

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
 8,300.0 3,204.6 284

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	22	Increase	33	37	Very Good	10	12	Likely	0	0
Hickory	7			Medium	32	54	No Change	16	12	Good	23	25	Infill	15	17
Maple	3	Abundant	3	Low	35	11	Decrease	15	15	Fair	10	10	Migrate	2	3
Oak	17	Common	20	FIA	6		New	10	10	Poor	8	4		17	20
Pine	6	Rare	47				Unknown	16	16	Very Poor	12	12			
Other	35	Absent	16							FIA Only	4	4			
	70		86		90	87		90	90	Unknown	10	10			
											77	77			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	63.7	65.4	67.4	67.4	
	CCSM85	63.7	65.6	68.1	70.7	
	GFDL45	63.7	66.5	68.4	69.1	
	GFDL85	63.7	66.3	69.5	73.0	
	HAD45	63.7	66.0	68.7	70.2	
	HAD85	63.7	66.2	70.2	74.1	
Growing Season	CCSM45	76.7	78.2	79.9	80.3	
	CCSM85	76.7	78.3	80.8	84.1	
	GFDL45	76.7	79.5	81.4	82.6	
	GFDL85	76.7	79.5	82.8	86.8	
	HAD45	76.7	79.9	82.2	84.1	
	HAD85	76.7	79.8	85.6	89.2	
Coldest Month	CCSM45	44.4	46.8	47.6	47.5	
	CCSM85	44.4	46.5	47.7	48.9	
	GFDL45	44.4	47.5	47.7	48.1	
	GFDL85	44.4	46.4	47.4	47.8	
	HAD45	44.4	44.5	46.0	46.7	
	HAD85	44.4	45.5	46.6	48.3	
Warmest Month	CCSM45	80.9	82.6	83.3	83.6	
	CCSM85	80.9	82.6	83.9	85.8	
	GFDL45	80.9	83.5	84.3	85.0	
	GFDL85	80.9	83.4	85.0	87.2	
	HAD45	80.9	85.0	86.6	87.4	
	HAD85	80.9	85.1	88.6	90.4	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	49.2	51.0	54.5	54.5	
	CCSM85	49.2	51.8	54.8	61.2	
	GFDL45	49.2	54.3	57.3	60.7	
	GFDL85	49.2	54.5	57.6	57.0	
	HAD45	49.2	47.0	51.9	52.6	
	HAD85	49.2	51.9	47.4	50.8	
Growing Season	CCSM45	19.4	21.3	22.9	23.2	
	CCSM85	19.4	20.9	22.1	24.4	
	GFDL45	19.4	24.0	26.0	26.6	
	GFDL85	19.4	24.1	26.9	27.0	
	HAD45	19.4	18.9	19.9	19.5	
	HAD85	19.4	20.3	16.2	17.0	

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-DGP30 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	100	4343.5	43.4	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	1
sweetgum	Liquidambar styraciflua	WDH	High	97.6	1349.6	13.8	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	90.4	720.5	8.0	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
shortleaf pine	Pinus echinata	WDH	High	74.7	427.0	5.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	4
white oak	Quercus alba	WDH	Medium	55.4	299.2	5.4	No change	No change	High	Common	Good	Good			1	5
yellow-poplar	Liriodendron tulipifera	WDH	High	67.5	280.5	4.2	No change	Sm. dec.	High	Common	Good	Fair			1	6
longleaf pine	Pinus palustris	NSH	Medium	22.9	222.3	9.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	7
southern red oak	Quercus falcata	WDL	Medium	59	210.2	3.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	8
red maple	Acer rubrum	WDH	High	71.1	179.5	2.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	9
pignut hickory	Carya glabra	WDL	Medium	47	129.7	2.8	No change	No change	Medium	Common	Fair	Fair			1	10
black cherry	Prunus serotina	WDL	Medium	67.5	107.0	1.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	11
laurel oak	Quercus laurifolia	NDH	Medium	31.3	106.2	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
mockernut hickory	Carya alba	WDL	Medium	49.4	103.1	2.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
sweetbay	Magnolia virginiana	NSL	Medium	16.9	101.9	6.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
blackgum	Nyssa sylvatica	WDL	Medium	51.8	95.9	1.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
swamp tupelo	Nyssa biflora	NDH	Medium	16.9	90.1	5.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	16
flowering dogwood	Cornus florida	WDL	Medium	59	86.8	1.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
post oak	Quercus stellata	WDH	High	41	83.8	2.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
winged elm	Ulmus alata	WDL	Medium	50.6	80.6	1.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
sourwood	Oxydendrum arboreum	NDL	High	31.3	71.2	2.3	Sm. dec.	No change	High	Common	Fair	Good			1	20
turkey oak	Quercus laevis	NSH	Medium	6	71.0	11.8	Sm. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	1	21
common persimmon	Diospyros virginiana	NSL	Low	31.3	62.3	2.0	Sm. dec.	Sm. inc.	High	Common	Fair	Very Good			1	22
willow oak	Quercus phellos	NSL	Low	8.4	58.2	6.9	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	23
eastern redcedar	Juniperus virginiana	WDH	Medium	28.9	48.4	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	24
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	24.1	43.7	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	25
chestnut oak	Quercus prinus	NDH	High	6	36.4	6.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	26
scarlet oak	Quercus coccinea	WDL	Medium	13.3	34.7	2.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	27
northern red oak	Quercus rubra	WDH	Medium	15.7	32.3	2.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	28
green ash	Fraxinus pennsylvanica	WSH	Low	21.7	27.9	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	29
florida maple	Acer barbatum	NSL	Low	18.1	26.3	1.5	Sm. inc.	Sm. inc.	High	Rare	Good	Good			1	30
black oak	Quercus velutina	WDH	High	15.7	24.1	1.5	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			1	31
black willow	Salix nigra	NSH	Low	4.8	23.0	4.8	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	1	32
American elm	Ulmus americana	WDH	Medium	15.7	22.0	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	33
blackjack oak	Quercus marilandica	NSL	Medium	14.5	20.4	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	34
black walnut	Juglans nigra	WDH	Low	2.4	17.9	7.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
shagbark hickory	Carya ovata	WSL	Medium	10.8	17.9	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
southern magnolia	Magnolia grandiflora	NSL	Low	8.4	17.4	2.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	37
American holly	Ilex opaca	NSL	Medium	13.3	16.9	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	38
red mulberry	Morus rubra	NSL	Low	12	15.8	1.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	39
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	15.7	15.4	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	40
American beech	Fagus grandifolia	WDH	High	10.8	15.0	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	41
spruce pine	Pinus glabra	NSL	Low	6	13.2	2.2	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	42
sand hickory	Carya pallida	NSL	FIA	2.4	12.5	5.2	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	43
swamp chestnut oak	Quercus michauxii	NSL	Low	2.4	10.6	4.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	44
eastern redbud	Cercis canadensis	NSL	Low	13.3	10.5	0.8	No change	Lg. inc.	Medium	Rare	Poor	Good			1	45
sycamore	Platanus occidentalis	NSL	Low	1.2	8.8	7.3	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	46
slippery elm	Ulmus rubra	WSL	Low	3.6	8.5	2.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	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
slash pine	Pinus elliottii	NDH	High	3.6	7.7	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	48
American basswood	Tilia americana	WSL	Medium	6	7.6	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
water hickory	Carya aquatica	NSL	Medium	2.4	7.1	3.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
pecan	Carya illinoensis	NSH	Low	1.2	7.1	5.9	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	51
boxelder	Acer negundo	WSH	Low	4.8	7.0	1.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	52
overcup oak	Quercus lyrata	NSL	Medium	2.4	5.7	2.4	No change	No change	Low	Rare	Very Poor	Very Poor			2	53
sassafras	Sassafras albidum	WSL	Low	8.4	5.4	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	54
river birch	Betula nigra	NSL	Low	4.8	4.6	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	55
water tupelo	Nyssa aquatica	NSH	Medium	2.4	3.4	1.4	Lg. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	56
white mulberry	Morus alba	NSL	FIA	2.4	3.2	1.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	57
white ash	Fraxinus americana	WDL	Medium	3.6	2.9	0.8	No change	No change	Low	Rare	Very Poor	Very Poor			2	58
sugarberry	Celtis laevigata	NDH	Medium	3.6	2.8	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	59
durand oak	Quercus sinuata var. sinuata	NSL	FIA	1.2	2.4	2.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	60
honeylocust	Gleditsia triacanthos	NSH	Low	1.2	2.3	1.9	No change	Sm. inc.	High	Rare	Fair	Good			2	61
wild plum	Prunus americana	NSLX	FIA	2.4	2.3	1.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	62
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	3.6	2.2	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	63
sand pine	Pinus clausa	NDH	High	1.2	2.2	1.8	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	64
bitternut hickory	Carya cordiformis	WSL	Low	1.2	2.0	1.7	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			0	65
bluejack oak	Quercus incana	NSL	Low	1.2	1.8	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	66
hackberry	Celtis occidentalis	WDH	Medium	2.4	1.8	0.7	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	67
cucumbertree	Magnolia acuminata	NSL	Low	1.2	1.5	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	68
American chestnut	Castanea dentata	NSLX	FIA	1.2	0.7	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	69
paulownia	Paulownia tomentosa	NSL	FIA	1.2	0.5	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	70
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	71
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	72
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	75
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	76
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	77
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	78
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	79
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	80
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	82
redbay	Persea borbonia	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	83
water elm	Planera aquatica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	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
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	87
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	88
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	89
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	90