

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
 8,093.1 3,124.7 200

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	21	Increase	16	18	Very Good	2	1	Likely	0	0
Hickory	3		Medium	27	No Change	11	10	Good	12	15	Infill	9	10
Maple	5	Abundant	Low	26	Decrease	19	18	Fair	10	10	Migrate	3	3
Oak	9	Common	FIA	7	New	19	21	Poor	9	9			
Pine	3	Rare			Unknown	16	14	Very Poor	11	10			
Other	31	Absent						FIA Only	5	5			
	53	77		81	79		81	58	57			12	13

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	50.4	52.0	53.9	54.1	
Average	50.4	52.5	54.7	57.4	
GFDL45	50.4	53.9	55.5	56.6	
GFDL85	50.4	53.1	56.7	60.7	
HAD45	50.4	52.6	56.0	57.7	
HAD85	50.4	52.5	56.9	61.5	
Growing Season	65.8	67.6	69.1	69.4	
May—Sep	65.8	67.7	69.9	72.9	
GFDL45	65.8	69.5	71.4	72.5	
GFDL85	65.8	68.7	72.6	76.8	
HAD45	65.8	68.0	71.3	73.4	
HAD85	65.8	67.2	72.4	77.0	
Coldest Month	27.0	28.3	29.7	30.4	
Average	27.0	29.3	30.3	32.7	
GFDL45	27.0	30.3	31.6	32.7	
GFDL85	27.0	30.4	32.1	34.2	
HAD45	27.0	28.5	30.8	31.2	
HAD85	27.0	29.5	31.4	34.2	
Warmest Month	72.3	74.2	75.0	74.9	
Average	72.3	74.3	75.6	77.0	
GFDL45	72.3	74.9	76.3	77.2	
GFDL85	72.3	75.3	77.6	80.0	
HAD45	72.3	74.5	76.3	77.4	
HAD85	72.3	73.5	76.3	79.1	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	49.2	48.4	47.8	53.3	
Total	49.2	49.5	50.7	54.9	
GFDL45	49.2	52.2	54.5	53.1	
GFDL85	49.2	51.0	53.6	55.2	
HAD45	49.2	49.7	54.8	54.0	
HAD85	49.2	53.1	54.0	55.1	
Growing Season	18.9	20.1	18.7	20.2	
May—Sep	18.9	19.4	19.8	20.1	
GFDL45	18.9	18.0	17.4	17.7	
GFDL85	18.9	18.5	17.2	17.2	
HAD45	18.9	19.3	20.4	19.3	
HAD85	18.9	19.4	19.3	19.7	

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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Northern Research Station
Landscape Change Research Group
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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	84	2516.2	28.9	Sm. dec.	Lg. dec.	High	Abundant	Good	Good	Infill ++	Infill ++	2	1
eastern white pine	Pinus strobus	WDH	High	64.8	1439.5	20.9	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor	Infill +	Infill +	2	2
pitch pine	Pinus rigida	NSH	High	35.6	580.9	14.3	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair	Infill +	Infill +	2	3
scarlet oak	Quercus coccinea	WDL	Medium	65.6	573.7	8.9	No change	Sm. dec.	Medium	Abundant	Good	Fair	Infill ++	Infill +	2	4
white oak	Quercus alba	WDH	Medium	71.2	498.0	6.7	Sm. inc.	No change	High	Common	Very Good	Good	Infill ++	Infill ++	2	5
black oak	Quercus velutina	WDH	High	65	490.8	6.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	6
northern red oak	Quercus rubra	WDH	Medium	44.1	402.4	9.5	No change	No change	High	Common	Good	Good			2	7
black cherry	Prunus serotina	WDL	Medium	36.8	221.6	6.7	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	2	8
blackgum	Nyssa sylvatica	WDL	Medium	40	181.2	3.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			2	9
white ash	Fraxinus americana	WDL	Medium	27.7	120.8	4.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair		Infill +	2	10
sweet birch	Betula lenta	NDH	High	22.1	91.9	4.4	Sm. inc.	No change	Low	Common	Fair	Poor			0	11
eastern hemlock	Tsuga canadensis	NSH	High	18.8	91.5	6.7	No change	Sm. dec.	Low	Common	Poor	Poor			2	12
yellow birch	Betula alleghaniensis	NDL	High	26	80.5	3.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			2	13
gray birch	Betula populifolia	NSL	Low	19.5	70.3	2.8	No change	No change	Medium	Common	Fair	Fair			0	14
Norway maple	Acer platanoides	NSL	FIA	9.1	49.8	8.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	15
American elm	Ulmus americana	WDH	Medium	17.2	46.4	2.6	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair			0	16
green ash	Fraxinus pennsylvanica	WSH	Low	10.3	45.7	6.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	17
American beech	Fagus grandifolia	WDH	High	15.9	42.3	3.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	18
eastern redcedar	Juniperus virginiana	WDH	Medium	17.1	37.5	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	19
sassafras	Sassafras albidum	WSL	Low	20.1	36.8	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	20
mockernut hickory	Carya alba	WDL	Medium	5.9	33.9	2.3	No change	No change	High	Rare	Fair	Fair			2	21
sugar maple	Acer saccharum	WDH	High	8.6	32.4	3.6	No change	No change	High	Rare	Fair	Fair			0	22
pignut hickory	Carya glabra	WDL	Medium	9.8	30.2	2.9	No change	No change	Medium	Rare	Poor	Poor			2	23
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	8.4	28.7	3.1	No change	No change	Low	Rare	Very Poor	Very Poor			0	24
pin cherry	Prunus pensylvanica	NSL	Low	3.1	22.9	5.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	25
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	6.8	20.9	2.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	26
shagbark hickory	Carya ovata	WSL	Medium	12.3	19.0	1.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			0	27
hackberry	Celtis occidentalis	WDH	Medium	0.6	12.6	4.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	28
honeylocust	Gleditsia triacanthos	NSH	Low	0.5	11.4	3.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	29
silver maple	Acer saccharinum	NSH	Low	1.2	10.4	8.0	Sm. dec.	Sm. inc.	High	Rare	Poor	Good			0	30
post oak	Quercus stellata	WDH	High	3.1	10.3	4.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	31
balsam poplar	Populus balsamifera	NSH	Medium	1.2	9.9	7.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
bigtooth aspen	Populus grandidentata	NSL	Medium	7.4	9.3	1.2	No change	No change	Medium	Rare	Poor	Poor			0	33
black locust	Robinia pseudoacacia	NDH	Low	5.4	9.0	2.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	34
black walnut	Juglans nigra	WDH	Low	1.2	8.8	6.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
red pine	Pinus resinosa	NSH	Medium	2.9	7.2	2.9	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	36
black willow	Salix nigra	NSH	Low	4.3	7.1	5.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	37
quaking aspen	Populus tremuloides	WDH	High	2.5	6.2	2.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	38
swamp white oak	Quercus bicolor	NSL	Low	7.9	5.9	1.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	39
tamarack (native)	Larix laricina	NSH	High	1.8	5.0	1.3	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	40
American holly	Ilex opaca	NSL	Medium	3.7	4.2	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	41
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	5.7	3.6	0.8	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	42
Norway spruce	Picea abies	NSH	FIA	1.8	3.0	0.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	43
boxelder	Acer negundo	WSH	Low	1.2	2.8	2.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	44
pin oak	Quercus palustris	NSH	Low	1.2	1.9	1.4	Very Lg. dec.	Sm. dec.	Low	Rare	Lost	Very Poor			0	45
chokecherry	Prunus virginiana	NSLX	FIA	0.5	1.8	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	46
American basswood	Tilia americana	WSL	Medium	5.4	1.7	1.0	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			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
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	1.2	1.1	0.8	No change	Lg. inc.	High	Rare	Fair	Good			0	48
chestnut oak	Quercus prinus	NDH	High	2.5	0.9	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	49
American chestnut	Castanea dentata	NSLX	FIA	2.5	0.8	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	50
northern catalpa	Catalpa speciosa	NSHX	FIA	1.2	0.8	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	51
butternut	Juglans cinerea	NSLX	FIA	4.2	0.8	2.0	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	52
paper birch	Betula papyrifera	WDH	High	1.2	0.3	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	53
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	54
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	55
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	56
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	57
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	58
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	59
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	60
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	61
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	62
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	63
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	64
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	65
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	66
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	67
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	68
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	69
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	70
red mulberry	Morus rubra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	71
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	72
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	73
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	74
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	75
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	76
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	77
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	78
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	79
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	80
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	81