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)

R8OAKxe Eastern Dry-Xeric Oak

General Information

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

Modelers

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Reviewers

One anonymous reviewer

Vegetation Type

Forested

Dominant Species*

QUPR	QUMU
QUCO	QUST
QUAL	PIRI
CARY	NVEG

General Model Sources

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

LANDFIRE Mapping Zones

47 59 53 57

Rapid AssessmentModel Zones

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

Geographic Range

Southern Appalachians, Cumberland Mountains, Allegheny Mountains and Unglaciated Allegheny Plateau sections.

Biophysical Site Description

Occupies xeric sites, primarily on ridge- tops, southern, and southwestern aspects at elevations up to 3000 feet.

Vegetation Description

Oaks dominate, particularly chestnut oak, white oak, post oak, scarlet oak, black oak, chinquapin oak, and shumard oak. Minor associates include hickory, virginia pine, eastern white pine, shortleaf pine, pitch and/or table mountain pine. Midstory species are primarily oak, but can include, red maple, dogwood, hickories, eastern white pine, sourwood, mountain laurel, sassafras, and eastern red cedar. The understory is likely to contain dogwood, blueberries, sawbrier, greenbrier, and wild grape. Herbaceous cover includes a variety of grasses and forbs. On these very dry sites, oak will dominate the site even without fire, but regular (3 - 15 year interval) fire will keep the oak component very high, and with these fire intervals, shifts to oak savannas are likely. On the oak savannas there is an open oak overstory and a grass-forb forest floor with a scattered shrub / midstory layer. In the absence of fire, the area will become more closed with dominant and intermediate trees, but the oaks will continue to dominate the site because the more mesic species cannot out-compete the oaks on these very xeric sites. This type corresponds to NatureServe ecological systems: CES 203.359, 202.457, 202.898, 202.047, and 202.707.

Disturbance Description

Surface fires during the dormant season are very common with fire return intervals averaging every 10 years, Fire Regime II. Occasional growing season mosaic fires occur once or twice every 20-25 years that would cause some mortality. Stand Replacement fires average every 100 years in closed forest systems to 150

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

years in open systems when growing season burns occur in drought years. Ice, snow, and wind will damage and kill patches of trees every 200 years.

Adjacency or Identification Concerns

Mesic oak hickory systems are likely to be adjacent to these xeric sites; the mesic sites will likely be on the eastern, northwestern, and lower slopes.

Scale Description

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

Issues/Problems

Note that classes C and E are reversed from the standard five-box model in this PNVG (class C is late-development closed; class E is mid-development open).

Model Evolution and Comments

QA/QC changes: Removed AltSucc from Class C to Class C because Succession was to C. Modeler could not provide information on Scale or identify any specific issues/problems. Peer review results-changed order of species in Dominant Species list (moved QUCO2 over QUAL); added a reference supplied; based upon strong recommendation from a knowledgeable reviewer, changed Mixed Fire path in Class D (late open) to D, and Mixed Fire path in Class C (late closed) to D (late open). This changed landscape percentages drastically (lowering A (early, all) and E (mid open) in favor of D (late open), but did not change fire intervals significantly or FRG. Based upon the FRI and severity, I changed FRG to I from II.

*Succession Classes***

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

Class A 10 %

Early1 All Struct

Description

Regeneration class where reproduction is primarily oak plus some hickory, pine, blackgum, red maple, ashes, elms, sourwood, and black locust up to 15 feet tall. There are also a variety of forbs and grasses in the understory.

Dominant Species* and Canopy Position

QUPR2 All
QUCO2 All
QUAL All
CARYA All

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☑ Tree

Fuel Model 10

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	10 %	25 %
Height	Tree Regen <5m	Tree Regen <5m
Tree Size Class	Seedling <4.5ft	

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

Class B 1 %

Mid1 Closed

Description

The area is predominantly pole-sized trees, with a relatively closed canopy. The area has more crown closure than would normally be expected because the area has NOT burned in several decades. Tree species include a variety of oaks and hickories along minor numbers of pine, blackgum, red maple, ashes, elms, sourwood, black locust, sawbrier, greenbrier, fetterbush, and wild grape. Grasses

Dominant Species* and Canopy Position

QUPR2 Upper
QUCO2 Upper
QUAL Upper
CARYA Upper

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☑ Tree

Fuel Model 8

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	60 %	90 %
Height	Tree Short 5-9m	Tree Medium 10-24m
Tree Size Class	Pole 5-9" DBH	

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

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and forbs are widely scattered and sparse. Small, scattered areas are non-stocked with trees where soils are extremely thin and in rock outcrops, but forbs and grasses do exist.

Class C 4 %

Late1 Closed

Description

The area is predominantly larger trees - for this dry site - with a relatively closed canopy. Tree species include a variety of oaks and hickories along with minor numbers of pine, blackgum, red maple, ashes, elms, sourwood, black locust, sawbrier, greenbrier, fetterbush, and wild grape. Grasses and forbs are widely scattered and sparse. Small, scattered areas are non-stocked with trees where soils are extremely thin and in rock outcrops but forbs and grasses do exist.

Dominant Species* and Canopy Position

QUPR2 Upper
QUCO2 Upper
QUAL Upper
CARYA Upper

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☑ Tree

Fuel Model 10

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	60 %	90 %
Height	Tree Medium 10-24m	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:

Class D 70 %

Late1 Open

Description

The area is predominantly larger trees - for this dry site - with a relatively open canopy. The trees are long-lived species that are tolerant of fire, but over the years many have died. Mesic species are not being regenerated because of the frequent fires and the poor site. The area will be similar to an oak savanna where there is an open oak overstory and a grass-forb forest floor with little or no shrub / midstory layer.

Dominant Species* and Canopy Position

QUPR2 Upper
QUAL Upper
CARYA Upper
HU Lower

Upper Layer Lifeform

☐ Herbaceous
☐ Shrub
☑ Tree

Fuel Model 1

Structure Data (for upper layer lifeform)

	Min	*Max*
Cover	30 %	60 %
Height	Tree Medium 10-24m	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:

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Class E 15 %

Mid1 Open

Description

The area is predominantly pole-sized trees, with a relatively OPEN canopy and few midstory trees because frequent fires have kept the area clean of non-fire adapted species. Tree species include a variety of oaks and hickories along minor numbers of pine, blackgum, red maple, ashes, elms, sourwood, black locust, sawbrier, greenbrier, fetterbush, and wild grape. Grasses and forbs are widely scattered and sparse. Small, scattered areas are non-stocked with trees where soils are extremely thin and in rock outcrops but forbs and grasses do exist.

Dominant Species* and Canopy Position

QUPR2 Upper
QUAL Upper
CARYA Upper
HU Lower

Upper Layer Lifeform

- ☐ Herbaceous
- ☐ Shrub
- ☑ Tree

Fuel Model 1

Structure Data (for upper layer lifeform)

	Min	Max
Cover	30 %	60 %
Height	Tree Short 5-9m	Tree Medium 10-24m
Tree Size Class	Pole 5-9" DBH	

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

Disturbances

Disturbances Modeled

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

Historical Fire Size (acres)

Avg: 1000
Min: 1
Max: 3000

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.

	Avg FI	*Min FI*	*Max FI*	*Probability*	*Percent of All Fires*
Replacement	128	50	100	0.00781	6
Mixed	50	20	30	0.02	16
Surface	10	1	10	0.1	78
All Fires	8			0.12781	

References

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