

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	8,174.9	3,156.3	273

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	Scenario	Scenario	Scenario	SHIFT	SHIFT				
				High		RCP45	RCP85	RCP45	RCP85	RCP45	RCP85				
Ash	3			22	14	Increase	13	15	Very Good	4	3	Likely	0	0	
Hickory	1			19	34	No Change	6	5	Good	9	11	Infill	5	6	
Maple	5	Abundant	4	Low	16	11	Decrease	19	18	Fair	6	7	Migrate	8	12
Oak	4	Common	15	FIA	2		New	16	17	Poor	8	7		13	18
Pine	3	Rare	21				Unknown	5	4	Very Poor	7	6			
Other	24	Absent	19					59	59	FIA Only	2	2			
	40		59							Unknown	3	2			
											39	38			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	45.4	47.2	49.3	49.5	
	CCSM85	45.4	47.7	50.2	53.2	
	GFDL45	45.4	48.2	51.3	52.8	
	GFDL85	45.4	48.6	52.7	57.5	
	HAD45	45.4	48.2	51.4	53.0	
	HAD85	45.4	48.5	52.6	57.8	
Growing Season (May—Sep)	CCSM45	62.7	64.6	66.4	66.7	
	CCSM85	62.7	64.9	67.2	70.6	
	GFDL45	62.7	65.7	69.0	70.6	
	GFDL85	62.7	66.0	70.5	75.5	
	HAD45	62.7	65.4	68.2	70.4	
	HAD85	62.7	65.2	69.9	75.3	
Coldest Month Average	CCSM45	18.4	20.0	21.6	22.3	
	CCSM85	18.4	21.0	22.1	24.4	
	GFDL45	18.4	21.4	23.5	24.8	
	GFDL85	18.4	22.1	24.3	27.0	
	HAD45	18.4	20.8	23.4	23.7	
	HAD85	18.4	22.4	24.6	28.0	
Warmest Month Average	CCSM45	69.1	71.2	72.2	72.2	
	CCSM85	69.1	71.6	73.1	74.7	
	GFDL45	69.1	71.9	73.7	74.9	
	GFDL85	69.1	72.3	75.0	77.7	
	HAD45	69.1	72.0	73.5	74.8	
	HAD85	69.1	71.6	74.3	77.8	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	48.4	47.1	45.0	51.5	
	CCSM85	48.4	47.4	49.4	52.4	
	GFDL45	48.4	52.3	55.5	54.0	
	GFDL85	48.4	50.7	53.6	55.9	
	HAD45	48.4	52.0	55.4	53.5	
	HAD85	48.4	53.7	53.2	55.8	
Growing Season (May—Sep)	CCSM45	19.3	19.7	17.5	19.3	
	CCSM85	19.3	18.6	19.6	19.4	
	GFDL45	19.3	18.7	18.2	18.2	
	GFDL85	19.3	19.4	18.0	17.4	
	HAD45	19.3	20.7	21.2	20.9	
	HAD85	19.3	20.1	19.9	21.1	

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	96.9	2383.4	21.5	No change	Sm. dec.	High	Abundant	Very Good	Good			1	1
eastern white pine	Pinus strobus	WDH	High	96.1	2263.1	20.4	Sm. dec.	Lg. dec.	Low	Abundant	Fair	Poor			0	2
northern red oak	Quercus rubra	WDH	Medium	91.4	1358.3	12.3	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
eastern hemlock	Tsuga canadensis	NSH	High	87.4	1352.4	14.5	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	4
American beech	Fagus grandifolia	WDH	High	76.5	454.7	5.3	No change	No change	Medium	Common	Fair	Fair			1	5
balsam fir	Abies balsamea	NDH	High	61.7	382.7	5.1	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	6
white ash	Fraxinus americana	WDL	Medium	66	341.2	4.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	7
paper birch	Betula papyrifera	WDH	High	75.2	281.4	3.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	8
quaking aspen	Populus tremuloides	WDH	High	46	239.1	3.8	No change	No change	Medium	Common	Fair	Fair			1	9
red spruce	Picea rubens	NDH	High	43.9	225.1	2.8	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	10
sugar maple	Acer saccharum	WDH	High	44.2	198.9	4.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	11
yellow birch	Betula alleghaniensis	NDL	High	50.4	196.0	3.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
bigtooth aspen	Populus grandidentata	NSL	Medium	33.9	170.1	3.0	Sm. inc.	No change	Medium	Common	Good	Fair			1	13
white oak	Quercus alba	WDH	Medium	27.7	108.1	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	14
gray birch	Betula populifolia	NSL	Low	45.8	90.3	1.9	No change	No change	Medium	Common	Fair	Fair			1	15
black cherry	Prunus serotina	WDL	Medium	30.2	84.1	2.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	16
pitch pine	Pinus rigida	NSH	High	12	81.8	4.7	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	17
sweet birch	Betula lenta	NDH	High	13.1	57.4	4.0	Lg. inc.	Sm. inc.	Low	Common	Good	Fair	Infill ++	Infill +	2	18
black oak	Quercus velutina	WDH	High	19.2	50.2	2.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	19
red pine	Pinus resinosa	NSH	Medium	11.7	46.3	3.6	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			2	20
American elm	Ulmus americana	WDH	Medium	30.6	45.4	1.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	21
black spruce	Picea mariana	NSH	High	4.9	43.9	8.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	22
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	20.5	30.2	1.4	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	23
tamarack (native)	Larix laricina	NSH	High	6.3	19.8	3.1	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	24
American basswood	Tilia americana	WSL	Medium	9.9	15.4	1.5	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	1	25
serviceberry	Amelanchier spp.	NSL	Low	2.1	14.5	4.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	26
black ash	Fraxinus nigra	WSH	Medium	8.5	11.7	1.3	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	27
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	2.4	8.6	3.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	28
green ash	Fraxinus pennsylvanica	WSH	Low	2.2	7.6	2.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	29
striped maple	Acer pensylvanicum	NSL	Medium	5.7	5.1	0.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
white spruce	Picea glauca	NSL	Medium	4.8	4.5	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	31
mountain maple	Acer spicatum	NSL	Low	1	3.9	2.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	32
shagbark hickory	Carya ovata	WSL	Medium	4.1	3.3	0.6	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	33
silver maple	Acer saccharinum	NSH	Low	1.2	3.2	2.5	Sm. dec.	Lg. inc.	High	Rare	Poor	Good			2	34
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	5.1	3.0	0.6	No change	Lg. inc.	Medium	Rare	Poor	Good		Infill ++	1	35
pin cherry	Prunus pensylvanica	NSL	Low	3.7	2.0	0.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	36
northern white-cedar	Thuja occidentalis	WSH	High	3.4	1.8	0.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	37
sassafras	Sassafras albidum	WSL	Low	1.1	0.9	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	38
blackgum	Nyssa sylvatica	WDL	Medium	1.2	0.7	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	39
American chestnut	Castanea dentata	NSLX	FIA	1.2	0.6	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	40
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	41
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	42
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	43
boxelder	Acer negundo	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	44
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	45
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	46
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American holly	Ilex opaca	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	48
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	49
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	50
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	51
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	52
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	53
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	54
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	55
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	56
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	57
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	58
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	59