

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

	sq. km	sq. mi	FIA Plots
Area of Region	8,600.0	3,320.5	86

**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									
		Abundant	Common	High	Medium	Increase	No Change	Decrease	New	Unknown	Very Good	Good	Fair	Poor	Very Poor	FIA Only	Unknown	SHIFT RCP45	SHIFT RCP85
Ash	2			20	19	20	20	3	4	3	3								
Hickory	4			26	44	6	8	11	14	9	7								
Maple	5			26	12	19	17	12	10	6	3								
Oak	7			7		22	23	6	3	11	10								
Pine	2					12	11	12	10	5	4								
Other	32																		
	<b>52</b>			<b>79</b>	<b>75</b>	<b>79</b>	<b>79</b>	<b>51</b>	<b>48</b>									<b>18</b>	<b>18</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	52.5	54.2	56.5	56.8	
	CCSM85	52.5	54.6	57.2	60.3	
	GFDL45	52.5	58.3	58.2	59.3	
	GFDL85	52.5	55.8	59.4	63.5	
	HAD45	52.5	55.2	58.5	60.1	
HAD85	52.5	55.3	59.5	64.2		
Growing Season May—Sep	CCSM45	68.7	70.5	72.4	72.9	
	CCSM85	68.7	70.8	73.3	77.2	
	GFDL45	68.7	75.5	75.3	76.8	
	GFDL85	68.7	72.8	76.8	81.3	
	HAD45	68.7	71.8	74.8	76.9	
HAD85	68.7	71.4	76.3	81.5		
Coldest Month Average	CCSM45	28.1	30.0	31.7	32.1	
	CCSM85	28.1	30.4	31.7	33.5	
	GFDL45	28.1	31.4	32.2	32.8	
	GFDL85	28.1	31.3	32.5	34.2	
	HAD45	28.1	29.8	32.2	32.4	
HAD85	28.1	30.5	32.4	34.6		
Warmest Month Average	CCSM45	74.6	76.8	77.8	78.0	
	CCSM85	74.6	77.0	78.8	80.6	
	GFDL45	74.6	77.6	79.6	80.9	
	GFDL85	74.6	79.0	81.3	84.3	
	HAD45	74.6	78.2	79.9	81.2	
HAD85	74.6	78.1	81.1	84.7		

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	44.2	46.8	48.6	51.6	
	CCSM85	44.2	47.4	49.5	53.9	
	GFDL45	44.2	49.5	53.0	52.6	
	GFDL85	44.2	46.4	52.4	54.1	
	HAD45	44.2	46.8	47.9	47.5	
HAD85	44.2	49.8	46.2	49.6		
Growing Season May—Sep	CCSM45	20.2	23.0	24.0	25.5	
	CCSM85	20.2	22.7	23.7	25.3	
	GFDL45	20.2	21.4	22.7	23.2	
	GFDL85	20.2	19.9	22.1	22.6	
	HAD45	20.2	21.3	19.9	19.4	
HAD85	20.2	21.7	19.2	19.6		

**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
red maple	Acer rubrum	WDH	High	80.2	406.7	14.5	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			0	1
black cherry	Prunus serotina	WDL	Medium	74.4	281.9	12.4	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	2
yellow-poplar	Liriodendron tulipifera	WDH	High	77.9	276.1	16.8	Sm. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	3
chestnut oak	Quercus prinus	NDH	High	53.5	213.1	13.2	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			0	4
white ash	Fraxinus americana	WDL	Medium	55.8	147.7	8.5	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	5
black oak	Quercus velutina	WDH	High	50	132.2	10.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			0	6
green ash	Fraxinus pennsylvanica	WSH	Low	8.1	109.5	22.2	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	2	7
northern red oak	Quercus rubra	WDH	Medium	54.7	97.3	7.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			2	8
white oak	Quercus alba	WDH	Medium	45.3	92.4	7.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			2	9
black walnut	Juglans nigra	WDH	Low	40.7	83.5	8.3	No change	No change	Medium	Common	Fair	Fair	Infill +		2	10
blackgum	Nyssa sylvatica	WDL	Medium	50	82.2	5.1	No change	Sm. inc.	High	Common	Good	Very Good			0	11
boxelder	Acer negundo	WSH	Low	36	75.9	9.1	Sm. dec.	No change	High	Common	Fair	Good	Infill +		2	12
pignut hickory	Carya glabra	WDL	Medium	45.3	72.9	4.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			2	13
sweet birch	Betula lenta	NDH	High	47.7	68.6	9.0	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	14
mockernut hickory	Carya alba	WDL	Medium	30.2	57.9	6.8	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			2	15
silver maple	Acer saccharinum	NSH	Low	11.6	56.2	16.5	Sm. dec.	Sm. dec.	High	Common	Fair	Fair		Infill +	2	16
scarlet oak	Quercus coccinea	WDL	Medium	26.7	55.5	5.5	Sm. inc.	No change	Medium	Common	Good	Fair		Infill +	2	17
sassafras	Sassafras albidum	WSL	Low	64	41.3	3.2	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	18
black locust	Robinia pseudoacacia	NDH	Low	33.7	36.9	10.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	19
American beech	Fagus grandifolia	WDH	High	37.2	35.2	6.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	20
shagbark hickory	Carya ovata	WSL	Medium	12.8	33.8	6.2	Sm. inc.	No change	Medium	Rare	Fair	Poor			0	21
black willow	Salix nigra	NSH	Low	2.3	33.8	13.3	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	22
American elm	Ulmus americana	WDH	Medium	29.1	30.6	2.9	No change	Lg. inc.	Medium	Rare	Poor	Good			2	23
Norway maple	Acer platanoides	NSL	FIA	29.1	30.2	8.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	24
ailanthus	Ailanthus altissima	NSL	FIA	32.6	29.4	4.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	25
eastern white pine	Pinus strobus	WDH	High	10.5	22.0	6.9	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	26
swamp white oak	Quercus bicolor	NSL	Low	1.2	21.1	16.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	27
bitternut hickory	Carya cordiformis	WSL	Low	26.7	19.2	3.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	28
sycamore	Platanus occidentalis	NSL	Low	5.8	18.9	8.0	No change	Sm. inc.	Medium	Rare	Poor	Fair			2	29
eastern redcedar	Juniperus virginiana	WDH	Medium	10.5	12.3	7.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	30
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	12.8	12.2	2.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	31
pin oak	Quercus palustris	NSH	Low	5.8	12.0	6.1	No change	No change	Low	Rare	Very Poor	Very Poor			2	32
white spruce	Picea glauca	NSL	Medium	5.8	8.3	3.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
Norway spruce	Picea abies	NSH	FIA	5.8	7.2	5.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	34
bigtooth aspen	Populus grandidentata	NSL	Medium	5.8	6.8	3.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	35
yellow birch	Betula alleghaniensis	NDL	High	1.2	6.1	4.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	36
American basswood	Tilia americana	WSL	Medium	14	5.8	6.1	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	10.5	5.1	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	38
flowering dogwood	Cornus florida	WDL	Medium	19.8	4.4	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	39
white mulberry	Morus alba	NSL	FIA	5.8	4.3	2.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	40
hackberry	Celtis occidentalis	WDH	Medium	19.8	3.9	2.3	Sm. inc.	Lg. inc.	High	Rare	Good	Good			0	41
northern catalpa	Catalpa speciosa	NSHX	FIA	4.7	1.9	5.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	42
pitch pine	Pinus rigida	NSH	High	1.2	1.7	1.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	43
pawpaw	Asimina triloba	NSL	Low	5.8	1.7	1.0	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	44
rock elm	Ulmus thomasii	NSLX	FIA	4.7	1.3	4.0	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	45
sugar maple	Acer saccharum	WDH	High	4.7	0.6	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	46
pin cherry	Prunus pensylvanica	NSL	Low	4.7	0.4	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	47

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
quaking aspen	Populus tremuloides	WDH	High	9.3	0.4	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	48
eastern redbud	Cercis canadensis	NSL	Low	4.7	0.4	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	49
eastern hemlock	Tsuga canadensis	NSH	High	4.7	0.2	0.6	Sm. inc.	Lg. dec.	Low	Rare	Poor	Very Poor			0	50
American chestnut	Castanea dentata	NSLX	FIA	4.7	0.1	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	51
serviceberry	Amelanchier spp.	NSL	Low	4.7	0.1	0.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			0	52
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	53
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	54
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	55
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	56
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	57
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	58
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	59
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	60
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	61
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	62
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	63
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	64
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	65
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	66
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	67
red mulberry	Morus rubra	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	68
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	69
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	70
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	71
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	72
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	73
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	75
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	76
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	77
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	78
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	79