

HUC 110300 Middle 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	53,188	20,536	52

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 RCP45	Scenario RCP85	Scenario RCP45	Scenario RCP85	SHIFT RCP45	SHIFT RCP85				
Ash	1			High	9	14	Increase	6	6	Very Good	0	0	Likely	1	1
Hickory	1			Medium	16	32	No Change	10	11	Good	4	4	Infill	12	13
Maple	1	Abundant	0	Low	23	6	Decrease	5	4	Fair	6	6	Migrate	4	9
Oak	4	Common	0	FIA	5		New	14	14	Poor	7	7		17	23
Pine	0	Rare	26				Unknown	18	18	Very Poor	4	4			
Other	19	Absent	23							FIA Only	4	4			
	26		49		53	52		53	53	Unknown	13	13			
											38	38			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	50.1	51.5	52.9	53.4	
	CCSM85	50.1	51.9	53.4	55.7	
	GFDL45	50.1	54.8	53.8	54.8	
	GFDL85	50.1	52.2	54.5	57.7	
	HAD45	50.1	52.0	54.2	54.9	
	HAD85	50.1	52.2	55.9	58.0	
Growing Season (May—Sep)	CCSM45	63.5	65.3	66.9	67.3	
	CCSM85	63.5	65.7	67.3	70.0	
	GFDL45	63.5	69.9	68.2	69.9	
	GFDL85	63.5	66.4	69.1	73.1	
	HAD45	63.5	65.1	66.9	67.5	
	HAD85	63.5	65.6	69.4	71.2	
Coldest Month (Average)	CCSM45	30.3	31.7	32.5	33.1	
	CCSM85	30.3	32.0	32.4	33.8	
	GFDL45	30.3	33.0	33.2	33.4	
	GFDL85	30.3	31.5	32.5	33.1	
	HAD45	30.3	31.6	33.3	33.2	
	HAD85	30.3	33.1	34.9	36.1	
Warmest Month (Average)	CCSM45	68.7	70.6	71.7	72.2	
	CCSM85	68.7	71.4	72.3	73.9	
	GFDL45	68.7	72.0	72.9	74.2	
	GFDL85	68.7	72.1	73.2	76.4	
	HAD45	68.7	70.2	71.4	71.7	
	HAD85	68.7	71.6	73.3	74.3	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	22.0	21.4	21.7	21.2	
	CCSM85	22.0	22.2	22.5	22.9	
	GFDL45	22.0	23.5	25.2	24.3	
	GFDL85	22.0	24.2	27.0	25.1	
	HAD45	22.0	24.2	23.2	24.5	
	HAD85	22.0	22.7	21.1	23.8	
Growing Season (May—Sep)	CCSM45	13.5	12.1	12.2	11.9	
	CCSM85	13.5	12.9	12.7	13.1	
	GFDL45	13.5	14.4	15.1	14.6	
	GFDL85	13.5	15.0	16.7	15.3	
	HAD45	13.5	14.5	14.7	14.8	
	HAD85	13.5	13.3	12.1	13.1	

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	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
Osage-orange	Maclura pomifera	NDH	Medium	16.2	26.3	22.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	1
red mulberry	Morus rubra	NSL	Low	22.4	24.4	18.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	2
American elm	Ulmus americana	WDH	Medium	17	22.3	15.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	3
hackberry	Celtis occidentalis	WDH	Medium	17.8	20.6	15.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	4
green ash	Fraxinus pennsylvanica	WSH	Low	13	18.5	15.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	5
eastern cottonwood	Populus deltoides	NSH	Low	12.5	13.5	21.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	6
eastern redcedar	Juniperus virginiana	WDH	Medium	17.3	11.6	12.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	7
black walnut	Juglans nigra	WDH	Low	7	7.4	9.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	8
Siberian elm	Ulmus pumila	NDH	FIA	5.7	7.2	30.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	9
honeylocust	Gleditsia triacanthos	NSH	Low	9.6	6.9	14.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	10
black willow	Salix nigra	NSH	Low	4.8	5.9	11.0	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	11
peachleaf willow	Salix amygdaloides	NSLX	FIA	4.2	5.7	25.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	12
northern catalpa	Catalpa speciosa	NSHX	FIA	3.8	5.1	12.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	13
black locust	Robinia pseudoacacia	NDH	Low	2.3	4.8	51.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	14
bur oak	Quercus macrocarpa	NDH	Medium	1.4	2.4	8.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	15
eastern redbud	Cercis canadensis	NSL	Low	1.2	1.8	17.5	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	16
wild plum	Prunus americana	NSLX	FIA	1.4	1.5	1.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	17
boxelder	Acer negundo	WSH	Low	4.9	1.4	3.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	18
pecan	Carya illinoensis	NSH	Low	0.2	0.9	2.4	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	19
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	3.2	0.9	2.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			2	20
slippery elm	Ulmus rubra	WSL	Low	2.5	0.8	5.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	21
sycamore	Platanus occidentalis	NSL	Low	0.1	0.2	0.3	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	22
sugarberry	Celtis laevigata	NDH	Medium	0.9	0.1	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	23
northern red oak	Quercus rubra	WDH	Medium	0.2	0.1	0.2	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	24
blackjack oak	Quercus marilandica	NSL	Medium	0.2	0.0	0.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	25
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0.2	0.0	0.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	26
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	27
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	28
shortleaf pine	Pinus echinata	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	29
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	30
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	31
Ohio buckeye	Aesculus glabra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	32
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	33
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	34
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	35
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	36
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	37
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	38
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	39
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	40
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	41
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	42
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	43
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	44
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	45
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	46
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	47



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Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	48
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	49
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	50
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	51
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	52
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	53