

**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  
 8,600.0      3,320.5      111

**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	4			High	10	19	Increase	16	16	Very Good	2	2	Likely	1	1
Hickory	4			Medium	21	33	No Change	8	5	Good	13	15	Infill	19	18
Maple	6	Abundant	0	Low	28	9	Decrease	24	27	Fair	11	6	Migrate	1	2
Oak	6	Common	22	FIA	8		New	9	9	Poor	7	8			
Pine	3	Rare	34				Unknown	10	10	Very Poor	14	16			
Other	33	Absent	11							FIA Only	2	2			
	<b>56</b>		<b>67</b>		<b>67</b>	<b>61</b>		<b>67</b>	<b>67</b>	Unknown	2	2			
											<b>51</b>	<b>51</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	49.6	51.5	54.1	54.2	
Average	CCSM85	49.6	52.2	54.9	57.9	
	GFDL45	49.6	54.8	55.2	56.2	
	GFDL85	49.6	52.7	56.2	60.5	
	HAD45	49.6	52.7	56.2	57.9	
	HAD85	49.6	53.0	57.6	62.6	
Growing Season	CCSM45	67.1	69.0	71.3	71.8	
	CCSM85	67.1	69.9	72.3	76.0	
May—Sep	GFDL45	67.1	73.6	73.9	75.4	
	GFDL85	67.1	71.0	75.2	80.3	
	HAD45	67.1	70.6	73.5	75.7	
	HAD85	67.1	70.4	76.0	81.2	
Coldest Month	CCSM45	22.1	23.7	26.0	26.0	
	CCSM85	22.1	24.6	26.3	28.1	
Average	GFDL45	22.1	25.5	26.4	26.9	
	GFDL85	22.1	25.3	26.6	28.1	
	HAD45	22.1	23.6	27.1	27.1	
	HAD85	22.1	25.7	28.5	31.5	
Warmest Month	CCSM45	73.0	74.8	76.4	76.9	
	CCSM85	73.0	76.4	78.2	80.0	
Average	GFDL45	73.0	76.0	77.8	78.9	
	GFDL85	73.0	77.1	79.1	82.2	
	HAD45	73.0	76.8	79.0	80.2	
	HAD85	73.0	77.8	81.5	85.0	

**Precipitation (in)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	38.3	37.5	37.2	37.7	
Total	CCSM85	38.3	38.1	37.7	38.9	
	GFDL45	38.3	40.7	44.9	45.5	
	GFDL85	38.3	41.0	46.3	47.8	
	HAD45	38.3	39.2	41.6	40.8	
	HAD85	38.3	41.3	38.5	41.5	
Growing Season	CCSM45	19.2	19.3	18.8	18.1	
	CCSM85	19.2	18.1	18.1	17.5	
May—Sep	GFDL45	19.2	19.9	21.6	22.2	
	GFDL85	19.2	20.7	22.0	22.1	
	HAD45	19.2	19.3	18.3	18.9	
	HAD85	19.2	19.2	15.9	16.6	

**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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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
black cherry	Prunus serotina	WDL	Medium	81.4	374.2	17.4	No change	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	1
silver maple	Acer saccharinum	NSH	Low	27.9	250.8	20.1	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	2
red maple	Acer rubrum	WDH	High	46.5	234.1	16.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	3
American elm	Ulmus americana	WDH	Medium	83.7	206.1	7.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	4
black oak	Quercus velutina	WDH	High	34.9	172.8	10.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	5
slippery elm	Ulmus rubra	WSL	Low	44.2	168.9	13.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor				6
Siberian elm	Ulmus pumila	NDH	FIA	9.3	168.2	28.8	Unknown	Unknown	NA	Common	NNIS	NNIS				7
sugar maple	Acer saccharum	WDH	High	60.5	158.0	10.2	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	8
black willow	Salix nigra	NSH	Low	19.8	135.8	15.1	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			2	9
American basswood	Tilia americana	WSL	Medium	38.4	128.8	13.0	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	10
hackberry	Celtis occidentalis	WDH	Medium	48.8	127.1	7.0	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	11
northern red oak	Quercus rubra	WDH	Medium	52.3	123.0	9.0	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	12
eastern cottonwood	Populus deltoides	NSH	Low	23.3	122.7	15.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	13
green ash	Fraxinus pennsylvanica	WSH	Low	50	111.8	8.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	14
black walnut	Juglans nigra	WDH	Low	53.5	108.5	9.0	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	2	15
white oak	Quercus alba	WDH	Medium	31.4	79.5	7.1	Lg. inc.	Sm. inc.	High	Common	Very Good	Very Good			2	16
eastern white pine	Pinus strobus	WDH	High	2.3	79.0	32.0	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor				17
sassafras	Sassafras albidum	WSL	Low	37.2	78.7	6.1	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +		2	18
boxelder	Acer negundo	WSH	Low	33.7	62.5	7.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	19
white ash	Fraxinus americana	WDL	Medium	38.4	58.8	5.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	2	20
bitternut hickory	Carya cordiformis	WSL	Low	34.9	53.9	4.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	21
red mulberry	Morus rubra	NSL	Low	47.7	51.0	4.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor				22
pignut hickory	Carya glabra	WDL	Medium	37.2	42.1	4.2	Sm. inc.	No change	Medium	Rare	Fair	Poor	Infill +		2	23
Scots pine	Pinus sylvestris	NSH	FIA	5.8	39.8	16.9	Unknown	Unknown	NA	Rare	NNIS	NNIS				24
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	32.6	35.4	4.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor				25
black ash	Fraxinus nigra	WSH	Medium	12.8	30.6	6.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor				26
American beech	Fagus grandifolia	WDH	High	34.9	23.7	4.7	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				27
shagbark hickory	Carya ovata	WSL	Medium	31.4	21.5	3.0	Sm. inc.	Sm. dec.	Medium	Rare	Fair	Very Poor	Infill +		2	28
sycamore	Platanus occidentalis	NSL	Low	25.6	21.0	4.2	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	29
yellow-poplar	Liriodendron tulipifera	WDH	High	30.2	20.1	4.5	Lg. inc.	Sm. inc.	High	Rare	Good	Good				30
red pine	Pinus resinosa	NSH	Medium	7	19.5	5.5	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor				31
bigtooth aspen	Populus grandidentata	NSL	Medium	10.5	19.2	6.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				32
northern catalpa	Catalpa speciosa	NSHX	FIA	5.8	14.9	10.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				33
ailanthus	Ailanthus altissima	NSL	FIA	1.2	12.6	10.2	Unknown	Unknown	NA	Rare	NNIS	NNIS				34
black locust	Robinia pseudoacacia	NDH	Low	15.1	12.6	5.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				35
Norway maple	Acer platanoides	NSL	FIA	1.2	12.0	9.7	Unknown	Unknown	NA	Rare	NNIS	NNIS				36
pin oak	Quercus palustris	NSH	Low	11.6	11.5	2.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2	37
swamp white oak	Quercus bicolor	NSL	Low	10.5	10.5	3.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				38
Osage-orange	Maclura pomifera	NDH	Medium	1.2	9.8	7.9	No change	Sm. inc.	High	Rare	Fair	Good				39
shellbark hickory	Carya laciniosa	NSL	Low	1.2	8.5	6.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				40
blackgum	Nyssa sylvatica	WDL	Medium	8.1	7.6	2.2	No change	No change	High	Rare	Fair	Fair		Infill +	2	41
white mulberry	Morus alba	NSL	FIA	16.3	7.6	2.4	Unknown	Unknown	NA	Rare	NNIS	NNIS				42
eastern redbud	Cercis canadensis	NSL	Low	1.2	7.0	5.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				43
flowering dogwood	Cornus florida	WDL	Medium	11.6	6.9	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				44
blue ash	Fraxinus quadrangulata	NSL	Low	5.8	6.6	3.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor				45
pawpaw	Asimina triloba	NSL	Low	5.8	5.9	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				46
Norway spruce	Picea abies	NSH	FIA	1.2	5.9	4.8	Unknown	Unknown	NA	Rare	NNIS	NNIS				47



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black maple	Acer nigrum	NSH	Low	2.3	5.8	2.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	48
bur oak	Quercus macrocarpa	NDH	Medium	23.3	5.5	3.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	49
eastern redcedar	Juniperus virginiana	WDH	Medium	7	4.4	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	50
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	14	2.9	3.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	51
Ohio buckeye	Aesculus glabra	NSL	Low	15.1	2.9	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	52
honeylocust	Gleditsia triacanthos	NSH	Low	5.8	2.6	1.5	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	53
yellow birch	Betula alleghaniensis	NDL	High	1.2	1.8	1.4	Very Lg. dec.	Sm. dec.	Medium	Rare	Lost	Very Poor			0	54
serviceberry	Amelanchier spp.	NSL	Low	4.7	1.5	4.9	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	55
chokecherry	Prunus virginiana	NSLX	FIA	4.7	1.4	4.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	56
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	57
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	58
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	59
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	60
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	61
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	62
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	63
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	64
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	65
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	66
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	67