

13760

Southern Ridge and Valley/Cumberland Dry Calcareous Forest

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Vegetation Type

Forest and Woodland

Map Zones

48, 53, 57, 61

Geographic Range

This system includes dry to dry mesic calcareous forests of the Southern Ridge and Valley region of Alabama and Georgia, extending north into Tennessee, Kentucky, Virginia and adjacent West Virginia. It includes calcareous forests on lower escarpments of the Cumberland Plateau and other related areas.

Biophysical Site Description

Examples of this forest and woodland system occur usually on dry sites, on a variety of topographic and landscape positions including slopes (particularly south- and west-facing ones), ridges, and knobs, depending on where the base-rich rock is present or crops out, and where the soils are influenced by calcareous/circumneutral geology. Elevation is generally between 200-500m.

Vegetation Description

Oaks dominate the overstory of most natural stands, if they have not been preferentially removed. Tree species include white oak, post oak, chinquapin oak, Shumard oak, black oak, and hickory species with eastern redcedar, possibly mixed with shortleaf pine. Midstory species in natural systems are primarily oak, but can include sugar maple, American beech, dogwood, hickories, ashes, elms, hackberry/sugarberry, Eastern redcedar, hop-hornbeam, redbud, black locust, black cherry, sassafras, and possibly sprouts of American chestnut. Eastern redcedar coverage will be limited or reduced in examples with more frequent fire, but it may dominate a midstory layer in conditions of infrequent fire. The shrub layer is typically characterized by non-ericads (but possibly with deerberry [*Vaccinium stamineum*]), *Viburnum* species, *Crataegus* species, and *Philadelphus* species. Ground cover typically includes little bluestem (*Schizachyrium scoparium*), Yellow Indian grass (*Sorghastrum nutans*), calciphilic sedges (*Carex* spp.) and a variety of herbaceous plants. More mesic inclusions may have serviceberry, basswood, or American holly in the tree layers and *Viburnum*, dogwood, sawbrier (*Smilax glauca*), greenbrier (*Smilax rotundifolia*), wild grape (*Vitis* spp.), and others in the shrub layer. Without periodic fire, advanced oak regeneration is usually absent except on xeric sites. With even shorter fire return intervals (or more intense growing-season burns) successional shifts of oak forest and woodlands to savannas or to woodlands are possible.

BpS Dominant and Indicator Species

Symbol	Scientific Name	Common Name
QUST	<i>Quercus stellata</i>	Post oak
QUAL	<i>Quercus alba</i>	White oak
QUSH	<i>Quercus shumardii</i>	Shumard's oak
JUVI	<i>Juniperus virginiana</i>	Eastern redcedar
VIBUR	<i>Viburnum</i>	Viburnum
SCSC	<i>Schizachyrium scoparium</i>	Little bluestem

Species names are from the NRCS PLANTS database. Check species codes at <http://plants.usda.gov>.

Disturbance Description

Fire regime group I, with frequent surface fires. Pre-settlement fire return intervals are believed to have ranged from 3-14yrs. 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 20-25yrs).

Windthrow and ice damage can be important agents in opening the canopy.

Fire Frequency

Severity	Avg FI	Percent of All Fires	Min FI	Max FI
Replacement	189	4		
Moderate (Mixed)	111	6		
Low (Surface)	8	90		
All Fires	7	100		

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. Percent of all fires is the percent of all fires modeled in that severity class. Minimum and Maximum FIs show the relative range of fire intervals as estimated by model contributors, if known.

Scale Description

This is a large-patch type, generally occupying distinct physiographic settings (ridges, upper slopes, lower south and west-facing slopes) on the order of 100s of hectares, rather than extending over large continuous areas.

Adjacency or Identification Concerns

In the absence of fire, mesophytic species (e.g. yellow poplar, sugar/red maples and others) could replace oaks over time. Widespread oak decline could dramatically change dominance regimes. Nonnative invasive plant species (most notably Ailanthus, Asiatic bittersweet, Japanese honeysuckle, and kudzu) along with insects (most notably gypsy moth) can also exacerbate community shifts.

Issues or Problems

The Fire Regime Condition Class type was originally described for Cumberlands and Southern Appalachians, but the concept includes the most exposed mid-elevation ridges and lower slopes of the Cumberland Plateau escarpment, where base-rich rocks and resultant soils are present.

Native Uncharacteristic Conditions

Comments

Succession Classes

Mapping Rules

Upper Layer Lifeform	Height (m)	Canopy Cover (%)									
		0-10	11-20	21-30	31-40	41 - 50	51-60	61-70	71-80	81-90	91-100
Herb	0-0.5	UN	UN	UN	UN	UN	UN	UN	UN	UN	UN
Herb	0.5-1.0	UN	UN	UN	UN	UN	UN	UN	UN	UN	UN
Herb	>1.0	UN	UN	UN	UN	UN	UN	UN	UN	UN	UN
Shrub	0-0.5	UN	UN	UN	UN	UN	UN	UN	UN	UN	UN
Shrub	0.5-1.0	A	A	A	A	UN	UN	UN	UN	UN	UN
Shrub	1.0-3.0	A	A	A	A	UN	UN	UN	UN	UN	UN
Shrub	>3.0	A	A	A	A	UN	UN	UN	UN	UN	UN
Tree	0-5	A	A	A	A	UN	UN	UN	UN	UN	UN
Tree	5-10	UN	UN	C	C	C	B	B	B	UN	UN
Tree	10-25	UN	UN	D	D	D	E	E	E	UN	UN
Tree	25-50	UN	UN	D	D	D	E	E	E	UN	UN
Tree	>50	UN	UN	D	D	D	E	E	E	UN	UN

Succession class letters A-E are described in the Succession Class Description section. Some classes use a leafform distinction where a qualifier is added to the class letter: Brdl (broadleaf), Con (conifer), or Mix (mixed conifer and broadleaf). UN refers to uncharacteristic native or a combination of height and cover that would not be expected under the reference condition. NP refers to not possible or a combination of height and cover which is not physiologically possible for the species in the BpS.

Description

Class A	8	Early Development 1 - All Structures
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
QUAL	Quercus alba	White oak	Upper
QUST	Quercus stellata	Post oak	Upper
JUVI	Juniperus virginiana	Eastern redcedar	Middle
SCSC	Schizachyrium scoparium	Little bluestem	Lower

Description

Oak and Eastern red-cedar reproduction to 15ft tall and ~15yrs old. 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.

Upper Layer Lifeform is not the dominant lifeform. Some examples are more open, but trees are typically the dominant life form.

Maximum Tree Size Class

Sapling >4.5ft; <5"DBH

Class B	5	Mid Development 1 - Closed
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
JUVI	<i>Juniperus virginiana</i>	Eastern redcedar	Mid-Upper
ACSA3	<i>Acer saccharum</i>	Sugar maple	Upper
QUAL	<i>Quercus alba</i>	White oak	Mid-Upper
LITU	<i>Liriodendron tulipifera</i>	Tuliptree	Upper

Description

Mid-development with closed canopy, oak with Eastern red-cedar with little or no herbaceous understory. Some woody understory development. Greater than 50% canopy cover (crown closure estimate). In the continued absence of fire, stands may become heavily dominated by E. red-cedar with mesophytic species (e.g. yellow poplar, sugar, red maple, black gum) likely to replace oaks.

Maximum Tree Size Class

Medium 9-21"DBH

Class C	22	Mid Development 1 - Open
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
QUST	<i>Quercus stellata</i>	Post oak	Upper
QUAL	<i>Quercus alba</i>	White oak	Upper
SCSC	<i>Schizachyrium scoparium</i>	Little bluestem	Lower
DASP2	<i>Danthonia spicata</i>	Poverty oatgrass	Lower

Description

Mid-development open canopy. Woodland with herbaceous and/or low shrub understory. Oak (white, post) with limited eastern redcedar <50% canopy cover. *Schizachyrium scoparium* most typical grass.

Upper Layer Lifeform is not the dominant lifeform. Ground layer (herbs and sometimes dwarf shrubs) could exceed tree cover, but this is not typical.

Maximum Tree Size Class

Medium 9-21"DBH

Class D	50	Late Development 1 - Open
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Indicator Species

Symbol	Scientific Name	Common Name	Canopy Position
QUST	<i>Quercus stellata</i>	Post oak	Upper
QUAL	<i>Quercus alba</i>	White oak	Upper

Alternative Succession	Early1:ALL	Mid1:CLS	1	1	Yes	13
Replacement Fire	Early1:ALL	Early1:ALL	0.01	100	Yes	0
Surface Fire	Early1:ALL	Early1:ALL	0.15	7	No	0
Alternative Succession	Mid1:OPN	Mid1:CLS	1	1	Yes	20
Wind or Weather or Stress	Mid1:OPN	Mid1:OPN	0.004	250	No	0
Mixed Fire	Mid1:OPN	Mid1:OPN	0.005	200	No	0
Replacement Fire	Mid1:OPN	Early1:ALL	0.005	200	Yes	0
Surface Fire	Mid1:OPN	Mid1:OPN	0.15	7	No	0
Wind or Weather or Stress	Mid1:CLS	Early1:ALL	0.003	333	Yes	0
Replacement Fire	Mid1:CLS	Early1:ALL	0.005	200	Yes	0
Mixed Fire	Mid1:CLS	Mid1:OPN	0.03	33	Yes	0
Surface Fire	Mid1:CLS	Mid1:CLS	0.06	17	No	0
Alternative Succession	Late1:OPN	Late1:CLS	1	1	Yes	20
Wind or Weather or Stress	Late1:OPN	Early1:ALL	0.001	1000	Yes	0
Wind or Weather or Stress	Late1:OPN	Late1:OPN	0.005	200	No	0
Replacement Fire	Late1:OPN	Early1:ALL	0.005	200	Yes	0
Mixed Fire	Late1:OPN	Late1:OPN	0.01	100	No	0
Surface Fire	Late1:OPN	Late1:OPN	0.15	7	No	0
Insects or Disease	Late1:CLS	Early1:ALL	0.003	333	Yes	0
Replacement Fire	Late1:CLS	Early1:ALL	0.005	200	Yes	0
Wind or Weather or Stress	Late1:CLS	Late1:OPN	0.01	100	Yes	0
Mixed Fire	Late1:CLS	Late1:OPN	0.01	100	Yes	0
Surface Fire	Late1:CLS	Late1:CLS	0.04	25	No	0

References

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