

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
 9,273.2 3,580.4 33

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	2	12	Increase	11	12	Very Good	1	2	Likely	0	0
Hickory	2			Medium	15	20	No Change	10	5	Good	10	6	Infill	17	19
Maple	2	Abundant	0	Low	17	4	Decrease	7	11	Fair	5	8	Migrate	0	4
Oak	7	Common	8	FIA	3		New	5	5	Poor	5	6		17	23
Pine	0	Rare	23				Unknown	4	4	Very Poor	5	4			
Other	18	Absent	5							FIA Only	2	2			
	31		36		37	36		37	37	Unknown	1	1			
											29	29			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	49.3	51.2	53.5	54.1	
Average	CCSM85	49.3	51.8	54.5	57.5	
	GFDL45	49.3	55.2	54.3	55.6	
	GFDL85	49.3	52.2	55.4	59.8	
	HAD45	49.3	51.8	55.1	56.7	
	HAD85	49.3	52.5	57.0	61.2	
Growing Season	CCSM45	68.4	70.7	72.8	73.7	
	CCSM85	68.4	71.5	74.1	77.6	
May—Sep	GFDL45	68.4	76.0	74.5	76.5	
	GFDL85	68.4	72.2	75.7	81.3	
	HAD45	68.4	70.6	73.2	75.0	
	HAD85	68.4	71.4	76.2	80.1	
Coldest Month	CCSM45	18.6	20.8	22.7	23.3	
	CCSM85	18.6	21.3	22.8	24.8	
Average	GFDL45	18.6	22.0	22.8	23.2	
	GFDL85	18.6	21.6	23.2	24.8	
	HAD45	18.6	20.5	23.9	23.9	
	HAD85	18.6	23.4	26.9	29.5	
Warmest Month	CCSM45	74.6	76.9	78.5	79.2	
	CCSM85	74.6	78.6	80.4	82.4	
Average	GFDL45	74.6	78.1	79.6	81.2	
	GFDL85	74.6	78.8	80.3	84.2	
	HAD45	74.6	76.7	78.6	79.4	
	HAD85	74.6	78.5	81.3	83.6	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	34.3	34.0	34.6	33.0	
Total	CCSM85	34.3	33.8	34.6	35.6	
	GFDL45	34.3	37.8	40.3	39.6	
	GFDL85	34.3	38.0	41.3	40.3	
	HAD45	34.3	38.0	38.3	38.4	
	HAD85	34.3	35.7	35.4	38.5	
Growing Season	CCSM45	21.2	20.4	20.5	19.6	
	CCSM85	21.2	19.8	19.9	20.1	
May—Sep	GFDL45	21.2	23.2	23.9	23.2	
	GFDL85	21.2	23.6	24.4	22.8	
	HAD45	21.2	22.1	22.0	22.3	
	HAD85	21.2	20.7	19.4	19.4	

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	30.5	113.0	13.9	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	2	1
American elm	Ulmus americana	WDH	Medium	53.9	104.0	8.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	2
shagbark hickory	Carya ovata	WSL	Medium	29.4	87.7	10.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	3
silver maple	Acer saccharinum	NSH	Low	9.4	72.0	19.3	No change	Sm. dec.	High	Common	Good	Fair		Infill +	2	4
black walnut	Juglans nigra	WDH	Low	37.4	64.9	9.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	5
hackberry	Celtis occidentalis	WDH	Medium	30.5	61.6	7.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	6
slippery elm	Ulmus rubra	WSL	Low	35.8	61.1	8.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	7
eastern redcedar	Juniperus virginiana	WDH	Medium	19.6	50.5	10.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	2	8
boxelder	Acer negundo	WSH	Low	12.9	46.7	6.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	9
honeylocust	Gleditsia triacanthos	NSH	Low	9.4	46.6	9.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	10
black oak	Quercus velutina	WDH	High	26.4	36.9	12.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	11
black cherry	Prunus serotina	WDL	Medium	32.1	31.3	7.2	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			2	12
red mulberry	Morus rubra	NSL	Low	21.1	30.2	5.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	13
eastern cottonwood	Populus deltoides	NSH	Low	12.9	25.8	9.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	14
green ash	Fraxinus pennsylvanica	WSH	Low	9.3	16.1	4.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	15
northern red oak	Quercus rubra	WDH	Medium	23.2	15.7	5.7	Sm. inc.	No change	High	Rare	Good	Fair	Infill ++	Infill +	2	16
black locust	Robinia pseudoacacia	NDH	Low	6	14.9	13.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	17
American basswood	Tilia americana	WSL	Medium	14.8	14.0	6.3	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	18
Siberian elm	Ulmus pumila	NDH	FIA	20.4	12.9	9.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	19
Osage-orange	Maclura pomifera	NDH	Medium	0.8	10.9	7.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	20
bitternut hickory	Carya cordiformis	WSL	Low	13.9	10.7	4.2	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	21
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	17.9	9.9	4.3	Lg. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	22
white oak	Quercus alba	WDH	Medium	12.2	8.8	7.8	No change	Lg. dec.	High	Rare	Fair	Poor	Infill +		2	23
black willow	Salix nigra	NSH	Low	7.1	6.9	5.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	24
white ash	Fraxinus americana	WDL	Medium	0.9	2.5	0.8	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	25
chokecherry	Prunus virginiana	NSLX	FIA	0.7	2.3	1.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	26
serviceberry	Amelanchier spp.	NSL	Low	4.3	1.5	5.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	27
wild plum	Prunus americana	NSLX	FIA	1.6	1.3	1.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	28
northern pin oak	Quercus ellipsoidalis	NSH	Medium	7	1.1	1.7	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	29
chinkapin oak	Quercus muehlenbergii	NSL	Medium	2.7	0.9	2.0	No change	No change	Medium	Rare	Poor	Poor			0	30
shingle oak	Quercus imbricaria	NDH	Medium	0.8	0.5	0.3	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			0	31
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	32
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	33
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	34
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	35
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	36
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	37