecological site description, 2007.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 4 | 100 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) |  |  |  |  |
| All Fires | 4 | 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

This system is confined to the south Texas sand sheet.

Adjacency or Identification Concerns

In parts of the south Texas sand sheet, live oak forests exist, and there is some debate as to what extent these forests were present historically. These forests should be handled in a separate BpS description as they have different disturbance regimes and vegetation communities.

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 | B | B | B | B | B | B | B | B |
| Herb | 0.5-1.0 | A | A | B | B | B | B | B | C | C | C |
| Herb | >1.0 | A | A | B | B | B | B | B | C | C | C |
| Shrub | 0-0.5 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 0.5-1.0 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | 1.0-3.0 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| Shrub | >3.0 | C | C | UN | UN | UN | UN | UN | UN | UN | UN |
| 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 4 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| HELIA3 | Helianthus | Sunflower | Upper |
| FROEL | Froelichia | Snakecotton | Upper |
| CROTO | Croton | Croton | Upper |

Description

This class consists of early-successional plants on bare areas, often existing as dunes. This class can either be created by fire followed by heavy native grazing or wind storm events that removed vegetated dunes and caused active movement.

*Maximum Tree Size Class*  
None

Class B 24 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| SCSC | Schizachyrium scoparium | Little bluestem | Upper |
| FORBS | <NOT FOUND IN NRCS> | <NOT FOUND IN NRCS> | Mid-Upper |
| PAPL3 | Paspalum plicatulum | Brownseed paspalum | Upper |
| HECO10 | Heteropogon contortus | Tanglehead | Upper |

Description

This class consists of late-successional grassland with little to no woody vegetation that has been recently burned. Plant species composition would be unchanged from unburned sites but of a lower stature and higher forb dominance.

*Maximum Tree Size Class*  
None

Class C 72 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| SCSC | Schizachyrium scoparium | Little bluestem | None |
| SONU2 | Sorghastrum nutans | Indiangrass | None |
| HECO10 | Heteropogon contortus | Tanglehead | None |
| QUVI | Quercus virginiana | Live oak | None |

Description

This class consists of late-successional grassland that has not burned in over a year. Canopy cover and height of herbaceous vegetation is of maximum extent in ungrazed condition.

After a long absence from fire, light shrub invasion of both live oak and mesquite could have occurred.

*Maximum Tree Size Class*  
None

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 2 |
| Mid1:CLS | 1 | Mid1:OPN | 2 |
| Mid1:OPN | 3 | Mid1: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 | Mid1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Native Grazing | Mid1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Mid1:OPN | Mid1:CLS | 0.33 | 3 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Native Grazing | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |

References

Cleland, D.T.; Freeouf, J.A.; Keys, J.E.; Nowacki, G.J.; Carpenter, C.A.; and McNab, W.H. 2007. Ecological Subregions: Sections and Subsections for the conterminous United States. Gen. Tech. Report WO-76D [Map on CD-ROM] (A.M. Sloan, cartographer). Washington, DC: U.S. Department of Agriculture, Forest Service, presentation scale 1:3,500,000; colored

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

USDA-NRCS. 2007. Ecological Site Description DRAFT. Sand Hills PE 25-44, MLRA: 83E Not yet available online. [http://esis.sc.egov.usda.gov/Welcome/pgESDWelcome.aspx].