

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
 8,007.4 3,091.7 182

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	3			High	21	19	Increase	17	20	Very Good	9	9	Likely	4	4
Hickory	4			Medium	25	46	No Change	10	8	Good	10	11	Infill	3	5
Maple	4	Abundant	6	Low	27	12	Decrease	16	15	Fair	8	11	Migrate	7	14
Oak	8	Common	23	FIA	9		New	24	25	Poor	8	5			
Pine	4	Rare	23				Unknown	15	14	Very Poor	8	5			
Other	29	Absent	28							FIA Only	4	4			
	52		80		82	77		82	82	Unknown	6	5			
											53	50			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	49.6	51.5	53.7	54.0	
	CCSM85	49.6	51.9	54.4	57.6	
	GFDL45	49.6	52.9	55.4	56.6	
	GFDL85	49.6	52.8	56.7	60.9	
	HAD45	49.6	52.3	55.6	57.3	
Growing Season (May-Sep)	CCSM45	66.2	68.4	70.1	70.6	
	CCSM85	66.2	68.6	71.1	74.9	
	GFDL45	66.2	69.8	72.9	74.1	
	GFDL85	66.2	70.0	74.2	78.6	
	HAD45	66.2	69.2	72.1	74.2	
Coldest Month Average	CCSM45	24.1	25.8	27.5	28.1	
	CCSM85	24.1	26.7	27.8	29.8	
	GFDL45	24.1	27.5	28.9	29.8	
	GFDL85	24.1	27.5	29.1	31.3	
	HAD45	24.1	25.8	28.5	28.8	
Warmest Month Average	CCSM45	72.3	74.9	75.9	76.0	
	CCSM85	72.3	75.1	76.7	78.7	
	GFDL45	72.3	75.2	77.2	78.4	
	GFDL85	72.3	76.4	78.9	81.6	
	HAD45	72.3	75.6	77.1	78.3	
HAD85	72.3	75.1	77.6	81.2		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	47.9	49.2	48.9	53.8	
	CCSM85	47.9	49.6	52.8	55.5	
	GFDL45	47.9	53.4	57.2	55.2	
	GFDL85	47.9	51.5	55.3	58.9	
	HAD45	47.9	49.6	51.4	51.4	
Growing Season (May-Sep)	CCSM45	21.6	24.5	23.6	25.6	
	CCSM85	21.6	23.0	25.3	24.7	
	GFDL45	21.6	22.6	22.9	24.0	
	GFDL85	21.6	22.1	23.0	24.0	
	HAD45	21.6	22.6	21.2	21.6	
HAD85	21.6	22.2	21.3	22.0		

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-DGP30 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	90	1357.5	16.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
northern red oak	Quercus rubra	WDH	Medium	72.5	968.1	15.5	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
sugar maple	Acer saccharum	WDH	High	77.5	931.2	13.9	No change	Sm. dec.	High	Abundant	Very Good	Good			1	3
chestnut oak	Quercus prinus	NDH	High	56.1	721.4	14.7	No change	Sm. dec.	High	Abundant	Very Good	Good			1	4
sweet birch	Betula lenta	NDH	High	66.1	510.0	8.7	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
white ash	Fraxinus americana	WDL	Medium	58.8	506.2	9.6	No change	No change	Low	Abundant	Fair	Fair			0	6
American elm	Ulmus americana	WDH	Medium	47.5	292.2	7.2	No change	No change	Medium	Common	Fair	Fair			1	7
black oak	Quercus velutina	WDH	High	52.7	283.1	7.1	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	8
white oak	Quercus alba	WDH	Medium	58.8	270.4	5.5	Lg. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
eastern hemlock	Tsuga canadensis	NSH	High	32.3	241.3	7.2	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	10
swamp white oak	Quercus bicolor	NSL	Low	10	236.7	23.1	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	11
eastern redcedar	Juniperus virginiana	WDH	Medium	31.2	228.3	9.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	12
black cherry	Prunus serotina	WDL	Medium	43.8	207.4	6.7	Lg. inc.	Sm. inc.	Low	Common	Good	Fair			1	13
pignut hickory	Carya glabra	WDL	Medium	55.2	165.1	3.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
eastern white pine	Pinus strobus	WDH	High	20.2	155.1	8.7	Sm. inc.	No change	Low	Common	Fair	Poor			1	15
shagbark hickory	Carya ovata	WSL	Medium	40.1	149.1	5.1	No change	No change	Medium	Common	Fair	Fair			1	16
green ash	Fraxinus pennsylvanica	WSH	Low	18.7	137.1	10.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
yellow birch	Betula alleghaniensis	NDL	High	26.2	133.9	5.0	No change	No change	Medium	Common	Fair	Fair			1	18
American beech	Fagus grandifolia	WDH	High	26.2	119.3	4.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
yellow-poplar	Liriodendron tulipifera	WDH	High	17.7	106.8	7.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
eastern cottonwood	Populus deltoides	NSH	Low	3.7	104.5	27.2	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	1	21
pin oak	Quercus palustris	NSH	Low	12.5	89.4	10.8	No change	Sm. inc.	Low	Common	Poor	Fair			1	22
American basswood	Tilia americana	WSL	Medium	11.1	85.8	7.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	23
quaking aspen	Populus tremuloides	WDH	High	10	61.2	9.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	24
black locust	Robinia pseudoacacia	NDH	Low	10.2	60.4	8.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
Norway maple	Acer platanoides	NSL	FIA	10.1	59.0	7.8	Unknown	Unknown	NA	Common	NNIS	NNIS			0	26
scarlet oak	Quercus coccinea	WDL	Medium	12.4	58.1	4.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	27
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	27.5	57.5	2.4	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	28
blackgum	Nyssa sylvatica	WDL	Medium	21.2	54.3	4.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	29
pitch pine	Pinus rigida	NSH	High	3.7	43.1	11.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
Scots pine	Pinus sylvestris	NSH	FIA	1.2	42.7	33.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	31
black ash	Fraxinus nigra	WSH	Medium	6.2	41.5	6.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	32
ailanthus	Ailanthus altissima	NSL	FIA	11.5	38.9	4.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	33
serviceberry	Amelanchier spp.	NSL	Low	24.8	34.8	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	34
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	18.7	31.0	2.1	No change	Lg. inc.	Medium	Rare	Poor	Good			1	35
bitternut hickory	Carya cordiformis	WSL	Low	9.9	30.2	2.9	No change	Sm. inc.	High	Rare	Fair	Good			1	36
sassafras	Sassafras albidum	WSL	Low	12.4	27.5	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	37
black walnut	Juglans nigra	WDH	Low	4.9	18.6	3.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	38
bigtooth aspen	Populus grandidentata	NSL	Medium	6.2	17.4	2.7	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	39
Norway spruce	Picea abies	NSH	FIA	3.7	16.6	4.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	40
red pine	Pinus resinosa	NSH	Medium	1.2	15.6	12.2	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	41
hackberry	Celtis occidentalis	WDH	Medium	3.7	7.7	2.0	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	42
mockernut hickory	Carya alba	WDL	Medium	16.2	7.1	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	43
gray birch	Betula populifolia	NSL	Low	2.5	5.8	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	44
flowering dogwood	Cornus florida	WDL	Medium	5	3.5	0.7	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	45
striped maple	Acer pensylvanicum	NSL	Medium	3.7	2.8	0.7	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	46
slippery elm	Ulmus rubra	WSL	Low	2.5	2.5	1.0	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
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	1.2	2.4	1.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	48
American chestnut	Castanea dentata	NSLX	FIA	2.5	1.7	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	49
butternut	Juglans cinerea	NSLX	FIA	1.2	1.6	1.2	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	50
white mulberry	Morus alba	NSL	FIA	1.2	1.5	1.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	51
northern catalpa	Catalpa speciosa	NSHX	FIA	1.2	0.8	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			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 ++	3	54
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	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
boxelder	Acer negundo	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	58
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	59
paper birch	Betula papyrifera	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	60
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	61
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	62
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	63
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	64
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	65
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	66
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	67
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	68
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	70
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	71
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	72
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	73
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	74
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	75
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	76
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	77
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	78
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	79
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	80
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	81
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	82