

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
 8,500.0 3,281.9 217

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	24	25	Increase	21	26	Very Good	15	15	Likely	2	2
Hickory	6			Medium	28	52	No Change	18	15	Good	7	12	Infill	6	11
Maple	5	Abundant	5	Low	37	15	Decrease	25	23	Fair	13	11	Migrate	6	13
Oak	9	Common	34	FIA	6		New	18	19	Poor	17	17			
Pine	6	Rare	31				Unknown	13	12	Very Poor	10	8			
Other	42	Absent	24							FIA Only	3	3			
	70		94		95	92		95	95	Unknown	7	6			
											72	72			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	57.2	59.1	61.3	61.5	
Average	57.2	59.5	62.0	64.8	
GFDL45	57.2	59.9	62.4	63.1	
GFDL85	57.2	60.1	63.5	67.1	
HAD45	57.2	59.5	62.6	63.8	
HAD85	57.2	59.8	64.2	68.1	
Growing Season	71.7	73.6	75.6	76.1	
May—Sep	71.7	73.8	76.5	80.2	
GFDL45	71.7	74.8	77.8	79.1	
GFDL85	71.7	75.2	79.3	83.3	
HAD45	71.7	74.8	77.7	79.2	
HAD85	71.7	74.9	81.1	84.8	
Coldest Month	35.5	37.7	38.7	38.8	
Average	35.5	38.3	39.1	40.4	
GFDL45	35.5	38.8	38.8	39.2	
GFDL85	35.5	37.3	38.4	39.0	
HAD45	35.5	35.3	37.3	37.7	
HAD85	35.5	36.5	38.0	39.7	
Warmest Month	76.6	78.7	79.7	79.9	
Average	76.6	78.8	80.4	82.2	
GFDL45	76.6	80.0	81.5	82.4	
GFDL85	76.6	80.4	82.9	85.0	
HAD45	76.6	80.5	82.7	83.4	
HAD85	76.6	81.4	85.7	87.5	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	53.2	55.8	59.7	58.3	
Total	53.2	58.0	59.6	63.9	
GFDL45	53.2	59.2	60.4	64.8	
GFDL85	53.2	58.7	62.1	63.8	
HAD45	53.2	52.1	56.1	57.1	
HAD85	53.2	55.8	51.4	54.8	
Growing Season	22.3	23.2	24.7	24.2	
May—Sep	22.3	24.1	23.3	25.2	
GFDL45	22.3	25.7	25.6	27.0	
GFDL85	22.3	24.8	26.4	26.9	
HAD45	22.3	22.0	21.7	22.4	
HAD85	22.3	23.6	18.9	20.7	

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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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
Virginia pine	Pinus virginiana	NDH	High	69.4	950.7	13.1	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
yellow-poplar	Liriodendron tulipifera	WDH	High	78.8	947.8	11.5	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	69.4	658.1	9.0	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
chestnut oak	Quercus prinus	NDH	High	57.6	586.8	9.7	No change	Sm. dec.	High	Abundant	Very Good	Good			1	4
eastern redcedar	Juniperus virginiana	WDH	Medium	45.9	514.5	10.7	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	5
white oak	Quercus alba	WDH	Medium	64.7	477.2	7.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	6
southern red oak	Quercus falcata	WDL	Medium	32.9	295.2	8.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	7
mockernut hickory	Carya alba	WDL	Medium	49.4	277.9	5.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
pignut hickory	Carya glabra	WDL	Medium	60	255.4	4.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	9
black cherry	Prunus serotina	WDL	Medium	51.8	252.0	4.6	No change	Sm. inc.	Low	Common	Poor	Fair			1	10
blackgum	Nyssa sylvatica	WDL	Medium	62.4	236.2	3.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
sugar maple	Acer saccharum	WDH	High	54.1	234.5	4.1	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	12
sourwood	Oxydendrum arboreum	NDL	High	64.7	229.9	3.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	13
black locust	Robinia pseudoacacia	NDH	Low	41.2	229.9	5.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	14
scarlet oak	Quercus coccinea	WDL	Medium	47.1	211.8	4.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	15
black oak	Quercus velutina	WDH	High	49.4	203.3	3.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
white ash	Fraxinus americana	WDL	Medium	35.3	202.2	5.5	No change	No change	Low	Common	Poor	Poor			0	17
shortleaf pine	Pinus echinata	WDH	High	38.8	201.6	5.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
sweetgum	Liquidambar styraciflua	WDH	High	34.1	183.4	5.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
eastern hemlock	Tsuga canadensis	NSH	High	21.2	179.6	8.1	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	20
northern red oak	Quercus rubra	WDH	Medium	44.7	174.9	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	21
hackberry	Celtis occidentalis	WDH	Medium	23.5	156.2	6.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	22
eastern white pine	Pinus strobus	WDH	High	18.8	155.9	7.9	No change	No change	Low	Common	Poor	Poor			0	23
flowering dogwood	Cornus florida	WDL	Medium	52.9	150.8	2.7	No change	No change	Medium	Common	Fair	Fair			1	24
American beech	Fagus grandifolia	WDH	High	42.4	134.4	3.0	No change	No change	Medium	Common	Fair	Fair			1	25
American elm	Ulmus americana	WDH	Medium	23.5	130.0	5.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	26
black walnut	Juglans nigra	WDH	Low	36.5	123.8	3.2	Sm. dec.	No change	Medium	Common	Poor	Fair			1	27
winged elm	Ulmus alata	WDL	Medium	24.7	119.7	4.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	28
shagbark hickory	Carya ovata	WDL	Medium	30.6	119.0	3.7	No change	Sm. dec.	Medium	Common	Fair	Poor			1	29
post oak	Quercus stellata	WDH	High	18.8	110.5	5.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	30
sassafras	Sassafras albidum	WSL	Low	45.9	110.4	2.3	No change	Sm. inc.	Medium	Common	Fair	Good			1	31
green ash	Fraxinus pennsylvanica	WSH	Low	27.1	102.9	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	32
eastern redbud	Cercis canadensis	NSL	Low	36.5	96.4	2.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	33
sycamore	Platanus occidentalis	NSL	Low	9.4	91.3	9.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	34
chinkapin oak	Quercus muehlenbergii	NSL	Medium	15.3	81.2	5.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	35
loblolly pine	Pinus taeda	WDH	High	12.9	81.2	6.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	36
boxelder	Acer negundo	WSH	Low	14.1	69.8	4.7	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	37
bitternut hickory	Carya cordiformis	WSL	Low	15.3	66.4	4.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	38
Osage-orange	Maclura pomifera	NDH	Medium	1.2	61.7	50.0	Sm. dec.	No change	High	Common	Fair	Good		Infill ++	2	39
sweet birch	Betula lenta	NDH	High	18.8	42.1	2.1	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	40
sugarberry	Celtis laevigata	NDH	Medium	3.5	39.0	10.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	41
ailanthus	Ailanthus altissima	NSL	FIA	10.6	38.9	3.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	42
common persimmon	Diospyros virginiana	NSL	Low	20	38.3	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	43
American basswood	Tilia americana	WSL	Medium	11.8	30.7	2.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	44
slippery elm	Ulmus rubra	WSL	Low	15.3	30.1	1.9	No change	Lg. inc.	Medium	Rare	Poor	Good			1	45
paulownia	Paulownia tomentosa	NSL	FIA	5.9	28.3	4.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	46
yellow buckeye	Aesculus flava	NSL	Low	7.1	24.9	3.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	47

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red mulberry	Morus rubra	NSL	Low	11.8	24.1	2.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	48
Table Mountain pine	Pinus pungens	NSL	Low	5.9	22.2	3.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	1	49
pitch pine	Pinus rigida	NSH	High	8.2	17.1	2.0	No change	No change	Medium	Rare	Poor	Poor			1	50
serviceberry	Amelanchier spp.	NSL	Low	12.9	15.4	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	9.4	12.0	1.2	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	52
striped maple	Acer pensylvanicum	NSL	Medium	9.4	9.2	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	53
cucumbertree	Magnolia acuminata	NSL	Low	5.9	9.2	1.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	54
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	5.9	8.1	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	55
black willow	Salix nigra	NSH	Low	1.2	8.0	6.5	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	56
white mulberry	Morus alba	NSL	FIA	4.7	6.4	1.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	57
silver maple	Acer saccharinum	NSH	Low	2.4	5.5	2.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	58
American holly	Ilex opaca	NSL	Medium	4.7	4.0	0.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	59
chokecherry	Prunus virginiana	NSLX	FIA	1.2	4.0	3.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	60
Shumard oak	Quercus shumardii	NSL	Low	1.2	2.5	2.0	No change	Sm. inc.	High	Rare	Fair	Good			2	61
shellbark hickory	Carya laciniosa	NSL	Low	1.2	2.4	2.0	Very Lg. dec.	Lg. dec.	Medium	Rare	Lost	Very Poor			0	62
wild plum	Prunus americana	NSLX	FIA	1.2	1.9	1.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	63
yellow birch	Betula alleghaniensis	NDL	High	3.5	1.9	0.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	64
silverbell	Halesia spp.	NSL	Low	2.4	1.9	0.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	65
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	2.4	1.8	0.7	No change	No change	Low	Rare	Very Poor	Very Poor			0	66
pecan	Carya illinoensis	NSH	Low	1.2	1.1	0.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2	67
pawpaw	Asimina triloba	NSL	Low	1.2	0.7	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	68
butternut	Juglans cinerea	NSLX	FIA	1.2	0.6	0.5	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	69
red spruce	Picea rubens	NDH	High	1.2	0.6	0.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	70
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	71
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	72
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	73
northern white-cedar	Thuja occidentalis	WSH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	75
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	76
Ohio buckeye	Aesculus glabra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
river birch	Betula nigra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	78
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	79
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	80
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	81
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	82
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	83
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	84
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	85
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	86
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	87
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	88
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	89
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	90
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	91
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	92
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	93
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	94

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAlv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	95