

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
 8,400.0 3,243.3 247

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	20	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85				
Ash	1					Increase	25	27	Very Good	11	11	Likely	1	1	
Hickory	5			Medium	29	48	No Change	12	12	Good	16	17	Infill	12	16
Maple	3	Abundant	5	Low	30	9	Decrease	18	16	Fair	8	9	Migrate	5	5
Oak	14	Common	21	FIA	4		New	12	14	Poor	9	10			
Pine	3	Rare	33				Unknown	13	11	Very Poor	8	6			
Other	33	Absent	18							FIA Only	2	2			
	59		77		80	77		80	80	Unknown	9	7			
											63	62			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	61.4	63.2	65.2	65.3	
Average	61.4	63.5	66.0	68.7	
GFDL45	61.4	64.1	66.3	67.0	
GFDL85	61.4	64.2	67.4	71.0	
HAD45	61.4	63.7	66.5	68.0	
HAD85	61.4	63.9	68.1	72.0	
Growing Season	75.0	76.7	78.5	78.9	
May—Sep	75.0	78.0	80.2	81.5	
GFDL85	75.0	78.2	81.8	85.9	
HAD45	75.0	78.1	80.7	82.4	
HAD85	75.0	78.0	83.9	87.7	
Coldest Month	41.4	43.9	44.6	44.6	
Average	41.4	43.9	44.9	46.1	
GFDL45	41.4	44.5	44.7	45.1	
GFDL85	41.4	43.1	44.1	44.6	
HAD45	41.4	41.5	43.3	43.8	
HAD85	41.4	42.5	43.6	45.3	
Warmest Month	79.7	81.7	82.6	82.5	
Average	79.7	81.8	83.3	85.1	
GFDL45	79.7	82.7	83.6	84.4	
GFDL85	79.7	83.0	84.8	87.0	
HAD45	79.7	83.6	85.2	85.9	
HAD85	79.7	83.9	87.6	89.6	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	48.0	50.8	54.0	54.4	
Total	48.0	51.0	54.3	60.8	
GFDL45	48.0	53.5	56.6	60.3	
GFDL85	48.0	52.9	57.8	57.9	
HAD45	48.0	47.1	51.1	52.8	
HAD85	48.0	53.4	48.2	51.5	
Growing Season	19.6	21.5	23.5	24.0	
May—Sep	19.6	21.2	22.3	25.1	
GFDL45	19.6	24.0	26.3	27.3	
GFDL85	19.6	23.2	27.0	27.5	
HAD45	19.6	19.4	20.0	20.5	
HAD85	19.6	22.2	17.4	18.2	

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	82.1	2888.8	33.9	Sm. inc.	No change	Medium	Abundant	Very Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	94	1530.9	15.7	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	88.1	760.0	8.3	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
yellow-poplar	Liriodendron tulipifera	WDH	High	77.4	685.4	8.5	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	4
white oak	Quercus alba	WDH	Medium	76.2	667.2	8.4	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	5
shortleaf pine	Pinus echinata	WDH	High	63.1	392.1	6.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	6
southern red oak	Quercus falcata	WDL	Medium	69	379.1	5.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	7
red maple	Acer rubrum	WDH	High	60.7	281.9	4.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
black cherry	Prunus serotina	WDL	Medium	69	241.3	3.4	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	9
pignut hickory	Carya glabra	WDL	Medium	56	212.1	3.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	10
winged elm	Ulmus alata	WDL	Medium	61.9	202.0	3.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	11
flowering dogwood	Cornus florida	WDL	Medium	53.6	142.3	2.6	No change	No change	Medium	Common	Fair	Fair			1	12
green ash	Fraxinus pennsylvanica	WSH	Low	25	139.1	5.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	13
northern red oak	Quercus rubra	WDH	Medium	27.4	102.6	3.6	No change	No change	High	Common	Good	Good			1	14
black oak	Quercus velutina	WDH	High	23.8	102.1	4.1	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	15
scarlet oak	Quercus coccinea	WDL	Medium	28.6	101.0	3.4	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	16
sourwood	Oxydendrum arboreum	NDL	High	38.1	97.7	2.5	No change	No change	High	Common	Good	Good			1	17
post oak	Quercus stellata	WDH	High	38.1	96.9	2.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
blackgum	Nyssa sylvatica	WDL	Medium	48.8	94.3	1.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	19
eastern redcedar	Juniperus virginiana	WDH	Medium	29.8	91.5	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
river birch	Betula nigra	NSL	Low	10.7	69.5	6.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
American beech	Fagus grandifolia	WDH	High	28.6	63.6	2.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	22
Virginia pine	Pinus virginiana	NDH	High	13.1	61.3	4.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	23
mockernut hickory	Carya alba	WDL	Medium	23.8	55.4	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	24
boxelder	Acer negundo	WSH	Low	13.1	53.0	3.9	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	25
sycamore	Platanus occidentalis	NSL	Low	8.3	51.6	6.0	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	26
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	25	40.8	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	27
common persimmon	Diospyros virginiana	NSL	Low	27.4	39.3	1.4	Sm. dec.	No change	High	Rare	Poor	Fair			1	28
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	17.9	35.7	1.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	29
pecan	Carya illinoensis	NSH	Low	4.8	35.5	7.2	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	30
slippery elm	Ulmus rubra	WSL	Low	15.5	34.8	2.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
florida maple	Acer barbatum	NSL	Low	13.1	23.6	1.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	32
laurel oak	Quercus laurifolia	NDH	Medium	7.1	23.2	3.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	33
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	4.8	17.5	3.6	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	34
black willow	Salix nigra	NSH	Low	3.6	16.9	4.6	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	35
bitternut hickory	Carya cordiformis	WSL	Low	2.4	15.8	6.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	36
American holly	Ilex opaca	NSL	Medium	7.1	10.7	1.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	37
American elm	Ulmus americana	WDH	Medium	7.1	9.3	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	38
red mulberry	Morus rubra	NSL	Low	10.7	9.2	0.8	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good		Infill ++	1	39
willow oak	Quercus phellos	NSL	Low	3.6	8.4	2.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	40
black walnut	Juglans nigra	WDH	Low	4.8	8.3	1.7	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	41
eastern redbud	Cercis canadensis	NSL	Low	6	7.8	1.3	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	42
sassafras	Sassafras albidum	WSL	Low	9.5	7.6	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good		Infill ++	2	43
serviceberry	Amelanchier spp.	NSL	Low	3.6	6.6	1.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	44
swamp chestnut oak	Quercus michauxii	NSL	Low	2.4	5.2	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
hackberry	Celtis occidentalis	WDH	Medium	4.8	5.1	1.0	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	46
chestnut oak	Quercus prinus	NDH	High	2.4	5.0	2.0	No change	No change	High	Rare	Fair	Fair			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
black locust	Robinia pseudoacacia	NDH	Low	1.2	4.2	3.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	48
eastern cottonwood	Populus deltoides	NSH	Low	1.2	2.7	2.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	49
sugarberry	Celtis laevigata	NDH	Medium	2.4	2.4	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	50
swamp tupelo	Nyssa biflora	NDH	Medium	2.4	2.3	0.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	51
sand hickory	Carya pallida	NSL	FIA	1.2	2.1	1.7	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	52
overcup oak	Quercus lyrata	NSL	Medium	1.2	1.4	1.1	Very Lg. dec.	Sm. dec.	Low	Rare	Lost	Very Poor			0	53
blackjack oak	Quercus marilandica	NSL	Medium	1.2	1.1	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	54
honeylocust	Gleditsia triacanthos	NSH	Low	1.2	0.6	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	55
white mulberry	Morus alba	NSL	FIA	1.2	0.6	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	56
paulownia	Paulownia tomentosa	NSL	FIA	1.2	0.5	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	57
Osage-orange	Maclura pomifera	NDH	Medium	1.2	0.3	0.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	58
wild plum	Prunus americana	NSLX	FIA	1.2	0.3	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	59
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	60
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	61
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	62
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	63
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	64
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	66
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	67
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	68
shagbark hickory	Carya ovata	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	69
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	70
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	71
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	72
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	74
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	75
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	76
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	77
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	78
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	79
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	80