14460

South Florida Pine Flatwoods

BpS Model/Description Version: Aug. 2020

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| --- | --- | --- | --- |
| **Modelers** |  | **Reviewers** |  |
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|  |  |  |  |

Vegetation Type

Mixed Upland and Wetland

Map Zones

56

Geographic Range

South Florida Pine Flatwoods is endemic to southern FL, ranging from approximately Lee, Desoto, Highlands and Okeechobee counties southward (NatureServe 2006).

Biophysical Site Description

South Florida Pine Flatwoods occur on poorly drained acidic sands on ancient marine terraces. The terrain is level and flat. Slight changes in elevation result in significant changes in vegetation, and in numerous depression or flatwoods marshes scattered throughout the landscape.

NatureServe (2006) notes there is considerable variation between the wet and "non-wet" flatwoods implied in this system.

Vegetation Description

According to Huffman and Judd (1998) examples of this system have generally open canopies composed of *Pinus elliottii* var. *densa* and, more rarely, *Pinus palustris*. The south Florida slash pine overstory has a crown closure of 10-50%. *Serenoa repens*, *Lyonia lucida*, *Lyonia fruticosa*, *Ilex glabra*, *Vaccinium darrowii*, *Vaccinium myrsinites*, and *Quercus minima* are common shrubs. Grasses are typically abundant, including *Aristida beyrichiana* and *Schizachyrium scoparium* var. *stoloniferum*; most other grass and herbaceous species found are in common with Florida Dry Prairie (CES203.380) (NatureServe 2006).

BpS Dominant and Indicator Species

|  |  |  |
| --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** |
| PIELD | *Pinus elliottii var. densa* | Florida slash pine |
| SERE2 | *Serenoa repens* | Saw palmetto |
| SAPA | *Sabal palmetto* | Cabbage palmetto |
| LYLU3 | *Lyonia lucida* | Fetterbush lyonia |
| VADA | *Vaccinium darrowii* | Darrow's blueberry |
| QUMI2 | *Quercus minima* | Dwarf live oak |
| ARBE7 | *Aristida beyrichiana* | Beyrich threeawn |
| SCSCS3 | *Schizachyrium scoparium var. stoloniferum* | Creeping bluestem |

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

Disturbance Description

This model typically exhibits a 1-4-year fire interval, with frequent, low intensity fires. Most acreage burned historically from April to June during the early lightning season. Less common moderately severe fires associated with drought occurred primarily from March through May. Anthropogenic fire was considered, but is not expected to change reference class composition. Stand replacement fires may occur as frequently as every 20-50yrs in the closed classes because of the intense fire generated by the shrub understory, however, the trees are generally spaced far enough apart to prevent a true crown fire. Mortality frequently results from duff burning the root structure of the pines, sometimes followed by an increase in bark beetle activity on the stressed trees. Mixed fire that burns the shrub understory and reduces the overstory would result in a more open condition. Mixed fires resulting in a change in class would generally only occur in closed stands with abundant shrubs. Fires in extremely advanced stages of class E are generally less intense due to the lack of fine fuel or shrubs to carry the fire.

Hurricanes frequently impact the landscape in south and central Florida. Storms occurring once every 10-50yrs may be intense enough to open up closed stands, resulting in a more open condition. Storms intense enough to return classes to the early post-replacement condition would occur less frequently.

Fire Frequency

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Severity** | **Avg FI** | **Percent of All Fires** | **Min FI** | **Max FI** |
| Replacement | 50 | 6 | 50 | 90 |
| Moderate (Mixed) | 1130 |  |  |  |
| Low (Surface) | 3 | 94 | 1 | 6 |
| 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

This BpS occurs on a landscape scale with stands reaching several hundred thousand acres. The point of transition from South Florida Pine Flatwoods to Florida Dry Prairie (BpS 1425 or CES203.380) would be hard to define, as the species composition is virtually identical, except for the presence of scattered south Florida slash pine (*Pinus elliottii* var. *densa*). This can also be said about the transition to longleaf pine mesic flatwoods. There is a relatively large area within the transition zone where both longleaf and south Florida slash are found on these mesic sites. Because this BpS is commonly found with numerous depression or flatwoods marshes and other wetlands scattered throughout and potentially acting as a barrier to fire spread, the size of disturbances would have ranged from a few hundred acres to 25,000-30,000ac. Fire could reach much larger sizes under extreme conditions.

Adjacency or Identification Concerns

Similar Ecological Systems identified by NatureServe include Florida Dry Prairie (CES203.380 or BpS 1425) and South Florida Pine Rockland (CES411.367 or BpS 1360). South Florida Pine Rockland is also dominated almost exclusively by *Pinus elliottii* var. *densa* in the canopy, but occurs on limestone and has a richer, diverse mix of tropical and temperate species in the understory. The understory structure of South Florida Pine Flatwoods is similar to Florida Dry Prairie (CES203.380 or BpS 1425), the primary difference being the presence of a canopy layer of slash pine in this model.

NatureServe (2006) notes that no associations have currently been described in the NVC for this system. More information is needed. The floristic composition of this system overlaps Florida Dry Prairie (CES203.380 or BpS 1425); the primary difference lies in taller and denser shrub cover (especially of *Serenoa repens*) (Huffman and Judd 1998). There is considerable variation between the wet and "non-wet" flatwoods implied in this system.

Issues or Problems

The natural fire regime is currently altered by urbanization, artificially controlled water levels and extensive agricultural land use. Invasive exotics such as Brazilian pepper and melaleuca are increasingly common on wetter sites throughout this range.

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 | 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 | B mix | B mix | B mix | B mix | B mix | B mix | B mix | B mix | B mix | B mix |
| Tree | 5-10 | B brdlf | B brdlf | B brdlf | B brdlf | B brdlf | B brdlf | B brdlf | B brdlf | B brdlf | B brdlf |
| Tree | 5-10 | C con | C con | C con | C con | C con | C con | C con | C con | C con | C con |
| Tree | 10-25 | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf |
| Tree | 10-25 | E mix | E mix | E mix | E mix | E mix | E mix | E mix | E mix | E mix | E mix |
| Tree | 10-25 | D con | D con | D con | D con | D con | D con | D con | D con | D con | D con |
| Tree | 25-50 | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf |
| Tree | 25-50 | E mix | E mix | E mix | E mix | E mix | E mix | E mix | E mix | E mix | E mix |
| Tree | 25-50 | D con | D con | D con | D con | D con | D con | D con | D con | D con | D con |
| Tree | >50 | E mix | E mix | E mix | E mix | E mix | E mix | E mix | E mix | E mix | E mix |
| Tree | >50 | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf | E brdlf |
| Tree | >50 | D con | D con | D con | D con | D con | D con | D con | D con | D con | D con |

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** |
| PIELD | Pinus elliottii var. densa | Florida slash pine | Upper |
| ARBE7 | Aristida beyrichiana | Beyrich threeawn | Lower |
| SERE2 | Serenoa repens | Saw palmetto | Lower |

Description

Class includes seedlings, saplings and poles of south Florida slash pine. The dominant lifeform in this class is most likely wiregrass or other herbaceous vegetation. Individual tree gaps and clusters of dead or downed individuals are interspersed throughout the landscape. These are the result of mortality from wind or lightning. Under typical conditions, the vegetation will recover sufficiently to burn again within two years, and will burn vigorously three years post fire.

Replacement fires that kill the pine regeneration may occur in the landscape. Hurricanes regularly impact slash pine communities. In this early post-replacement phase some tree mortality may occur from flooding or wind, however, this is not expected to return this class to the early post-replacement condition.

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

Class B 1 Mid Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIELD | Pinus elliottii var. densa | Florida slash pine | Upper |
| SERE2 | Serenoa repens | Saw palmetto | Low-Mid |
| ARBE7 | Aristida beyrichiana | Beyrich threeawn | Lower |

Description

Class is characterized by a shift towards a shrub dominated community, usually by saw palmetto, gallberry, ericaceous shrubs or various oak species. In the young stages of this class, wiregrass may still remain abundant. However, as the shrubs increase in cover, wiregrass and other forbs will disappear. Without fire or other disturbances, class becomes a dense, shrub dominated community with an overstory of slash pines.

Fires may occur less frequently due to the decline in fine fuel, however, they are typically intense when they occur, particularly in dense saw palmetto. Replacement fires may occur and kill the pine overstory, returning the site to the early post-replacement phase. Mixed fires occurring in this class may reduce the stature of the shrub understory and kill some of the overstory trees, resulting in a more open stand. However, the shrubs will quickly resprout from basal shoots. Hurricanes may impact by reducing the pine overstory and shrub understory.

*Maximum Tree Size Class*  
Medium 9-21"DBH

Class C 50 Mid Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIELD | Pinus elliottii var. densa | Florida slash pine | Upper |
| ARBE7 | Aristida beyrichiana | Beyrich threeawn | Lower |
| SERE2 | Serenoa repens | Saw palmetto | Lower |

Description

Class is characterized by an open stand of slash pine with an understory dominated by wiregrass. Numerous other grasses and forbs are present in the understory. The dominant lifeform in this class remains wiregrass and other herbaceous vegetation. Shrubs, where present, are generally short in stature due to the frequent fire.

*Maximum Tree Size Class*  
Medium 9-21"DBH

Class D 22 Late Development 1 - Open

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIELD | Pinus elliottii var. densa | Florida slash pine | Upper |
| SERE2 | Serenoa repens | Saw palmetto | Low-Mid |
| ARBE7 | Aristida beyrichiana | Beyrich threeawn | Lower |

Description

Class is characterized by an open stand of slash pine with an understory dominated by wiregrass. Numerous other grasses and forbs are present in the understory. The dominant lifeform in this class remains wiregrass and other herbaceous vegetation. Shrubs, where present, are generally short in stature due to the frequent fire.

*Maximum Tree Size Class*  
Medium 9-21"DBH

Class E 1 Late Development 1 - Closed

Indicator Species

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Scientific Name** | **Common Name** | **Canopy Position** |
| PIELD | Pinus elliottii var. densa | Florida slash pine | Upper |
| SERE2 | Serenoa repens | Saw palmetto | Low-Mid |

Description

Class contains a dense understory of shrubs, particularly saw palmetto, with very little herbaceous vegetation in the ground cover. The shrub layer generally remains dominant. In the absence of fire for long periods of time, oaks or other hardwoods will capture the canopy and only remnant pines will remain. In this condition, the overstory becomes so dense that the shrubs begin to disappear.

*Maximum Tree Size Class*  
Medium 9-21"DBH

Model Parameters

Deterministic Transitions

|  |  |  |  |
| --- | --- | --- | --- |
| **From Class** | **Begins at (yr)** | **Succeeds to** | **After (years)** |
| Early1:ALL | 0 | Mid1:OPN | 14 |
| Mid1:OPN | 15 | Late1:OPN | 74 |
| Mid1:CLS | 15 | Late1:CLS | 74 |
| Late1:OPN | 75 | Late1:OPN | 999 |
| Late1:CLS | 75 | 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 | Early1:ALL | Mid1:CLS | 1 | 1 | Yes | 13 |
| Replacement Fire | Early1:ALL | Early1:ALL | 0.05 | 20 | Yes | 0 |
| Surface Fire | Early1:ALL | Early1:ALL | 0.3 | 3 | No | 0 |
| Alternative Succession | Mid1:OPN | Mid1:CLS | 1 | 1 | Yes | 15 |
| Wind or Weather or Stress | Mid1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Mid1:OPN | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Surface Fire | Mid1:OPN | Mid1:OPN | 0.3 | 3 | No | 0 |
| Wind or Weather or Stress | Mid1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Wind or Weather or Stress | Mid1:CLS | Mid1:OPN | 0.033 | 30 | Yes | 0 |
| Mixed Fire | Mid1:CLS | Mid1:OPN | 0.033 | 30 | Yes | 0 |
| Replacement Fire | Mid1:CLS | Early1:ALL | 0.033 | 30 | Yes | 0 |
| Surface Fire | Mid1:CLS | Mid1:CLS | 0.1 | 10 | No | 0 |
| Alternative Succession | Late1:OPN | Late1:CLS | 1 | 1 | Yes | 12 |
| Replacement Fire | Late1:OPN | Early1:ALL | 0.007 | 143 | Yes | 0 |
| Wind or Weather or Stress | Late1:OPN | Mid1:OPN | 0.01 | 100 | Yes | 0 |
| Surface Fire | Late1:OPN | Late1:OPN | 0.3 | 3 | No | 0 |
| Wind or Weather or Stress | Late1:CLS | Early1:ALL | 0.01 | 100 | Yes | 0 |
| Replacement Fire | Late1:CLS | Early1:ALL | 0.02 | 50 | Yes | 0 |
| Wind or Weather or Stress | Late1:CLS | Late1:OPN | 0.033 | 30 | Yes | 0 |
| Mixed Fire | Late1:CLS | Late1:OPN | 0.033 | 30 | Yes | 0 |
| Surface Fire | Late1:CLS | Late1:CLS | 0.1 | 10 | No | 0 |

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