

DRAFT

Fire Regime Condition Class (FRCC) Interagency Handbook Reference Conditions

Modeler: Roger D. Fryar

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PNVG Code: (100) Oak-Hickory

Potential Natural Vegetation Group: Eastern Dry-Xeric Oak (OKHK1)

Geographic Area: Southern Appalachians and Cumberland Mountains

Description: Potential natural vegetation group common to the Southern Appalachians and Cumberland mountains, typically occupying dry to xeric sites at elevations between 1000 and 3500 feet on ridge tops, western, southern, southwestern and, on lower elevations, dryer northern aspects. Overstory oaks dominate with up to 60% oak specific. Tree species include scarlet oak, chestnut oak, black oak, chinquapin oak, shumard oak, hickory with mixes of Virginia pine, eastern white pine, shortleaf pine, pitch and/or table-mountain pine. Midstory species in natural systems are primarily oak, but can include blackgum, red maple, American beech, dogwood, hickories, ashes, elms, eastern white pine, sourwood, black locust, black cherry, sassafras, mountain laurel, eastern red cedar, along with sprouts of American chestnut and chinquapin. and, in more mesic inclusions, serviceberry, basswood, eastern hemlock, American holly, silverbell, and rhododendron, along with sprouts of American chestnut and chinquapin. The lower canopy, particularly in mesic inclusions, can include rhododendron, mountain-laurel (*Kalmia latifolia*), hobblebush (*Viburnum alnifolium*), dogwood, blueberries (*Vaccinium* spp.), sawbrier (*Smilax glauca*), greenbrier (*S. rotundifolia*), fetterbush (*Pieris floribunda*), (*Gaylussacia* spp), wild grape (*Vitis* spp.), and others. Ground cover in (more mesic sites) may also include galax (*Galax urceolata*), sedges (*Carex* spp.) and a variety of herbaceous plants.

Without periodic fire, advanced oak regeneration is usually absent except on xeric sites. In the absence of fire, mesophytic species (e.g. eastern white pine, yellow poplar, maples and others) are likely to replace oaks. Widespread oak decline and stand-replacement with species like mountain-laurel can pose serious ecosystem health problems. Non-native invasive plant species (most notable Asiatic bittersweet and kudzu) along with insects (most notably gypsy moth) can also exacerbate community sustainability.

Succession: Succession to mesophytic species can occur in the absence of periodic fire. Other pathways of succession can move closed oak forests to open, oak woodland. With even shorter fire return intervals (or more intense growing-season burns) successional shifts of oak forest and woodlands to savannas or to woodlands with more of a pine component are possible.

Fire Regime Description: Fire regime group I, with frequent surface fires. Mean Fire Return Interval (MFI) <35 years www.srs.fs.fed.us/sustain; Pre-settlement fire return intervals ranging from 3-14 years. Natural fire regimes were primarily surface fires during

the dormant season with occasional growing season mosaic fires (most likely occurring infrequently once or twice every 20-25 years).

Model Assumptions: Mid and late-seral dry-xeric open stands are relatively stable communities and maintained with frequent fire (7-year interval for model). Mid and late-seral closed stands are less ecologically stable and more susceptible to disturbance agents including insects, disease and mosaic (mixed severity) fires.

For model purposes, the following definitions were used for closed versus open classes:

- <10% prairie
- 11-25% savanna
- 26-60% woodland (open)
- 61%+ forest (closed)

Vegetation Type and Structure

Class*	Percent of Landscape	Description
A: post replacement	15	Pine and oak reproduction to 15' tall. Community of forbs and perennial grasses. More persistent on dry sites. Openings tend to be small and have scattered live trees. < 25% tree canopy cover
B: mid-seral closed	20	Mid-seral with closed canopy, oak with shortleaf, pitch, Virginia pine or occasionally eastern white pine with little or no herbaceous understory Some woody understory development. > 50% canopy cover (crown closure estimate)
C: mid-seral open	30	Mid-development, open canopy. Woodland with herbaceous understory. Oak with shortleaf, pitch or Virginia pine (occasionally table-mountain on xeric sites) < 50% canopy cover
D: late-seral open	25	Late-development, open canopy pine-oak to oak-pine in composition. Late-seral woodland pine and oak overstory with perennial grasses and limited shrub community. < 50% canopy cover
E: late-seral closed	10	Late-seral, closed canopy, oak dominated overstory community with little herbaceous cover but a "rank" woody shrub understory layer. Canopy gaps occupying 1- 2%, larger openings represent 1- 2% of landscape respectively > 50% canopy cover (crown closure estimate)
Total 100		

*Formal codes for classes A-E are: AESP, BMSC, CMSO, DLSO, and ELSC, respectively.

Fire Frequency and Severity

Fire Severity	Fire Frequency (yrs)	Probability	Percent, All Fires	Description
Replacement Fire	98	.0102	8	Late growing season fire that occurs in drought years
Non-Replacement Fire	8	.1206	92	Primarily surface fire in all classes. Some mosaic fire.
All Fire Frequency*	7.6	.1309	100	

*All Fire Probability = sum of replacement fire and non-replacement fire probabilities. All Fire Fire Frequency = inverse of all fire probability (previous calculation).

References

U.S. Department of Agriculture, Forest Service, Southern Forest Research Station, Southern Forest Resource Assessment, [Online]. Available: <http://www.srs.fs.fed.us/sustain>

Spetich, Martin A., ed. 2004. Upland oak ecology symposium: history, current conditions, and sustainability. Gen. Tech. Rep. SRS-73. Asheville, NC: U.S. Department of Agriculture, Forest Service, Southern Research Station. 311 p.

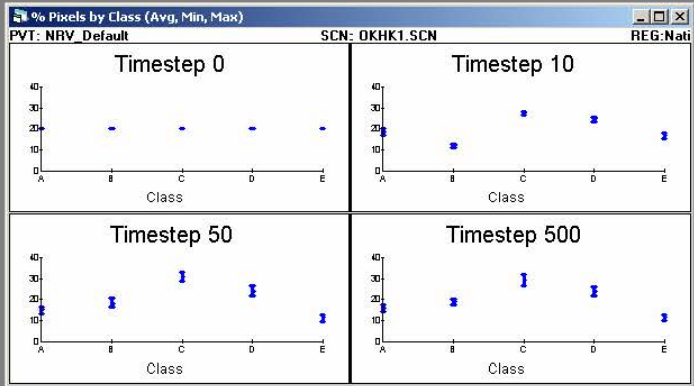
Brown, James K.; Smith, Jane Kapler, eds. 2000. Wildland fire in ecosystems: effects of fire on flora. Gen. Tech. Rep. RMRS-GTR-42-vol. 2. Ogden, UT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 257 p.

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.

U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory (2002, December). Fire Effects Information System, [Online]. Available: <http://www.fs.fed.us/database/feis/>.

VDDT File Documentation

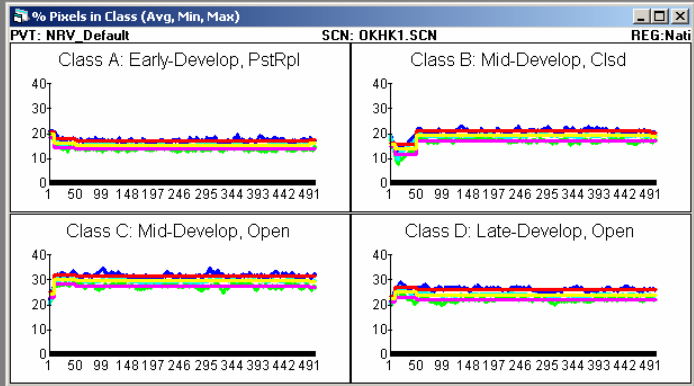
Include screen captures (print-screens) from any of the VDDT graphs that were used to develop reference conditions.



Status

PVT: NRV_Default
SCN: OKHK1.SCN
REG:Nati
PRJ:
Unmodified

Successions...

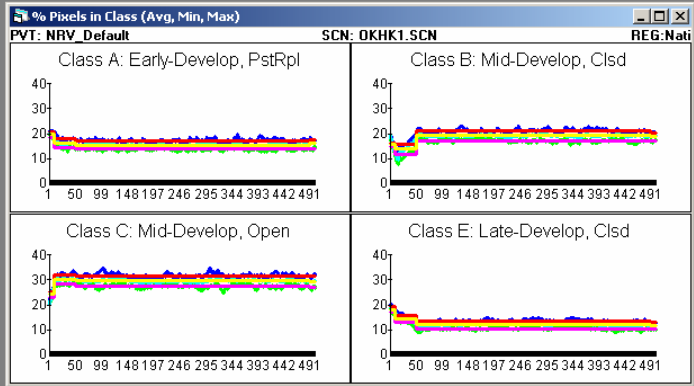


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Unmodified

Successions...

Init. Conds: Years: 500 MC: 10 Attributes Dist. Mult. Annual Mult. Landscape Mult. Feedback Mult. Trend Mult. TSD On Dist. Disabled

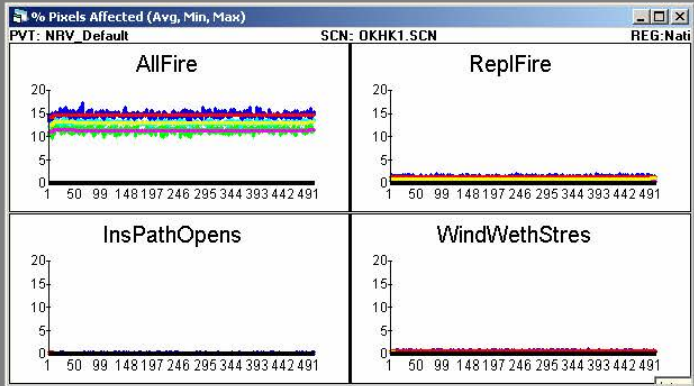


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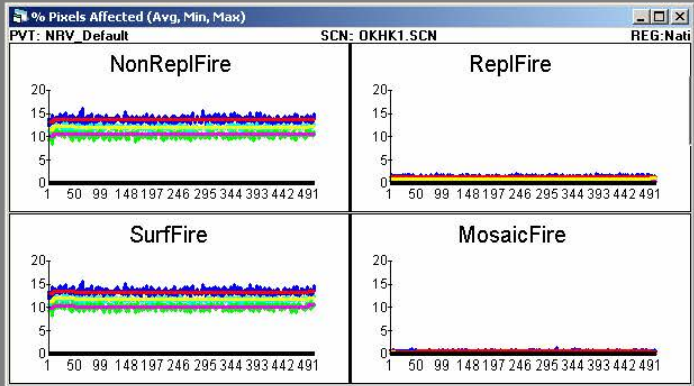
Successions...

Init. Conds: Years: 500 MC: 10 Attributes Dist. Multi Annual Multi Landscape Multi Feedback Multi Trend Multi TSD On Dist. Disabled



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Init. Conds. | Years: 500 | MC: 10 | Attributes | Dist. Mult. | Annual Mult. | Landscape Mult. | Feedback Mult. | Trend Mult. | TSD On | Dist. Disabled