

HUC 080204 Lower Arkansas

HUC 6 Watershed Climate Change Atlas Tree Species

Current and Potential Future Habitat, Capability, and Migration

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

sq. km sq. mi FIA Plots
Area of Region 4,309.5 1,663.9 59

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	Reliability	Adaptability	Potential Change in Habitat Suitability		Capability to Cope or Persist		Migration Potential	
							Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT
							RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Ash	2			High	13	21	Increase	34	36	Very Good	15	15
Hickory	7			Medium	31	45	No Change	9	9	Good	15	17
Maple	4	Abundant	2	Low	29	9	Decrease	15	13	Fair	11	11
Oak	13	Common	29	FIA	2		New	10	10	Poor	11	10
Pine	2	Rare	29				Unknown	7	7	Very Poor	5	3
Other	32	Absent	13							FIA Only	2	2
	60		73		75	75		75	75	Unknown	5	5
											64	63

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	CCSM45	48.6	49.5	50.6	50.8
Average	CCSM85	48.6	49.7	51.1	52.6
	GFDL45	48.6	50.5	51.2	51.7
	GFDL85	48.6	50.2	51.8	53.8
	HAD45	48.6	50.0	51.6	52.3
	HAD85	48.6	50.2	52.6	54.7
Growing	CCSM45	56.8	57.6	58.5	58.8
Season	CCSM85	56.8	57.9	59.2	61.1
May—Sep	GFDL45	56.8	59.1	59.7	60.8
	GFDL85	56.8	58.7	60.6	63.1
	HAD45	56.8	58.6	60.1	60.7
	HAD85	56.8	58.7	62.2	64.0
Coldest	CCSM45	36.2	37.4	38.1	38.2
Month	CCSM85	36.2	37.5	38.1	38.9
Average	GFDL45	36.2	38.3	38.4	38.5
	GFDL85	36.2	36.9	37.6	38.0
	HAD45	36.2	36.8	37.8	38.0
	HAD85	36.2	37.4	38.3	39.2
Warmest	CCSM45	59.7	60.5	61.0	61.1
Month	CCSM85	59.7	60.9	61.4	62.4
Average	GFDL45	59.7	62.2	62.5	63.2
	GFDL85	59.7	62.0	62.8	64.5
	HAD45	59.7	62.0	63.0	63.1
	HAD85	59.7	62.5	64.6	65.2

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	CCSM45	26.9	27.2	29.6	28.8
Total	CCSM85	26.9	28.1	29.7	30.6
	GFDL45	26.9	29.4	32.2	30.7
	GFDL85	26.9	29.4	31.7	32.5
	HAD45	26.9	26.0	28.4	29.8
	HAD85	26.9	28.8	25.1	27.9
Growing	CCSM45	9.3	9.0	9.2	9.2
Season	CCSM85	9.3	8.9	8.5	8.9
May—Sep	GFDL45	9.3	10.2	10.9	10.8
	GFDL85	9.3	10.7	11.5	11.5
	HAD45	9.3	8.5	8.8	8.4
	HAD85	9.3	9.2	6.7	6.8

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-DCP30 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	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
sugarberry	Celtis laevigata	NDH	Medium	34.5	744.1	10.6	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	35.3	516.4	11.6	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	2
loblolly pine	Pinus taeda	WDH	High	8.3	455.4	9.3	No change	No change	Medium	Common	Fair	Fair			1	3
post oak	Quercus stellata	WDH	High	30.1	434.6	11.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	4
green ash	Fraxinus pennsylvanica	WSH	Low	48.4	295.4	6.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	5
overcup oak	Quercus lyrata	NSL	Medium	45.6	283.0	9.3	No change	No change	Low	Common	Poor	Poor			0	6
pecan	Carya illinoensis	NSH	Low	18.3	229.0	6.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	7
southern red oak	Quercus falcata	WDL	Medium	21	226.5	4.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	8
water oak	Quercus nigra	WDH	High	16.6	201.4	6.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	9
winged elm	Ulmus alata	WDL	Medium	43.9	200.0	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
common persimmon	Diospyros virginiana	NSL	Low	39.3	192.9	3.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	11
water hickory	Carya aquatica	NSL	Medium	30.9	182.6	5.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	12
water elm	Planera aquatica	NSL	Low	10.9	175.8	12.0	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	13
black willow	Salix nigra	NSH	Low	28.8	166.5	7.7	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	1	14
slippery elm	Ulmus rubra	WSL	Low	44.8	161.4	2.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	15
sycamore	Platanus occidentalis	NSL	Low	19.4	156.0	3.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	16
boxelder	Acer negundo	WSH	Low	17.4	154.7	2.8	Sm. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	1	17
willow oak	Quercus phellos	NSL	Low	24.6	150.6	3.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
American elm	Ulmus americana	WDH	Medium	39.5	139.0	3.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
mockernut hickory	Carya alba	WDL	Medium	40	138.4	4.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	20
bald cypress	Taxodium distichum	NSH	Medium	11.5	136.7	5.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2	21
honeylocust	Gleditsia triacanthos	NSH	Low	27.1	136.1	3.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	22
red maple	Acer rubrum	WDH	High	22.9	109.3	4.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	23
black hickory	Carya texana	NDL	High	19.7	101.3	4.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	24
blackgum	Nyssa sylvatica	WDL	Medium	16.2	91.0	3.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	25
Nuttall oak	Quercus texana	NSH	Medium	41.3	89.8	7.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			0	26
blackjack oak	Quercus marilandica	NSL	Medium	6.2	89.0	4.5	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	27
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	26.6	80.2	4.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	28
Shumard oak	Quercus shumardii	NSL	Low	18.3	62.7	14.2	Sm. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	1	29
shagbark hickory	Carya ovata	WSL	Medium	28	60.2	2.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	30
white oak	Quercus alba	WDH	Medium	11.4	54.4	2.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	31
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	2.5	50.5	10.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	32
eastern cottonwood	Populus deltoides	NSH	Low	9.5	48.0	3.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	33
eastern redcedar	Juniperus virginiana	WDH	Medium	10.2	29.2	2.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	34
silver maple	Acer saccharinum	NSH	Low	0.8	25.2	3.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	35
Osage-orange	Maclura pomifera	NDH	Medium	0.8	22.8	0.9	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	36
northern red oak	Quercus rubra	WDH	Medium	4.4	21.7	4.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	37
black cherry	Prunus serotina	WDL	Medium	17.7	21.1	1.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	38
hackberry	Celtis occidentalis	WDH	Medium	9.2	17.1	1.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	39
waterlocust	Gleditsia aquatica	NSLX	FIA	25.1	16.1	1.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	40
cedar elm	Ulmus crassifolia	NDH	Medium	11.3	14.3	5.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	41
shortleaf pine	Pinus echinata	WDH	High	2	14.1	5.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	42
bitternut hickory	Carya cordiformis	WSL	Low	9.9	12.8	2.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	43
florida maple	Acer barbatum	NSL	Low	2.3	11.4	4.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	44
pawpaw	Asimina triloba	NSL	Low	2.2	10.8	4.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
black oak	Quercus velutina	WDH	High	4.6	9.3	1.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	46
red mulberry	Morus rubra	NSL	Low	8.4	6.7	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCI45	ChngCI85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
flowering dogwood	Cornus florida	WDL	Medium	11	5.6	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	48
black walnut	Juglans nigra	WDH	Low	2.2	4.9	2.1	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	49
river birch	Betula nigra	NSL	Low	2.3	4.8	2.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	50
eastern redbud	Cercis canadensis	NSL	Low	10.6	4.4	1.4	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51
swamp chestnut oak	Quercus michauxii	NSL	Low	12.6	2.9	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	52
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	2.3	2.7	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	53
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.3	2.3	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	54
black locust	Robinia pseudoacacia	NDH	Low	2.3	1.9	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	55
sassafras	Sassafras albidum	WSL	Low	2.5	1.9	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	56
pignut hickory	Carya glabra	WDL	Medium	1.1	1.1	0.2	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	57
wild plum	Prunus americana	NSLX	FIA	1.1	1.0	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	58
white ash	Fraxinus americana	WDL	Medium	6.7	0.9	0.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2	59
water tupelo	Nyssa aquatica	NSH	Medium	0.2	0.6	0.0	No change	Lg. inc.	Low	Rare	Very Poor	Fair			0	60
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	61
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	62
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	63
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	64
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	65
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	66
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	67
American holly	Ilex opaca	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	68
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	69
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	70
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	71
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	72
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	73
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	75