

One x One Degree
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

Area of Region sq. km sq. mi FIA Plots
 9,130.7 3,525.4 23

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	1			High	2	10	Increase	3	4	Very Good	0	0	Likely	2	2
Hickory	1			Medium	12	17	No Change	7	6	Good	3	4	Infill	13	13
Maple	2	Abundant	0	Low	15	4	Decrease	7	7	Fair	6	5	Migrate	1	7
Oak	2	Common	6	FIA	3		New	12	12	Poor	7	8		16	22
Pine	0	Rare	14				Unknown	3	3	Very Poor	1	0			
Other	14	Absent	12							FIA Only	2	2			
	20		32		32	31		32	32	Unknown	0	0			
											19	19			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	48.4	50.3	52.7	53.4	
	CCSM85	48.4	50.9	53.5	56.9	
	GFDL45	48.4	54.4	53.2	54.5	
	GFDL85	48.4	51.2	54.4	58.9	
	HAD45	48.4	51.2	54.7	56.1	
	HAD85	48.4	51.9	56.6	60.7	
Growing Season (May—Sep)	CCSM45	68.2	70.4	72.9	73.6	
	CCSM85	68.2	71.1	73.7	77.7	
	GFDL45	68.2	75.9	74.2	76.2	
	GFDL85	68.2	71.8	75.5	81.0	
	HAD45	68.2	70.4	73.2	74.7	
	HAD85	68.2	71.2	75.7	79.4	
Coldest Month Average	CCSM45	17.2	19.8	21.3	22.3	
	CCSM85	17.2	19.9	21.4	23.4	
	GFDL45	17.2	20.7	21.5	21.9	
	GFDL85	17.2	20.0	21.6	23.5	
	HAD45	17.2	19.8	23.4	23.1	
	HAD85	17.2	22.9	27.0	29.6	
Warmest Month Average	CCSM45	74.5	77.1	78.8	79.7	
	CCSM85	74.5	78.6	80.2	82.9	
	GFDL45	74.5	77.9	79.3	80.6	
	GFDL85	74.5	78.7	80.3	84.0	
	HAD45	74.5	76.4	78.5	79.2	
	HAD85	74.5	78.3	80.8	83.4	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	29.0	29.7	28.8	28.9	
	CCSM85	29.0	29.9	30.4	30.5	
	GFDL45	29.0	32.2	35.3	34.4	
	GFDL85	29.0	32.6	35.4	34.8	
	HAD45	29.0	33.2	31.7	31.6	
	HAD85	29.0	30.2	30.9	34.4	
Growing Season (May—Sep)	CCSM45	18.0	17.6	16.5	16.7	
	CCSM85	18.0	17.2	16.9	16.6	
	GFDL45	18.0	20.2	21.7	20.2	
	GFDL85	18.0	20.7	21.3	19.9	
	HAD45	18.0	19.9	18.5	18.2	
	HAD85	18.0	17.9	17.2	16.9	

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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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
bur oak	Quercus macrocarpa	NDH	Medium	18.6	147.5	22.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	1
American basswood	Tilia americana	WSL	Medium	13.6	115.6	18.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	2
hackberry	Celtis occidentalis	WDH	Medium	20.6	96.0	19.6	No change	No change	High	Common	Good	Good			2	3
eastern cottonwood	Populus deltoides	NSH	Low	13.1	77.8	19.4	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	4
green ash	Fraxinus pennsylvanica	WSH	Low	20.9	76.7	26.6	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	5
red mulberry	Morus rubra	NSL	Low	21.9	76.5	8.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	6
American elm	Ulmus americana	WDH	Medium	17.1	42.5	19.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	7
black walnut	Juglans nigra	WDH	Low	7.1	34.8	8.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	8
eastern redcedar	Juniperus virginiana	WDH	Medium	27.9	33.0	6.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	9
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	15.8	27.7	6.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	10
boxelder	Acer negundo	WSH	Low	10.7	23.4	5.6	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	11
bitternut hickory	Carya cordiformis	WSL	Low	8.1	21.2	5.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	12
Siberian elm	Ulmus pumila	NDH	FIA	19.7	20.5	6.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	13
slippery elm	Ulmus rubra	WSL	Low	14	17.2	3.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	14
silver maple	Acer saccharinum	NSH	Low	6.9	15.0	22.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	15
northern red oak	Quercus rubra	WDH	Medium	1.5	8.6	3.5	No change	Sm. dec.	High	Rare	Fair	Poor	Infill +	Infill +	2	16
black locust	Robinia pseudoacacia	NDH	Low	3.1	5.7	14.6	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair		Infill +	2	17
honeylocust	Gleditsia triacanthos	NSH	Low	4.4	5.7	20.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	18
wild plum	Prunus americana	NSLX	FIA	4.4	1.0	3.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	19
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	4.4	0.6	2.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	20
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	21
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	22
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	23
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	24
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	25
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	26
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	27
black cherry	Prunus serotina	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	28
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	29
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	30
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	31
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	32