

**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	8,200.0	3,166.0	263

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
				High	Low	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Ash	2			16	22	Increase	29	35	Very Good	13	14
Hickory	6			33	48	No Change	19	17	Good	17	19
Maple	3	Abundant	4	33	12	Decrease	17	13	Fair	8	8
Oak	16	Common	20	2		New	11	11	Poor	12	13
Pine	5	Rare	43			Unknown	8	8	Very Poor	14	10
Other	35	Absent	14	84	82				FIA Only	1	1
	67		81				84	84	Unknown	6	6
										71	71
										17	19

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	63.3	65.0	67.0	67.1	
	CCSM85	63.3	65.3	67.7	70.4	
	GFDL45	63.3	66.1	68.0	68.8	
	GFDL85	63.3	66.0	69.1	72.7	
	HAD45	63.3	65.5	68.2	69.8	
	HAD85	63.3	65.8	69.7	73.7	
Growing Season (May—Sep)	CCSM45	76.7	78.2	80.0	80.4	
	CCSM85	76.7	78.3	80.9	84.3	
	GFDL45	76.7	79.6	81.4	82.8	
	GFDL85	76.7	79.6	82.9	87.0	
	HAD45	76.7	79.7	82.1	84.0	
	HAD85	76.7	79.6	85.1	89.1	
Coldest Month Average	CCSM45	43.5	45.9	46.6	46.6	
	CCSM85	43.5	45.7	46.9	48.1	
	GFDL45	43.5	46.4	46.7	47.2	
	GFDL85	43.5	45.5	46.4	47.1	
	HAD45	43.5	43.8	45.5	46.0	
	HAD85	43.5	44.7	45.6	47.2	
Warmest Month Average	CCSM45	81.2	83.0	83.9	84.1	
	CCSM85	81.2	83.2	84.7	86.4	
	GFDL45	81.2	83.6	84.4	85.3	
	GFDL85	81.2	83.9	85.5	87.7	
	HAD45	81.2	84.8	86.2	86.9	
	HAD85	81.2	85.1	88.5	90.5	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	45.1	48.4	50.9	52.4	
	CCSM85	45.1	48.5	52.5	58.1	
	GFDL45	45.1	50.5	54.1	56.8	
	GFDL85	45.1	50.1	55.8	55.4	
	HAD45	45.1	44.5	47.9	49.4	
	HAD85	45.1	49.2	45.2	47.4	
Growing Season (May—Sep)	CCSM45	19.7	22.7	24.8	25.1	
	CCSM85	19.7	21.9	24.4	26.6	
	GFDL45	19.7	24.9	27.3	28.0	
	GFDL85	19.7	24.0	28.4	29.0	
	HAD45	19.7	19.8	20.3	20.6	
	HAD85	19.7	21.8	17.8	17.8	

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	96.3	3778.6	41.2	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	1
sweetgum	Liquidambar styraciflua	WDH	High	82.9	905.9	11.5	No change	No change	Medium	Abundant	Good	Good			1	2
longleaf pine	Pinus palustris	NSH	Medium	50	653.0	14.3	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
water oak	Quercus nigra	WDH	High	87.8	635.8	7.7	Sm. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	4
slash pine	Pinus elliottii	NDH	High	22	317.7	14.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	5
red maple	Acer rubrum	WDH	High	63.4	283.7	4.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	6
laurel oak	Quercus laurifolia	NDH	Medium	32.9	205.4	6.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	7
swamp tupelo	Nyssa biflora	NDH	Medium	36.6	199.7	6.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	8
yellow-poplar	Liriodendron tulipifera	WDH	High	36.6	170.0	4.7	Sm. inc.	No change	High	Common	Very Good	Good			1	9
black cherry	Prunus serotina	WDL	Medium	63.4	165.5	2.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	10
winged elm	Ulmus alata	WDL	Medium	40.2	160.4	4.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
turkey oak	Quercus laevis	NSH	Medium	22	138.4	6.3	No change	Sm. inc.	High	Common	Good	Very Good			1	12
southern red oak	Quercus falcata	WDL	Medium	36.6	132.4	3.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
shortleaf pine	Pinus echinata	WDH	High	29.3	129.9	5.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
post oak	Quercus stellata	WDH	High	47.6	110.0	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
American holly	Ilex opaca	NSL	Medium	39	104.8	3.0	No change	Sm. inc.	Medium	Common	Fair	Good			1	16
mockernut hickory	Carya alba	WDL	Medium	29.3	96.8	3.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
green ash	Fraxinus pennsylvanica	WSH	Low	23.2	94.4	4.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	18
bluejack oak	Quercus incana	NSL	Low	12.2	92.3	7.6	No change	Sm. inc.	Medium	Common	Fair	Good			1	19
blackgum	Nyssa sylvatica	WDL	Medium	37.8	85.7	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
white oak	Quercus alba	WDH	Medium	26.8	84.9	3.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	21
pignut hickory	Carya glabra	WDL	Medium	24.4	79.6	3.3	No change	Sm. inc.	Medium	Common	Fair	Good			1	22
eastern redcedar	Juniperus virginiana	WDH	Medium	17.1	58.4	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	23
willow oak	Quercus phellos	NSL	Low	15.9	53.8	3.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	24
flowering dogwood	Cornus florida	WDL	Medium	36.6	49.6	1.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	25
common persimmon	Diospyros virginiana	NSL	Low	25.6	43.6	1.7	Lg. dec.	No change	High	Rare	Poor	Fair			1	26
redbay	Persea borbonia	NSL	Low	15.9	36.2	2.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	27
blackjack oak	Quercus marilandica	NSL	Medium	12.2	35.2	2.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	28
live oak	Quercus virginiana	NDH	High	4.9	33.7	6.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	29
black willow	Salix nigra	NSH	Low	9.8	31.8	3.3	No change	Sm. inc.	Low	Rare	Very Poor	Poor			1	30
sugarberry	Celtis laevigata	NDH	Medium	9.8	31.4	3.2	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	31
sand hickory	Carya pallida	NSL	FIA	9.8	29.5	3.0	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	32
bald cypress	Taxodium distichum	NSH	Medium	8.5	29.4	7.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	33
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	12.2	25.1	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	34
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	3.7	23.7	6.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	35
sweetbay	Magnolia virginiana	NSL	Medium	9.8	23.2	2.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	36
sycamore	Platanus occidentalis	NSL	Low	7.3	21.6	3.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
American elm	Ulmus americana	WDH	Medium	15.9	21.5	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	38
shagbark hickory	Carya ovata	WSL	Medium	3.7	19.8	5.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	39
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	8.5	19.5	2.3	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	40
black oak	Quercus velutina	WDH	High	11	15.4	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	41
ailanthus	Ailanthus altissima	NSL	FIA	2.4	15.1	6.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	42
sassafras	Sassafras albidum	WSL	Low	13.4	14.7	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	43
river birch	Betula nigra	NSL	Low	4.9	14.1	2.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	44
white ash	Fraxinus americana	WDL	Medium	3.7	12.8	3.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	45
slippery elm	Ulmus rubra	WSL	Low	7.3	11.1	1.5	No change	No change	Medium	Rare	Poor	Poor		Infill +	1	46
overcup oak	Quercus lyrata	NSL	Medium	3.7	9.8	2.7	No change	No change	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
scarlet oak	Quercus coccinea	WDL	Medium	2.4	7.0	2.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	48
sourwood	Oxydendrum arboreum	NDL	High	7.3	6.2	0.9	No change	No change	High	Rare	Fair	Fair	Infill +		1	49
northern red oak	Quercus rubra	WDH	Medium	2.4	6.1	2.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	50
pond pine	Pinus serotina	NSH	Medium	2.4	5.9	2.4	Lg. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	51
boxelder	Acer negundo	WSH	Low	6.1	5.2	0.8	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +		1	52
red mulberry	Morus rubra	NSL	Low	7.3	4.7	0.6	No change	No change	Medium	Rare	Poor	Poor			1	53
florida maple	Acer barbatum	NSL	Low	3.7	4.7	1.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	54
water elm	Planera aquatica	NSL	Low	1.2	4.6	3.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	55
swamp chestnut oak	Quercus michauxii	NSL	Low	3.7	4.3	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +		2	56
southern magnolia	Magnolia grandiflora	NSL	Low	3.7	4.2	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	57
black walnut	Juglans nigra	WDH	Low	3.7	3.7	1.0	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	58
water hickory	Carya aquatica	NSL	Medium	1.2	3.4	2.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	59
pawpaw	Asimina triloba	NSL	Low	1.2	3.1	2.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
water tupelo	Nyssa aquatica	NSH	Medium	2.4	2.9	1.2	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	61
eastern redbud	Cercis canadensis	NSL	Low	3.7	2.5	0.7	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	62
honeylocust	Gleditsia triacanthos	NSH	Low	1.2	1.6	1.3	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	63
American beech	Fagus grandifolia	WDH	High	2.4	1.0	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	64
yellow buckeye	Aesculus flava	NSL	Low	1.2	0.6	0.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	65
serviceberry	Amelanchier spp.	NSL	Low	1.2	0.4	0.3	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	66
bitternut hickory	Carya cordiformis	WSL	Low	1.2	0.4	0.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	67
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	68
sand pine	Pinus clausa	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
spruce pine	Pinus glabra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	70
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	71
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	72
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	73
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	75
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	76
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	78
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	79
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	80
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
chestnut oak	Quercus prinus	NDH	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	82
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	83
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	84