

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	8,200.0	3,166.0	89

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		
		Abundant	Common	High	Low	Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT	
				Reliability	Adaptability	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85	
Ash	3					Increase	15	16	Very Good	0	0	
Hickory	4					No Change	9	10	Good	13	14	
Maple	3	Abundant	0	High	10	18	Decrease	15	13	Fair	8	8
Oak	9	Common	5	Medium	16	24	New	7	8	Poor	8	8
Pine	1	Rare	37	Low	22	6	Unknown	5	4	Very Poor	9	8
Other	22	Absent	8	FIA	3					FIA Only	1	1
	42		50		51	48		51	51	41	40	

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	60.2	62.0	63.8	64.3	
	CCSM85	60.2	62.7	64.9	67.6	
	GFDL45	60.2	66.2	65.1	66.3	
	GFDL85	60.2	63.1	66.0	69.9	
	HAD45	60.2	62.5	65.2	66.4	
	HAD85	60.2	62.7	67.3	70.6	
Growing Season (May—Sep)	CCSM45	76.0	78.1	79.7	80.4	
	CCSM85	76.0	79.0	81.1	84.5	
	GFDL45	76.0	84.2	82.0	84.3	
	GFDL85	76.0	79.9	83.2	88.2	
	HAD45	76.0	78.4	80.8	81.9	
	HAD85	76.0	78.9	84.2	87.0	
Coldest Month Average	CCSM45	35.8	38.1	39.2	39.8	
	CCSM85	35.8	38.4	39.2	40.9	
	GFDL45	35.8	39.8	40.0	40.1	
	GFDL85	35.8	37.3	38.7	39.4	
	HAD45	35.8	36.6	39.0	39.0	
	HAD85	35.8	38.7	40.6	42.3	
Warmest Month Average	CCSM45	82.4	84.5	85.6	86.0	
	CCSM85	82.4	85.6	86.5	88.3	
	GFDL45	82.4	87.2	88.3	90.0	
	GFDL85	82.4	86.9	88.5	92.6	
	HAD45	82.4	84.7	86.4	86.9	
	HAD85	82.4	86.0	88.7	89.8	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	41.8	40.0	42.1	41.1	
	CCSM85	41.8	40.4	41.8	42.8	
	GFDL45	41.8	44.2	47.4	43.9	
	GFDL85	41.8	44.3	49.8	48.7	
	HAD45	41.8	42.5	44.0	45.4	
	HAD85	41.8	44.1	38.8	42.8	
Growing Season (May—Sep)	CCSM45	20.9	18.9	19.4	19.3	
	CCSM85	20.9	19.7	18.6	19.5	
	GFDL45	20.9	22.2	22.9	22.1	
	GFDL85	20.9	22.6	25.5	23.8	
	HAD45	20.9	20.9	21.5	21.8	
	HAD85	20.9	21.9	17.1	18.8	

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
post oak	Quercus stellata	WDH	High	54.9	148.4	33.6	No change	No change	High	Common	Good	Good			1	1
sugarberry	Celtis laevigata	NDH	Medium	59.8	85.3	13.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	2
American elm	Ulmus americana	WDH	Medium	69.5	85.3	10.1	No change	No change	Medium	Common	Fair	Fair			1	3
blackjack oak	Quercus marilandica	NSL	Medium	54.9	76.9	14.9	No change	No change	High	Common	Good	Good			1	4
pecan	Carya illinoensis	NSH	Low	58.5	62.4	14.4	Sm. inc.	No change	Low	Common	Fair	Poor			1	5
black hickory	Carya texana	NDL	High	53.7	36.9	9.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	6
green ash	Fraxinus pennsylvanica	WSH	Low	53.7	34.0	8.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	7
winged elm	Ulmus alata	WDL	Medium	54.9	32.3	7.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	8
common persimmon	Diospyros virginiana	NSL	Low	50	30.6	7.3	No change	No change	High	Rare	Fair	Fair			1	9
black oak	Quercus velutina	WDH	High	39	21.9	7.5	No change	No change	Medium	Rare	Poor	Poor			1	10
red mulberry	Morus rubra	NSL	Low	30.5	21.6	3.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	11
hackberry	Celtis occidentalis	WDH	Medium	43.9	19.9	6.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good			1	12
Shumard oak	Quercus shumardii	NSL	Low	20.7	19.5	4.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	13
loblolly pine	Pinus taeda	WDH	High	4.9	17.8	49.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	14
honeylocust	Gleditsia triacanthos	NSH	Low	30.5	17.1	6.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good			1	15
eastern redcedar	Juniperus virginiana	WDH	Medium	24.4	15.5	8.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	16
black willow	Salix nigra	NSH	Low	9.8	8.0	11.1	No change	No change	Low	Rare	Very Poor	Very Poor			2	17
Siberian elm	Ulmus pumila	NDH	FIA	4.9	7.3	20.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	18
slippery elm	Ulmus rubra	WSL	Low	11	7.1	4.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	19
black walnut	Juglans nigra	WDH	Low	20.7	7.1	1.9	Sm. inc.	No change	Medium	Rare	Fair	Poor	Infill +		1	20
Osage-orange	Maclura pomifera	NDH	Medium	15.9	7.0	3.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	21
boxelder	Acer negundo	WSH	Low	19.5	6.8	4.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	22
silver maple	Acer saccharinum	NSH	Low	9.8	6.6	9.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	23
white ash	Fraxinus americana	WDL	Medium	29.3	5.7	2.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	24
bitternut hickory	Carya cordiformis	WSL	Low	19.5	5.5	3.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	25
pin oak	Quercus palustris	NSH	Low	9.8	5.4	7.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	26
black cherry	Prunus serotina	WDL	Medium	19.5	5.4	3.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	27
chinkapin oak	Quercus muehlenbergii	NSL	Medium	14.6	3.8	3.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	28
sycamore	Platanus occidentalis	NSL	Low	19.5	3.5	2.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	29
bur oak	Quercus macrocarpa	NDH	Medium	14.6	2.8	2.6	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	30
sassafras	Sassafras albidum	WSL	Low	4.9	2.7	7.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
northern red oak	Quercus rubra	WDH	Medium	9.8	2.6	3.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	32
eastern redbud	Cercis canadensis	NSL	Low	24.4	2.0	1.1	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair		Infill +	1	33
black locust	Robinia pseudoacacia	NDH	Low	4.9	1.4	3.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	34
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	WDL	Low	14.6	1.0	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	35
mockernut hickory	Carya alba	NSL	Medium	9.8	0.4	0.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	36
Texas ash	Fraxinus texensis	NDH	FIA	4.9	0.4	1.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	37
white mulberry	Morus alba	NSL	FIA	4.9	0.3	0.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	38
serviceberry	Amelanchier spp.	NSL	Low	4.9	0.3	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
sugar maple	Acer saccharum	WDH	High	4.9	0.2	0.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	40
eastern cottonwood	Populus deltoides	NSH	Low	4.9	0.1	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	41
white oak	Quercus alba	WDH	Medium	4.9	0.1	0.2	Lg. dec.	Lg. inc.	High	Rare	Poor	Good			0	42
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	43
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	44
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	45
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	46
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIaiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	48
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	49
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	50
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	51