

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
 8,700.0 3,359.1 224

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	13	22	Increase	25	25	Very Good	11	12	Likely	0	0
Hickory	6			Medium	29	44	No Change	10	13	Good	13	13	Infill	6	10
Maple	3	Abundant	4	Low	31	8	Decrease	19	16	Fair	7	7	Migrate	7	6
Oak	12	Common	20	FIA	1		New	9	10	Poor	11	12			
Pine	3	Rare	31				Unknown	11	10	Very Poor	11	8			
Other	29	Absent	18							FIA Only	1	1			
	55		73		74	74		74	74	Unknown	10	9			
											64	62			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	64.8	66.4	68.0	68.3	
Average	64.8	67.1	69.3	71.8	
GFDL45	64.8	67.7	69.0	70.3	
GFDL85	64.8	67.6	70.4	73.9	
HAD45	64.8	67.1	69.9	70.9	
HAD85	64.8	67.5	71.4	75.0	
Growing Season	78.6	80.1	81.3	81.8	
May—Sep	78.6	82.0	83.2	85.7	
GFDL45	78.6	82.1	85.2	89.6	
GFDL85	78.6	82.1	85.2	89.6	
HAD45	78.6	81.4	84.1	84.5	
HAD85	78.6	81.8	86.7	89.8	
Coldest Month	44.3	46.7	47.7	47.7	
Average	44.3	48.0	48.2	48.1	
GFDL45	44.3	48.0	48.2	47.2	
GFDL85	44.3	45.4	46.7	47.2	
HAD45	44.3	44.9	46.7	47.2	
HAD85	44.3	46.5	48.2	50.0	
Warmest Month	83.6	84.7	85.1	85.3	
Average	83.6	85.6	86.2	87.9	
GFDL45	83.6	88.4	88.3	90.1	
GFDL85	83.6	87.9	89.4	92.6	
HAD45	83.6	86.9	88.1	88.2	
HAD85	83.6	87.6	90.1	91.1	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	47.0	47.2	51.3	50.3	
Total	47.0	47.9	51.7	51.5	
GFDL45	47.0	49.1	56.9	49.1	
GFDL85	47.0	48.7	51.9	52.3	
HAD45	47.0	46.9	47.2	51.4	
HAD85	47.0	50.2	43.3	46.8	
Growing Season	17.9	18.9	18.8	19.2	
May—Sep	17.9	19.6	23.9	19.5	
GFDL45	17.9	19.6	23.9	21.3	
GFDL85	17.9	19.8	21.3	21.3	
HAD45	17.9	17.2	16.7	17.7	
HAD85	17.9	18.0	13.8	14.5	

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	83.9	2893.3	33.3	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	92	1606.5	16.9	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	2
shortleaf pine	Pinus echinata	WDH	High	66.7	839.5	12.2	No change	No change	Medium	Abundant	Good	Good			1	3
water oak	Quercus nigra	WDH	High	75.9	687.1	8.7	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	4
southern red oak	Quercus falcata	WDL	Medium	72.4	498.0	6.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	5
winged elm	Ulmus alata	WDL	Medium	81.6	477.5	5.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
post oak	Quercus stellata	WDH	High	50.6	406.3	7.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	7
willow oak	Quercus phellos	NSL	Low	31	224.7	7.0	No change	No change	Medium	Common	Fair	Fair			1	8
river birch	Betula nigra	NSL	Low	23	185.2	7.8	No change	No change	Medium	Common	Fair	Fair			1	9
sugarberry	Celtis laevigata	NDH	Medium	36.8	168.8	4.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	10
white oak	Quercus alba	WDH	Medium	31	155.2	4.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
red maple	Acer rubrum	WDH	High	41.4	143.8	3.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	12
blackgum	Nyssa sylvatica	WDL	Medium	50.6	129.3	2.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
eastern redcedar	Juniperus virginiana	WDH	Medium	37.9	124.6	3.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
American elm	Ulmus americana	WDH	Medium	33.3	120.2	3.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	20.7	96.8	4.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
mockernut hickory	Carya alba	WDL	Medium	27.6	94.7	3.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
black willow	Salix nigra	NSH	Low	18.4	91.8	4.8	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	18
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	18.4	89.1	4.7	No change	No change	High	Common	Good	Good			1	19
blackjack oak	Quercus marilandica	NSL	Medium	21.8	84.0	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	23	82.0	3.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	21
green ash	Fraxinus pennsylvanica	WSH	Low	13.8	76.8	5.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	22
overcup oak	Quercus lyrata	NSL	Medium	8	75.2	9.0	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	23
common persimmon	Diospyros virginiana	NSL	Low	20.7	52.1	2.4	Sm. dec.	No change	High	Common	Fair	Good			1	24
sassafras	Sassafras albidum	WSL	Low	19.5	45.0	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	25
black hickory	Carya texana	NDL	High	13.8	44.3	3.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	26
black cherry	Prunus serotina	WDL	Medium	33.3	41.5	1.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	27
bald cypress	Taxodium distichum	NSH	Medium	1.1	40.4	34.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	28
bluejack oak	Quercus incana	NSL	Low	8	39.7	4.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	29
flowering dogwood	Cornus florida	WDL	Medium	26.4	37.3	1.4	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	30
American holly	Ilex opaca	NSL	Medium	12.6	32.7	2.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	31
sycamore	Platanus occidentalis	NSL	Low	2.3	31.1	13.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
honeylocust	Gleditsia triacanthos	NSH	Low	11.5	29.6	2.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	1	33
water elm	Planera aquatica	NSL	Low	4.6	28.0	5.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
boxelder	Acer negundo	WSH	Low	4.6	23.5	4.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	35
white ash	Fraxinus americana	WDL	Medium	12.6	17.6	1.3	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	1	36
cedar elm	Ulmus crassifolia	NDH	Medium	3.4	14.6	4.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	37
Osage-orange	Maclura pomifera	NDH	Medium	2.3	14.4	6.0	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	38
red mulberry	Morus rubra	NSL	Low	10.3	13.5	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	39
slash pine	Pinus elliotii	NDH	High	2.3	13.4	5.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
florida maple	Acer barbatum	NSL	Low	5.7	13.3	2.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	41
black oak	Quercus velutina	WDH	High	8	12.6	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	42
bitternut hickory	Carya cordiformis	WSL	Low	6.9	11.4	1.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	43
pecan	Carya illinoensis	NSH	Low	4.6	7.9	1.7	No change	No change	Low	Rare	Very Poor	Very Poor			2	44
American basswood	Tilia americana	WSL	Medium	1.1	6.6	5.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
eastern cottonwood	Populus deltoides	NSH	Low	1.1	4.6	3.9	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	46
eastern redbud	Cercis canadensis	NSL	Low	4.6	4.1	0.9	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	47

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USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	3.4	3.6	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	48
wild plum	Prunus americana	NSLX	FIA	2.3	2.9	1.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	49
water hickory	Carya aquatica	NSL	Medium	2.3	2.6	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	50
hackberry	Celtis occidentalis	WDH	Medium	1.1	2.6	2.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	51
Shumard oak	Quercus shumardii	NSL	Low	1.1	2.3	2.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	52
pignut hickory	Carya glabra	WDL	Medium	2.3	2.1	0.9	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	53
slippery elm	Ulmus rubra	WSL	Low	1.1	1.1	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	54
swamp chestnut oak	Quercus michauxii	NSL	Low	1.1	0.5	0.4	Lg. dec.	No change	Medium	Rare	Very Poor	Poor			0	55
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	56
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	57
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	58
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++		3	59
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	60
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	61
black walnut	Juglans nigra	WDH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	62
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	63
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	64
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	66
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	67
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	68
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
turkey oak	Quercus laevis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	70
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	71
chestnut oak	Quercus prinus	NDH	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	72
northern red oak	Quercus rubra	WDH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	73
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	74