

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
 8,000.0 3,088.8 37

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	Reliability	Adaptability	Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT		
						RCP45	RCP85	RCP45	RCP85	RCP45	RCP85		
Ash	3			High	5	11	13	Very Good	0	0	Likely	1	1
Hickory	3			Medium	19	11	8	Good	10	10	Infill	22	22
Maple	4	Abundant	0	Low	21	8	9	Fair	7	9	Migrate	6	11
Oak	4	Common	7	FIA	3	14	14	Poor	7	5			
Pine	1	Rare	26			Unknown	4	4	Very Poor	5	5		
Other	18	Absent	14					FIA Only	1	1			
	33		47		48	48	48	Unknown	1	1			
									31	31			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	49.9	52.0	54.4	54.6	
Average	49.9	52.7	55.3	58.2	
GFDL45	49.9	56.3	55.3	56.4	
GFDL85	49.9	53.0	56.4	60.7	
HAD45	49.9	52.7	56.2	58.0	
HAD85	49.9	53.1	57.8	62.5	
Growing Season	68.7	71.1	73.2	73.7	
May—Sep	68.7	72.1	74.5	77.8	
GFDL45	68.7	76.7	75.1	76.9	
GFDL85	68.7	72.6	76.4	81.7	
HAD45	68.7	71.6	74.4	76.6	
HAD85	68.7	71.8	77.2	81.7	
Coldest Month	19.3	21.2	23.6	23.7	
Average	19.3	22.1	23.6	25.5	
GFDL45	19.3	23.1	24.0	24.6	
GFDL85	19.3	22.9	24.5	26.0	
HAD45	19.3	20.7	24.5	24.4	
HAD85	19.3	23.6	26.9	29.5	
Warmest Month	74.7	77.0	78.5	79.2	
Average	74.7	78.7	80.5	82.1	
GFDL45	74.7	78.1	79.7	81.2	
GFDL85	74.7	79.1	80.8	84.2	
HAD45	74.7	77.8	79.8	80.8	
HAD85	74.7	79.1	82.4	85.2	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	36.0	34.8	35.3	35.4	
Total	36.0	34.7	35.0	35.6	
GFDL45	36.0	38.9	42.2	42.4	
GFDL85	36.0	39.4	44.2	43.8	
HAD45	36.0	38.4	39.3	39.3	
HAD85	36.0	38.3	36.8	39.8	
Growing Season	20.0	19.6	19.4	19.0	
May—Sep	20.0	18.5	18.2	18.1	
GFDL45	20.0	20.7	22.5	22.3	
GFDL85	20.0	21.6	23.1	22.0	
HAD45	20.0	20.6	19.3	20.1	
HAD85	20.0	20.3	17.5	17.9	

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
American elm	Ulmus americana	WDH	Medium	78.7	128.9	13.3	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	1
silver maple	Acer saccharinum	NSH	Low	26.3	95.0	33.9	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	2
black cherry	Prunus serotina	WDL	Medium	42.5	89.8	12.4	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	3
black walnut	Juglans nigra	WDH	Low	37.5	80.8	14.5	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	4
American basswood	Tilia americana	WSL	Medium	26.2	61.0	12.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	5
white ash	Fraxinus americana	WDL	Medium	16.3	54.5	15.7	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	6
black oak	Quercus velutina	WDH	High	31.2	50.3	15.4	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	7
hackberry	Celtis occidentalis	WDH	Medium	61.2	46.8	7.6	Lg. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	8
Osage-orange	Maclura pomifera	NDH	Medium	25	40.1	21.5	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	9
white oak	Quercus alba	WDH	Medium	16.2	39.5	21.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	10
eastern redcedar	Juniperus virginiana	WDH	Medium	2.5	38.6	12.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	11
eastern cottonwood	Populus deltoides	NSH	Low	12.5	35.1	16.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	12
shagbark hickory	Carya ovata	WSL	Medium	43.8	34.1	6.5	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		1	13
red mulberry	Morus rubra	NSL	Low	22.5	28.4	9.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	14
slippery elm	Ulmus rubra	WSL	Low	36.2	25.3	6.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	15
white mulberry	Morus alba	NSL	FIA	26.3	23.6	5.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	16
boxelder	Acer negundo	WSH	Low	16.2	23.2	6.3	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	17
Siberian elm	Ulmus pumila	NDH	FIA	10	22.9	30.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	18
bitternut hickory	Carya cordiformis	WSL	Low	31.3	22.5	7.9	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	19
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	10	18.7	25.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	20
bur oak	Quercus macrocarpa	NDH	Medium	21.2	18.3	6.9	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	21
northern red oak	Quercus rubra	WDH	Medium	16.2	16.8	8.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	22
black locust	Robinia pseudoacacia	NDH	Low	10	15.4	20.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	23
mockernut hickory	Carya alba	WDL	Medium	16.3	15.3	5.9	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	24
eastern white pine	Pinus strobus	WDH	High	5	12.4	33.3	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	25
black maple	Acer nigrum	NSH	Low	5	11.9	31.9	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	26
green ash	Fraxinus pennsylvanica	WSH	Low	11.2	11.2	7.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	27
black ash	Fraxinus nigra	WSH	Medium	5	7.0	18.9	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	28
bigtooth aspen	Populus grandidentata	NSL	Medium	5	4.7	12.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	29
honeylocust	Gleditsia triacanthos	NSH	Low	10	4.6	6.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	30
black willow	Salix nigra	NSH	Low	1.2	2.1	1.4	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	31
sugar maple	Acer saccharum	WDH	High	5	1.3	3.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	32
wild plum	Prunus americana	NSLX	FIA	1.3	1.1	0.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	33
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	34
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	35
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	36
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	37
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	38
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	39
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	40
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	41
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	42
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	43
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	44
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	45
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	46
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	47



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USDA Forest Service
Northern Research Station
Landscape Change Research Group
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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAlv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	48