

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 8,193.9 3,163.7 255

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	15	21	Increase	23	29	Very Good	11	12	Likely	3	3
Hickory	5			Medium	35	53	No Change	23	19	Good	10	11	Infill	21	21
Maple	3	Abundant	5	Low	35	11	Decrease	12	10	Fair	10	13	Migrate	0	3
Oak	13	Common	17	FIA	1		New	11	15	Poor	21	17			
Pine	5	Rare	37				Unknown	17	13	Very Poor	5	5			
Other	31	Absent	23							FIA Only	1	1			
	59		82		86	85		86	86	Unknown	16	12			
											74	71			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	66.5	68.0	69.7	69.8	
	CCSM85	66.5	68.2	70.6	72.8	
	GFDL45	66.5	69.2	70.8	71.6	
	GFDL85	66.5	68.9	71.9	75.2	
	HAD45	66.5	68.5	71.0	72.3	
HAD85	66.5	68.8	72.1	75.6		
Growing Season (May—Sep)	CCSM45	78.5	79.7	81.0	81.4	
	CCSM85	78.5	79.7	82.0	84.6	
	GFDL45	78.5	81.1	82.6	84.0	
	GFDL85	78.5	80.8	83.8	87.6	
	HAD45	78.5	81.1	83.2	84.3	
HAD85	78.5	81.1	85.4	88.5		
Coldest Month (Average)	CCSM45	48.4	50.6	51.4	51.2	
	CCSM85	48.4	50.7	51.9	52.9	
	GFDL45	48.4	51.8	52.0	52.2	
	GFDL85	48.4	50.0	51.1	51.7	
	HAD45	48.4	48.4	50.0	50.8	
HAD85	48.4	49.8	51.0	52.6		
Warmest Month (Average)	CCSM45	81.7	82.8	83.2	83.4	
	CCSM85	81.7	82.7	83.8	85.3	
	GFDL45	81.7	84.4	84.9	85.7	
	GFDL85	81.7	83.7	85.0	87.1	
	HAD45	81.7	84.8	86.1	86.6	
HAD85	81.7	85.1	87.6	88.9		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	64.6	67.0	71.0	71.5	
	CCSM85	64.6	68.8	70.2	74.0	
	GFDL45	64.6	72.2	76.5	75.5	
	GFDL85	64.6	71.1	73.7	73.6	
	HAD45	64.6	62.3	67.4	70.1	
HAD85	64.6	70.0	61.6	64.5		
Growing Season (May—Sep)	CCSM45	29.6	31.4	32.1	32.5	
	CCSM85	29.6	29.9	31.1	31.9	
	GFDL45	29.6	35.4	38.5	35.9	
	GFDL85	29.6	35.6	38.4	39.2	
	HAD45	29.6	28.4	29.9	31.0	
HAD85	29.6	31.0	23.9	25.0		

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	70.2	1855.1	24.8	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	1
slash pine	Pinus elliotii	NDH	High	71.1	1515.6	19.9	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	2
longleaf pine	Pinus palustris	NSH	Medium	65.8	1391.4	20.3	No change	No change	Medium	Abundant	Good	Good			1	3
water oak	Quercus nigra	WDH	High	81	835.0	9.7	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
sweetbay	Magnolia virginiana	NSL	Medium	68.3	653.0	9.2	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	5
swamp tupelo	Nyssa biflora	NDH	Medium	53.6	446.8	7.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	6
laurel oak	Quercus laurifolia	NDH	Medium	51.5	413.4	7.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	7
red maple	Acer rubrum	WDH	High	70.4	242.8	3.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	8
water tupelo	Nyssa aquatica	NSH	Medium	14.6	237.1	15.7	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	9
sweetgum	Liquidambar styraciflua	WDH	High	46.6	215.7	4.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
bald cypress	Taxodium distichum	NSH	Medium	22.1	204.6	9.5	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	11
blackgum	Nyssa sylvatica	WDL	Medium	51	193.1	3.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	12
yellow-poplar	Liriodendron tulipifera	WDH	High	28	160.2	5.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	13
green ash	Fraxinus pennsylvanica	WSH	Low	14.6	126.1	8.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
southern red oak	Quercus falcata	WDL	Medium	38.9	123.3	3.1	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
live oak	Quercus virginiana	NDH	High	21.9	110.4	4.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	16
black cherry	Prunus serotina	WDL	Medium	34	86.5	2.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	17
turkey oak	Quercus laevis	NSH	Medium	14.6	77.5	5.1	No change	Sm. dec.	High	Common	Good	Fair			1	18
flowering dogwood	Cornus florida	WDL	Medium	25.5	73.9	2.8	No change	No change	Medium	Common	Fair	Fair			1	19
black willow	Salix nigra	NSH	Low	11	68.9	6.1	No change	Sm. inc.	Low	Common	Poor	Fair			1	20
pecan	Carya illinoensis	NSH	Low	9.7	68.9	6.9	Sm. dec.	No change	Low	Common	Poor	Poor		Infill +	0	21
redbay	Persea borbonia	NSL	Low	40.3	61.8	1.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	22
American holly	Ilex opaca	NSL	Medium	25.6	40.6	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	23
shortleaf pine	Pinus echinata	WDH	High	6.1	37.8	6.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	24
post oak	Quercus stellata	WDH	High	23.2	35.0	1.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	25
pond cypress	Taxodium ascendens	NSH	Medium	9.5	32.6	3.8	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	26
overcup oak	Quercus lyrata	NSL	Medium	9.7	29.9	3.0	No change	No change	Low	Rare	Very Poor	Very Poor			0	27
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	7.3	29.8	4.0	No change	No change	Medium	Rare	Poor	Poor			1	28
sugarberry	Celtis laevigata	NDH	Medium	6.1	29.1	4.6	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	29
southern magnolia	Magnolia grandiflora	NSL	Low	7.7	25.6	2.7	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	30
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	6.1	23.0	3.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	31
Nuttall oak	Quercus texana	NSH	Medium	4.9	21.9	4.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	32
common persimmon	Diospyros virginiana	NSL	Low	17.1	21.6	1.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	33
water hickory	Carya aquatica	NSL	Medium	4.9	18.7	3.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	34
slippery elm	Ulmus rubra	WSL	Low	4.9	17.9	3.6	No change	No change	Medium	Rare	Poor	Poor	Infill +		1	35
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	3.7	15.1	4.0	Lg. inc.	Sm. inc.	Low	Rare	Fair	Poor	Infill +		1	36
bluejack oak	Quercus incana	NSL	Low	8.5	14.7	1.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	37
willow oak	Quercus phellos	NSL	Low	7.3	13.5	1.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	38
eastern cottonwood	Populus deltoides	NSH	Low	2.4	12.8	5.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	39
blackjack oak	Quercus marilandica	NSL	Medium	6.1	12.1	1.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	40
American elm	Ulmus americana	WDH	Medium	9.7	11.6	1.2	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	41
white oak	Quercus alba	WDH	Medium	6.1	10.4	1.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	42
sycamore	Platanus occidentalis	NSL	Low	2.4	8.0	3.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	43
mockernut hickory	Carya alba	WDL	Medium	4.9	7.5	1.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	44
florida maple	Acer barbatum	NSL	Low	1.2	5.0	4.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	45
sassafras	Sassafras albidum	WSL	Low	3.7	4.2	1.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	46
sourwood	Oxydendrum arboreum	NDL	High	2.4	3.8	1.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
boxelder	Acer negundo	WSH	Low	1.2	2.9	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	48
eastern redcedar	Juniperus virginiana	WDH	Medium	4.9	2.8	0.6	Very Lg. dec.	Sm. dec.	Medium	Rare	Lost	Very Poor			2	49
swamp chestnut oak	Quercus michauxii	NSL	Low	1.2	2.8	2.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	50
American beech	Fagus grandifolia	WDH	High	2.4	2.3	0.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	51
cucumbertree	Magnolia acuminata	NSL	Low	1.2	1.7	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	52
pignut hickory	Carya glabra	WDL	Medium	3.7	1.7	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	53
sand hickory	Carya pallida	NSL	FIA	1.2	0.9	0.7	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	54
water elm	Planera aquatica	NSL	Low	1.2	0.8	0.7	No change	Lg. inc.	Medium	Rare	Poor	Good			2	55
white ash	Fraxinus americana	WDL	Medium	1.2	0.6	0.5	Lg. dec.	No change	Low	Rare	Very Poor	Very Poor			2	56
spruce pine	Pinus glabra	NSL	Low	1.2	0.6	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	57
river birch	Betula nigra	NSL	Low	1.2	0.5	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	58
hackberry	Celtis occidentalis	WDH	Medium	1.2	0.4	0.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	59
sand pine	Pinus clausa	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	60
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	61
Virginia pine	Pinus virginiana	NDH	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	62
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	63
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	64
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	65
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	66
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat		Migrate +	3	67
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	68
shagbark hickory	Carya ovata	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	70
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	71
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	72
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	73
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
black walnut	Juglans nigra	WDH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	75
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	76
red mulberry	Morus rubra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	77
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	78
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	79
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	80
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
black oak	Quercus velutina	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	82
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	83
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	84
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	85
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	86