

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

sq. km sq. mi FIA Plots
Area of Region 94,281 36,402 64

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	6	15	Increase	0	1	Likely	0	0
Hickory	1			Medium	13	22	No Change	10	10	Infill	12	14
Maple	3	Abundant	0	Low	19	3	Decrease	7	6	Migrate	4	6
Oak	1	Common	0	FIA	5		New	17	17		16	20
Pine	2	Rare	22				Unknown	9	9			
Other	14	Absent	20									
	22		42		43	40		43	43			
											23	23

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	45.4	47.3	49.8	50.5	
Average	CCSM85	45.4	48.0	50.8	54.2	
	GFDL45	45.4	51.5	50.1	51.5	
	GFDL85	45.4	48.2	51.4	56.0	
	HAD45	45.4	48.5	52.4	53.9	
	HAD85	45.4	49.0	54.2	58.7	
Growing Season	CCSM45	66.1	68.2	70.8	71.5	
	CCSM85	66.1	69.0	71.8	76.0	
May—Sep	GFDL45	66.1	73.8	72.0	73.8	
	GFDL85	66.1	69.5	73.1	78.8	
	HAD45	66.1	68.7	71.7	73.5	
	HAD85	66.1	69.0	73.3	77.9	
Coldest Month	CCSM45	13.4	15.5	17.2	18.0	
	CCSM85	13.4	14.8	16.6	18.8	
Average	GFDL45	13.4	17.0	17.8	18.2	
	GFDL85	13.4	16.7	18.1	20.4	
	HAD45	13.4	16.1	19.9	19.4	
	HAD85	13.4	19.2	24.0	26.3	
Warmest Month	CCSM45	73.2	76.0	77.7	78.5	
	CCSM85	73.2	77.3	79.2	82.0	
Average	GFDL45	73.2	76.9	78.4	79.5	
	GFDL85	73.2	77.4	79.1	82.8	
	HAD45	73.2	76.2	77.9	79.1	
	HAD85	73.2	76.9	79.4	82.5	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	23.1	23.7	23.3	22.7	
Total	CCSM85	23.1	23.1	23.2	23.8	
	GFDL45	23.1	26.7	29.1	27.6	
	GFDL85	23.1	26.6	29.7	29.1	
	HAD45	23.1	25.8	24.6	25.4	
	HAD85	23.1	24.8	25.5	27.5	
Growing Season	CCSM45	15.1	14.6	14.1	13.5	
	CCSM85	15.1	13.9	14.0	13.3	
May—Sep	GFDL45	15.1	17.6	19.0	17.4	
	GFDL85	15.1	17.4	18.6	17.6	
	HAD45	15.1	15.7	14.6	14.5	
	HAD85	15.1	14.8	14.3	13.4	

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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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
green ash	Fraxinus pennsylvanica	WSH	Low	12.1	36.3	30.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	1
bur oak	Quercus macrocarpa	NDH	Medium	5.3	23.9	30.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	2
Siberian elm	Ulmus pumila	NDH	FIA	5.5	18.4	35.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	3
American elm	Ulmus americana	WDH	Medium	6.7	17.8	24.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	4
eastern redcedar	Juniperus virginiana	WDH	Medium	5.8	14.1	18.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	5
eastern cottonwood	Populus deltoides	NSH	Low	2.7	13.9	47.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	6
boxelder	Acer negundo	WSH	Low	5.3	12.6	23.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	7
hackberry	Celtis occidentalis	WDH	Medium	3.6	8.3	18.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	8
red mulberry	Morus rubra	NSL	Low	0.6	5.1	24.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	9
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.6	2.9	11.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	10
red pine	Pinus resinosa	NSH	Medium	0.4	2.7	100.0	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	11
American basswood	Tilia americana	WSL	Medium	1.3	2.6	4.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	12
honeylocust	Gleditsia triacanthos	NSH	Low	1	2.4	24.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	13
silver maple	Acer saccharinum	NSH	Low	0.5	2.3	29.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	14
chokecherry	Prunus virginiana	NSLX	FIA	1.6	1.5	10.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	15
peachleaf willow	Salix amygdaloides	NSLX	FIA	0.4	1.0	35.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	16
black walnut	Juglans nigra	WDH	Low	0.7	0.9	16.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	17
slippery elm	Ulmus rubra	WSL	Low	0.5	0.6	0.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	18
Scots pine	Pinus sylvestris	NSH	FIA	0.4	0.5	17.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	19
bitternut hickory	Carya cordiformis	WSL	Low	0.1	0.3	1.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	20
sugar maple	Acer saccharum	WDH	High	0.4	0.2	8.4	Sm. dec.	No change	High	Rare	Poor	Fair			2	21
wild plum	Prunus americana	NSLX	FIA	0.1	0.1	1.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	22
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	NA	Absent	New Habitat	New Habitat			0	23
mountain maple	Acer spicatum	NSL	Low	0	0	0	New Habitat	Unknown	High	Absent	New Habitat	Unknown			3	24
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	25
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	26
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	27
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	28
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	29
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	30
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	31
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	32
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	33
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	34
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	35
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	36
northern red oak	Quercus rubra	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	37
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	38
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	39
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	40
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	41
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	42
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	43