

HUC 080101 Lower Mississippi-Memphis

HUC 6 Watershed Climate Change Atlas Tree Species

USDA Forest Service
Northern Research Station
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Iverson, Peters, Prasad, Matthews

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	2,842.2	1,097.4	50

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	2			High	14	22	Increase	31	34	Very Good	5	6	Likely	0	0
Hickory	7			Medium	33	50	No Change	12	10	Good	23	24	Infill	26	26
Maple	4	Abundant	2	Low	35	12	Decrease	16	15	Fair	13	13	Migrate	7	9
Oak	16	Common	23	FIA	4		New	19	19	Poor	13	11			
Pine	1	Rare	38				Unknown	8	8	Very Poor	5	5			
Other	33	Absent	21							FIA Only	2	2			
	63		84		86	84		86	86	Unknown	4	4			
											65	65			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	41.1	41.7	42.3	42.5	
	CCSM85	41.1	41.8	42.7	43.6	
	GFDL45	41.1	42.4	42.7	43.0	
	GFDL85	41.1	42.0	43.0	44.2	
	HAD45	41.1	42.0	43.0	43.4	
	HAD85	41.1	42.1	43.6	44.8	
Growing Season (May—Sep)	CCSM45	46.3	46.8	47.4	47.6	
	CCSM85	46.3	47.0	47.9	49.1	
	GFDL45	46.3	47.8	48.1	48.6	
	GFDL85	46.3	47.4	48.6	50.0	
	HAD45	46.3	47.4	48.3	48.8	
	HAD85	46.3	47.5	49.6	50.8	
Coldest Month (Average)	CCSM45	33.1	33.8	34.2	34.3	
	CCSM85	33.1	34.0	34.4	34.9	
	GFDL45	33.1	34.4	34.4	34.5	
	GFDL85	33.1	33.7	34.1	34.2	
	HAD45	33.1	33.5	34.2	34.2	
	HAD85	33.1	33.8	34.5	35.0	
Warmest Month (Average)	CCSM45	48.0	48.6	48.9	49.0	
	CCSM85	48.0	48.8	49.3	49.9	
	GFDL45	48.0	49.3	49.6	49.9	
	GFDL85	48.0	49.2	49.8	50.7	
	HAD45	48.0	49.4	50.2	50.3	
	HAD85	48.0	49.9	51.3	51.7	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	16.2	16.2	18.2	17.3	
	CCSM85	16.2	17.3	17.7	18.4	
	GFDL45	16.2	18.3	19.6	19.9	
	GFDL85	16.2	18.5	20.1	21.1	
	HAD45	16.2	15.6	17.2	17.4	
	HAD85	16.2	16.6	15.2	16.8	
Growing Season (May—Sep)	CCSM45	6.1	5.7	6.1	5.8	
	CCSM85	6.1	6.1	5.5	5.8	
	GFDL45	6.1	7.0	7.2	7.5	
	GFDL85	6.1	7.3	7.7	8.0	
	HAD45	6.1	5.5	5.6	5.2	
	HAD85	6.1	5.7	4.3	4.4	

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
black willow	Salix nigra	NSH	Low	64.3	777.6	14.6	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	1
sweetgum	Liquidambar styraciflua	WDH	High	42.8	529.1	5.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	2
boxelder	Acer negundo	WSH	Low	69.6	423.0	3.2	No change	No change	High	Common	Good	Good			1	3
black locust	Robinia pseudoacacia	NDH	Low	14.3	370.2	10.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +		0	4
silver maple	Acer saccharinum	NSH	Low	51.4	364.0	6.0	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	5
sugarberry	Celtis laevigata	NDH	Medium	46.9	345.2	4.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
sugar maple	Acer saccharum	WDH	High	24.7	287.1	2.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	7
American elm	Ulmus americana	WDH	Medium	46.6	262.2	2.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
winged elm	Ulmus alata	WDL	Medium	27.1	262.2	1.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
eastern cottonwood	Populus deltoides	NSH	Low	39.2	255.7	5.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	10
pecan	Carya illinoensis	NSH	Low	30.2	254.1	6.2	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	11
yellow-poplar	Liriodendron tulipifera	WDH	High	13.6	246.3	2.8	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	12
sycamore	Platanus occidentalis	NSL	Low	49.2	241.4	3.0	No change	Sm. inc.	Medium	Common	Fair	Good			1	13
hackberry	Celtis occidentalis	WDH	Medium	37.7	236.9	3.2	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	14
sassafras	Sassafras albidum	WSL	Low	22.9	209.4	1.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	15
bald cypress	Taxodium distichum	NSH	Medium	15.5	200.7	7.1	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	1	16
green ash	Fraxinus pennsylvanica	WSH	Low	63.4	190.8	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
pin oak	Quercus palustris	NSH	Low	3.5	134.4	38.1	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	18
slippery elm	Ulmus rubra	WSL	Low	50.5	99.2	1.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
red mulberry	Morus rubra	NSL	Low	23.6	76.8	0.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	20
overcup oak	Quercus lyrata	NSL	Medium	11.1	74.4	4.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	2	21
chinkapin oak	Quercus muehlenbergii	NSL	Medium	19.1	72.9	0.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	22
American beech	Fagus grandifolia	WDH	High	10.7	70.8	1.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	23
blackgum	Nyssa sylvatica	WDL	Medium	14.2	55.7	0.9	No change	Sm. inc.	High	Common	Good	Very Good	Infill ++	Infill ++	1	24
bitternut hickory	Carya cordiformis	WSL	Low	20.8	53.3	0.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	25
red maple	Acer rubrum	WDH	High	26.4	51.4	1.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	26
common persimmon	Diospyros virginiana	NSL	Low	31.8	49.7	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	27
white oak	Quercus alba	WDH	Medium	13.4	49.5	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	28
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	11	44.9	0.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	29
honeylocust	Gleditsia triacanthos	NSH	Low	14	44.4	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	30
shingle oak	Quercus imbricaria	NDH	Medium	0.8	35.7	2.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
mockernut hickory	Carya alba	WDL	Medium	17.8	34.0	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	32
swamp chestnut oak	Quercus michauxii	NSL	Low	9.4	30.9	2.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	33
black cherry	Prunus serotina	WDL	Medium	16.1	27.9	1.5	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	34
Shumard oak	Quercus shumardii	NSL	Low	8.6	27.7	1.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	35
willow oak	Quercus phellos	NSL	Low	7.2	21.6	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	36
flowering dogwood	Cornus florida	WDL	Medium	6.6	21.3	0.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	37
shagbark hickory	Carya ovata	WSL	Medium	9.4	19.9	0.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	38
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	9.9	17.7	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	39
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0.5	15.8	0.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	40
pawpaw	Asimina triloba	NSL	Low	17.3	10.3	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	41
water elm	Planera aquatica	NSL	Low	6.3	10.1	1.2	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	42
black walnut	Juglans nigra	WDH	Low	13.4	9.9	3.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	43
northern red oak	Quercus rubra	WDH	Medium	7.5	9.5	0.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	44
paulownia	Paulownia tomentosa	NSL	FIA	2.9	7.7	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	45
pignut hickory	Carya glabra	WDL	Medium	11.8	7.1	0.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	46
black oak	Quercus velutina	WDH	High	10.2	6.4	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	47



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shellbark hickory	<i>Carya laciniosa</i>	NSL	Low	3.5	5.2	1.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	48
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	7.5	3.8	0.2	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	49
loblolly pine	<i>Pinus taeda</i>	WDH	High	0.8	3.7	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	50
water oak	<i>Quercus nigra</i>	WDH	High	2.4	3.7	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	51
butternut	<i>Juglans cinerea</i>	NSLX	FIA	4.9	3.3	1.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	52
southern red oak	<i>Quercus falcata</i>	WDL	Medium	0.3	2.7	0.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	53
white ash	<i>Fraxinus americana</i>	WDL	Medium	0.5	2.5	0.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	54
river birch	<i>Betula nigra</i>	NSL	Low	3.8	1.7	0.5	No change	No change	Medium	Rare	Poor	Poor			0	55
eastern redcedar	<i>Juniperus virginiana</i>	WDH	Medium	0.5	1.5	0.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	56
yellow buckeye	<i>Aesculus flava</i>	NSL	Low	1.3	1.3	0.1	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	57
waterlocust	<i>Gleditsia aquatica</i>	NSLX	FIA	3.5	1.3	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	58
ailanthus	<i>Ailanthus altissima</i>	NSL	FIA	13.4	1.3	0.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	59
post oak	<i>Quercus stellata</i>	WDH	High	0.3	1.0	0.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	60
water hickory	<i>Carya aquatica</i>	NSL	Medium	5.9	1.0	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	61
Nuttall oak	<i>Quercus texana</i>	NSH	Medium	0.3	0.8	0.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			0	62
scarlet oak	<i>Quercus coccinea</i>	WDL	Medium	7.6	0.7	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	63
ashe juniper	<i>Juniperus ashei</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	64
shortleaf pine	<i>Pinus echinata</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	65
slash pine	<i>Pinus elliottii</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	66
longleaf pine	<i>Pinus palustris</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	67
florida maple	<i>Acer barbatum</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	68
striped maple	<i>Acer pensylvanicum</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	69
serviceberry	<i>Amelanchier</i> spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	70
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum</i> ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	71
black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	72
black ash	<i>Fraxinus nigra</i>	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	73
American holly	<i>Ilex opaca</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	74
Osage-orange	<i>Maclura pomifera</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	75
cucumbertree	<i>Magnolia acuminata</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	76
southern magnolia	<i>Magnolia grandiflora</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	77
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	78
water tupelo	<i>Nyssa aquatica</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	79
swamp tupelo	<i>Nyssa biflora</i>	NDH	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	80
pin cherry	<i>Prunus pensylvanica</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	81
swamp white oak	<i>Quercus bicolor</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	82
laurel oak	<i>Quercus laurifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	83
blackjack oak	<i>Quercus marilandica</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	84
live oak	<i>Quercus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	85
cedar elm	<i>Ulmus crassifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	86