

**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	9,813.8	3,789.1	46

**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	3			High	6	15	Increase	14	16	Very Good	0	0
Hickory	4			Medium	15	23	No Change	11	9	Good	10	13
Maple	2	Abundant	0	Low	23	9	Decrease	8	8	Fair	13	10
Oak	7	Common	4	FIA	3		New	7	7	Poor	3	5
Pine	0	Rare	32				Unknown	7	7	Very Poor	7	5
Other	20	Absent	11							FIA Only	3	3
	<b>36</b>		<b>47</b>		<b>47</b>	<b>47</b>		<b>47</b>	<b>47</b>	Unknown	4	4
											<b>23</b>	<b>24</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	56.7	58.6	60.4	60.9	
	CCSM85	56.7	59.2	61.3	64.0	
	GFDL45	56.7	62.9	61.8	63.0	
	GFDL85	56.7	59.6	62.6	66.6	
	HAD45	56.7	59.1	62.0	63.0	
	HAD85	56.7	59.5	64.2	67.3	
Growing Season (May—Sep)	CCSM45	73.9	76.2	77.9	78.4	
	CCSM85	73.9	76.9	78.9	82.1	
	GFDL45	73.9	82.3	80.1	82.3	
	GFDL85	73.9	77.6	81.0	86.2	
	HAD45	73.9	76.0	78.3	79.3	
	HAD85	73.9	76.7	81.9	84.6	
Coldest Month (Average)	CCSM45	30.5	32.7	33.9	34.5	
	CCSM85	30.5	33.0	33.7	35.4	
	GFDL45	30.5	34.5	34.8	34.8	
	GFDL85	30.5	32.3	33.6	34.4	
	HAD45	30.5	31.7	34.3	34.2	
	HAD85	30.5	33.8	35.9	37.7	
Warmest Month (Average)	CCSM45	80.4	82.9	84.0	84.5	
	CCSM85	80.4	83.8	84.9	86.7	
	GFDL45	80.4	85.0	86.3	87.8	
	GFDL85	80.4	84.9	86.4	90.6	
	HAD45	80.4	82.5	84.1	84.6	
	HAD85	80.4	84.2	86.8	88.1	

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	38.4	36.8	38.4	37.3	
	CCSM85	38.4	38.0	38.8	39.4	
	GFDL45	38.4	41.0	43.8	41.7	
	GFDL85	38.4	41.7	48.0	45.3	
	HAD45	38.4	41.3	40.2	41.4	
	HAD85	38.4	40.1	36.5	40.0	
Growing Season (May—Sep)	CCSM45	22.2	20.0	20.9	20.3	
	CCSM85	22.2	21.3	21.0	21.4	
	GFDL45	22.2	23.9	24.5	24.0	
	GFDL85	22.2	24.7	28.3	25.9	
	HAD45	22.2	23.3	23.4	23.6	
	HAD85	22.2	22.4	19.4	20.6	

**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	20.8	216.5	18.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	1
Osage-orange	Maclura pomifera	NDH	Medium	49.6	180.5	23.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	2
American elm	Ulmus americana	WDH	Medium	63.3	99.6	11.5	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	3
hackberry	Celtis occidentalis	WDH	Medium	53.9	81.0	11.2	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	4
black walnut	Juglans nigra	WDH	Low	37.1	38.8	8.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	5
green ash	Fraxinus pennsylvanica	WSH	Low	37.3	35.7	7.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	6
blackjack oak	Quercus marilandica	NSL	Medium	18.4	35.7	5.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	7
eastern redcedar	Juniperus virginiana	WDH	Medium	44	29.5	5.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	8
honeylocust	Gleditsia triacanthos	NSH	Low	21.3	17.2	9.7	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	9
bur oak	Quercus macrocarpa	NDH	Medium	17.1	15.1	8.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	10
eastern cottonwood	Populus deltoides	NSH	Low	3.2	13.9	5.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	11
eastern redbud	Cercis canadensis	NSL	Low	23.8	13.7	5.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	12
red mulberry	Morus rubra	NSL	Low	26.5	11.2	2.3	Sm. inc.	No change	Medium	Rare	Fair	Poor	Infill +	Infill +	2	13
slippery elm	Ulmus rubra	WSL	Low	21.5	8.5	2.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	14
bitternut hickory	Carya cordiformis	WSL	Low	10.4	8.4	6.4	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	15
northern catalpa	Catalpa speciosa	NSHX	FIA	1.7	8.4	13.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	16
northern red oak	Quercus rubra	WDH	Medium	9.6	7.2	8.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	17
boxelder	Acer negundo	WSH	Low	14.5	7.0	1.9	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	18
pecan	Carya illinoensis	NSH	Low	6.4	5.9	3.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	19
sycamore	Platanus occidentalis	NSL	Low	11.7	5.7	4.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	20
black oak	Quercus velutina	WDH	High	7.5	4.8	1.7	Sm. inc.	No change	Medium	Rare	Fair	Poor	Infill +	Infill +	2	21
chinkapin oak	Quercus muehlenbergii	NSL	Medium	17.1	4.0	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	22
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	12.9	3.2	2.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			2	23
Shumard oak	Quercus shumardii	NSL	Low	7.1	2.8	0.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	24
sugarberry	Celtis laevigata	NDH	Medium	7.7	2.1	3.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	25
silver maple	Acer saccharinum	NSH	Low	5.3	2.0	3.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	26
wild plum	Prunus americana	NSLX	FIA	5	1.8	1.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	27
common persimmon	Diospyros virginiana	NSL	Low	10.9	1.4	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	28
black willow	Salix nigra	NSH	Low	1.9	1.1	2.0	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	29
shagbark hickory	Quercus ovata	WSL	Medium	4.1	0.8	3.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
blue ash	Fraxinus quadrangulata	NSL	Low	0.1	0.6	0.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	31
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0.1	0.6	0.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	32
black hickory	Carya texana	NDL	High	2.7	0.6	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	33
white ash	Fraxinus americana	WDL	Medium	4.1	0.4	1.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	34
serviceberry	Amelanchier spp.	NSL	Low	0.2	0.2	0.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
black cherry	Prunus serotina	WDL	Medium	0.1	0.1	0.0	No change	Lg. inc.	Low	Rare	Very Poor	Fair			0	36
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	37
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	38
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	39
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	40
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	41
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	42
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +		3	43
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	44
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	45
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	46
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	47

