

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
 9,000.0 3,474.9 264

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	17	21	Increase	28	30	Very Good	10	11	Likely	3	3
Hickory	6			Medium	28	46	No Change	9	11	Good	17	19	Infill	8	9
Maple	3	Abundant	4	Low	32	10	Decrease	24	20	Fair	12	12	Migrate	2	2
Oak	16	Common	26	FIA	3		New	11	11	Poor	9	7			
Pine	4	Rare	34				Unknown	8	8	Very Poor	11	10			
Other	33	Absent	16							FIA Only	1	1			
	64		80		80	77		80	80	Unknown	5	5			
											65	65			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	60.6	62.4	64.5	64.5	
Average	60.6	62.8	65.2	68.0	
GFDL45	60.6	63.7	65.6	66.4	
GFDL85	60.6	63.5	66.7	70.4	
HAD45	60.6	62.9	65.8	67.2	
HAD85	60.6	63.2	67.2	71.3	
Growing Season	74.7	76.4	78.2	78.7	
May—Sep	74.7	78.2	80.0	81.4	
GFDL85	74.7	78.0	81.5	85.8	
HAD45	74.7	77.7	80.4	82.1	
HAD85	74.7	77.7	83.1	87.5	
Coldest Month	39.9	42.3	43.1	43.1	
Average	39.9	43.0	43.3	44.0	
GFDL85	39.9	42.0	42.9	43.7	
HAD45	39.9	40.3	42.0	42.4	
HAD85	39.9	41.0	42.1	43.7	
Warmest Month	79.7	81.8	82.8	82.9	
Average	79.7	82.6	83.6	84.6	
GFDL85	79.7	83.2	85.0	87.5	
HAD45	79.7	83.3	85.1	85.7	
HAD85	79.7	83.9	87.3	89.7	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	44.1	48.2	50.2	52.1	
Total	44.1	48.5	51.5	57.3	
GFDL45	44.1	49.3	53.4	56.1	
GFDL85	44.1	48.5	54.9	55.0	
HAD45	44.1	45.5	47.8	48.2	
HAD85	44.1	48.7	44.8	46.9	
Growing Season	19.0	22.0	23.4	24.7	
May—Sep	19.0	23.0	25.9	26.7	
GFDL85	19.0	22.1	27.1	27.2	
HAD45	19.0	19.2	19.7	20.4	
HAD85	19.0	21.7	18.1	17.7	

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
loblolly pine	Pinus taeda	WDH	High	66.7	2048.3	32.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	97.8	1106.9	12.9	No change	No change	Medium	Abundant	Good	Good			1	2
shortleaf pine	Pinus echinata	WDH	High	78.9	567.5	8.5	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
red maple	Acer rubrum	WDH	High	90	522.6	6.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	4
yellow-poplar	Liriodendron tulipifera	WDH	High	75.6	479.8	7.2	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	5
eastern redcedar	Juniperus virginiana	WDH	Medium	86.7	436.4	5.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
Virginia pine	Pinus virginiana	NDH	High	50	304.7	7.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	7
white oak	Quercus alba	WDH	Medium	66.7	284.1	5.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
water oak	Quercus nigra	WDH	High	56.7	255.2	4.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	9
southern red oak	Quercus falcata	WDL	Medium	64.4	207.4	4.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	10
winged elm	Ulmus alata	WDL	Medium	72.2	186.8	2.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
northern red oak	Quercus rubra	WDH	Medium	57.8	163.5	3.5	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	12
willow oak	Quercus phellos	NSL	Low	53.3	154.4	3.3	Sm. dec.	No change	Medium	Common	Poor	Fair			1	13
black cherry	Prunus serotina	WDL	Medium	70	151.1	2.6	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	14
green ash	Fraxinus pennsylvanica	WDL	Low	34.4	133.6	3.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	15
mockernut hickory	Carya alba	WDL	Medium	57.8	126.8	2.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	16
post oak	Quercus stellata	WDH	High	53.3	126.4	3.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
sourwood	Oxydendrum arboreum	NDL	High	47.8	126.4	3.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	18
flowering dogwood	Cornus florida	WDL	Medium	76.7	118.3	1.9	No change	No change	Medium	Common	Fair	Fair			1	19
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	37.8	97.0	2.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	20
American beech	Fagus grandifolia	WDH	High	34.4	93.9	3.5	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	21
river birch	Betula nigra	NSL	Low	6.7	85.6	12.7	No change	No change	Medium	Common	Fair	Fair			1	22
American elm	Ulmus americana	WDH	Medium	43.3	85.0	2.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	23
chestnut oak	Quercus prinus	NDH	High	8.9	81.3	9.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +		2	24
pignut hickory	Carya glabra	WDL	Medium	48.9	78.0	2.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	25
sycamore	Platanus occidentalis	NSL	Low	16.7	72.2	4.3	Sm. dec.	No change	Medium	Common	Poor	Fair			1	26
blackgum	Nyssa sylvatica	WDL	Medium	53.3	65.8	1.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	27
scarlet oak	Quercus coccinea	WDL	Medium	31.1	57.5	2.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	28
white ash	Fraxinus americana	WDL	Medium	34.4	57.2	2.1	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	29
black oak	Quercus velutina	WDH	High	38.9	53.5	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	30
shagbark hickory	Carya ovata	WSL	Medium	15.6	42.3	2.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
boxelder	Acer negundo	WSH	Low	10	34.3	3.4	No change	No change	High	Rare	Fair	Fair			1	32
black walnut	Juglans nigra	WDH	Low	17.8	34.0	1.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	33
slippery elm	Ulmus rubra	WSL	Low	18.9	29.4	2.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	34
florida maple	Acer barbatum	NSL	Low	15.6	28.1	1.8	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	35
blackjack oak	Quercus marilandica	NSL	Medium	6.7	26.2	3.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	36
red mulberry	Morus rubra	NSL	Low	8.9	20.9	2.3	No change	No change	Medium	Rare	Poor	Poor			1	37
sugarberry	Celtis laevigata	NDH	Medium	11.1	20.7	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	38
black willow	Salix nigra	NSH	Low	1.1	19.8	17.6	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	39
common persimmon	Diospyros virginiana	NSL	Low	17.8	19.2	1.4	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			1	40
sand hickory	Carya pallida	NSL	FIA	10	17.5	1.7	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	41
eastern redbud	Cercis canadensis	NSL	Low	14.4	15.9	1.1	Lg. dec.	No change	Medium	Rare	Very Poor	Poor			1	42
American holly	Ilex opaca	NSL	Medium	15.6	13.9	0.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	43
hackberry	Celtis occidentalis	WDH	Medium	4.4	13.8	3.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	44
laurel oak	Quercus laurifolia	NDH	Medium	5.6	11.3	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++		2	45
black locust	Robinia pseudoacacia	NDH	Low	7.8	6.4	1.9	Very Lg. dec.	Lg. dec.	Medium	Rare	Lost	Very Poor			0	46
overcup oak	Quercus lyrata	NSL	Medium	1.1	6.4	5.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
ailanthus	Ailanthus altissima	NSL	FIA	2.2	5.7	2.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	48
eastern cottonwood	Populus deltoides	NSH	Low	2.2	4.3	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
honeylocust	Gleditsia triacanthos	NSH	Low	3.3	3.7	1.1	Sm. inc.	Lg. inc.	High	Rare	Good	Good		Infill ++	2	50
sassafras	Sassafras albidum	WSL	Low	7.8	3.5	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good		Infill ++	1	51
American basswood	Tilia americana	WSL	Medium	2.2	3.3	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	52
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	3.3	2.9	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	53
bitternut hickory	Carya cordiformis	WSL	Low	8.9	2.6	0.5	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	54
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	3.3	2.3	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	55
Shumard oak	Quercus shumardii	NSL	Low	2.2	2.1	0.9	Sm. dec.	No change	High	Rare	Poor	Fair			0	56
shellbark hickory	Carya laciniosa	NSL	Low	1.1	2.0	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	57
cucumbertree	Magnolia acuminata	NSL	Low	2.2	1.8	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	58
white mulberry	Morus alba	NSL	FIA	2.2	1.2	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	59
pawpaw	Asimina triloba	NSL	Low	2.2	0.9	0.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	60
longleaf pine	Pinus palustris	NSH	Medium	1.1	0.7	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	61
bluejack oak	Quercus incana	NSL	Low	1.1	0.3	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	62
swamp chestnut oak	Quercus michauxii	NSL	Low	1.1	0.2	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	63
serviceberry	Amelanchier spp.	NSL	Low	4.4	0.1	0.5	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			0	64
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	65
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	66
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	67
sugar maple	Acer saccharum	WDH	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	68
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	69
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	70
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	71
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	73
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	75
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	76
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	77
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	78
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	79
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	80