

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
8,200.0 3,166.0 246

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			
					RCP45	RCP85	RCP45	RCP85	RCP45	RCP85			
Ash	2		High	22	Increase	21	25	Very Good	10	12	Likely	2	2
Hickory	4		Medium	28	No Change	16	18	Good	12	14	Infill	10	19
Maple	4	Abundant	Low	30	Decrease	24	18	Fair	12	13	Migrate	3	8
Oak	10	Common	FIA	4	New	15	16	Poor	19	18			
Pine	6	Rare			Unknown	8	7	Very Poor	8	4			
Other	39	Absent						FIA Only	2	2			
	65	84		84	82	84	84	Unknown	4	3			
									67	66			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	57.5	59.4	61.5	61.6	
Average	57.5	59.8	62.2	65.1	
	57.5	60.3	62.7	63.5	
	57.5	60.6	63.9	67.6	
	57.5	59.8	62.9	64.2	
	57.5	60.1	64.2	68.3	
Growing Season	71.6	73.4	75.3	75.8	
	71.6	73.7	76.3	80.0	
	71.6	74.7	77.4	78.7	
	71.6	75.2	78.9	83.2	
	71.6	74.7	77.5	79.0	
	71.6	74.6	80.2	84.5	
Coldest Month	36.9	39.1	40.0	40.1	
	36.9	39.5	40.5	41.5	
	36.9	40.2	40.4	41.1	
	36.9	39.0	40.0	40.9	
	36.9	37.3	39.1	39.5	
	36.9	38.0	39.3	40.8	
Warmest Month	76.6	78.7	79.8	79.8	
	76.6	78.9	80.5	82.2	
	76.6	79.9	81.1	82.1	
	76.6	80.6	82.7	85.2	
	76.6	80.2	82.1	82.8	
	76.6	80.9	84.4	86.9	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	48.1	52.0	54.8	55.9	
Total	48.1	52.9	55.4	60.7	
	48.1	53.8	57.0	59.7	
	48.1	52.2	58.3	58.2	
	48.1	49.4	51.8	52.4	
	48.1	52.9	49.0	51.4	
Growing Season	21.3	24.3	25.9	27.0	
	21.3	24.1	24.6	27.1	
	21.3	25.1	27.0	27.9	
	21.3	23.5	27.8	27.8	
	21.3	21.6	21.9	22.7	
	21.3	24.3	21.0	21.3	

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
yellow-poplar	Liriodendron tulipifera	WDH	High	90.2	1431.2	15.3	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	92.7	994.5	10.3	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
Virginia pine	Pinus virginiana	NDH	High	73.2	917.6	12.1	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	3
chestnut oak	Quercus prinus	NDH	High	56.1	653.7	11.2	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	4
white oak	Quercus alba	WDH	Medium	76.8	651.0	8.2	No change	No change	High	Abundant	Very Good	Very Good			1	5
eastern white pine	Pinus strobus	WDH	High	53.7	614.9	11.0	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	6
sourwood	Oxydendrum arboreum	NDL	High	85.4	493.9	5.6	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	7
loblolly pine	Pinus taeda	WDH	High	24.4	387.2	15.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
scarlet oak	Quercus coccinea	WDL	Medium	61	385.2	6.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	9
black cherry	Prunus serotina	WDL	Medium	65.9	319.8	4.7	No change	No change	Low	Common	Poor	Poor			0	10
blackgum	Nyssa sylvatica	WDL	Medium	76.8	258.7	3.2	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
shortleaf pine	Pinus echinata	WDH	High	43.9	218.3	4.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
sweetgum	Liquidambar styraciflua	WDH	High	37.8	213.1	5.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	13
northern red oak	Quercus rubra	WDH	Medium	58.5	203.1	3.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	14
flowering dogwood	Cornus florida	WDL	Medium	69.5	171.0	2.4	No change	No change	Medium	Common	Fair	Fair			1	15
eastern hemlock	Tsuga canadensis	NSH	High	29.3	158.7	5.2	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	16
southern red oak	Quercus falcata	WDL	Medium	39	143.1	3.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
pignut hickory	Carya glabra	WDL	Medium	50	129.0	2.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	18
eastern redcedar	Juniperus virginiana	WDH	Medium	24.4	119.1	4.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
sweet birch	Betula lenta	NDH	High	29.3	111.9	3.7	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	20
mockernut hickory	Carya alba	WDL	Medium	41.5	102.8	2.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	21
American holly	Ilex opaca	NSL	Medium	45.1	96.4	2.1	No change	No change	Medium	Common	Fair	Fair			1	22
river birch	Betula nigra	NSL	Low	9.8	93.3	9.2	No change	No change	Medium	Common	Fair	Fair			1	23
American beech	Fagus grandifolia	WDH	High	30.5	90.7	2.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	24
white ash	Fraxinus americana	WDL	Medium	18.3	80.0	4.2	No change	Sm. inc.	Low	Common	Poor	Fair			1	25
black walnut	Juglans nigra	WDH	Low	13.4	79.0	5.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	26
black locust	Robinia pseudoacacia	NDH	Low	29.3	79.0	2.6	No change	No change	Medium	Common	Fair	Fair			1	27
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	22	77.9	3.4	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	28
pitch pine	Pinus rigida	NSH	High	23.2	75.6	3.1	Sm. dec.	No change	Medium	Common	Poor	Fair			1	29
black oak	Quercus velutina	WDH	High	35.4	71.3	1.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	30
winged elm	Ulmus alata	WDL	Medium	6.1	61.0	9.6	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	31
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	15.9	54.1	3.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	32
sycamore	Platanus occidentalis	NSL	Low	12.2	52.7	4.2	No change	Lg. inc.	Medium	Common	Fair	Very Good	Infill +	Infill ++	1	33
common persimmon	Diospyros virginiana	NSL	Low	12.2	48.1	3.8	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			1	34
post oak	Quercus stellata	WDH	High	13.4	47.3	3.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	35
Table Mountain pine	Pinus pungens	NSL	Low	6.1	26.8	4.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	1	36
sassafras	Sassafras albidum	WSL	Low	18.3	25.8	1.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	37
willow oak	Quercus phellos	NSL	Low	2.4	22.8	9.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	38
ailanthus	Ailanthus altissima	NSL	FIA	8.5	22.3	2.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	39
eastern redbud	Cercis canadensis	NSL	Low	8.5	18.8	2.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	40
honeylocust	Gleditsia triacanthos	NSH	Low	2.4	13.6	5.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	41
serviceberry	Amelanchier spp.	NSL	Low	7.3	13.2	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	42
shagbark hickory	Carya ovata	WSL	Medium	6.1	11.0	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	43
boxelder	Acer negundo	WSH	Low	2.4	10.6	4.2	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	44
paulownia	Paulownia tomentosa	NSL	FIA	2.4	10.4	4.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	45
sugar maple	Acer saccharum	WDH	High	4.9	10.1	2.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	46
hackberry	Celtis occidentalis	WDH	Medium	2.4	9.6	3.8	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			0	47

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Climate Change Atlas Tree Species

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

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
American basswood	Tilia americana	WSL	Medium	4.9	9.1	1.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	48
yellow birch	Betula alleghaniensis	NDL	High	2.4	7.5	3.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	49
butternut	Juglans cinerea	NSLX	FIA	1.2	6.5	5.2	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	50
green ash	Fraxinus pennsylvanica	WSH	Low	7.3	6.0	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	51
silverbell	Halesia spp.	NSL	Low	6.1	4.8	0.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	52
red mulberry	Morus rubra	NSL	Low	3.7	4.3	1.1	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	1	53
American elm	Ulmus americana	WDH	Medium	3.7	4.2	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	54
cucumbertree	Magnolia acuminata	NSL	Low	4.9	4.1	0.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	55
bitternut hickory	Carya cordiformis	WSL	Low	4.9	3.6	0.7	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	56
American chestnut	Castanea dentata	NSLX	FIA	3.7	2.6	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	57
water oak	Quercus nigra	WDH	High	2.4	2.3	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	58
yellow buckeye	Aesculus flava	NSL	Low	3.7	1.7	0.5	No change	No change	Low	Rare	Very Poor	Very Poor			0	59
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	1.2	0.8	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	60
black willow	Salix nigra	NSH	Low	1.2	0.8	0.6	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	61
blackjack oak	Quercus marilandica	NSL	Medium	1.2	0.7	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	62
sugarberry	Celtis laevigata	NDH	Medium	1.2	0.4	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	63
pawpaw	Asimina triloba	NSL	Low	1.2	0.3	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	64
striped maple	Acer pensylvanicum	NSL	Medium	1.2	0.3	0.2	Sm. inc.	No change	Medium	Rare	Fair	Poor		Infill +	1	65
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	66
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	67
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	68
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	69
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	70
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	71
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	72
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	75
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	76
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	77
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	78
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	79
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	80
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	81
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	82
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	83
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	84