

**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  
 8,085.7    3,121.9    444

**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	20	17	Increase	17	17	Very Good	4	4	Likely	0	0
Hickory	0			Medium	24	34	No Change	4	4	Good	15	16	Infill	2	2
Maple	5	Abundant	7	Low	20	15	Decrease	12	12	Fair	6	5	Migrate	8	14
Oak	4	Common	14	FIA	4		New	26	29	Poor	4	4		<b>10</b>	<b>16</b>
Pine	4	Rare	16				Unknown	9	6	Very Poor	3	3			
Other	21	Absent	30					<b>68</b>	<b>68</b>	FIA Only	2	2			
	<b>37</b>		<b>67</b>		<b>68</b>	<b>66</b>				Unknown	5	2			
											<b>39</b>	<b>36</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	40.1	41.7	44.9	44.8	
Average	CCSM85	40.1	42.6	45.7	49.3	
	GFDL45	40.1	43.3	46.4	47.9	
	GFDL85	40.1	43.8	47.6	53.0	
	HAD45	40.1	43.6	46.9	48.9	
	HAD85	40.1	43.9	48.0	54.1	
Growing Season	CCSM45	59.1	60.7	63.3	63.3	
	CCSM85	59.1	61.4	64.1	68.1	
May—Sep	GFDL45	59.1	63.4	67.6	69.9	
	GFDL85	59.1	64.2	68.9	75.3	
	HAD45	59.1	62.4	64.6	67.1	
	HAD85	59.1	62.2	66.1	71.9	
Coldest Month	CCSM45	11.0	12.1	14.8	14.4	
	CCSM85	11.0	12.5	14.8	17.5	
Average	GFDL45	11.0	13.5	15.4	16.0	
	GFDL85	11.0	14.4	16.1	19.1	
	HAD45	11.0	13.2	17.4	17.3	
	HAD85	11.0	16.2	18.9	23.6	
Warmest Month	CCSM45	65.3	67.1	68.7	69.0	
	CCSM85	65.3	68.0	69.8	72.0	
Average	GFDL45	65.3	69.9	71.8	73.3	
	GFDL85	65.3	70.6	73.1	76.0	
	HAD45	65.3	68.7	69.5	71.4	
	HAD85	65.3	68.8	70.7	74.6	

**Precipitation (in)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	31.0	32.5	32.2	32.0	
Total	CCSM85	31.0	30.7	31.8	32.0	
	GFDL45	31.0	33.6	35.1	34.5	
	GFDL85	31.0	33.3	36.6	36.7	
	HAD45	31.0	32.4	33.3	33.2	
	HAD85	31.0	32.7	34.2	35.5	
Growing Season	CCSM45	16.7	17.5	16.3	16.5	
	CCSM85	16.7	16.3	16.6	15.5	
May—Sep	GFDL45	16.7	18.0	18.3	18.1	
	GFDL85	16.7	18.0	19.3	18.3	
	HAD45	16.7	16.7	16.4	15.7	
	HAD85	16.7	16.7	15.3	15.8	

**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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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
sugar maple	Acer saccharum	WDH	High	93.6	3069.9	23.6	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	96.7	1653.6	11.4	No change	No change	High	Abundant	Very Good	Very Good			1	2
balsam fir	Abies balsamea	NDH	High	94.8	1222.2	9.3	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	3
quaking aspen	Populus tremuloides	WDH	High	73.8	992.5	8.7	No change	No change	Medium	Abundant	Good	Good			1	4
eastern hemlock	Tsuga canadensis	NSH	High	57.6	585.7	6.9	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	5
northern white-cedar	Thuja occidentalis	WSH	High	68.3	570.8	6.0	No change	No change	Medium	Abundant	Good	Good			1	6
yellow birch	Betula alleghaniensis	NDL	High	85.6	556.0	4.4	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	7
white spruce	Picea glauca	NSL	Medium	83.2	471.9	3.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	8
black spruce	Picea mariana	NSH	High	55.5	414.5	5.5	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	9
paper birch	Betula papyrifera	WDH	High	68.5	309.0	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
black cherry	Prunus serotina	WDL	Medium	72.7	278.5	3.2	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	11
eastern white pine	Pinus strobus	WDH	High	41.4	265.4	4.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	12
red pine	Pinus resinosa	NSH	Medium	28	251.8	6.1	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	13
American basswood	Tilia americana	WSL	Medium	49.1	243.1	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
tamarack (native)	Larix laricina	NSH	High	33.2	166.1	3.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	15
jack pine	Pinus banksiana	NSH	Medium	15.6	154.5	6.8	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	16
northern red oak	Quercus rubra	WDH	Medium	28.5	129.9	2.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
bigtooth aspen	Populus grandidentata	NSL	Medium	28.9	104.3	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
black ash	Fraxinus nigra	WSH	Medium	39.1	102.9	1.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	19
balsam poplar	Populus balsamifera	NSH	Medium	14.6	97.9	5.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	20
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	50.3	93.3	1.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	21
white ash	Fraxinus americana	WDL	Medium	18.1	48.4	1.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	22
American elm	Ulmus americana	WDH	Medium	21.4	30.1	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	23
Scots pine	Pinus sylvestris	NSH	FIA	1.4	11.2	3.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	24
black willow	Salix nigra	NSH	Low	1.2	6.3	5.1	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	25
green ash	Fraxinus pennsylvanica	WSH	Low	3.2	5.6	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	26
serviceberry	Amelanchier spp.	NSL	Low	6.7	4.6	0.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	27
northern pin oak	Quercus ellipsoidalis	NSH	Medium	4.1	4.1	0.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	28
mountain maple	Acer spicatum	NSL	Low	8	3.3	0.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	29
boxelder	Acer negundo	WSH	Low	2.1	2.6	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	30
chokecherry	Prunus virginiana	NSLX	FIA	4	2.5	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	31
pin cherry	Prunus pensylvanica	NSL	Low	1.8	2.3	0.2	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	32
swamp white oak	Quercus bicolor	NSL	Low	0.3	1.5	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	33
rock elm	Ulmus thomasii	NSLX	FIA	0.6	1.3	0.5	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	34
bur oak	Quercus macrocarpa	NDH	Medium	1.2	0.8	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	35
Norway spruce	Picea abies	NSH	FIA	1.2	0.7	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	36
striped maple	Acer pensylvanicum	NSL	Medium	0.3	0.6	0.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	38
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	39
red spruce	Picea rubens	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	40
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	41
sweet birch	Betula lenta	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	42
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	43
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	44
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	45
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	46
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	47



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sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	48
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	49
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	50
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	51
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	52
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	53
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	54
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	55
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	56
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	57
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	58
pin oak	Quercus palustris	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat		Migrate +	3	59
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	60
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	61
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	62
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	63
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	64
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	65
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	66
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	67
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	68