

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

Area of Region    sq. km    sq. mi    FIA Plots  
 9,130.7    3,525.4    9

**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	2	13	Increase	7	7	Very Good	0	0
Hickory	2			Medium	15	18	No Change	7	7	Good	3	4
Maple	3	Abundant	0	Low	17	5	Decrease	13	13	Fair	6	6
Oak	5	Common	2	FIA	3		New	5	6	Poor	10	6
Pine	0	Rare	28				Unknown	5	4	Very Poor	7	9
Other	17	Absent	7							FIA Only	2	2
	<b>30</b>		<b>37</b>		<b>37</b>	<b>36</b>		<b>37</b>	<b>37</b>	Unknown	2	1
											<b>15</b>	<b>14</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	47.3	49.3	51.9	52.5
	CCSM85	47.3	50.0	52.8	56.1
	GFDL45	47.3	53.7	52.5	53.7
	GFDL85	47.3	50.3	53.6	58.1
	HAD45	47.3	50.1	53.5	55.2
	HAD85	47.3	50.8	55.3	59.7
Growing Season May—Sep	CCSM45	67.3	69.5	71.9	72.7
	CCSM85	67.3	70.3	73.0	76.9
	GFDL45	67.3	75.3	73.4	75.4
	GFDL85	67.3	71.0	74.7	80.3
	HAD45	67.3	69.6	72.3	74.2
	HAD85	67.3	70.4	75.0	79.1
Coldest Month Average	CCSM45	15.4	17.8	19.9	20.5
	CCSM85	15.4	18.1	19.9	22.0
	GFDL45	15.4	18.9	20.0	20.2
	GFDL85	15.4	18.7	20.3	22.1
	HAD45	15.4	17.6	21.3	21.2
	HAD85	15.4	20.5	24.2	27.1
Warmest Month Average	CCSM45	73.4	75.9	77.6	78.4
	CCSM85	73.4	77.6	79.3	81.8
	GFDL45	73.4	76.6	78.1	79.5
	GFDL85	73.4	77.4	79.1	82.9
	HAD45	73.4	75.6	77.6	78.4
	HAD85	73.4	77.5	80.1	82.8

**Precipitation (in)**

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	32.9	33.0	32.9	32.2
	CCSM85	32.9	33.0	33.8	34.5
	GFDL45	32.9	36.3	39.8	38.4
	GFDL85	32.9	37.0	39.6	39.0
	HAD45	32.9	36.4	35.7	35.5
	HAD85	32.9	33.6	34.0	37.5
Growing Season May—Sep	CCSM45	20.8	20.4	19.9	19.8
	CCSM85	20.8	19.8	19.4	19.3
	GFDL45	20.8	22.7	24.5	22.9
	GFDL85	20.8	23.5	23.8	22.5
	HAD45	20.8	22.0	20.9	20.6
	HAD85	20.8	19.8	19.1	19.0

**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
silver maple	Acer saccharinum	NSH	Low	7.9	69.3	10.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	1
eastern cottonwood	Populus deltoides	NSH	Low	7.8	66.2	36.0	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	2	2
black walnut	Juglans nigra	WDH	Low	24.2	46.0	8.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	3
bur oak	Quercus macrocarpa	NDH	Medium	18.1	40.6	16.2	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	4
American elm	Ulmus americana	WDH	Medium	25.4	36.1	7.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	5
green ash	Fraxinus pennsylvanica	WSH	Low	18.8	30.6	16.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	6
northern red oak	Quercus rubra	WDH	Medium	13.6	24.5	3.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	7
bitternut hickory	Carya cordiformis	WSL	Low	13.6	23.7	9.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	8
boxelder	Acer negundo	WSH	Low	16.2	22.4	3.5	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	9
American basswood	Tilia americana	WSL	Medium	12.7	21.1	4.5	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	10
red mulberry	Morus rubra	NSL	Low	17.5	18.8	6.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	11
slippery elm	Ulmus rubra	WSL	Low	14.6	18.4	3.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	12
white oak	Quercus alba	WDH	Medium	3.9	18.2	3.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +		2	13
hackberry	Celtis occidentalis	WDH	Medium	16.8	17.9	2.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	14
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	6.4	13.6	2.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	15
eastern redcedar	Juniperus virginiana	WDH	Medium	9.4	9.3	5.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	16
black maple	Acer nigrum	NSH	Low	1.7	9.1	2.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	17
shagbark hickory	Carya ovata	WSL	Medium	9.8	8.9	3.1	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	18
white ash	Fraxinus americana	WDL	Medium	3.7	5.7	2.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	19
honeylocust	Gleditsia triacanthos	NSH	Low	6.2	3.6	4.9	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	20
black willow	Salix nigra	NSH	Low	4.9	3.2	4.3	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	21
black ash	Fraxinus nigra	WDH	Medium	1.7	3.0	0.6	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	22
black oak	Quercus velutina	WDH	High	0.4	2.7	1.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	23
black cherry	Prunus serotina	WDL	Medium	0.4	1.6	0.6	Sm. inc.	No change	Low	Rare	Poor	Very Poor	Infill +		2	24
wild plum	Prunus americana	NSLX	FIA	4.7	1.4	1.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	25
serviceberry	Amelanchier spp.	NSL	Low	1.7	1.2	0.2	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	26
Siberian elm	Ulmus pumila	NDH	FIA	4.4	1.1	3.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	27
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	1.3	0.6	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	28
chokecherry	Prunus virginiana	NSLX	FIA	1.3	0.5	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	29
chinkapin oak	Quercus muehlenbergii	NSL	Medium	1.3	0.2	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	30
jack pine	Pinus banksiana	NSH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	31
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	32
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	33
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	34
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	35
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	36
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	37