11590

Rocky Mountain Montane Riparian Systems

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
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Vegetation Type

Woody Wetland

Map Zone

15

Geographic Range

This system is found throughout the Rocky Mountain and Colorado Plateau regions.

Biophysical Site Description

This system occurs within a broad elevation range from ~900-2,800m. This system is dependent on a natural hydrologic regime, especially annual to episodic flooding. Occurrences are found within the flood zone of rivers, on islands, sand or cobble bars, and immediate streambanks. They can form large, wide occurrences on mid-channel islands in larger rivers or narrow bands on small, rocky canyon tributaries and well-drained benches. It is also typically found in backwater channels and other perennially wet but less scoured sites, such as floodplain swales and irrigation ditches.

Vegetation Description

This system often occurs as a mosaic of multiple communities that are tree-dominated with a diverse shrub component. Species include *Platanus wrightii*, *Quercus* spp., *Juglans major*, *Arbustus arizonica*, *Pinus engelmannii*, *Pinus leiophyla*, *Pinus arizonica*, *Acer negundo*, *Populus angustifolia*, *Populus balsamifera*, *Populus deltoides*, *Populus fremontii*, *Pseudotsuga menziesii*, *Picea pungens*, or *Juniperus scopulorum*. Dominant shrubs include *Acer glabrum*, *Alnus incana*, *Betula occidentalis*, *Cornus sericea*, *Crataegus rivularis*, *Forestiera pubescens*, *Prunus virginiana*, *Rhus trilobata*, *Salix amygdaloides*, *Salix drummondiana*, *Salix exigua*, *Salix goodingii*, *Salix irrorata*, *Salix luicida*, *Salix monticola*, *Shepherdia argentea*, or *Symphoricarpos* spp.

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| POPUL | *Populus* | Cottonwood |
| SALIX | *Salix* | Willow |
| ROWO | *Rosa woodsii* | Woods' rose |
| CAREX | *Carex* | Sedge |
| ACGL | *Acer glabrum* | Rocky mountain maple |
| BEOC | *Benitoa occidentalis* | Benitoa |
| COSE16 | *Cornus sericea* | Redosier dogwood |
| PRVI | *Prunus virginiana* | Chokecherry |

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

Disturbance Description

The role of fire in these systems has been commonly underestimated. Increased amounts of pine results in increased fire in these systems. Mean fire return interval in the western Chiricahuas ranged from 4-7yrs, where these canyon riparian systems act as corridors for fire spread from grasslands below and ponderosa pine forests above. They are relatively productive systems due to water drainage and springs/surface water. Fuel accumulates rapidly due to this high productivity and gravity. Fuel is continuous and abundant, can be high in moisture but dry out during the summer, and can carry fire, often surface fire, from adjacent systems. Dominant scrub species, which resprout as an adaption to flooding, also resprout following fire. Apache used these areas as seasonal rancherias. Burning was used on fine scale except during wartime periods, mid-1700s and mid-1800s, when there was more widespread use by Apache, Spanish, and Anglo Americans.

This system is dependent on a natural hydrologic regime, especially annual to episodic flooding. Flood events of increasing magnitude will cause maintenance to stand-replacing disturbances; 7yr flood events for herbaceous and seedling cover; 20yr events for shrubs and pole-size trees; and 50yr events for mature trees. Hall (1946) describes a spotty distribution of Beaver (*Castor canadensis*) in the Colorado River system.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 54 | 12 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 8 | 88 |  |  |
| 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

These systems are small linear features in the landscape. May exist as mid-large patches in low-elevation riverine systems.

Adjacency or Identification Concerns

Today exotic trees of *Elaeagnus angustifolia* and *Tamarix* spp. are common in some stands. Generally, the upland vegetation surrounding this riparian system is different and ranges from grasslands to forests. Fire behavior in these systems is strongly influenced by the adjacent uplands. Hydrological processes (e.g., flooding) are the determining factors in these systems.

Issues or Problems

Overgrazing and irrigation use have had major impacts on some of these systems. This ecological system occurs at scales <30m resolution of LANDFIRE.

There is a paucity of information on this system.

Native Uncharacteristic Conditions

Comments

For LANDFIRE National, this model was adopted from Great Basin 131159; species and other modifications for map zone 15 are based on peer review.

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 | B | B | B | B | B | B | B | B | B | B |
| 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 | C | C | C | C | C | C | C | C | C | C |
| Tree | 25-50 | C | C | C | C | C | C | C | C | C | C |
| Tree | >50 | C | C | C | C | C | C | C | 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 26 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| POPUL | Populus | Cottonwood | Upper |
| SALIX | Salix | Willow | Upper |
| CAREX | Carex | Sedge | Lower |

Description

Immediate post-fire responses in this ecological system are dependent on pre-burn vegetation form. Generally this class is expected to occur a few years post-disturbance. It is typically shrub-dominated, but grass may co-dominate (up to 100% herbaceous cover). *Salix* spp. dominates after fire, whereas *Popilus* spp. and *Salix* spp. Co-dominate after flooding. Silt, gravel, cobble, and woody debris may be common. Composition is highly variable.

*Maximum Tree Size Class*  
None

Class B 58 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| POPUL | Populus | Cottonwood | Upper |
| SALIX | Salix | Willow | Upper |

Description

Highly dependent on the hydrologic regime. Vegetation composition includes tall shrubs and small trees (cottonwood, aspen, and conifers).

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

Class C 16 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| POPUL | Populus | Cottonwood | Upper |
| PINUS | Pinus | Pine | Upper |
| SALIX | Salix | Willow | Mid-Upper |

Description

This class represents the mature, large cottonwood, conifer, etc., woodlands.

*Maximum Tree Size Class*  
Very Large >33" DBH

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 4 |
| Mid1:OPN | 5 | Late1:CLS | 49 |
| Late1:CLS | 50 | 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** |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.02 | 50 | Yes | 0 |
| Wind or Weather or Stress | Early1:ALL | Early1:ALL | 0.1 | 10 | Yes | 0 |
| Surface Fire | Early1:ALL | Early1:ALL | 0.1 | 10 | No | 0 |
| Optional 1 | Early1:ALL | Early1:ALL | 0.1 | 10 | Yes | 0 |
| Wind or Weather or Stress | Mid1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.02 | 50 | Yes | 0 |
| Optional 1 | Mid1:OPN | Mid1:OPN | 0.025 | 40 | No | 0 |
| Optional 1 | Mid1:OPN | Early1:ALL | 0.025 | 40 | Yes | 0 |
| Surface Fire | Mid1:OPN | Mid1:OPN | 0.143 | 7 | No | 0 |
| Wind or Weather or Stress | Mid1:OPN | Mid1:OPN | 0.2 | 5 | No | 0 |
| Optional 1 | Late1:CLS | Mid1:OPN | 0.001 | 1000 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Mid1:OPN | 0.005 | 200 | Yes | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.143 | 7 | No | 0 |

Optional Disturbances

Optional 1: farming

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