

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 8,244.2 3,183.1 202

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	23	19	Increase	18	19	Very Good	8	7	Likely	0	0
Hickory	4			Medium	28	46	No Change	12	12	Good	8	13	Infill	0	0
Maple	5	Abundant	5	Low	25	13	Decrease	20	19	Fair	11	8	Migrate	0	0
Oak	10	Common	17	FIA	6		New	19	19	Poor	8	8		0	0
Pine	4	Rare	34				Unknown	13	13	Very Poor	12	11			
Other	30	Absent	23							FIA Only	2	2			
	56		79		82	78		82	82	Unknown	7	7			
											56	56			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	50.1	51.9	53.9	54.2	
Average	50.1	52.3	54.7	57.7	
GFDL45	50.1	53.5	55.6	56.7	
GFDL85	50.1	53.1	56.8	60.9	
HAD45	50.1	52.4	55.8	57.5	
HAD85	50.1	52.3	56.6	61.2	
Growing Season	66.3	68.2	69.8	70.3	
May—Sep	66.3	68.4	70.8	74.2	
GFDL45	66.3	69.9	72.4	73.6	
GFDL85	66.3	69.7	73.7	77.9	
HAD45	66.3	68.7	71.8	73.8	
HAD85	66.3	67.9	72.7	77.5	
Coldest Month	25.7	27.2	28.8	29.4	
Average	25.7	28.1	29.2	31.2	
GFDL45	25.7	29.2	30.4	31.4	
GFDL85	25.7	29.1	30.7	32.8	
HAD45	25.7	27.0	29.5	29.8	
HAD85	25.7	28.0	30.1	32.9	
Warmest Month	72.6	74.8	75.7	75.7	
Average	72.6	75.0	76.5	78.1	
GFDL45	72.6	75.4	77.0	78.1	
GFDL85	72.6	76.2	78.6	81.1	
HAD45	72.6	75.2	76.7	77.7	
HAD85	72.6	74.3	76.7	79.8	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	51.0	51.3	50.9	56.2	
Total	51.0	52.4	55.0	58.2	
GFDL45	51.0	55.8	59.5	57.2	
GFDL85	51.0	54.5	58.0	61.2	
HAD45	51.0	51.7	55.3	55.1	
HAD85	51.0	55.6	55.5	58.1	
Growing Season	21.2	23.8	22.5	24.5	
May—Sep	21.2	22.7	24.1	23.7	
GFDL45	21.2	21.5	21.5	22.4	
GFDL85	21.2	21.9	21.7	22.6	
HAD45	21.2	21.4	21.1	21.1	
HAD85	21.2	22.0	21.4	22.1	

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	94.1	1878.0	21.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			0	1
sweet birch	Betula lenta	NDH	High	79	1008.2	12.9	Sm. dec.	Lg. dec.	Low	Abundant	Fair	Poor			0	2
northern red oak	Quercus rubra	WDH	Medium	75	651.6	9.4	No change	No change	High	Abundant	Very Good	Very Good			0	3
black oak	Quercus velutina	WDH	High	70	629.5	9.6	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			0	4
white oak	Quercus alba	WDH	Medium	64.7	529.8	8.2	No change	No change	High	Abundant	Very Good	Very Good			0	5
scarlet oak	Quercus coccinea	WDL	Medium	48.9	351.7	7.0	No change	No change	Medium	Common	Fair	Fair			0	6
white ash	Fraxinus americana	WDL	Medium	52.1	346.6	7.1	Sm. inc.	No change	Low	Common	Fair	Poor			0	7
sugar maple	Acer saccharum	WDH	High	48.5	345.9	7.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			0	8
eastern redcedar	Juniperus virginiana	WDH	Medium	27.6	319.6	12.0	No change	Sm. inc.	Medium	Common	Fair	Good			0	9
American beech	Fagus grandifolia	WDH	High	55.6	308.5	5.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			0	10
eastern hemlock	Tsuga canadensis	NSH	High	28.6	300.8	10.5	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	11
eastern white pine	Pinus strobus	WDH	High	24.2	199.6	9.6	No change	Sm. dec.	Low	Common	Poor	Poor			0	12
yellow birch	Betula alleghaniensis	NDL	High	43.7	186.6	4.4	No change	No change	Medium	Common	Fair	Fair			0	13
black cherry	Prunus serotina	WDL	Medium	41.7	172.5	4.1	Lg. inc.	Lg. inc.	Low	Common	Good	Good			0	14
chestnut oak	Quercus prinus	NDH	High	27	165.3	5.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			0	15
pignut hickory	Carya glabra	WDL	Medium	40.4	147.2	3.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			0	16
yellow-poplar	Liriodendron tulipifera	WDH	High	26.4	118.5	4.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			0	17
American elm	Ulmus americana	WDH	Medium	19.8	84.4	6.5	No change	No change	Medium	Common	Fair	Fair			0	18
black locust	Robinia pseudoacacia	NDH	Low	4.2	68.5	12.1	No change	No change	Medium	Common	Fair	Fair			0	19
sassafras	Sassafras albidum	WSL	Low	29.9	62.3	2.4	Lg. inc.	Sm. inc.	Medium	Common	Very Good	Good			0	20
shagbark hickory	Carya ovata	WSL	Medium	34.4	60.8	2.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			0	21
blackgum	Nyssa sylvatica	WDL	Medium	20.3	53.9	2.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			0	22
Norway maple	Acer platanoides	NSL	FIA	11.3	47.4	9.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	23
sycamore	Platanus occidentalis	NSL	Low	2.4	45.4	18.1	No change	No change	Medium	Rare	Poor	Poor			0	24
bitternut hickory	Carya cordiformis	WSL	Low	8.4	44.9	5.1	No change	No change	High	Rare	Fair	Fair			0	25
bigtooth aspen	Populus grandidentata	NSL	Medium	16.9	43.3	3.4	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	26
mockernut hickory	Carya alba	WDL	Medium	16.7	41.5	2.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			0	27
paper birch	Betula papyrifera	WDH	High	7.3	41.2	5.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	28
pitch pine	Pinus rigida	NSH	High	4.3	31.1	4.9	No change	No change	Medium	Rare	Poor	Poor			0	29
eastern cottonwood	Populus deltoides	NSH	Low	4.8	30.2	6.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
gray birch	Betula populifolia	NSL	Low	11.8	27.3	1.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
silver maple	Acer saccharinum	NSH	Low	6.1	25.0	11.2	Sm. dec.	No change	High	Rare	Poor	Fair			0	32
swamp white oak	Quercus bicolor	NSL	Low	12.1	24.3	4.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
black walnut	Juglans nigra	WDH	Low	2.6	19.9	9.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	34
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	13.3	17.2	1.2	Sm. inc.	Lg. inc.	High	Rare	Good	Good			0	35
quaking aspen	Populus tremuloides	WDH	High	4.8	15.9	3.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	36
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	12.1	15.1	1.2	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			0	37
green ash	Fraxinus pennsylvanica	WSH	Low	3.3	13.7	5.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			0	38
Norway spruce	Picea abies	NSH	FIA	3.6	12.4	3.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	39
serviceberry	Amelanchier spp.	NSL	Low	7.1	11.6	1.5	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	40
American basswood	Tilia americana	WSL	Medium	6.9	9.5	1.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			0	41
American chestnut	Castanea dentata	NSLX	FIA	12.9	5.7	1.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	42
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	0.8	5.1	2.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	43
black ash	Fraxinus nigra	WSH	Medium	1.2	4.8	3.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	44
flowering dogwood	Cornus florida	WDL	Medium	10.7	4.1	0.6	No change	Lg. inc.	Medium	Rare	Poor	Good			0	45
Scots pine	Pinus sylvestris	NSH	FIA	1.2	3.4	2.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	46
pin cherry	Prunus pensylvanica	NSL	Low	1.2	3.0	2.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	47

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USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

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red spruce	<i>Picea rubens</i>	NDH	High	4.4	2.7	1.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor				0 48
slippery elm	<i>Ulmus rubra</i>	WSL	Low	2.4	2.3	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost				0 49
northern pin oak	<i>Quercus ellipsoidalis</i>	NSH	Medium	4	1.2	3.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0 50
striped maple	<i>Acer pensylvanicum</i>	NSL	Medium	2.4	1.1	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 51
ailanthus	<i>Ailanthus altissima</i>	NSL	FIA	5.2	0.7	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 52
red pine	<i>Pinus resinosa</i>	NSH	Medium	4.9	0.7	2.1	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost				0 53
post oak	<i>Quercus stellata</i>	WDH	High	0.8	0.5	0.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good				0 54
pin oak	<i>Quercus palustris</i>	NSH	Low	4	0.4	1.1	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair				0 55
tamarack (native)	<i>Larix laricina</i>	NSH	High	3.2	0.3	0.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor				0 56
shortleaf pine	<i>Pinus echinata</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 57
loblolly pine	<i>Pinus taeda</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 58
Virginia pine	<i>Pinus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 59
bald cypress	<i>Taxodium distichum</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 60
florida maple	<i>Acer barbatum</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 61
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum ssp.</i>	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 62
black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 63
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 64
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 65
American holly	<i>Ilex opaca</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 66
sweetgum	<i>Liquidambar styraciflua</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 67
cucumbertree	<i>Magnolia acuminata</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 68
mountain or Fraser magnolia	<i>Magnolia fraseri</i>	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				0 69
swamp tupelo	<i>Nyssa biflora</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				0 70
sourwood	<i>Oxydendrum arboreum</i>	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 71
redbay	<i>Persea borbonia</i>	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 72
southern red oak	<i>Quercus falcata</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 73
cherrybark oak; swamp red o.	<i>Quercus pagoda</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 74
laurel oak	<i>Quercus laurifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 75
blackjack oak	<i>Quercus marilandica</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 76
chinkapin oak	<i>Quercus muehlenbergii</i>	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 77
water oak	<i>Quercus nigra</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 78
willow oak	<i>Quercus phellos</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 79
bluejack oak	<i>Quercus incana</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 80
American mountain-ash	<i>Sorbus americana</i>	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				0 81
winged elm	<i>Ulmus alata</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 82