

**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	8,000.0	3,088.8	47

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	7	18	Increase	14	16	Very Good	0	0
Hickory	2			Medium	17	21	No Change	4	1	Good	12	9
Maple	4	Abundant	0	Low	19	6	Decrease	12	13	Fair	6	9
Oak	6	Common	6	FIA	4		New	13	13	Poor	4	6
Pine	2	Rare	28				Unknown	4	4	Very Poor	8	4
Other	18	Absent	13							FIA Only	2	2
	34		47		47	45		47	47	Unknown	0	0
											32	30

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	47.8	49.8	52.5	52.5	
Average	47.8	50.5	53.2	56.2	
GFDL45	47.8	54.3	53.3	54.4	
GFDL85	47.8	51.0	54.4	58.8	
HAD45	47.8	50.7	54.3	56.1	
HAD85	47.8	51.1	55.8	60.7	
Growing Season	66.5	68.8	71.0	71.4	
May—Sep	66.5	69.6	72.0	75.6	
GFDL45	66.5	74.5	73.0	74.8	
GFDL85	66.5	70.4	74.3	79.6	
HAD45	66.5	69.6	72.2	74.3	
HAD85	66.5	69.6	74.5	79.4	
Coldest Month	17.7	19.5	22.2	22.0	
Average	17.7	20.5	22.3	24.3	
GFDL45	17.7	21.4	22.7	23.1	
GFDL85	17.7	21.5	23.1	24.9	
HAD45	17.7	19.0	23.2	23.2	
HAD85	17.7	22.0	25.5	28.5	
Warmest Month	72.5	74.9	76.3	77.0	
Average	72.5	76.3	78.1	79.9	
GFDL45	72.5	75.7	77.3	78.6	
GFDL85	72.5	76.8	78.6	81.9	
HAD45	72.5	75.6	77.5	78.6	
HAD85	72.5	76.8	79.7	83.1	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	35.4	35.2	34.8	35.4	
Total	35.4	35.2	35.1	35.5	
GFDL45	35.4	38.0	42.2	41.6	
GFDL85	35.4	39.0	43.7	43.2	
HAD45	35.4	37.0	38.1	37.6	
HAD85	35.4	37.7	35.5	38.1	
Growing Season	19.7	20.1	19.4	19.6	
May—Sep	19.7	19.0	18.9	18.3	
GFDL45	19.7	20.3	23.0	22.5	
GFDL85	19.7	21.5	22.9	21.9	
HAD45	19.7	19.9	18.5	19.2	
HAD85	19.7	19.8	16.4	17.0	

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
black cherry	Prunus serotina	WDL	Medium	60	255.0	22.9	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			2	1
American elm	Ulmus americana	WDH	Medium	48.8	187.7	17.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	2
black walnut	Juglans nigra	WDH	Low	43.8	140.2	14.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	3
hackberry	Celtis occidentalis	WDH	Medium	35	119.5	8.9	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	2	4
boxelder	Acer negundo	WSH	Low	41.3	96.2	21.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	5
bur oak	Quercus macrocarpa	NDH	Medium	32.5	88.4	20.3	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	2	6
eastern white pine	Pinus strobus	WDH	High	10	47.0	56.3	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	7
shagbark hickory	Carya ovata	WSL	Medium	37.5	45.7	9.4	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	8
white oak	Quercus alba	WDH	Medium	32.5	43.4	7.1	Sm. inc.	Sm. dec.	High	Rare	Good	Poor	Infill ++	Infill +	2	9
green ash	Fraxinus pennsylvanica	WSH	Low	17.5	35.8	10.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	10
slippery elm	Ulmus rubra	WSL	Low	28.7	34.3	4.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	11
black oak	Quercus velutina	WDH	High	26.2	27.3	8.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	12
sugar maple	Acer saccharum	WDH	High	10	25.6	30.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	13
black locust	Robinia pseudoacacia	NDH	Low	11.3	22.8	14.7	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair		Infill +	2	14
red mulberry	Morus rubra	NSL	Low	16.3	19.8	4.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	15
American basswood	Tilia americana	WSL	Medium	11.2	14.9	6.8	Lg. inc.	Sm. inc.	Medium	Rare	Good	Fair	Infill ++	Infill +	2	16
northern red oak	Quercus rubra	WDH	Medium	35	13.5	4.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	17
white ash	Fraxinus americana	WDL	Medium	20	10.2	6.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	18
bitternut hickory	Carya cordiformis	WSL	Low	25	10.0	4.8	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	19
honeylocust	Gleditsia triacanthos	NSH	Low	15	9.7	7.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	20
Osage-orange	Maclura pomifera	NDH	Medium	5	5.9	14.0	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	21
northern pin oak	Quercus ellipsoidalis	NSH	Medium	11.3	5.8	2.9	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost	Infill +		2	22
silver maple	Acer saccharinum	NSH	Low	5	4.0	9.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	23
red pine	Pinus resinosa	NSH	Medium	5	1.9	4.5	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	24
black maple	Acer nigrum	NSH	Low	5	1.9	4.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	25
black willow	Salix nigra	NSH	Low	5	1.3	3.2	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	26
eastern redcedar	Juniperus virginiana	WDH	Medium	5	1.3	3.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	27
white mulberry	Morus alba	NSL	FIA	10	1.2	1.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	28
Siberian elm	Ulmus pumila	NDH	FIA	5	1.0	2.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	29
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	5	0.9	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	30
eastern cottonwood	Populus deltoides	NSH	Low	5	0.9	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	31
pin oak	Quercus palustris	NSH	Low	5	0.5	1.2	Lg. dec.	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	32
chokecherry	Prunus virginiana	NSLX	FIA	5	0.3	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	33
peachleaf willow	Salix amygdaloides	NSLX	FIA	5	0.2	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	34
red maple	Acer rubrum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	35
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	36
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	37
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	38
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	39
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	40
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	41
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	42
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	43
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	44
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	45
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	46
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	47