14712

**Central Interior and Appalachian Floodplain Systems - Large Floodplains**

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
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| None | None | None | None |
| None | None | None | None |

Vegetation Type

Mixed Upland and Wetland

Map Zones

44

Model Splits or Lumps

This Biophysical Setting (BpS) was split from 14710--Central Interior and Appalachian Floodplain Systems. BpS 14710 represents only the Missouri and the Mississippi Rivers whereas BpS 14712 represents the intermediate to large floodplains throughout the rest of the zone, in almost all subsections.

Geographic Range

Arkansas, Missouri and Oklahoma. Includes the larger rivers of the Ozarks (e.g., White River, Buffalo River, Ozark River, Mulberry River and Piney Creek).

Biophysical Site Description

This system inhabits broad floodplains along large creeks and rivers that are usually inundated for at least part of each year. Examples can range in size from very small (<1ac) to hundreds of acres in larger floodplain areas. This system likely floods at least once annually and can be altered by occasional severe floods. Examples occur along large rivers or streams where topography and alluvial processes have resulted in a well-developed floodplain. A single occurrence may extend from river's edge across the outermost extent of the floodplain or to where it meets a wet meadow or upland system. Many examples of this system will contain well-drained levees, terraces and stabilized bars, and some will include herbaceous sloughs and shrub wetlands resulting, in part, from beaver activity. A variety of soil types may be found within the floodplain from very well-drained sandy substrates to very dense clays. It is this variety of substrates in combination with different flooding regimes that creates the mix of vegetation. Most areas, except for the montane alluvial forests, are inundated at some point each spring; microtopography determines how long the various habitats are inundated.

Vegetation Description

Vegetation varies quite widely, encompassing shrubby and herbaceous communities, as well as forested communities with a wide array of canopy types. Examples may include silver maple (*Acer saccharinum*), sycamore (*Platanus occidentalis*), sweetgum (*Liquidambar styraciflua*), river birch (*Betula nigra*), green ash (*Fraxinus pennsylvanica*) and river birch (*Acer negundo*). Understory species are mixed but include shrubs, such as buttonbush (*Cephalanthus occidentalis*) and giant cane (*Arundinaria gigantea* ssp. *gigantea*) and sedges (*Carex* spp.). Herbaceous marshes are created when blockages of stream channels occur. Drift jams and the activities of beavers are the primary causes of these anomalous herbaceous marsh patch communities (Heineke 1987). Canebrakes, dominated by giant cane, occur on natural levees or low ridges within the bottoms. The role of fire in maintaining canebrakes is well documented (Wharton 1982).

Apart from treefall gaps and non-forested canebrakes, there is a continuous canopy of deciduous broadleaved species. Relative dominance of canopy tree species may vary according to regional location and hydrology. The tree canopy ranges from approximately 80-150ft tall. The understory is <80ft tall and is usually composed of the canopy species and deciduous broad-leaved understory species. Understory shrub density is generally low but may be dense on ridges within the bottoms that are less subject to inundation. The herbaceous layer is generally sparse due to shade and/or frequent inundation, although there may be relatively thick herbaceous vegetation in treefall gaps and early seral stages.

River banks and flat, poorly drained areas within the floodplain are often dominated by *Populus deltoides* (cottonwood), *Betula nigra* (river birch), *Acer rubrum* (red maple), silver maple, box elder, sycamore, *Ulmus americana* (American elm), *Fraxinus pennsylvanica* (green ash), *F. caroliniana* (Carolina ash), *Celtis laevigata* (sugarberry), *C. occidentalis* (hackberry), Carya aquatica (water hickory), *Diospyros virginiana* (persimmon) and *Juglans nigra* (black walnut).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PLOC | *Platanus occidentalis* | American sycamore |
| CELA | *Celtis laevigata* | Sugarberry |
| BENI | *Betula nigra* | River birch |
| FRPE | *Fraxinus pennsylvanica* | Green ash |
| ACNE2 | *Acer negundo* | Boxelder |
| ULAM | *Ulmus americana* | American elm |
| ULAL | *Ulmus alata* | Winged elm |

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

Disturbance Description

Flooding dynamics are an important factor in the development and maintenance of this system.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 139 | 41 |  |  |
| Moderate (Mixed) |  |  |  |  |
| Low (Surface) | 98 | 59 |  |  |
| All Fires | 58 | 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

None

Adjacency or Identification Concerns

This is a very wide-ranging system, and some ecoregional subdivision may be appropriate for certain applications. The relevant Freshwater Systems classification affected our decision not to implement any formal subdivision of this system. Much of the larger floodplains have been converted to pasture.

Issues or Problems

Native Uncharacteristic Conditions

Comments

Prior to LANDFIRE Remap this BpS was named South-Central Interior Large Floodplain.

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 | A | A | A | A | A | A | A | A | A | A |
| Tree | 5-10 | A | A | A | A | A | A | A | A | A | A |
| Tree | 10-25 | B | B | B | B | B | B | B | B | B | B |
| 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 18 Early Development 1 - All Structures

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PLOC | Platanus occidentalis | American sycamore | Lower |
| BENI | Betula nigra | River birch | Lower |
| ACNE2 | Acer negundo | Boxelder | Lower |
| FRPE | Fraxinus pennsylvanica | Green ash | Lower |

Description

Post replacement community. This class includes the fire maintained canebrake community (non-forested type). Periodic flooding will replace the class. Replacement fire is more frequent in this class especially the cane break areas, increasing the overall fire frequency. Surface fire is infrequent.

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

Class B 27 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PLOC | Platanus occidentalis | American sycamore | Upper |
| BENI | Betula nigra | River birch | Upper |
| CELA | Celtis laevigata | Sugarberry | Upper |
| FRPE | Fraxinus pennsylvanica | Green ash | Upper |

Description

This class is a mid seral stage bottomland hardwood forest with closed canopy. Vegetation will consist of pole size timber with a fairly dense mid-story as well as mature bottomland hardwood. Replacement fire events do occur, and other disturbance factors such as wind events or floods could produce replacement events. A more frequent flooding event generally does not cause a state change. Surface fires occur.

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

Class C 55 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PLOC | Platanus occidentalis | American sycamore | Upper |
| BENI | Betula nigra | River birch | Upper |
| ULAM | Ulmus americana | American elm | Upper |
| FRPE | Fraxinus pennsylvanica | Green ash | Upper |

Description

This class is a mature, late seral closed canopy bottomland hardwood forest. Vegetation will consist of large timber (>20in DBH) mature bottomland hardwood with an open mid-story. Replacement fire events are very rare and other disturbance factors such as wind events or floods could produce replacement events. A more frequent flooding event may maintain this class. Surface fires occur.

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

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:CLS | 19 |
| Mid1:CLS | 20 | Late1:CLS | 79 |
| Late1:CLS | 80 | 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** |
| Surface Fire | Early1:ALL | Early1:ALL | 0.01 | 100 | No | 0 |
| Optional 1 | Early1:ALL | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.033 | 30 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Wind or Weather or Stress | Mid1:CLS | Early1:ALL | 0.004 | 250 | Yes | 0 |
| Optional 1 | Mid1:CLS | Early1:ALL | 0.004 | 250 | Yes | 0 |
| Surface Fire | Mid1:CLS | Mid1:CLS | 0.01 | 100 | No | 0 |
| Optional 1 | Mid1:CLS | Mid1:CLS | 0.01 | 100 | No | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.001 | 1000 | Yes | 0 |
| Optional 1 | Late1:CLS | Early1:ALL | 0.002 | 500 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Early1:ALL | 0.003 | 333 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.01 | 100 | No | 0 |
| Optional 1 | Late1:CLS | Late1:CLS | 0.01 | 100 | No | 0 |

Optional Disturbances

Optional 1: Flooding

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