

U.S. Census Bureau Urban Areas
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

Area of Region sq. km sq. mi FIA Plots
 8,200.0 3,166.0 194

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	16	24	Increase	33	36	Very Good	17	18	Likely	1	1
Hickory	7			Medium	33	48	No Change	18	17	Good	13	15	Infill	20	21
Maple	4	Abundant	5	Low	30	9	Decrease	11	9	Fair	11	12	Migrate	3	6
Oak	14	Common	26	FIA	2		New	13	15	Poor	15	12			
Pine	2	Rare	33				Unknown	6	4	Very Poor	5	4			
Other	35	Absent	16							FIA Only	2	2			
	64		80		81	81		81	81	Unknown	4	2			
											67	65			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	61.8	63.5	65.5	65.8	
Average	61.8	63.9	66.3	69.0	
GFDL45	61.8	65.1	66.5	67.6	
GFDL85	61.8	64.7	67.5	71.2	
HAD45	61.8	64.3	67.2	68.5	
HAD85	61.8	64.6	69.2	72.8	
Growing Season	76.7	78.4	80.1	80.7	
May—Sep	76.7	80.8	82.2	84.2	
GFDL45	76.7	80.4	83.7	88.3	
GFDL85	76.7	80.4	83.7	88.3	
HAD45	76.7	79.9	82.7	83.9	
HAD85	76.7	80.2	86.5	89.7	
Coldest Month	39.0	41.4	42.5	42.7	
Average	39.0	41.5	42.5	44.0	
GFDL45	39.0	42.9	43.2	43.3	
GFDL85	39.0	40.2	41.6	42.3	
HAD45	39.0	40.0	41.9	42.2	
HAD85	39.0	41.2	43.0	44.7	
Warmest Month	82.3	84.0	85.0	85.1	
Average	82.3	84.6	85.4	87.3	
GFDL45	82.3	87.0	87.7	88.9	
GFDL85	82.3	86.6	88.2	91.5	
HAD45	82.3	86.3	88.1	88.4	
HAD85	82.3	87.3	91.0	92.1	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	50.0	49.9	54.3	52.9	
Total	50.0	51.8	55.0	56.2	
GFDL45	50.0	54.2	59.3	56.0	
GFDL85	50.0	54.4	59.0	60.0	
HAD45	50.0	48.5	52.9	55.2	
HAD85	50.0	53.9	46.7	51.6	
Growing Season	18.1	17.4	17.7	17.7	
May—Sep	18.1	17.5	16.7	17.5	
GFDL45	18.1	19.5	20.7	20.4	
GFDL85	18.1	20.5	22.0	21.7	
HAD45	18.1	16.6	17.2	16.4	
HAD85	18.1	17.9	12.9	13.4	

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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Current and Potential Future Habitat, Capability, and Migration

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	54.9	2015.7	36.9	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	69.5	907.3	13.8	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	2
post oak	Quercus stellata	WDH	High	58.5	644.8	11.4	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	3
white oak	Quercus alba	WDH	Medium	63.4	592.8	10.2	No change	No change	High	Abundant	Very Good	Very Good			1	4
shortleaf pine	Pinus echinata	WDH	High	32.9	526.0	14.8	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	5
black hickory	Carya texana	NDL	High	47.6	282.4	6.1	No change	No change	Medium	Common	Fair	Fair			1	6
southern red oak	Quercus falcata	WDL	Medium	51.2	253.4	5.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	7
water oak	Quercus nigra	WDH	High	43.9	243.5	6.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
willow oak	Quercus phellos	NSL	Low	39	238.0	8.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
mockernut hickory	Carya alba	WDL	Medium	51.2	227.8	4.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
winged elm	Ulmus alata	WDL	Medium	63.4	216.1	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
red maple	Acer rubrum	WDH	High	47.6	159.5	3.8	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	12
blackgum	Nyssa sylvatica	WDL	Medium	61	153.0	2.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
sugarberry	Celtis laevigata	NDH	Medium	18.3	135.4	10.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
eastern redcedar	Juniperus virginiana	WDH	Medium	23.2	115.2	5.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	31.7	109.8	4.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
green ash	Fraxinus pennsylvanica	WSH	Low	45.1	106.5	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
pecan	Carya illinoensis	NSH	Low	2.4	102.7	39.0	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	18
black cherry	Prunus serotina	WDL	Medium	42.7	100.2	2.8	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	19
common persimmon	Diospyros virginiana	NSL	Low	23.2	97.6	4.8	No change	No change	High	Common	Good	Good			1	20
black oak	Quercus velutina	WDH	High	19.5	89.7	4.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	21
boxelder	Acer negundo	WSH	Low	13.4	88.4	8.7	No change	Sm. inc.	High	Common	Good	Very Good			1	22
black willow	Salix nigra	NSH	Low	3.7	83.8	21.2	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	23
blackjack oak	Quercus marilandica	NSL	Medium	24.4	80.1	4.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	24
honeylocust	Gleditsia triacanthos	NSH	Low	11	73.6	9.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	25
silver maple	Acer saccharinum	NSH	Low	2.4	72.2	27.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			0	26
northern red oak	Quercus rubra	WDH	Medium	25.6	71.3	3.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	27
slippery elm	Ulmus rubra	WSL	Low	19.5	65.2	5.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	28
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	31.7	63.3	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	29
shagbark hickory	Carya ovata	WSL	Medium	14.6	57.6	6.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	30
sycamore	Platanus occidentalis	NSL	Low	7.3	57.0	7.2	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	1	31
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	28	47.7	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	32
overcup oak	Quercus lyrata	NSL	Medium	17.1	45.6	4.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	33
flowering dogwood	Cornus florida	WDL	Medium	29.3	41.0	1.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	34
water elm	Planera aquatica	NSL	Low	1.2	32.9	25.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	35
bald cypress	Taxodium distichum	NSH	Medium	2.4	29.5	11.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	36
red mulberry	Morus rubra	NSL	Low	12.2	26.8	3.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
water hickory	Carya aquatica	NSL	Medium	8.5	25.7	7.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	38
American elm	Ulmus americana	WDH	Medium	19.5	24.5	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	39
American holly	Ilex opaca	NSL	Medium	9.8	17.9	1.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	40
sassafras	Sassafras albidum	WSL	Low	14.6	17.6	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	41
bitternut hickory	Carya cordiformis	WSL	Low	7.3	17.5	2.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	42
Shumard oak	Quercus shumardii	NSL	Low	6.1	16.5	2.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	43
black walnut	Juglans nigra	WDH	Low	3.7	13.6	3.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	44
swamp chestnut oak	Quercus michauxii	NSL	Low	4.9	12.5	2.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	45
hackberry	Celtis occidentalis	WDH	Medium	6.1	12.2	1.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	46
waterlocust	Gleditsia aquatica	NSLX	FIA	2.4	11.1	4.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	47

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

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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	2.4	10.2	3.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	48
Osage-orange	Maclura pomifera	NDH	Medium	1.2	9.3	7.1	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	49
chinkapin oak	Quercus muehlenbergii	NSL	Medium	2.4	9.2	3.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
florida maple	Acer barbatum	NSL	Low	1.2	6.5	4.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	51
white ash	Fraxinus americana	WDL	Medium	7.3	6.0	0.8	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	1	52
eastern redbud	Cercis canadensis	NSL	Low	3.7	5.9	1.5	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	53
American basswood	Tilia americana	WSL	Medium	3.7	5.2	1.3	No change	No change	Medium	Rare	Poor	Poor			0	54
pignut hickory	Carya glabra	WDL	Medium	7.3	4.9	1.7	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	55
sweetbay	Magnolia virginiana	NSL	Medium	3.7	4.4	1.1	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	56
wild plum	Prunus americana	NSLX	FIA	6.1	3.9	2.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	57
eastern cottonwood	Populus deltoides	NSH	Low	1.2	3.5	2.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	58
water tupelo	Nyssa aquatica	NSH	Medium	1.2	1.8	1.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	59
Nuttall oak	Quercus texana	NSH	Medium	1.2	1.8	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			0	60
cedar elm	Ulmus crassifolia	NDH	Medium	4.9	1.7	5.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	61
black locust	Robinia pseudoacacia	NDH	Low	1.2	1.1	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	62
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	1.2	0.8	0.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	63
serviceberry	Amelanchier spp.	NSL	Low	1.2	0.5	0.4	No change	No change	Medium	Rare	Poor	Poor			0	64
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	65
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	66
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	67
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	68
sugar maple	Acer saccharum	WDH	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	69
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	70
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	71
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	72
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	73
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat		Migrate +	3	75
sourwood	Oxydendron arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	76
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	77
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	78
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	79
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	80
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	81