

HUC 080402 Lower Ouachita

HUC 6 Watershed Climate Change Atlas Tree Species

USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	27,642	10,673	943

Species Information

The columns below provide brief summaries of the species associated with the region and described in the table on the next pages. Definitions are provided in the Excel file for this region.

Genus	Species	Abundance		Model		Potential Change in Habitat Suitability		Capability to Cope or Persist		Migration Potential					
				Reliability	Adaptability	Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT				
				High	26	Increase	RCP45	RCP85	Very Good	13	14	Likely	0	0	
Ash	2			Medium	34	55	No Change	22	18	Good	17	19	Infill	22	25
Hickory	8			Low	38	10	Decrease	15	15	Fair	19	16	Migrate	6	7
Maple	5	Abundant	2	FIA	3		New	13	13	Poor	8	11			
Oak	16	Common	25				Unknown	6	6	Very Poor	15	12			
Pine	3	Rare	49							FIA Only	2	2			
Other	42	Absent	16							Unknown	3	3			
	76		92		92	91		92	92		77	77		28	32

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	57.0	58.4	60.0	60.2	
Average	CCSM85	57.0	58.7	60.7	62.8	
	GFDL45	57.0	59.4	60.6	61.5	
	GFDL85	57.0	59.3	61.6	64.5	
	HAD45	57.0	59.0	61.4	62.3	
	HAD85	57.0	59.3	62.8	65.8	
Growing Season	CCSM45	68.5	69.8	71.0	71.4	
	CCSM85	68.5	70.1	72.0	74.7	
May—Sep	GFDL45	68.5	71.3	72.5	74.2	
	GFDL85	68.5	71.3	73.9	77.4	
	HAD45	68.5	71.1	73.4	74.0	
	HAD85	68.5	71.3	76.1	78.7	
Coldest Month	CCSM45	40.0	41.9	42.8	42.8	
	CCSM85	40.0	42.1	43.1	44.2	
Average	GFDL45	40.0	43.0	43.1	43.1	
	GFDL85	40.0	41.0	41.9	42.4	
	HAD45	40.0	40.8	42.2	42.7	
	HAD85	40.0	41.7	43.0	44.4	
Warmest Month	CCSM45	72.6	73.8	74.4	74.5	
	CCSM85	72.6	74.1	74.8	76.2	
Average	GFDL45	72.6	76.2	76.3	77.5	
	GFDL85	72.6	75.8	77.0	79.4	
	HAD45	72.6	75.9	77.2	77.3	
	HAD85	72.6	76.5	79.3	80.1	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	43.9	44.6	48.9	47.3	
Total	CCSM85	43.9	45.9	48.5	50.2	
	GFDL45	43.9	47.4	53.3	49.5	
	GFDL85	43.9	47.0	50.0	51.1	
	HAD45	43.9	42.9	45.1	48.0	
	HAD85	43.9	46.1	40.5	44.3	
Growing Season	CCSM45	15.9	15.8	16.2	15.9	
	CCSM85	15.9	15.2	14.8	15.4	
May—Sep	GFDL45	15.9	17.3	20.1	18.3	
	GFDL85	15.9	17.9	19.2	19.3	
	HAD45	15.9	15.0	15.1	14.7	
	HAD85	15.9	15.7	11.7	12.0	

NOTE: For the six climate variables, four 30-year periods are used to indicate six potential future trajectories. The period ending in 2009 is based on modeled observations from the PRISM Climate Group and the three future periods were obtained from the NASA NEX-DPC30 dataset. Future climate projections from three models under two emission scenarios show estimates of each climate variable within the region. The three models are CCSM4, GFDL CM3, and HadGEM2-ES and the emission scenarios are the 4.5 and 8.5 RCP. The average value for the region is reported, even though locations within the region may vary substantially based on latitude, elevation, land-use, or other factors.

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N	
loblolly pine	Pinus taeda	WDH	High	92.3	4835.3	42.4	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1	
sweetgum	Liquidambar styraciflua	WDH	High	92.2	1195.7	10.4	No change	No change	Medium	Abundant	Good	Good				1	2
water oak	Quercus nigra	WDH	High	74.6	442.4	4.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1	3
white oak	Quercus alba	WDH	Medium	65.6	395.3	4.3	No change	No change	High	Common	Good	Good				1	4
willow oak	Quercus phellos	NSL	Low	48.4	345.4	5.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1	5
shortleaf pine	Pinus echinata	WDH	High	43	340.5	5.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1	6
southern red oak	Quercus falcata	WDL	Medium	69.7	319.2	3.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				1	7
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	57	237.4	3.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1	8
red maple	Acer rubrum	WDH	High	72.4	228.1	2.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good				1	9
winged elm	Ulmus alata	WDL	Medium	76.8	226.9	2.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1	10
blackgum	Nyssa sylvatica	WDL	Medium	67.3	206.3	2.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				1	11
overcup oak	Quercus lyrata	NSL	Medium	19.6	176.0	6.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair				1	12
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	47.6	171.4	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1	13
post oak	Quercus stellata	WDH	High	41.9	153.5	2.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				1	14
bald cypress	Taxodium distichum	NSH	Medium	12.9	141.8	8.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1	15
green ash	Fraxinus pennsylvanica	WSH	Low	39.7	113.5	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1	16
mockernut hickory	Carya alba	WDL	Medium	43.3	103.1	1.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good				1	17
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	38.4	96.1	2.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good				1	18
American holly	Ilex opaca	NSL	Medium	39.5	92.7	2.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1	19
black cherry	Prunus serotina	WDL	Medium	37.7	69.4	1.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good				1	20
black hickory	Carya texana	NDL	High	24.2	68.8	1.8	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good				1	21
water hickory	Carya aquatica	NSL	Medium	9.9	64.2	5.4	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +		1	22
sugarberry	Celtis laevigata	NDH	Medium	11.1	63.7	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1	23
American beech	Fagus grandifolia	WDH	High	16.1	63.3	2.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++		1	24
flowering dogwood	Cornus florida	WDL	Medium	40.8	60.6	1.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good				1	25
American elm	Ulmus americana	WDH	Medium	20.1	57.6	1.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good				1	26
common persimmon	Diospyros virginiana	NSL	Low	26.3	50.3	1.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good				1	27
Nuttall oak	Quercus texana	NSH	Medium	8.2	49.2	4.5	No change	No change	High	Rare	Fair	Fair				0	28
swamp chestnut oak	Quercus michauxii	NSL	Low	17.3	43.2	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				1	29
sassafras	Sassafras albidum	WSL	Low	20.8	42.4	1.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good				1	30
black oak	Quercus velutina	WDH	High	14.7	41.3	1.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		1	31
cedar elm	Ulmus crassifolia	NDH	Medium	5	30.1	3.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +		2	32
pignut hickory	Carya glabra	WDL	Medium	11.7	26.3	1.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		1	33
shagbark hickory	Carya ovata	WSL	Medium	5.9	25.0	2.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0	34
water elm	Planera aquatica	NSL	Low	5	23.9	3.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		1	35
water tupelo	Nyssa aquatica	NSH	Medium	3.9	21.2	2.9	No change	No change	Low	Rare	Very Poor	Very Poor				2	36
eastern redcedar	Juniperus virginiana	WDH	Medium	12.8	20.9	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++		1	37
northern red oak	Quercus rubra	WDH	Medium	7.3	20.3	1.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +		2	38
sweetbay	Magnolia virginiana	NSL	Medium	7.9	19.9	1.8	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +		1	39
white ash	Fraxinus americana	WDL	Medium	13.1	19.5	1.3	No change	Sm. inc.	Low	Rare	Very Poor	Poor			Infill +	1	40
honeylocust	Gleditsia triacanthos	NSH	Low	5.3	17.9	1.7	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++		1	41
pecan	Carya illinoensis	NSH	Low	3.8	16.8	4.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor			Infill +	2	42
sycamore	Platanus occidentalis	NSL	Low	5.3	15.7	3.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +		2	43
Shumard oak	Quercus shumardii	NSL	Low	4.7	15.4	2.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +		2	44
laurel oak	Quercus laurifolia	NDH	Medium	6.3	14.1	2.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++		1	45
slippery elm	Ulmus rubra	WSL	Low	7.9	14.1	1.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair				1	46
black willow	Salix nigra	NSH	Low	4.6	10.8	2.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +		1	47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
river birch	Betula nigra	NSL	Low	2.2	10.6	3.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	48
eastern cottonwood	Populus deltoides	NSH	Low	0.4	10.1	27.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	49
hackberry	Celtis occidentalis	WDH	Medium	1.8	9.5	5.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	50
blackjack oak	Quercus marilandica	NSL	Medium	5.9	9.3	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	51
boxelder	Acer negundo	WSH	Low	2.1	9.2	1.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	52
bitternut hickory	Carya cordiformis	WSL	Low	4.7	8.3	1.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	53
red mulberry	Morus rubra	NSL	Low	7.1	6.8	0.6	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	54
yellow-poplar	Liriodendron tulipifera	WDH	High	0.9	5.4	2.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	55
slash pine	Pinus elliotii	NDH	High	1.1	5.0	4.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	56
eastern redbud	Cercis canadensis	NSL	Low	2.5	4.8	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	57
American basswood	Tilia americana	WSL	Medium	3.4	4.7	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	58
black locust	Robinia pseudoacacia	NDH	Low	0.6	3.7	3.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	59
black walnut	Juglans nigra	WDH	Low	0.4	3.1	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
waterlocust	Gleditsia aquatica	NSLX	FIA	1.4	2.7	2.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	61
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0.8	2.7	0.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	62
swamp tupelo	Nyssa biflora	NDH	Medium	1.1	2.2	0.7	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	63
florida maple	Acer barbatum	NSL	Low	1.5	1.8	0.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	64
shellbark hickory	Carya laciniosa	NSL	Low	0.1	1.8	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	65
swamp white oak	Quercus bicolor	NSL	Low	0.4	1.6	4.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	66
sourwood	Oxydendrum arboreum	NDL	High	1	1.3	0.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	67
pin cherry	Prunus pensylvanica	NSL	Low	0.8	1.2	1.0	No change	No change	Medium	Rare	Poor	Poor			0	68
serviceberry	Amelanchier spp.	NSL	Low	1.5	1.2	0.3	No change	No change	Medium	Rare	Poor	Poor			0	69
sugar maple	Acer saccharum	WDH	High	0.4	0.5	1.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	70
wild plum	Prunus americana	NSLX	FIA	0.3	0.5	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	71
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0.4	0.4	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	72
silver maple	Acer saccharinum	NSH	Low	0.4	0.3	0.7	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	73
pawpaw	Asimina triloba	NSL	Low	0.4	0.2	0.5	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	74
southern magnolia	Magnolia grandiflora	NSL	Low	0.4	0.1	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	75
white mulberry	Morus alba	NSL	FIA	0.4	0.1	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	76
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	77
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	78
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	79
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	80
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	81
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	82
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	83
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	84
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	85
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	86
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	87
redbay	Persea borbonia	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	88
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	89
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	90
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	91
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	92