

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

	sq. km	sq. mi	FIA Plots
Area of Region	10,642	4,108.9	123

**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	8	15	Increase	3	5	Very Good	0	0	Likely	1	1
Hickory	7			Medium	19	31	No Change	12	12	Good	5	7	Infill	6	7
Maple	1	Abundant	1	Low	22	4	Decrease	30	28	Fair	9	9	Migrate	0	0
Oak	12	Common	10	FIA	1		New	1	1	Poor	11	9		7	8
Pine	1	Rare	35				Unknown	4	4	Very Poor	20	20			
Other	23	Absent	4							FIA Only	1	1			
	<b>46</b>		<b>50</b>		<b>50</b>	<b>50</b>		<b>50</b>	<b>50</b>	Unknown	3	3			
											<b>49</b>	<b>49</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	68.0	69.7	70.8	71.3	
	CCSM85	68.0	70.0	72.2	74.3	
	GFDL45	68.0	73.0	72.1	73.5	
	GFDL85	68.0	70.6	73.6	77.0	
	HAD45	68.0	70.1	72.6	73.6	
	HAD85	68.0	70.5	73.9	77.1	
Growing Season (May—Sep)	CCSM45	80.6	82.2	82.8	83.5	
	CCSM85	80.6	82.6	84.4	87.0	
	GFDL45	80.6	86.8	85.2	87.6	
	GFDL85	80.6	83.9	87.3	91.4	
	HAD45	80.6	82.9	85.0	85.7	
	HAD85	80.6	83.3	87.1	89.8	
Coldest Month Average	CCSM45	48.5	50.9	51.4	51.7	
	CCSM85	48.5	50.9	51.9	53.1	
	GFDL45	48.5	52.1	52.2	52.3	
	GFDL85	48.5	49.5	50.6	51.1	
	HAD45	48.5	49.0	50.7	51.3	
	HAD85	48.5	51.1	52.5	54.2	
Warmest Month Average	CCSM45	84.9	86.0	86.5	86.8	
	CCSM85	84.9	86.7	87.3	88.7	
	GFDL45	84.9	89.0	89.3	90.8	
	GFDL85	84.9	89.1	90.7	93.5	
	HAD45	84.9	87.4	88.4	88.7	
	HAD85	84.9	88.0	89.9	90.8	

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	39.0	38.0	43.7	40.2	
	CCSM85	39.0	39.6	42.7	41.7	
	GFDL45	39.0	39.5	45.8	37.3	
	GFDL85	39.0	38.6	40.6	38.9	
	HAD45	39.0	40.5	38.4	40.3	
	HAD85	39.0	41.2	36.0	38.2	
Growing Season (May—Sep)	CCSM45	16.2	16.8	18.5	16.9	
	CCSM85	16.2	16.4	17.0	15.4	
	GFDL45	16.2	17.5	22.1	16.4	
	GFDL85	16.2	17.5	18.5	18.1	
	HAD45	16.2	16.4	15.6	16.9	
	HAD85	16.2	16.8	14.5	14.8	

**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
post oak	Quercus stellata	WDH	High	85.5	833.0	28.5	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
water oak	Quercus nigra	WDH	High	61.9	289.0	9.0	No change	No change	Medium	Common	Fair	Fair			1	2
winged elm	Ulmus alata	WDL	Medium	46.2	240.8	11.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	3
cedar elm	Ulmus crassifolia	NDH	Medium	63.9	230.9	13.1	No change	No change	Low	Common	Poor	Poor			0	4
eastern redcedar	Juniperus virginiana	WDH	Medium	61.3	179.5	9.0	No change	Sm. inc.	Medium	Common	Fair	Good			1	5
pecan	Carya illinoensis	NSH	Low	20.1	87.1	8.2	No change	No change	Low	Common	Poor	Poor			0	6
American elm	Ulmus americana	WDH	Medium	34.2	84.0	9.5	No change	No change	Medium	Common	Fair	Fair			1	7
sugarberry	Celtis laevigata	NDH	Medium	47.8	77.2	4.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
blackjack oak	Quercus marilandica	NSL	Medium	46.7	76.0	5.0	No change	No change	High	Common	Good	Good			1	9
Osage-orange	Maclura pomifera	NDH	Medium	23.8	69.8	3.8	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	10
green ash	Fraxinus pennsylvanica	WSH	Low	34.1	55.3	5.1	No change	No change	Medium	Common	Fair	Fair			1	11
white ash	Fraxinus americana	WDL	Medium	21.6	44.7	4.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	12
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	21.6	39.0	2.5	Sm. dec.	No change	High	Rare	Poor	Fair			1	13
black hickory	Carya texana	NDL	High	21.5	30.1	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	14
honeylocust	Gleditsia triacanthos	NSH	Low	11.5	27.9	3.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor		Infill +	1	15
mockernut hickory	Carya alba	WDL	Medium	13.5	21.7	4.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	16
willow oak	Quercus phellos	NSL	Low	12.8	19.4	5.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	17
common persimmon	Diospyros virginiana	NSL	Low	0.6	18.7	1.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	18
loblolly pine	Pinus taeda	WDH	High	10.2	17.2	5.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	19
live oak	Quercus virginiana	NDH	High	18.7	12.9	5.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	20
water hickory	Carya aquatica	NSL	Medium	5.5	10.8	2.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	21
black walnut	Juglans nigra	WDH	Low	4.8	10.8	5.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	22
water elm	Planera aquatica	NSL	Low	0.5	9.7	5.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	23
black willow	Salix nigra	NSH	Low	1.9	7.6	4.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	24
slippery elm	Ulmus rubra	WSL	Low	11.4	7.0	2.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	25
eastern cottonwood	Populus deltoides	NSH	Low	6.2	6.8	12.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	26
southern red oak	Quercus falcata	WDL	Medium	3.6	6.2	1.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	27
American holly	Ilex opaca	NSL	Medium	1.1	4.7	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	28
red mulberry	Morus rubra	NSL	Low	14.9	4.6	2.2	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
laurel oak	Quercus laurifolia	NDH	Medium	0.3	4.5	1.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
eastern redbud	Cercis canadensis	NSL	Low	2.8	3.3	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
hackberry	Celtis occidentalis	WDH	Medium	6.1	3.0	5.2	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	1	32
Shumard oak	Quercus shumardii	NSL	Low	4.2	2.7	2.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	33
sweetgum	Liquidambar styraciflua	WDH	High	1.6	2.6	1.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	34
bluejack oak	Quercus incana	NSL	Low	0.5	1.9	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
river birch	Betula nigra	NSL	Low	0.9	1.7	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	36
shagbark hickory	Carya ovata	WSL	Medium	0.5	1.4	0.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
boxelder	Acer negundo	WSH	Low	9.4	1.4	1.5	No change	No change	High	Rare	Fair	Fair			0	38
durand oak	Quercus sinuata var. sinuata	NSL	FIA	4.9	1.0	1.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	39
sassafras	Sassafras albidum	WSL	Low	2	0.5	0.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	40
black oak	Quercus velutina	WDH	High	2.3	0.5	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	41
bitternut hickory	Carya cordiformis	WSL	Low	6.7	0.4	0.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	42
bur oak	Quercus macrocarpa	NDH	Medium	0.1	0.4	0.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	43
flowering dogwood	Cornus florida	WDL	Medium	5.3	0.3	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	44
pignut hickory	Carya glabra	WDL	Medium	3.8	0.2	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
blackgum	Nyssa sylvatica	WDL	Medium	3.8	0.2	1.0	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	46
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	47

One x One Degree  
Climate Change Atlas Tree Species

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIaiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	48
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	49
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	50