

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 and 2005. For more information, please visit www.landfire.gov. Please direct questions to helpdesk@landfire.gov.

Potential Natural Vegetation Group (PNVG)

R9LLMU Longleaf Pine Mesic Uplands

General Information

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

Modelers

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Reviewers

Vegetation Type

Woodland

General Model Sources

- Literature
- Local Data
- Expert Estimate

Rapid Assessment Model Zones

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

Dominant Species*

PIPA2
ARBE
QUER

LANDFIRE Mapping Zones

46
55
58

Geographic Range

Longleaf mesic uplands occur from North Carolina to Alabama, and south to central Florida.

Biophysical Site Description

This PNVG occurs as mesic to dry-mesic woodland/savannas on productive soils such as Wagram or Orangeburg.

Vegetation Description

Longleaf mesic uplands are generally dominated by *Pinus palustris*, sometimes with a minority component of *Pinus echinata*. There is little cover and a low density of shrubs or mid-story hardwoods under the natural fire regime. The ground cover is dense, dominated by *Aristida stricta*, generally with a diversity of legumes, composites, and other grasses. Canopy trees are patchy in distribution, with regeneration in canopy gaps of ¼ acre or less in size, mid-successional stages in similar size patches, and the oldest trees occurring as isolated individuals. The reference condition classes are aggregates of numerous patches well dispersed over the landscape.

Disturbance Description

In longleaf pine mesic uplands canopy gaps are created by fire mortality, lightning, and windthrow at the scale of individual trees or several trees. Frequent surface fires, every 1-3 years, generally burn almost all of the vegetation. Fires are usually low in intensity overall but will occasionally kill young regeneration patches and rarely kill individual older trees.

Adjacency or Identification Concerns

Uncharacteristic vegetation types include even-aged canopy stands in which age structure has been homogenized by logging or clearing. Examples include where loblolly or slash pine have replaced some or all of the longleaf pine, and where the bunch grass-dominated ground cover has been lost due to soil disturbance or past canopy closure.

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

Scale Description

Sources of Scale Data Literature Local Data Expert Estimate

Patch size and the scale of disturbance for this PNVG can range from tens to tens of thousands of acres.

Issues/Problems

Many subtypes probably exist across the region. The unifying factors are longleaf pine and a grassy, usually wiregrass, understory on fertile soils of rolling uplands. Different hardwoods, including hickories, many species of oaks, and many species of small trees constitute isolated individuals or clumps in areas that experience lower fire frequencies. This model should be reviewed for applicability to the region as a whole.

Model Evolution and Comments

FRCC materials from Hiers, Robertson, Herman, Outcalt, Schafale, May 4, 2004, were used to develop this model.

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 All Struct

Description

Class A is a post-replacement condition, with canopy gaps, ranging from a single tree up to 1/4 acre size, of pine regeneration up to 10 years old. The native grassy ground cover is dominated by *Aristida stricta*. Tree cover ranges from 0 to 50%.

Dominant Species* and Canopy Position

PIPA2 Upper
ARBE7 Lower

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model 2

Structure Data (for upper layer lifeform)

	Min	Max
Cover	0 %	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:

Class B 4 %

Mid1 Closed

Description

Class B is characterized as a mid-seral closed condition with patches, mostly 1/4 acre or less, of canopy pines 10-75 years old. There is a substantial component of hardwoods or other pine species encroaching in the absence of fire. The hardwood/encroaching pine cover is greater than 50%. The canopy pine cover ranges from 25-75%.

Dominant Species* and Canopy Position

PIPA2 Upper
QUERC Upper

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model 7

Structure Data (for upper layer lifeform)

	Min	Max
Cover	66 %	90 %
Height	Tree Regen <5m	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 C 30 %

Mid2 Open
Description

Class C is characterized as a mid-seral open condition with patches, most ¼ acre or less in size, of canopy pines 10-40 years old. There is a minimal hardwood component due to frequent fire. The ground cover is dominated by grass, generally *Aristida stricta*. The canopy pine cover ranges from 33-66%.

Dominant Species* and Canopy Position

PIPA2 Upper
ARBE7 Lower

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model 2

Structure Data (for upper layer lifeform)

	Min	Max
Cover	33 %	66 %
Height	Tree Short 5-9m	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:

Class D 50 %

Late1 Open
Description

Class D is a late seral open condition with patches, most ¼ acre or less in size, of canopy pines 40 or more years old. There is a minimal component of hardwoods. The ground cover is dominated by grass, generally *Aristida stricta*. The canopy pine cover ranges from 33-66%.

Dominant Species* and Canopy Position

PIPA2 Upper
ARBE7 Lower
QUFA Upper

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model 2

Structure Data (for upper layer lifeform)

	Min	Max
Cover	33 %	66 %
Height	Tree Regen <5m	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:

Class E 1 %

Late2 Closed
Description

Class E is characterized as a late seral closed condition with patches of canopy pines 75 or more years old. There is a substantial component of hardwoods or pines other than longleaf in either the overstory or understory. The ground cover is shrubby or sparse. The encroaching hardwood/pine cover is greater than 50%. Additional hardwoods could be added to the list of species present.

Dominant Species* and Canopy Position

PIPA2 Upper
QUERC All

Upper Layer Lifeform

- Herbaceous
- Shrub
- Tree

Fuel Model 4

Structure Data (for upper layer lifeform)

	Min	Max
Cover	66 %	100 %
Height	Tree Short 5-9m	Tree Tall 25-49m
Tree Size Class	Medium 9-21"DBH	

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

Disturbances

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Disturbances Modeled

- Fire
- Insects/Disease
- Wind/Weather/Stress
- Native Grazing
- Competition
- Other:
- Other

Historical Fire Size (acres)

Avg: 1000
 Min: 10
 Max: 10000

Sources of Fire Regime Data

- Literature
- Local Data
- Expert Estimate

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 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.

	<i>Avg FI</i>	<i>Min FI</i>	<i>Max FI</i>	<i>Probability</i>	<i>Percent of All Fires</i>
<i>Replacement</i>	110	40	200	0.00909	3
<i>Mixed</i>	1000			0.001	0
<i>Surface</i>	3	1	5	0.33333	97
<i>All Fires</i>	3			0.34342	

References

Brown, James K., Smith, Jane Kapler, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 257 p.

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Schmidt, Kirsten M, Menakis, James P., Hardy, Colin C., Hann, Wendel J., Bunnell, David L. 2002. Development of coarse-scale spatial data for wildland fire and fuel management. Gen. Tech. Rep. RMRS-GTR-87. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 41 p. + CD.

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