

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	8,400.0	3,243.3	26

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	Medium	Increase	No Change	Decrease	New	Unknown	Very Good	Good	Fair	Poor	Very Poor	FIA Only	Unknown	SHIFT RCP45	SHIFT RCP85
Ash	2			9	18	11	15	1	1	3	3								
Hickory	5			21	29	11	13	6	7	24	27								
Maple	4			25	8	16	10	8	11	3	8								
Oak	8			2		14	14	11	11	3	3								
Pine	1					5	5	12	7										
Other	20							0	0										
	40			57	55	57	57	41	40									30	38

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	52.9	54.9	56.8	57.2	
Average	52.9	55.5	57.8	60.6	
GFDL45	52.9	59.1	58.2	59.1	
GFDL85	52.9	55.8	59.1	63.1	
HAD45	52.9	55.6	59.0	60.7	
HAD85	52.9	56.0	60.7	65.0	
Growing Season	70.5	72.8	74.4	75.2	
May—Sep	70.5	73.6	75.7	79.1	
GFDL45	70.5	78.3	76.8	78.3	
GFDL85	70.5	74.1	78.0	83.0	
HAD45	70.5	73.6	76.5	78.7	
HAD85	70.5	74.0	79.7	83.8	
Coldest Month	24.3	26.1	27.8	28.1	
Average	24.3	27.4	28.6	30.0	
GFDL45	24.3	28.8	29.4	30.0	
GFDL85	24.3	27.7	29.1	30.1	
HAD45	24.3	25.9	28.9	29.0	
HAD85	24.3	27.7	30.5	32.6	
Warmest Month	76.3	78.5	79.7	80.5	
Average	76.3	79.8	81.4	83.1	
GFDL45	76.3	79.5	81.1	82.2	
GFDL85	76.3	80.1	81.9	85.1	
HAD45	76.3	79.6	81.8	82.7	
HAD85	76.3	81.3	84.7	87.1	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	38.0	36.4	39.2	38.0	
Total	38.0	37.8	39.1	39.3	
GFDL45	38.0	42.4	45.0	46.2	
GFDL85	38.0	41.8	47.6	48.4	
HAD45	38.0	39.9	41.8	41.2	
HAD85	38.0	40.9	39.5	42.6	
Growing Season	18.7	17.8	18.8	17.2	
May—Sep	18.7	17.4	17.9	17.0	
GFDL45	18.7	20.5	20.8	21.5	
GFDL85	18.7	20.3	21.8	21.5	
HAD45	18.7	19.1	18.2	18.3	
HAD85	18.7	18.9	16.4	16.6	

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
black walnut	Juglans nigra	WDH	Low	42.9	85.9	19.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	1
American elm	Ulmus americana	WDH	Medium	52.4	82.3	15.6	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	2
hackberry	Celtis occidentalis	WDH	Medium	38.1	50.0	13.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	3
silver maple	Acer saccharinum	NSH	Low	23.8	49.5	20.6	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	4
honeylocust	Gleditsia triacanthos	NSH	Low	23.8	47.2	19.6	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	5
Siberian elm	Ulmus pumila	NDH	FIA	4.8	29.6	61.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	6
eastern cottonwood	Populus deltoides	NSH	Low	19	28.6	14.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	7
bitternut hickory	Carya cordiformis	WSL	Low	19	26.8	13.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	8
black locust	Robinia pseudoacacia	NDH	Low	9.5	25.6	26.7	Lg. dec.	No change	Medium	Rare	Very Poor	Poor			2	9
white oak	Quercus alba	WDH	Medium	33.3	19.5	5.8	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	10
pin oak	Quercus palustris	NSH	Low	14.3	19.1	13.2	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	11
slippery elm	Ulmus rubra	WSL	Low	28.6	18.6	6.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	12
green ash	Fraxinus pennsylvanica	WSH	Low	19	17.7	9.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	13
black oak	Quercus velutina	WDH	High	9.5	16.4	17.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	14
black cherry	Prunus serotina	WDL	Medium	38.1	15.3	4.0	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	2	15
white mulberry	Morus alba	NSL	FIA	4.8	12.6	26.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	16
boxelder	Acer negundo	WSH	Low	14.3	12.2	8.4	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	17
Osage-orange	Maclura pomifera	NDH	Medium	9.5	10.8	11.3	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	18
post oak	Quercus stellata	WDH	High	4.8	9.9	20.7	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	19
northern red oak	Quercus rubra	WDH	Medium	4.8	9.2	19.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	20
black willow	Salix nigra	NSH	Low	4.8	9.1	18.9	No change	No change	Low	Rare	Very Poor	Very Poor			2	21
Ohio buckeye	Aesculus glabra	NSL	Low	4.8	8.6	18.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	22
shagbark hickory	Carya ovata	WSL	Medium	19	8.5	4.4	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	23
shingle oak	Quercus imbricaria	NDH	Medium	14.3	7.3	5.0	Sm. inc.	No change	Medium	Rare	Fair	Poor	Infill +	Infill +	2	24
red mulberry	Morus rubra	NSL	Low	23.8	6.5	2.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	25
white ash	Fraxinus americana	WDL	Medium	9.5	6.0	6.3	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	26
red maple	Acer rubrum	WDH	High	4.8	4.7	9.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	27
sugar maple	Acer saccharum	WDH	High	9.5	4.2	4.4	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	28
American basswood	Tilia americana	WSL	Medium	4.8	4.1	8.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	29
bur oak	Quercus macrocarpa	NDH	Medium	9.5	3.7	3.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	30
pawpaw	Asimina triloba	NSL	Low	9.5	3.2	3.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
mockernut hickory	Carya alba	WDL	Medium	9.5	3.2	3.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	32
eastern white pine	Pinus strobus	WDH	High	4.8	3.1	6.4	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	33
sycamore	Platanus occidentalis	NSL	Low	4.8	2.8	5.8	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	34
chinkapin oak	Quercus muehlenbergii	NSL	Medium	14.3	2.4	1.7	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	35
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	4.8	1.8	3.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +		2	36
sassafras	Sassafras albidum	WSL	Low	9.5	1.7	1.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	37
black hickory	Carya texana	NDL	High	4.8	1.5	3.1	Lg. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	38
eastern redbud	Cercis canadensis	NSL	Low	9.5	1.2	1.2	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	39
shellbark hickory	Carya laciniosa	NSL	Low	4.8	0.7	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	40
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	41
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	42
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	43
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	44
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	45
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	46
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	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
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	48
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	49
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	50
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	51
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	52
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	53
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	54
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	55
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	56
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	57