

**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  
 1,046.5    404.1    52

**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			High	15	11	Increase	13	14	Very Good	3	3	Likely	0	0
Hickory	0			Medium	17	23	No Change	4	3	Good	9	9	Infill	8	8
Maple	3	Abundant	8	Low	12	10	Decrease	9	9	Fair	10	10	Migrate	7	11
Oak	1	Common	9	FIA	0		New	17	17	Poor	1	2		15	19
Pine	3	Rare	9				Unknown	1	1	Very Poor	2	1			
Other	17	Absent	18							FIA Only	0	0			
	<b>26</b>		<b>44</b>		<b>44</b>	<b>44</b>		<b>44</b>	<b>44</b>	Unknown	1	1			
											<b>26</b>	<b>26</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	36.8	38.2	41.1	41.3	
Average	CCSM85	36.8	39.1	42.4	46.0	
	GFDL45	36.8	40.1	43.3	45.1	
	GFDL85	36.8	40.5	44.7	50.5	
	HAD45	36.8	40.3	43.5	45.6	
	HAD85	36.8	40.6	44.7	50.9	
Growing Season	CCSM45	58.1	59.6	62.2	62.4	
	CCSM85	58.1	60.5	63.3	67.2	
May—Sep	GFDL45	58.1	62.4	66.4	68.7	
	GFDL85	58.1	63.0	67.7	74.3	
	HAD45	58.1	61.2	63.6	66.1	
	HAD85	58.1	61.1	64.9	70.7	
Coldest Month	CCSM45	2.8	3.6	6.2	6.1	
	CCSM85	2.8	3.7	6.1	8.5	
Average	GFDL45	2.8	6.1	8.4	9.1	
	GFDL85	2.8	7.2	9.2	12.9	
	HAD45	2.8	5.5	9.5	9.5	
	HAD85	2.8	8.5	11.5	15.9	
Warmest Month	CCSM45	65.1	66.7	68.2	68.6	
	CCSM85	65.1	68.0	69.9	72.1	
Average	GFDL45	65.1	70.1	71.9	73.5	
	GFDL85	65.1	70.4	73.0	76.0	
	HAD45	65.1	68.3	69.1	71.1	
	HAD85	65.1	68.4	70.3	74.2	

**Precipitation (in)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	28.6	29.9	30.2	28.7	
Total	CCSM85	28.6	28.1	30.0	29.6	
	GFDL45	28.6	30.4	31.7	30.9	
	GFDL85	28.6	31.4	33.1	33.5	
	HAD45	28.6	30.2	29.5	28.8	
	HAD85	28.6	29.8	30.4	32.0	
Growing Season	CCSM45	17.5	18.3	17.1	16.6	
	CCSM85	17.5	16.5	17.2	16.1	
May—Sep	GFDL45	17.5	18.4	18.4	18.4	
	GFDL85	17.5	19.3	19.7	18.7	
	HAD45	17.5	17.4	15.9	15.5	
	HAD85	17.5	17.3	15.8	15.6	

**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
paper birch	Betula papyrifera	WDH	High	98.6	3269.1	10.0	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
balsam fir	Abies balsamea	NDH	High	98.6	3084.6	9.3	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	2
quaking aspen	Populus tremuloides	WDH	High	87.7	3039.0	10.9	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	3
jack pine	Pinus banksiana	NSH	Medium	51.9	1937.0	13.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	4
black spruce	Picea mariana	NSH	High	89.8	1675.0	6.1	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	5
northern white-cedar	Thuja occidentalis	WSH	High	68.2	1418.0	4.4	Lg. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	6
black ash	Fraxinus nigra	WSH	Medium	27	807.3	6.9	No change	No change	Low	Abundant	Fair	Fair			0	7
red maple	Acer rubrum	WDH	High	48.5	520.7	2.2	Lg. inc.	Lg. inc.	High	Abundant	Very Good	Very Good			1	8
white spruce	Picea glauca	NSL	Medium	85.2	479.7	1.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
eastern white pine	Pinus strobus	WDH	High	19.9	417.2	5.1	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	10
tamarack (native)	Larix laricina	NSH	High	18.1	387.4	2.7	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	11
red pine	Pinus resinosa	NSH	Medium	29.9	379.5	2.3	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	12
mountain maple	Acer spicatum	NSL	Low	56.8	238.7	1.5	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	13
green ash	Fraxinus pennsylvanica	WSH	Low	2.9	98.1	3.1	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	14
yellow birch	Betula alleghaniensis	NDL	High	2.4	94.9	0.6	No change	No change	Medium	Common	Fair	Fair			1	15
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	7.3	63.3	5.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	16
American elm	Ulmus americana	WDH	Medium	7.3	52.9	4.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	17
serviceberry	Amelanchier spp.	NSL	Low	20.9	41.4	1.2	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	18
bigtooth aspen	Populus grandidentata	NSL	Medium	3.4	31.3	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	19
sugar maple	Acer saccharum	WDH	High	7.3	30.8	2.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	20
slippery elm	Ulmus rubra	WSL	Low	7.3	27.5	2.2	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	21
northern red oak	Quercus rubra	WDH	Medium	2.3	19.9	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	22
American basswood	Tilia americana	WSL	Medium	7.3	16.4	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	23
pin cherry	Prunus pensylvanica	NSL	Low	13.8	11.9	0.2	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	24
balsam poplar	Populus balsamifera	NSH	Medium	7.8	9.8	0.2	Lg. inc.	Sm. inc.	Medium	Rare	Good	Fair	Infill ++	Infill +	1	25
American mountain-ash	Sorbus americana	NSL	Low	10.5	4.5	0.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			0	26
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	27
eastern hemlock	Tsuga canadensis	NSH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	28
boxelder	Acer negundo	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	29
sweet birch	Betula lenta	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	30
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	31
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	32
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	33
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	34
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	35
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	36
black cherry	Prunus serotina	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	37
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	38
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	39
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	40
bur oak	Quercus macrocarpa	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	41
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	42
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	43
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	44