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):

R5FOWOdm **Interior Highlands Dry-Mesic Forest and Woodland**

General Information

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Vegetation Type

Forested

Dominant Species*

QUAL FAGR
QURU
ACSA3
ACRU

General Model Sources

- [x] Literature
- [ ] Local Data
- [x] Expert Estimate

LANDFIRE Mapping Zones

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Rapid Assessment Model Zones

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

Geographic Range

This PNVG primarily occurs in the Interior Low Plateau, southern Central Lowland, Ozark Plateaus, and Ouachita physiographic provinces. It includes parts of Missouri, Arkansas and Oklahoma.

Biophysical Site Description

This type is found on a wide range of topographic positions, including drier sites and mixed mesophytic forests, distribution is nonetheless influenced by local conditions affecting moisture and fertility. Generally, from east to west, that distribution becomes more and more limited in extent and more dependent on very favorable habitat conditions. Drier sites (often oak dominated) represent approximately 75% of the total type while less than 25% of the type is represented as the most mesic sites in the upland landscape. Open conditions describe a single canopy structure with no developed midstory. Closed conditions are multiple canopy usually late-seral forests.

Vegetation Description

The vegetation is variable along mositure gradients, but includes (on more mesic sites) generally more fire-intolerant species such as red maple, sugar maple and other non-oak hardwood components. On drier sites, white oak, red oaks, and other fire-tolerant hardwood species are dominant. Drier sites are generally more open than mesic sites. At these sites the canopy is open enough to support mixed grasses, sedges and forbs but not warm season grasses. In Missouri, this type occupies dry-mesic conditions associated with deeper soils of leeward, north- and east- facing hill and mountain shoulders to the toe of the slope. Mesic sites in mid and late seral stages tend to be closed forest with understories (sometimes more herbaceous than woody).

Disturbance Description

This PNVG is fire regime group I primarily, but with lower frequency than drier types and primarily low intensity surface fire with occasional mosaic (mixed severity) or replacement fire. Mean fire return interval

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

(MFI) is about 20 years with wide year-to-year and within-type variation related to moisture cycles, degree of sheltering, and proximity to more fire-prone types. Anthropogenic fire is considered and contributes to within-type MFI variation. Native ungulate grazing may have played a small role in replacement where buffalo and elk concentrated, but fire generally maintained systems. Drought and moist cycles play a strong role interacting with both fire and native grazing.

Adjacency or Identification Concerns

This PNVG was defined using NatureServe - Central Interior and Appalachian (202), CES202.306 Ouachita Montane Oak Forest, CES202.708 Ozark-Ouachita Dry-Mesic Oak Forest, CES202.043 Ozark-Ouachita Mesic Hardwood Forest. Also identified as Ouachita Mixed Forest and Eastern Broadleaf Forest (R8 Old Growth Guidance). The dry-mesic woodland differs from the more open, drier, bluestem-dominated woodland (R5BSOW) but the two do overlap.

Scale Description

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

Landscape adequate in size to contain natural variation in vegetation and disturbance regime. Topographically complex areas can be relatively small (< 1000 acres). Larger landscapes up to several thousand acres in size.

Issues/Problems

Type includes western mixed mesophytic as an inclusion in a much larger matrix of dry-mesic oak and other mesic hardwood. The more mesic type(s) are not mappable at LANDFIRE scales, but as a part of larger dry-mesic hardwood becomes mappable.

Model Evolution and Comments

Collaboration and suggested edits from Doug Zollner, Ron Masters, Paul Nelson, Tom Foti, Susan Hooks, Steve Osborne, Bruce Davenport and others. References and site description were expanded as a result of peer review.

Succession Classes

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

Class A 5%

Early1 All Structures

Description

0-15 years. Sprouts, seedlings, saplings of major overstory species in gaps and openings created by wind, lightning, insect/disease and fire. Both fire-tolerant and intolerant species present.

Indicator Species* and Canopy Position

ACRU	Upper
QUAL	Upper
QURU	Upper
PRSE2	Upper

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☑ Tree

Fuel Model 3

Structure Data (for upper layer lifeform)

	Min	Max
Cover	35 %	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:

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

Class B **25 %**

Mid1 Closed

Description

15–64 years. Dominated by young to mid-seral mature canopy with some development of mid and understory species. Closed conditions are more a function of mesic (or topographically protected) conditions. Understory/midstory development with at least two layers present (dependent on age) on these more mesic sites. On drier sites, forested conditions but with a relatively open understory.

Indicator Species* and Canopy Position

ACRU	Upper
ACSA3	Upper
QUAL	Upper
FAGR	Lower

Upper Layer Lifeform

- [ ] Herbaceous
- [ ] Shrub
- [x] Tree

Fuel Model 9

Structure Data (for upper layer lifeform)

	Min	Max
Cover	65 %	100 %
Height	Tree Short 5-9m	Tree Short 5-9m
Tree Size Class	Medium 9-21"DBH	

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

Class C **20 %**

Mid1 Open

Description

15-64 years. Similar overstory species as B but in a single canopy structure without well-developed midstory. On drier sites generally more oak-dominated. Variable herbaceous understory ranging from grass to rich herb layers. The understory is a function of moisture gradients, fire frequency and intensity.

Indicator Species* and Canopy Position

QUAL	Upper
QURU	Upper
ACRU	Upper

Upper Layer Lifeform

- [ ] Herbaceous
- [ ] Shrub
- [x] Tree

Fuel Model 9

Structure Data (for upper layer lifeform)

	Min	Max
Cover	35 %	65 %
Height	Tree Short 5-9m	Tree Short 5-9m
Tree Size Class	Medium 9-21"DBH	

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

Class D **30 %**

Late1 Open

Description

65-100+ years. Mature canopy sometimes reaching 100 feet in height. Dominant overstory species variable by location and stand history. Open (woodland) conditions dependent on fire frequency and intensity. Generally more oak dominated with white oak a common dominant.

Indicator Species* and Canopy Position

QUAL	Upper
QURU	Upper

Upper Layer Lifeform

- [ ] Herbaceous
- [ ] Shrub
- [x] Tree

Fuel Model 9

Structure Data (for upper layer lifeform)

	Min	Max
Cover	35 %	50 %
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 E **20 %**

Late1 Closed

Description

65-100+ years. Canopy may have more non-oak hardwood with well-developed lower layers containing many of the canopy species.

Indicator Species* and Canopy Position

QUAL	Upper
ACSA3	Middle
FAGR	Low-Mid
COFL2	Low-Mid

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☑ Tree

Fuel Model 9

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	65 %	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:

Disturbances

Non-Fire Disturbances Modeled

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

Historical Fire Size (acres)

Avg: 500
Min: 10
Max: 5000

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 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.

	Avg FI	*Min FI*	*Max FI*	*Probability*	*Percent of All Fires*
Replacement	250	50	300	0.004	7
Mixed	90	20	150	0.01111	18
Surface	22	5	35	0.04545	75
All Fires	17			0.06057	

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