

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
 8,028.7 3,099.9 241

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	23	20	Increase	20	22	Very Good	5	4	Likely	2	2
Hickory	3		Medium	26	40	No Change	8	6	Good	13	17	Infill	25	24
Maple	5	Abundant 6	Low	22	14	Decrease	17	17	Fair	8	6	Migrate	4	11
Oak	8	Common 9	FIA	5		New	21	21	Poor	8	6			
Pine	4	Rare 35				Unknown	10	10	Very Poor	10	12			
Other	28	Absent 25							FIA Only	3	3			
	50	75		76	74		76	76	Unknown	5	5			
										52	53			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	49.9	51.6	53.5	53.8	
	CCSM85	49.9	52.0	54.3	57.1	
	GFDL45	49.9	52.7	55.1	56.3	
	GFDL85	49.9	52.7	56.3	60.4	
	HAD45	49.9	52.1	55.5	57.2	
	HAD85	49.9	52.0	56.4	61.0	
Growing Season (May—Sep)	CCSM45	65.8	67.6	69.2	69.5	
	CCSM85	65.8	67.8	70.0	73.2	
	GFDL45	65.8	68.7	71.5	72.6	
	GFDL85	65.8	68.8	72.7	76.9	
	HAD45	65.8	68.0	71.2	73.3	
	HAD85	65.8	67.2	72.3	77.0	
Coldest Month Average	CCSM45	25.7	27.0	28.5	29.2	
	CCSM85	25.7	28.0	29.1	31.0	
	GFDL45	25.7	29.2	30.5	31.5	
	GFDL85	25.7	29.3	31.0	33.1	
	HAD45	25.7	27.3	29.7	30.1	
	HAD85	25.7	28.3	30.3	33.1	
Warmest Month Average	CCSM45	72.2	74.2	75.0	75.0	
	CCSM85	72.2	74.3	75.7	77.2	
	GFDL45	72.2	74.8	76.2	77.3	
	GFDL85	72.2	75.4	77.7	80.1	
	HAD45	72.2	74.5	76.1	77.2	
	HAD85	72.2	73.4	76.1	79.1	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	49.7	49.1	48.4	54.1	
	CCSM85	49.7	50.1	51.7	55.9	
	GFDL45	49.7	53.0	55.9	54.1	
	GFDL85	49.7	51.8	54.8	56.7	
	HAD45	49.7	50.5	54.9	54.3	
	HAD85	49.7	53.6	54.5	55.7	
Growing Season (May—Sep)	CCSM45	19.4	20.9	19.4	21.0	
	CCSM85	19.4	20.0	20.7	20.9	
	GFDL45	19.4	18.8	18.4	18.8	
	GFDL85	19.4	19.3	18.2	18.5	
	HAD45	19.4	19.9	20.6	19.8	
	HAD85	19.4	19.8	19.8	20.3	

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	89.5	3110.9	31.5	Sm. dec.	Lg. dec.	High	Abundant	Good	Good	Infill ++	Infill ++	1	1
eastern white pine	Pinus strobus	WDH	High	75.6	1530.9	19.1	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor	Infill +	Infill +	0	2
scarlet oak	Quercus coccinea	WDL	Medium	65	664.5	10.1	No change	Sm. dec.	Medium	Abundant	Good	Fair	Infill ++	Infill +	1	3
black oak	Quercus velutina	WDH	High	64	639.9	8.6	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good	Infill ++	Infill ++	1	4
northern red oak	Quercus rubra	WDH	Medium	62.1	633.3	9.9	No change	Sm. dec.	High	Abundant	Very Good	Good	Infill ++	Infill ++	1	5
white oak	Quercus alba	WDH	Medium	78.7	622.0	7.5	Sm. inc.	No change	High	Abundant	Very Good	Very Good	Infill ++	Infill ++	1	6
black cherry	Prunus serotina	WDL	Medium	31.3	258.8	7.3	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	7
sweet birch	Betula lenta	NDH	High	43.4	235.2	5.2	Sm. inc.	No change	Low	Common	Fair	Poor	Infill +	Infill +	1	8
yellow birch	Betula alleghaniensis	NDL	High	37.4	171.1	4.5	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	9
white ash	Fraxinus americana	WDL	Medium	38.5	166.1	4.3	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	10
eastern hemlock	Tsuga canadensis	NSH	High	19.8	156.9	7.5	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor	Infill +		0	11
pitch pine	Pinus rigida	NSH	High	23	151.1	6.9	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +		0	12
blackgum	Nyssa sylvatica	WDL	Medium	41.5	139.2	3.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	13
gray birch	Betula populifolia	NSL	Low	23.5	88.8	3.0	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	14
pignut hickory	Carya glabra	WDL	Medium	19.8	71.4	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
sassafras	Sassafras albidum	WSL	Low	26.2	44.8	1.7	Lg. inc.	Sm. inc.	Medium	Rare	Good	Fair	Infill ++	Infill +	1	16
eastern redcedar	Juniperus virginiana	WDH	Medium	13.2	44.4	2.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	17
American beech	Fagus grandifolia	WDH	High	19.4	40.6	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	18
quaking aspen	Populus tremuloides	WDH	High	10	40.0	3.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	19
mockernut hickory	Carya alba	WDL	Medium	12.6	37.5	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	20
sugar maple	Acer saccharum	WDH	High	21.5	34.8	1.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	21
chestnut oak	Quercus prinus	NDH	High	6.2	33.7	5.2	Sm. inc.	Sm. inc.	High	Rare	Good	Good			0	22
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	8.6	33.1	3.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	23
American elm	Ulmus americana	WDH	Medium	18.6	31.6	1.6	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	24
pin cherry	Prunus pensylvanica	NSL	Low	4.5	26.5	5.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	25
Norway maple	Acer platanoides	NSL	FIA	2.5	23.8	9.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	26
paper birch	Betula papyrifera	WDH	High	7.5	23.6	3.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	27
bigtooth aspen	Populus grandidentata	NSL	Medium	17.8	21.4	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	28
green ash	Fraxinus pennsylvanica	WSH	Low	7.7	21.4	3.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	29
shagbark hickory	Carya ovata	WSL	Medium	13.7	21.0	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	30
hackberry	Celtis occidentalis	WDH	Medium	0.6	12.7	4.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	31
silver maple	Acer saccharinum	NSH	Low	1.2	10.4	8.0	Sm. dec.	Sm. inc.	High	Rare	Poor	Good			2	32
balsam poplar	Populus balsamifera	NSH	Medium	1.2	10.0	7.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
balsam fir	Abies balsamea	NDH	High	1.2	9.6	7.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	34
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	10.7	7.7	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	35
red pine	Pinus resinosa	NSH	Medium	2.5	7.3	2.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	36
American holly	Ilex opaca	NSL	Medium	4.9	5.6	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good		Infill ++	2	37
swamp white oak	Quercus bicolor	NSL	Low	2.5	3.8	1.5	No change	No change	Medium	Rare	Poor	Poor			0	38
yellow-poplar	Liriodendron tulipifera	WDH	High	2.5	3.7	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	39
black willow	Salix nigra	NSH	Low	1.2	2.8	2.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	40
boxelder	Acer negundo	WSH	Low	1.2	2.8	2.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	41
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.5	2.3	0.9	No change	Lg. inc.	High	Rare	Fair	Good			2	42
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	2.8	2.2	1.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	43
pin oak	Quercus palustris	NSH	Low	1.2	1.9	1.4	Very Lg. dec.	No change	Low	Rare	Lost	Very Poor			0	44
American chestnut	Castanea dentata	NSLX	FIA	6.2	1.7	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	45
black locust	Robinia pseudoacacia	NDH	Low	2	1.7	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	46
tamarack (native)	Larix laricina	NSH	High	1.2	1.6	1.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
northern catalpa	Catalpa speciosa	NSHX	FIA	1.2	0.8	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	48
American mountain-ash	Sorbus americana	NSL	Low	1.2	0.6	0.5	No change	No change	Low	Rare	Very Poor	Very Poor			0	49
Scots pine	Pinus sylvestris	NSH	FIA	1.2	0.5	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	50
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	51
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	52
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	53
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	54
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	55
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	Unknown	High	Absent	New Habitat	Unknown			0	56
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	57
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	58
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	59
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	60
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	61
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	62
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	63
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	64
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	65
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	66
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	67
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	68
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	70
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	71
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	73
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	74
American basswood	Tilia americana	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	75
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	76