14760

Tamaulipan Riparian Systems

BpS Model/Description Version: Aug. 20205/16/07

|  |  |  |  |
| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
| Chris Hathcock | Chris.Hathcock@tpwd.state.tx.us | Frank Judd | fjudd@utpa.edu |
| Lee Elliott | lelliott@tnc.org | David Diamond | diamondd@missouri.edu |
| Mitch Sternberg | Mitch\_Sternberg@fws.gov |  |  |

Vegetation Type

Woody Wetland

Map Zones

36

Geographic Range

This group of systems occurs from the Rio Grande delta upstream within the map zone, in a restricted narrow band upstream and becoming well developed in the Rio Grande delta region.

Biophysical Site Description

River banks and terraces of the river and resacas. In oxbows and former river channels and distributaries of the Rio Grande. This system occupies sites with better-drained soil (loam or clay loam as opposed to more commonly clays in the floodplain) and higher topographic positions. Found on soils originating from alluvial deposits along the Rio Grande and drainages feeding into the river.

Vegetation Description

This Tamaulipan riparian systems group occurs along the lower Rio Grande in southern Texas. Soils are typically somewhat deeper than those of the surrounding landscape. Lower Rio Grande Valley characteristic tree species are Texas ebony (*Ebenopsis ebano*), knockaway (*Ehretia anacua*), great leadtree (*Leucaena pulverulenta*), sweet acacia (*Acacia farnesiana*), cedar elm (*Ulmus crassifolia*), honey mesquite (*Prosopis glandulosa*), sugarberry (*Celtis laevigata*), Mexican ash (*Fraxinus berlandieriana*), and many other riparian plants. The dense shrub canopy is a mix of species (the shrub canopy often mingles with overstory canopy forming a continuous layer from ~1m to the canopy) often including mouse’s eye (*Bernardia myricifolia*), Brazilian bluewood (*Condalia hookeria*), saffron plum (*Sideroxylon celastrinum*), spiny hackberry (*C. pallida*), Vasey’s wild lime (*Adelia vaseyi*), crucillo (*Randia rhagocarpa*), and devilqueen (*Phaulothamnus spinescens*). Lime pricklyash (*Zanthoxylum fagara*), Texas persimmon (*Diospyros texana*), and Texas swampprivet (*Forestiera angustifolia*) occur here but are more generally characteristic of more upland sites. Spiny hackberry, lime pricklyash, and Texas swampprivet are often dominants in the shrub layer where they occur. Herbaceous species in the understory include rougeplant (*Rivina humilis*), guinea henweed (*Petiveria alliacea*), blood sage (*Salvia coccinea*), wild crapemyrtle (*Malpighia glabra*), Jack in the bush (*Chromolaena odorata*), and blue boneset (*Tamaulipa azurea*). Species in the western reaches of the Rio Grande Valley differ substantially from the eastern reaches of the Rio Grande Valley due to the more subtropical nature of the flora near the Gulf and the wetter nature of those sites. Species in the western reaches may include Montezuma bald cypress (*Taxodium mucronatum*), Mexican ash, black willow, and sweet acacia. Palm riparian forests and woodlands are found on riverbanks and floodplains, now restricted to small remnant groves in the eastern reaches. Neotropical species such as Rio Grande palmetto, mountain torchwood, potatotree (*Solanum erianthum*), Vasey’s wild lime, West Indian milkberry (*Chiococca alba*), and pullback (*Pisonia aculeata*) may be present.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PRGL2 | *Prosopis glandulosa* | Honey mesquite |
| EBEB | *Ebenopsis ebano* | Texas ebony |
| EHAN | *Ehretia anacua* | Knockaway |
| CELA | *Celtis laevigata* | Sugarberry |
| ACFA | *Acacia farnesiana* | Sweet acacia |
| FRBE | *Fraxinus berlandieriana* | Mexican ash |
| ULCR | *Ulmus crassifolia* | Cedar elm |

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

Disturbance Description

The major process in this system was flooding. Freezes can have significant impacts on canopy species such as *Ebenopsis*, *Sabal*, and *Leucaena pulverulenta* in the delta. Hurricanes may not significantly affect dense ebony/anacua forest, except through flood effects. Lengthy droughts (lasting ~10yrs) can influence this system, but most species are drought-tolerant. Infrequent fires may also occur.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement |  |  |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 31 | 100 |  |  |
| All Fires | 31 | 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

Linear, becoming more well developed and occupying larger areas in the delta region.

Adjacency or Identification Concerns

We have lumped this model with Tamaulipan Floodplain.

Issues or Problems

Evergreen tree species, such as ebony and anacua, in the canopy can be distinguished remotely. Leonard and Judd (2002) have methodology for distinguishing riparian vegetation in the region using remote sensing.

Native Uncharacteristic Conditions

Class B may be overrepresented due to human disturbances that start succession.

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 | 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 | A | A | A | A | A | A | A | A |
| Shrub | 0.5-1.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | 1.0-3.0 | A | A | A | A | A | A | A | A | A | A |
| Shrub | >3.0 | A | A | A | A | A | A | A | A | A | A |
| Tree | 0-5 | B | B | B | B | B | B | B | B | B | B |
| Tree | 5-10 | B | B | B | B | B | B | B | B | B | B |
| Tree | 10-25 | B | B | B | B | B | B | B | C | C | C |
| Tree | 25-50 | B | B | B | B | B | B | B | C | C | C |
| Tree | >50 | B | B | B | B | B | B | B | C | C | C |

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 2 Early Development 1 - Open

DBH

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| CODI | Cocculus diversifolius | Snailseed | Upper |
| CHOD | Chromolaena odorata | Jack in the bush | Upper |
| TRIN6 | Trixis inula | Tropical threefold | Upper |
| LEPU3 | Leucaena pulverulenta | Great leadtree | Upper |

Description

Herbaceous dominant may be blood sage, rougeplant, snailseed (*Cocculus diversifolius*), littlefruit slipplejack (*Serjania brachycarpa*), streambed bristlegrass (*Setaria leucopila*), common reed (*Phragmites australis*), and Jack in the bush where there are high sunlight conditions. Woody species establishing in the understory include tropical threefold (*Trixis inula*), Rooseveltweed (*Baccharis neglecta*), shrubby yellowcrest (*Heimia salicifolia*), pelotazo (*Abutilon incanum*), black willow, knockaway, sugarberry, spiny hackberry, great leadtree, and Jerusalem thorn (*Parkinsonia aculeata*). Flooding is modeled for this stage.

*Maximum Tree Size Class*  
None

Class B 8 Mid Development 1 - Open

DBH

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| ACFA | Acacia farnesiana | Sweet acacia | Upper |
| CEPA8 | Celtis pallida | Spiny hackberry | Upper |
| CELA | Celtis laevigata | Sugarberry | Upper |
| EHAN | Ehretia anacua | Knockaway | Upper |

Description

Species composition would contain canopy species of an earlier successional type such as *Acacia farnesiana*, *Ehretia anacua*, *Leucaena pulverulenta*, *Celtis laevigata*, and *Celtis pallida*. Shrub cover would be increased due to openness of the canopy. Flooding and surface fires also occur.

*Maximum Tree Size Class*  
Pole 5-9" DBH

Class C 90 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| FRBE | Fraxinus berlandieriana | Mexican ash | Upper |
| EHAN | Ehretia anacua | Knockaway | Upper |
| ULCR | Ulmus crassifolia | Cedar elm | Upper |
| EBEB | Ebenopsis ebano | Texas ebony | Upper |

Description

Canopy becomes more closed and includes *Fraxinus berlandieriana*, *Ehretia anacua*, *Ebenopsis ebano*, *Ulmus crassifolia*, and *Sabal mexicana* in the lower reaches. Gap succession does occur as individual tree mortality. Freezes will reduce canopy of ebony and other subtropical species. Freezes and surface fires occur but do not cause transitions to other structural or floristic states. Flooding occurs.

*Maximum Tree Size Class*  
Large 21-33" DBH

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:OPN | 0 | Mid1:OPN | 12 |
| Mid1:OPN | 13 | Late1:CLS | 33 |
| Late1:CLS | 34 | 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** |
| Wind or Weather or Stress | Early1:OPN | Early1:OPN | 0.002 | 500 | Yes | 0 |
| Wind or Weather or Stress | Mid1:OPN | Early1:OPN | 0.002 | 500 | Yes | 0 |
| Surface Fire | Mid1:OPN | Mid1:OPN | 0.033 | 30 | No | 0 |
| Competition or Maintenance | Late1:CLS | Mid1:OPN | 0.002 | 500 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Early1:OPN | 0.002 | 500 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:CLS | 0.02 | 50 | No | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.033 | 30 | No | 0 |

References

Lonard, R.I. and F.W. Judd. 2002. Riparian vegetation of the lower Rio Grande. The Southwestern Naturalist. 47: 420-432.

McAtee, J.W., C.J. Scifres and D.L. Drawe. 1979. Improvement of gulf cordgrass range with burning or shredding. J. of Range Management 32: 372-378.

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