

**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	9,412.7	3,634.3	11

**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									
Hickory	3									
Maple	3	Abundant 0	High 4	16	Increase 7	8	Very Good 0	0	Likely 0	0
Oak	5	Common 0	Medium 20	25	No Change 14	14	Good 5	7	Infill 12	13
Pine	0	Rare 28	Low 23	6	Decrease 7	6	Fair 9	8	Migrate 5	11
Other	15	Absent 16	FIA 0		New 14	15	Poor 7	6	<b>17</b>	<b>24</b>
	<b>28</b>	<b>44</b>	<b>47</b>	<b>47</b>	Unknown 5	4	Very Poor 7	6		
					<b>47</b>	<b>47</b>	FIA Only 0	0		
							Unknown 5	4		
							<b>33</b>	<b>31</b>		

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	51.2	53.1	55.4	55.7	
	CCSM85	51.2	53.8	56.4	59.1	
	GFDL45	51.2	57.5	56.6	57.5	
	GFDL85	51.2	54.2	57.6	61.7	
	HAD45	51.2	54.0	57.5	59.2	
	HAD85	51.2	54.4	59.1	63.6	
Growing Season (May-Sep)	CCSM45	69.3	71.5	73.4	74.2	
	CCSM85	69.3	72.3	74.7	77.9	
	GFDL45	69.3	77.1	75.6	77.1	
	GFDL85	69.3	72.9	76.9	81.9	
	HAD45	69.3	72.4	75.3	77.5	
	HAD85	69.3	72.5	78.2	82.7	
Coldest Month Average	CCSM45	22.0	23.3	25.4	25.6	
	CCSM85	22.0	24.8	26.3	27.7	
	GFDL45	22.0	26.5	27.2	27.8	
	GFDL85	22.0	25.7	27.1	28.2	
	HAD45	22.0	23.6	27.0	26.9	
	HAD85	22.0	25.6	28.6	30.9	
Warmest Month Average	CCSM45	74.9	76.9	78.3	79.2	
	CCSM85	74.9	78.5	80.3	81.8	
	GFDL45	74.9	77.9	79.6	80.7	
	GFDL85	74.9	78.8	80.7	83.7	
	HAD45	74.9	78.2	80.5	81.4	
	HAD85	74.9	79.7	83.2	86.1	

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	37.7	36.4	37.2	36.8	
	CCSM85	37.7	37.3	37.2	38.2	
	GFDL45	37.7	41.4	44.7	45.8	
	GFDL85	37.7	41.3	46.9	47.6	
	HAD45	37.7	39.1	41.1	41.1	
	HAD85	37.7	40.9	39.1	42.7	
Growing Season (May-Sep)	CCSM45	18.7	18.1	17.9	16.6	
	CCSM85	18.7	17.2	16.9	16.5	
	GFDL45	18.7	20.0	20.9	21.5	
	GFDL85	18.7	20.2	21.5	21.0	
	HAD45	18.7	18.8	17.6	18.4	
	HAD85	18.7	18.8	15.9	16.2	

**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
black cherry	Prunus serotina	WDL	Medium	31.3	43.5	11.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			2	1
Osage-orange	Maclura pomifera	NDH	Medium	18.6	35.1	15.7	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	2
bur oak	Quercus macrocarpa	NDH	Medium	14	29.5	27.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	3
honeylocust	Gleditsia triacanthos	NSH	Low	15.7	29.3	6.6	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	4
silver maple	Acer saccharinum	NSH	Low	7.4	27.1	14.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	5
black walnut	Juglans nigra	WDH	Low	11	25.0	8.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	6
eastern cottonwood	Populus deltoides	NSH	Low	10.1	24.9	22.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	7
hackberry	Celtis occidentalis	WDH	Medium	13.7	23.8	9.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	8
sycamore	Platanus occidentalis	NSL	Low	4.4	20.2	26.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	9
American elm	Ulmus americana	WDH	Medium	20.4	16.2	7.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	10
sugar maple	Acer saccharum	WDH	High	6.6	15.8	3.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	11
white oak	Quercus alba	WDH	Medium	8.5	14.9	28.1	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	12
green ash	Fraxinus pennsylvanica	WSH	Low	15.3	14.8	8.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	13
shingle oak	Quercus imbricaria	NDH	Medium	9.3	13.0	8.6	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	14
white ash	Fraxinus americana	WDL	Medium	9	11.1	5.0	No change	No change	Low	Rare	Very Poor	Very Poor			2	15
shagbark hickory	Carya ovata	WSL	Medium	9.9	7.2	8.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	16
slippery elm	Ulmus rubra	WSL	Low	14.5	6.0	5.3	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +		2	17
black willow	Salix nigra	NSH	Low	4.2	4.9	18.6	No change	No change	Low	Rare	Very Poor	Very Poor			2	18
bitternut hickory	Carya cordiformis	WSL	Low	0.2	3.7	0.8	No change	No change	High	Rare	Fair	Fair		Infill +	2	19
northern red oak	Quercus rubra	WDH	Medium	1.6	2.8	1.3	Sm. inc.	No change	High	Rare	Good	Fair		Infill +	2	20
red mulberry	Morus rubra	NSL	Low	4.5	1.6	1.7	Sm. inc.	No change	Medium	Rare	Fair	Poor	Infill +	Infill +	2	21
American basswood	Tilia americana	WSL	Medium	4.2	1.5	5.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			2	22
black oak	Quercus velutina	WDH	High	4.2	1.5	5.7	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	23
boxelder	Acer negundo	WSH	Low	0.7	1.1	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	24
mockernut hickory	Carya alba	WDL	Medium	4.5	1.0	1.1	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	25
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	4.2	0.7	2.7	No change	No change	High	Rare	Fair	Fair			0	26
Ohio buckeye	Aesculus glabra	NSL	Low	1.4	0.5	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	27
sassafras	Sassafras albidum	WSL	Low	0.2	0.3	0.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	29
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	30
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	31
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	32
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	33
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	34
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	35
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	36
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	37
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	38
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	39
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	40
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	41
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	42
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	43
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	44
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	45
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	46
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	47

