

**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    10,306    3,979.1      120

**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	7	14	Increase	9	11	Very Good	0	0
Hickory	4			Medium	14	23	No Change	6	7	Good	8	10
Maple	1	Abundant	1	Low	17	4	Decrease	20	17	Fair	6	5
Oak	10	Common	8	FIA	4		New	2	2	Poor	12	11
Pine	0	Rare	30				Unknown	5	5	Very Poor	9	9
Other	21	Absent	3							FIA Only	4	4
	<b>39</b>		<b>42</b>		<b>42</b>	<b>41</b>		<b>42</b>	<b>42</b>	Unknown	1	1
											<b>18</b>	<b>17</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	63.5	65.0	66.6	67.3	
	CCSM85	63.5	65.7	67.7	70.2	
	GFDL45	63.5	68.7	67.9	69.5	
	GFDL85	63.5	66.4	69.4	73.2	
	HAD45	63.5	65.7	68.3	69.2	
	HAD85	63.5	66.0	70.1	73.3	
Growing Season (May—Sep)	CCSM45	78.3	79.7	81.2	82.1	
	CCSM85	78.3	80.7	82.5	85.6	
	GFDL45	78.3	85.2	83.6	86.3	
	GFDL85	78.3	82.4	85.8	90.7	
	HAD45	78.3	80.4	82.7	83.3	
	HAD85	78.3	80.9	85.5	88.3	
Coldest Month (Average)	CCSM45	41.4	43.6	44.3	44.9	
	CCSM85	41.4	43.6	44.5	45.8	
	GFDL45	41.4	44.7	44.7	45.0	
	GFDL85	41.4	42.2	43.6	43.8	
	HAD45	41.4	42.0	44.1	44.5	
	HAD85	41.4	44.5	46.2	47.9	
Warmest Month (Average)	CCSM45	84.3	85.3	86.3	86.6	
	CCSM85	84.3	86.5	87.1	88.9	
	GFDL45	84.3	89.6	89.8	91.9	
	GFDL85	84.3	89.6	91.4	95.5	
	HAD45	84.3	86.4	87.6	87.8	
	HAD85	84.3	87.2	89.5	90.4	

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	36.6	37.7	37.6	36.7	
	CCSM85	36.6	35.5	38.3	38.5	
	GFDL45	36.6	37.9	43.2	36.2	
	GFDL85	36.6	37.4	40.6	39.4	
	HAD45	36.6	37.0	35.9	38.3	
	HAD85	36.6	37.9	33.6	36.6	
Growing Season (May—Sep)	CCSM45	16.9	18.1	16.6	17.0	
	CCSM85	16.9	16.9	16.5	16.1	
	GFDL45	16.9	17.9	20.9	17.3	
	GFDL85	16.9	18.2	19.8	18.4	
	HAD45	16.9	16.9	16.3	17.2	
	HAD85	16.9	17.1	13.9	15.2	

**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	61.4	1098.1	36.4	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
American elm	Ulmus americana	WDH	Medium	46.7	244.9	12.5	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	2
sugarberry	Celtis laevigata	NDH	Medium	66.1	213.4	10.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	3
cedar elm	Ulmus crassifolia	NDH	Medium	46.3	168.9	13.9	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	1	4
blackjack oak	Quercus marilandica	NSL	Medium	35.1	150.9	10.5	No change	No change	High	Common	Good	Good			1	5
eastern redcedar	Juniperus virginiana	WDH	Medium	32.7	119.8	7.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	6
pecan	Carya illinoensis	NSH	Low	38.6	111.2	9.5	Sm. dec.	No change	Low	Common	Poor	Poor			0	7
live oak	Quercus virginiana	NDH	High	8.6	107.5	24.6	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	8
winged elm	Ulmus alata	WDL	Medium	25.6	60.8	5.1	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	9
Texas ash	Fraxinus texensis	NDH	FIA	15.5	49.7	7.4	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	10
Shumard oak	Quercus shumardii	NSL	Low	18.7	46.6	4.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	11
ashe juniper	Juniperus ashei	NDH	High	2.5	45.6	15.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			0	12
black willow	Salix nigra	NSH	Low	18.3	33.6	7.6	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	13
mockernut hickory	Carya alba	WDL	Medium	1	33.0	34.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	14
honeylocust	Gleditsia triacanthos	NSH	Low	28.9	30.9	7.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	15
bur oak	Quercus macrocarpa	NDH	Medium	7.9	27.4	9.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +		2	16
Osage-orange	Maclura pomifera	NDH	Medium	33.2	25.5	6.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	17
common persimmon	Diospyros virginiana	NSL	Low	3.3	25.0	6.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	18
green ash	Fraxinus pennsylvanica	WSH	Low	18.6	21.4	3.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	19
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	26	20.9	3.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	20
eastern cottonwood	Populus deltoides	NSH	Low	10.8	16.6	9.4	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	21
chinkapin oak	Quercus muehlenbergii	NSL	Medium	4.9	15.4	10.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	22
hackberry	Celtis occidentalis	WDH	Medium	25.2	14.2	2.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	23
black hickory	Carya texana	NDL	High	10	9.6	1.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	24
bitternut hickory	Carya cordiformis	WSL	Low	1	7.5	7.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	25
black walnut	Juglans nigra	WDH	Low	7.3	7.0	6.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	26
durand oak	Quercus sinuata var. sinuata	NSL	FIA	5.8	6.7	2.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	27
boxelder	Acer negundo	WSH	Low	6	6.5	6.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	28
waterlocust	Gleditsia aquatica	NSLX	FIA	0.5	6.1	3.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	29
slippery elm	Ulmus rubra	WSL	Low	13.5	5.8	2.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	30
eastern redbud	Cercis canadensis	NSL	Low	13.6	5.6	2.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
sycamore	Platanus occidentalis	NSL	Low	1.2	4.4	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
red mulberry	Morus rubra	NSL	Low	13.5	4.2	2.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	33
white ash	Fraxinus americana	WDL	Medium	2.3	2.5	0.8	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	34
black locust	Robinia pseudoacacia	NDH	Low	1	2.1	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
northern red oak	Quercus rubra	WDH	Medium	5	1.9	2.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	36
black oak	Quercus velutina	WDH	High	1.3	1.3	0.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
wild plum	Prunus americana	NSLX	FIA	2.8	0.9	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
southern red oak	Quercus falcata	WDL	Medium	2.5	0.4	1.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	39
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	40
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	41
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	42