

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
 8,300.0 3,204.6 210

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	19	20	Increase	21	28	Very Good	8	9	Likely	0	0
Hickory	5			Medium	28	47	No Change	16	11	Good	16	20	Infill	8	7
Maple	4	Abundant	6	Low	30	10	Decrease	24	22	Fair	14	11	Migrate	0	0
Oak	13	Common	22	FIA	2		New	9	10	Poor	7	9		8	7
Pine	5	Rare	35				Unknown	9	8	Very Poor	13	10			
Other	34	Absent	13							FIA Only	0	0			
	63		76		79	77		79	79	Unknown	7	6			
											65	65			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	58.9	60.7	62.8	62.9	
Average	CCSM85	58.9	61.1	63.5	66.4	
	GFDL45	58.9	61.7	64.0	64.9	
	GFDL85	58.9	61.9	65.1	68.9	
	HAD45	58.9	61.2	64.2	65.6	
	HAD85	58.9	61.5	65.4	69.8	
Growing Season	CCSM45	73.3	75.1	77.0	77.5	
	CCSM85	73.3	75.3	77.9	81.6	
May—Sep	GFDL45	73.3	76.5	79.0	80.4	
	GFDL85	73.3	76.8	80.4	84.7	
	HAD45	73.3	76.2	79.1	80.8	
	HAD85	73.3	76.2	81.4	86.1	
Coldest Month	CCSM45	37.5	39.7	40.5	40.7	
	CCSM85	37.5	39.9	40.8	42.0	
Average	GFDL45	37.5	40.9	41.2	42.0	
	GFDL85	37.5	39.8	40.7	41.8	
	HAD45	37.5	38.3	40.1	40.3	
	HAD85	37.5	38.6	39.9	41.5	
Warmest Month	CCSM45	78.7	80.8	81.8	81.8	
	CCSM85	78.7	81.0	82.7	84.3	
Average	GFDL45	78.7	81.7	82.8	83.9	
	GFDL85	78.7	82.3	84.3	86.7	
	HAD45	78.7	82.0	83.9	84.7	
	HAD85	78.7	82.7	85.9	88.8	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	45.3	49.7	52.4	53.7	
Total	CCSM85	45.3	50.9	53.5	59.2	
	GFDL45	45.3	50.5	54.3	57.2	
	GFDL85	45.3	49.3	55.4	56.4	
	HAD45	45.3	48.9	50.1	49.4	
	HAD85	45.3	51.2	47.8	49.5	
Growing Season	CCSM45	20.3	24.0	25.7	26.8	
	CCSM85	20.3	23.7	24.8	27.9	
May—Sep	GFDL45	20.3	23.6	26.1	27.5	
	GFDL85	20.3	22.5	27.0	27.6	
	HAD45	20.3	21.9	21.7	22.0	
	HAD85	20.3	24.1	21.7	21.4	

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
sweetgum	Liquidambar styraciflua	WDH	High	91.6	1322.9	14.7	No change	No change	Medium	Abundant	Good	Good			0	1
loblolly pine	Pinus taeda	WDH	High	56.6	1081.6	20.0	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			2	2
yellow-poplar	Liriodendron tulipifera	WDH	High	85.5	956.3	11.4	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			0	3
red maple	Acer rubrum	WDH	High	90.4	868.1	9.7	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			0	4
Virginia pine	Pinus virginiana	NDH	High	66.3	867.3	13.4	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	5
white oak	Quercus alba	WDH	Medium	83.1	652.3	8.1	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			0	6
shortleaf pine	Pinus echinata	WDH	High	56.6	314.5	5.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			0	7
eastern redcedar	Juniperus virginiana	WDH	Medium	63.9	287.1	4.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			2	8
pignut hickory	Carya glabra	WDL	Medium	61.4	245.3	4.1	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	9
southern red oak	Quercus falcata	WDL	Medium	57.8	207.4	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			0	10
mockernut hickory	Carya alba	WDL	Medium	61.4	202.5	3.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			2	11
sourwood	Oxydendrum arboreum	NDL	High	54.2	177.7	3.4	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +		2	12
white ash	Fraxinus americana	WDL	Medium	47	161.6	3.3	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	13
American elm	Ulmus americana	WDH	Medium	55.4	161.1	3.0	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +		2	14
northern red oak	Quercus rubra	WDH	Medium	49.4	159.9	3.4	No change	No change	High	Common	Good	Good			2	15
blackgum	Nyssa sylvatica	WDL	Medium	61.4	150.5	2.5	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			2	16
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	47	142.0	3.2	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +		2	17
post oak	Quercus stellata	WDH	High	36.1	138.4	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			2	18
willow oak	Quercus phellos	NSL	Low	39.8	125.7	3.1	No change	No change	Medium	Common	Fair	Fair			0	19
winged elm	Ulmus alata	WDL	Medium	49.4	125.4	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			2	20
black cherry	Prunus serotina	WDL	Medium	54.2	115.8	2.2	Sm. inc.	Lg. inc.	Low	Common	Fair	Good	Infill +		2	21
American beech	Fagus grandifolia	WDH	High	37.3	115.7	3.3	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +		2	22
flowering dogwood	Cornus florida	WDL	Medium	61.4	94.0	1.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			0	23
sycamore	Platanus occidentalis	NSL	Low	16.9	80.3	4.6	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +		2	24
black oak	Quercus velutina	WDH	High	31.3	77.2	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			2	25
common persimmon	Diospyros virginiana	NSL	Low	22.9	75.0	3.2	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			0	26
boxelder	Acer negundo	WSH	Low	13.3	69.1	5.0	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			0	27
scarlet oak	Quercus coccinea	WDL	Medium	27.7	68.3	2.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	28
green ash	Fraxinus pennsylvanica	WSH	Low	24.1	49.6	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	29
hackberry	Celtis occidentalis	WDH	Medium	9.6	49.0	4.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	30
slippery elm	Ulmus rubra	WSL	Low	18.1	42.5	2.3	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	31
shagbark hickory	Carya ovata	WSL	Medium	12	33.5	2.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	32
eastern redbud	Cercis canadensis	NSL	Low	26.5	32.4	1.4	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	33
river birch	Betula nigra	NSL	Low	9.6	29.4	2.9	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	34
water oak	Quercus nigra	WDH	High	10.8	27.3	3.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	35
black walnut	Juglans nigra	WDH	Low	12	22.8	1.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
florida maple	Acer barbatum	NSL	Low	6	22.3	3.6	No change	No change	High	Rare	Fair	Fair			2	37
ailanthus	Ailanthus altissima	NSL	FIA	4.8	20.1	4.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	38
black willow	Salix nigra	NSH	Low	4.8	17.6	3.5	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	39
sassafras	Sassafras albidum	WSL	Low	8.4	17.1	2.0	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	40
eastern white pine	Pinus strobus	WDH	High	2.4	12.6	5.0	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	41
black locust	Robinia pseudoacacia	NDH	Low	6	12.5	2.0	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	42
sugarberry	Celtis laevigata	NDH	Medium	3.6	12.0	3.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	43
sweet birch	Betula lenta	NDH	High	3.6	10.3	2.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	44
sugar maple	Acer saccharum	WDH	High	7.2	9.6	1.3	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	45
American holly	Ilex opaca	NSL	Medium	16.9	8.8	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	46
red mulberry	Morus rubra	NSL	Low	7.2	5.8	0.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
white mulberry	Morus alba	NSL	FIA	1.2	5.4	4.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	48
honeylocust	Gleditsia triacanthos	NSH	Low	3.6	5.3	1.4	No change	No change	High	Rare	Fair	Fair			0	49
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	2.4	4.9	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	50
bitternut hickory	Carya cordiformis	WSL	Low	3.6	4.8	1.3	Very Lg. dec.	Sm. dec.	High	Rare	Lost	Poor			0	51
chestnut oak	Quercus prinus	NDH	High	4.8	4.0	0.8	No change	No change	High	Rare	Fair	Fair			0	52
blackjack oak	Quercus marilandica	NSL	Medium	2.4	3.9	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	53
cucumbertree	Magnolia acuminata	NSL	Low	1.2	2.8	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	54
longleaf pine	Pinus palustris	NSH	Medium	1.2	2.5	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	55
pecan	Carya illinoensis	NSH	Low	6	2.3	1.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			2	56
laurel oak	Quercus laurifolia	NDH	Medium	3.6	2.3	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	57
serviceberry	Amelanchier spp.	NSL	Low	1.2	1.5	1.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	58
swamp chestnut oak	Quercus michauxii	NSL	Low	2.4	1.3	0.5	No change	No change	Medium	Rare	Poor	Poor			0	59
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	6	0.8	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	60
swamp tupelo	Nyssa biflora	NDH	Medium	1.2	0.8	0.6	No change	No change	Low	Rare	Very Poor	Very Poor			0	61
yellow birch	Betula alleghaniensis	NDL	High	1.2	0.5	0.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	62
pawpaw	Asimina triloba	NSL	Low	1.2	0.4	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	63
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	64
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	66
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	67
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	68
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	69
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	70
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	71
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	73
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	75
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	76
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	77
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	78
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	79