# Rapid Assessment Reference Condition Model

*The Rapid Assessment is a component of the LANDFIRE project. Reference condition models for the Rapid Assessment were created through a series of expert workshops and a peer-review process in 2004-2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.*

## Potential Natural Vegetation Group (PNVG):

**R5GCPF**      **Gulf Coastal Plain Pine Flatwoods**

## General Information

**Contributors** *(additional contributors may be listed under "Model Evolution and Comments")*

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**Vegetation Type**

Forested

**Dominant Species***

| PITA | QUPH |
|---|---|
| QUFA | PIEC2 |
| QUST | PIPA2 |
| QUNI | ANTE2 |

**General Model Sources**

- ☑ Literature
- ☐ Local Data
- ☑ Expert Estimate

**LANDFIRE Mapping Zones**

37
44

**Rapid Assessment Model Zones**

| | |
|---|---|
| ☐ California | ☐ Pacific Northwest |
| ☐ Great Basin | ☑ South Central |
| ☐ Great Lakes | ☐ Southeast |
| ☐ Northeast | ☐ S. Appalachians |
| ☐ Northern Plains | ☐ Southwest |
| ☐ N-Cent.Rockies | |

## Geographic Range

This type lies in parts of Arkansas, Louisiana, Oklahoma, Texas.

## Biophysical Site Description

This PNVG is situated on second and third Pleistocene Terraces above larger drainages. Lower levels are flooded at varying frequencies. These terraces are often topographically flat. Clayey subsoils lead to formation of permanent and semi-permanent wetlands. Mima mounds are also present in some situations. The Deweyville Terrace Pine Flatwoods (DPFW) also lie within this type. Pine flatwoods generally occur on the middle and highest Deweyville terraces in the study area, on Guyton and Pheba soils. The lower (and younger) Deweyville surfaces that occur below 26 m (87 ft.) mean sea level (msl) are subject to Ouachita or Saline River flooding at least once every ten years, on average, but their wetland character is primarily maintained by precipitation. Above 26 m msl, precipitation is the sole source of wetland hydrology in the pine flatwoods. Guyton soils occur in units of 10 to 400 ha. These soils are level and poorly drained. Guyton silt loam soils have water tables within 30 cm of the surface during the winter and early spring. Topographically lower areas of Guyton also experience periodic flooding during the winter and spring. On the higher Deweyville terraces, pine flatwoods occur primarily on Pheba silt loam, which has a seasonal water table perched above the fragipan during periods of high rainfall. The fragipan restricts water movement and root penetration. Since higher Deweyville sublevels are flatter and more poorly drained than the lower sublevels, they are marginal for pine flatwoods except on topographically higher rises of Pheba soil. This is in contrast to the Prairie Terrace Pine Flatwoods, where the higher sublevels are more dissected and better drained.

DPFW represent a transition from a pine-dominated terrace type to floodplain bottomland hardwood forest. The lower sublevels (the lowest and part of the next higher) are within the current floodplain of the Ouachita River and are primarily bottomland hardwood forest (BLH), whereas the upper part of the second

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sublevel and the highest sublevel are outside the current floodplain and are dominantly pine or pine-hardwood.   As a result many species occur on both the DPFW and the floodplain BLH communities.  Delta post oak (Quercus similis) is much more common on the Deweyville than on the Prairie terrace here, as is dwarf palmetto (Sabal minor).  The presence of laurel oak in vernal pools on the DPFW also indicates overlap between the DPFW and floodplain BLH.  It is not uncommon to see loblolly pine, baldcypress (Taxodium distichum), overcup oak (Quercus lyrata), and dwarf palmetto growing side by side in DPFW.

Prairie Terrace Pine Flatwoods (PPFW)
PPFW are located on the lowest, youngest, and least dissected of the Prairie Terrace sublevels (which are much older than Deweyville terraces and occupy a higher landscape position).  More dissected higher levels are naturally occupied by upland hardwood and pine-hardwood forest and woodland.  The soils on the PPFW sites are Amy and Pheba silt loams.  Amy map units are 10 to 400 ha in size. Pheba map units occur on slightly higher Prairie terrace surfaces, and are only 5 to 20 ha in size and occupy only a small portion of the total landscape.

Areas that are located on Amy silt loam soil are extremely wet, due to a seasonal high water table within 30 cm of the surface during the winter and spring.  Areas that are located on Pheba silt loam have a seasonal water table that is perched above the fragipan during periods of high rainfall.  The fragipan restricts water movement and root penetration and causes a hydroxeric alteration, as described before.

## Vegetation Description
The typical dominant overstory species is loblolly pine with willow oak in wetter flats and southern red oak (Quercus falcata) and post oak (Quercus stellata) on well-drained surfaces.  Shortleaf pine (Pinus echinata) can occupy some part of the canopy and sub-canopy in the northern part of range, while longleaf pine (Pinus palustris) can occupy some part of the canopy and sub-canopy in the southern part of the range.  In a few places, such as near Goldonna, Louisiana,  these three pines will co-occupy the canopy.  Depending on disturbance history, sub-canopy species can include recruitment species from the canopy, as well as mockernut hickory (Carya alba), black hickory (Carya texana), sweetgum (Liquidambar styraciflua), slippery elm (Ulmus rubra) sassafras (Sassafras albidum), white ash (Fraxinus americana), and black gum (Nyssa sylvatica).  Mid-story and shrub species include those listed above as well as flowering dogwood (Cornus florida), red maple (Acer rubrum), Mexican plum (Prunus mexicana), sourwood (Oxydendrum arboreum), wax myrtle (Myrica cerifera), French mulberry (Callicarpa americana), rusty blackhaw (Viburnum rufidulum), various hawthorns (Crataegus spp.), Male-berry (Lyonia ligustrina), various blueberries and huckleberries (Vaccinium spp.), various hollies (Ilex spp.), winged sumac (Rhus copallina), and sweetleaf (Symplocos tinctoria). Vines include poison ivy (Toxicodendron radicans), Virginia creeper (Parthenocissus quinquefolia), yellow jasmine (Gelsemium sempervirens), and greenbriars (Smilax spp.). The ground layer flora of the PPFW is dramatically different from that of the DPFW, with a large number of prairie species occurring only in PPFW.  Frequency of herbs and graminoids is directly correlated with disturbance, especially fire.  In the presence of fire this diverisity can be very high.  Common herbs and grasses include little bluestem (Andropogon scoparius), broomsedge (Andropogon virginicus), big bluestem (Andropogon gerardi), split-beard bluestem (Andropogon ternarius), spangle-grasses (Chasmanthium laxum and C. sessiliflorum), three-awn grasses (Aristida spp.), panic grasses (Dichanthilium acuminatum, D. boscii, D. commutatum, Panicum virgatum, P. anceps, D. rigidulum and others), sunflowers (Helianthus hirsutus, H. angustifolius, and others), goldenrods (Solidago rugosa, Solidago odora, and others), blazingstars (Liatris spicata, L. pycnostachya, L. squarrosa, L. squarrulosa, L. aspera and others), rosinweeds (Silphium integrifolium, S. asteriscus), partridge berry (Mitchella repens), beggarticks (Desmodium glutinosum, D. paniculatum, D. rotundifolium, D. marilandicum, D. viridiflorum and others), and Lespedeza (Lespedeza procumbens).

## Disturbance Description

Naturally this system had frequent fire dominated by replacement fires associated with productive grass fuels and cycles of moisture and drought. Infrequent, mild surface fires would occur in the system; however, they would not alter species composition or structure. Native ungulate grazing plays a small role in replacement where buffalo herds concentrated, but generally maintained systems. Drought and moist cycles play a strong role interacting with both fire frequency and intensity. Insect outbreaks (southern pine beetle), ice storm damage and windthrow are also important disturbance factors.

## Adjacency or Identification Concerns

## Scale Description

Greater than 100,000 acres.

| Sources of Scale Data | ☐ Literature | ☐ Local Data | ☑ Expert Estimate |
|---|---|---|---|

## Issues/Problems

## Model Evolution and Comments

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## *Succession Classes*

*Succession classes are the equivalent of "Vegetation Fuel Classes" as defined in the Interagency FRCC Guidebook (www.frcc.gov).*

### *Class A*    15%

Early1 PostRep
**Description**

All sites, post-fire grass regrowth, grass seedlings, forbs and hardwood sprouting. Little bluestem, panic grasses, composites, oaks, red maple, black gum.

**Indicator Species* and Canopy Position**

| | |
|---|---|
| PITA | Upper |
| QUPH | Mid-Upper |
| QUFA | Mid-Upper |
| QUNI | Mid-Upper |

**Upper Layer Lifeform**
☐ Herbaceous
☐ Shrub
☑ Tree

**Fuel Model** 7

**Structure Data (for upper layer lifeform)**

| | Min | Max |
|---|---|---|
| Cover | 80 % | 100 % |
| Height | Tree Regen <5m | Tree Regen <5m |
| Tree Size Class | Sapling >4.5ft; <5"DBH | |

☐ Upper layer lifeform differs from dominant lifeform.
   Height and cover of dominant lifeform are:

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### *Class B*    10%

Mid1 Closed
**Description**

Dense, thick stands of loblolly pine intermixed with oaks and other hardwoods. Fuel loads high, with prominent ladder fuels and deep layers of needles on forest floor. Little herbaceous vegetation due to intense shading and thick layers of needles on forest floor.

**Indicator Species* and Canopy Position**

| | |
|---|---|
| PITA | Upper |
| QUPH | Mid-Upper |
| QUFA | Mid-Upper |
| QUNI | Mid-Upper |

**Upper Layer Lifeform**
☐ Herbaceous
☐ Shrub
☑ Tree

**Fuel Model** 9

**Structure Data (for upper layer lifeform)**

| | Min | Max |
|---|---|---|
| Cover | 80 % | 100 % |
| Height | Tree Medium 10-24m | Tree Medium 10-24m |
| Tree Size Class | Medium 9-21"DBH | |

☐ Upper layer lifeform differs from dominant lifeform.
   Height and cover of dominant lifeform are:

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*Dominant and Indicator Species are from the NRCS PLANTS database. To check a species code, please visit http://plants.usda.gov.

## Class C    20%

Mid1 Open
**Description**
2-layered open woodland (canopy and herbaceous) dominated by loblolly pine, with various hardwoods (oaks, red maple, black gum) present as shrubs or sprouts. Diverse ground layer composed of grasses and forbs. Ground layer becomes more diverse with transition to Class D as more sunlight reaches the ground layer.

**Indicator Species* and Canopy Position**

| | |
|---|---|
| PITA | Upper |
| QUST | Lower |
| QUFA | Lower |
| QUNI | Lower |

**Upper Layer Lifeform**
- ☐ Herbaceous
- ☐ Shrub
- ☑ Tree

**Fuel Model**  2

**Structure Data (for upper layer lifeform)**

| | Min | Max |
|---|---|---|
| *Cover* | 50 % | 80 % |
| *Height* | Tree Medium 10-24m | Tree Medium 10-24m |
| *Tree Size Class* | Medium 9-21"DBH | |

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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## Class D    40%

Late1 Open
**Description**
2-layered open woodland (canopy and herbaceous) dominated by loblolly pine, with various hardwoods (oaks, red maple, black gum) present as shrubs or sprouts. Very diverse ground layer composed of many species of grasses and forbs. Shortleaf pine becomes more abundant than loblolly pine with age of stand due to longer life span and greater fire tolerance.

**Indicator Species* and Canopy Position**

| | |
|---|---|
| PITA | Upper |
| QUST | Lower |
| QUFA | Lower |
| PIEC2 | Mid-Upper |

**Upper Layer Lifeform**
- ☐ Herbaceous
- ☐ Shrub
- ☑ Tree

**Fuel Model**  2

**Structure Data (for upper layer lifeform)**

| | Min | Max |
|---|---|---|
| *Cover* | 50 % | 80 % |
| *Height* | Tree Tall 25-49m | Tree Tall 25-49m |
| *Tree Size Class* | Large 21-33"DBH | |

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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## Class E    15%

Late1 Closed
**Description**
Dense, thick stands of mature loblolly pine intermixed with oaks and other hardwoods. Vines (especially Campsis radicans, Gelsemium sempervirens, and Parthenocissus quinquefolia) prominent. Mid canopy and shrub layer prominent. with prominent ladder fuels and deep layers of needles on forest floor. Little herbaceous vegetation due to intense shading and thick layers of

**Indicator Species* and Canopy Position**

| | |
|---|---|
| PITA | Upper |
| QUST | Mid-Upper |
| QUFA | Mid-Upper |
| QUNI | Mid-Upper |

**Upper Layer Lifeform**
- ☐ Herbaceous
- ☐ Shrub
- ☑ Tree

**Fuel Model**  9

**Structure Data (for upper layer lifeform)**

| | Min | Max |
|---|---|---|
| *Cover* | 80 % | 100 % |
| *Height* | Tree Tall 25-49m | Tree Tall 25-49m |
| *Tree Size Class* | Large 21-33"DBH | |

☐ Upper layer lifeform differs from dominant lifeform. Height and cover of dominant lifeform are:

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needles on forest floor.

## *Disturbances*

**Non-Fire Disturbances Modeled**

☑ Insects/Disease
☑ Wind/Weather/Stress
☐ Native Grazing
☐ Competition
☐ Other: Wet years
☐ Other:

**Fire Regime Group:**     **1**

I: 0-35 year frequency, low and mixed severity
II: 0-35 year frequency, replacement severity
III: 35-200 year frequency, low and mixed severity
IV: 35-200 year frequency, replacement severity
V: 200+ year frequency, replacement severity

*Fire Intervals (FI):*
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. Minimum and maximum show the relative range of fire intervals, if known. Probability is the inverse of fire interval in years and is used in reference condition modeling. Percent of all fires is the percent of all fires in that severity class. All values are estimates and not precise.

**Historical Fire Size (acres)**

Avg: 800
Min: 100
Max: 5000

**Sources of Fire Regime Data**

☑ Literature
☐ Local Data
☑ Expert Estimate

| | Avg FI | Min FI | Max FI | Probability | Percent of All Fires |
|---|---|---|---|---|---|
| Replacement | 190 | | | 0.00526 | 2 |
| Mixed | 170 | | | 0.00588 | 3 |
| Surface | 5 | | | 0.2 | 95 |
| All Fires | 5 | | | 0.21115 | |

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