

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	8,387.2	3,238.3	254

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	Medium	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85				
Ash	3			14	21	Increase	26	31	Very Good	9	11	Likely	0	0	
Hickory	7			35	56	No Change	15	14	Good	15	15	Infill	12	18	
Maple	2	Abundant	3	Low	36	9	Decrease	27	23	Fair	9	12	Migrate	0	1
Oak	17	Common	17	FIA	4		New	4	4	Poor	18	14			
Pine	7	Rare	52				Unknown	17	17	Very Poor	17	16			
Other	36	Absent	15							FIA Only	4	4			
										Unknown	13	13			
	72		87		89	86		89	89		85	85		12	19

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	65.0	66.5	68.3	68.3	
Average	CCSM85	65.0	66.7	69.0	71.4	
	GFDL45	65.0	67.8	69.5	70.3	
	GFDL85	65.0	67.5	70.5	73.9	
	HAD45	65.0	66.8	69.2	70.5	
	HAD85	65.0	67.1	70.1	73.7	
Growing Season	CCSM45	77.5	78.8	80.3	80.7	
	CCSM85	77.5	78.9	81.2	84.1	
May—Sep	GFDL45	77.5	80.4	82.0	83.3	
	GFDL85	77.5	80.2	83.3	87.1	
	HAD45	77.5	79.9	81.9	83.4	
	HAD85	77.5	79.9	83.9	87.2	
Coldest Month	CCSM45	46.1	48.4	49.1	49.1	
Average	CCSM85	46.1	48.1	49.2	50.4	
	GFDL45	46.1	48.9	49.3	49.9	
	GFDL85	46.1	48.1	49.2	49.9	
	HAD45	46.1	46.3	47.9	48.5	
	HAD85	46.1	47.1	48.0	49.5	
Warmest Month	CCSM45	81.8	83.2	84.1	84.1	
Average	CCSM85	81.8	83.4	84.8	86.3	
	GFDL45	81.8	83.8	84.6	85.5	
	GFDL85	81.8	84.2	85.7	87.8	
	HAD45	81.8	84.5	85.5	86.0	
	HAD85	81.8	84.8	87.0	88.6	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	49.7	53.2	55.7	56.2	
Total	CCSM85	49.7	53.4	55.9	59.3	
	GFDL45	49.7	56.1	58.7	61.0	
	GFDL85	49.7	54.4	61.5	60.3	
	HAD45	49.7	49.9	50.4	51.0	
	HAD85	49.7	51.9	48.0	47.9	
Growing Season	CCSM45	25.9	29.9	31.3	30.8	
Season	CCSM85	25.9	28.2	30.5	31.8	
May—Sep	GFDL45	25.9	31.5	33.2	34.0	
	GFDL85	25.9	30.1	35.7	35.5	
	HAD45	25.9	25.9	25.8	24.9	
	HAD85	25.9	26.5	22.7	21.0	

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	94.9	3892.2	42.7	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
sweetgum	Liquidambar styraciflua	WDH	High	93.6	1151.3	12.7	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	88.4	657.3	8.0	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
red maple	Acer rubrum	WDH	High	82.5	477.7	6.0	No change	Sm. inc.	High	Common	Good	Very Good			1	4
swamp tupelo	Nyssa biflora	NDH	Medium	68.5	375.8	5.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	5
laurel oak	Quercus laurifolia	NDH	Medium	70.6	356.1	5.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
longleaf pine	Pinus palustris	NSH	Medium	26	140.6	5.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	7
water tupelo	Nyssa aquatica	NSH	Medium	11.9	137.9	11.3	No change	No change	Low	Common	Poor	Poor			0	8
live oak	Quercus virginiana	NDH	High	32	132.3	5.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	9
pond pine	Pinus serotina	NSH	Medium	17.5	124.0	6.5	No change	No change	Low	Common	Poor	Poor			0	10
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	37.5	111.7	3.4	No change	No change	Medium	Common	Fair	Fair			1	11
bald cypress	Taxodium distichum	NSH	Medium	22.7	105.8	4.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
green ash	Fraxinus pennsylvanica	WSH	Low	30.8	92.9	2.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	13
willow oak	Quercus phellos	NSL	Low	36.2	89.2	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
pond cypress	Taxodium ascendens	NSH	Medium	13.1	89.2	6.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	25.8	84.1	3.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
redbay	Persea borbonia	NSL	Low	43.7	82.9	2.2	No change	No change	High	Common	Good	Good			1	17
blackgum	Nyssa sylvatica	WDL	Medium	28.4	59.4	2.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
post oak	Quercus stellata	WDH	High	26.1	59.0	2.4	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	19
mockernut hickory	Carya alba	WDL	Medium	29.9	53.1	1.9	No change	Sm. inc.	High	Common	Good	Very Good			1	20
slippery elm	Ulmus rubra	WSL	Low	20.1	48.4	2.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	21
swamp chestnut oak	Quercus michauxii	NSL	Low	27.2	36.4	1.7	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	22
American elm	Ulmus americana	WDH	Medium	21.7	35.4	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	23
American holly	Ilex opaca	NSL	Medium	25	27.2	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	24
pignut hickory	Carya glabra	WDL	Medium	12.9	26.5	1.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	25
white oak	Quercus alba	WDH	Medium	19.2	25.7	1.5	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	26
black willow	Salix nigra	NSH	Low	17.6	25.7	2.5	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair			1	27
yellow-poplar	Liriodendron tulipifera	WDH	High	16.3	25.3	2.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	28
shortleaf pine	Pinus echinata	WDH	High	6	24.1	3.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	29
sweetbay	Magnolia virginiana	NSL	Medium	17.7	23.7	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	30
scarlet oak	Quercus coccinea	WDL	Medium	10.4	23.0	3.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
sugarberry	Celtis laevigata	NDH	Medium	11.1	22.8	2.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	32
spruce pine	Pinus glabra	NSL	Low	8.5	22.1	3.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	33
water elm	Planera aquatica	NSL	Low	6	19.4	3.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
flowering dogwood	Cornus florida	WDL	Medium	13.1	17.8	1.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
hackberry	Celtis occidentalis	WDH	Medium	3.6	17.7	4.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	36
black cherry	Prunus serotina	WDL	Medium	31.8	17.4	0.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	37
water hickory	Carya aquatica	NSL	Medium	8.3	17.2	2.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	38
southern red oak	Quercus falcata	WDL	Medium	16.3	16.5	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	39
slash pine	Pinus elliotii	NDH	High	4.5	16.4	3.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	40
eastern cottonwood	Populus deltoides	NSH	Low	3.6	14.4	3.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	41
sycamore	Platanus occidentalis	NSL	Low	1.2	14.2	11.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	42
overcup oak	Quercus lyrata	NSL	Medium	8	10.6	2.2	No change	No change	Low	Rare	Very Poor	Very Poor			2	43
bitternut hickory	Carya cordiformis	WSL	Low	1.2	10.5	8.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	44
river birch	Betula nigra	NSL	Low	4.8	10.4	2.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	45
common persimmon	Diospyros virginiana	NSL	Low	12.4	9.5	1.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	46
boxelder	Acer negundo	WSH	Low	8	8.9	1.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	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
winged elm	Ulmus alata	WDL	Medium	7.2	7.5	1.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill ++		1	48
American beech	Fagus grandifolia	WDH	High	4.8	5.8	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	49
black oak	Quercus velutina	WDH	High	5.9	5.5	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	50
pecan	Carya illinoensis	NSH	Low	5.2	5.5	2.4	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	51
turkey oak	Quercus laevis	NSH	Medium	2.4	5.1	2.1	No change	No change	High	Rare	Fair	Fair			0	52
cabbage palmetto	Sabal palmetto	NDH	Medium	10	4.9	3.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	53
blackjack oak	Quercus marilandica	NSL	Medium	7.2	4.9	0.7	Lg. dec.	No change	High	Rare	Poor	Fair	Infill +		2	54
red mulberry	Morus rubra	NSL	Low	4	3.1	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	55
Carolina ash	Fraxinus caroliniana	NSL	FIA	1.2	2.9	2.4	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	56
Virginia pine	Pinus virginiana	NDH	High	1.9	2.4	3.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	57
southern magnolia	Magnolia grandiflora	NSL	Low	5.5	2.3	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	58
shagbark hickory	Carya ovata	WSL	Medium	1.2	2.2	1.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	59
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	6.6	2.2	0.6	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +		2	60
eastern redcedar	Juniperus virginiana	WDH	Medium	5.6	2.1	2.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	61
pumpkin ash	Fraxinus profunda	NSH	FIA	1.2	1.4	1.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	62
northern red oak	Quercus rubra	WDH	Medium	1.1	1.2	1.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	63
loblolly-bay	Gordonia lasianthus	NSH	Medium	2.4	1.2	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	64
sassafras	Sassafras albidum	WSL	Low	7.8	0.9	0.5	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair	Infill +		2	65
Shumard oak	Quercus shumardii	NSL	Low	5.6	0.9	1.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	66
bluejack oak	Quercus incana	NSL	Low	1.2	0.5	0.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +		2	67
sand hickory	Carya pallida	NSL	FIA	1.2	0.5	0.4	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	68
wild plum	Prunus americana	NSLX	FIA	1.2	0.3	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	69
sourwood	Oxydendrum arboreum	NDL	High	1.2	0.3	0.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	70
black locust	Robinia pseudoacacia	NDH	Low	3.8	0.3	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	71
eastern redbud	Cercis canadensis	NSL	Low	4.4	0.1	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	72
florida maple	Acer barbatum	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	73
silver maple	Acer saccharinum	NSH	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	74
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	75
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	76
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	78
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	79
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	80
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
black walnut	Juglans nigra	WDH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	82
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	83
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	84
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	85
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	86
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	87
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	88
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	89