

**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    8,213.4    3,171.2      110

**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	14	14	Increase	11	11	Very Good	4	3	Likely	1	1
Hickory	0			Medium	17	25	No Change	3	4	Good	3	6	Infill	13	12
Maple	1	Abundant	2	Low	14	8	Decrease	5	4	Fair	7	5	Migrate	12	14
Oak	1	Common	5	FIA	2		New	24	24	Poor	3	3		26	27
Pine	1	Rare	14				Unknown	4	4	Very Poor	1	0			
Other	16	Absent	25							FIA Only	2	2			
	<b>21</b>		<b>46</b>		<b>47</b>	<b>47</b>		<b>47</b>	<b>47</b>	Unknown	2	2			
											<b>22</b>	<b>21</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	39.0	40.5	43.3	44.0	
	CCSM85	39.0	41.3	44.9	48.6	
	GFDL45	39.0	44.0	44.2	45.8	
	GFDL85	39.0	41.8	45.5	50.6	
	HAD45	39.0	42.4	46.1	48.2	
	HAD85	39.0	42.9	47.3	53.5	
Growing Season (May—Sep)	CCSM45	61.6	63.3	65.7	66.3	
	CCSM85	61.6	64.3	67.3	71.2	
	GFDL45	61.6	67.4	67.8	69.5	
	GFDL85	61.6	64.9	68.8	74.5	
	HAD45	61.6	64.7	67.6	70.0	
	HAD85	61.6	64.6	68.5	74.5	
Coldest Month Average	CCSM45	2.4	4.1	6.5	6.6	
	CCSM85	2.4	3.3	6.3	8.9	
	GFDL45	2.4	5.9	7.5	8.1	
	GFDL85	2.4	6.4	8.2	11.5	
	HAD45	2.4	4.9	9.0	8.8	
	HAD85	2.4	8.0	11.8	15.9	
Warmest Month Average	CCSM45	68.2	70.5	72.0	72.4	
	CCSM85	68.2	71.7	73.9	76.1	
	GFDL45	68.2	71.9	73.6	74.9	
	GFDL85	68.2	72.1	74.3	77.4	
	HAD45	68.2	71.8	73.3	75.3	
	HAD85	68.2	71.9	74.2	78.1	

**Precipitation (in)**

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	22.1	22.0	22.3	21.3	
	CCSM85	22.1	21.9	22.0	21.6	
	GFDL45	22.1	24.4	26.0	25.9	
	GFDL85	22.1	25.8	26.6	27.1	
	HAD45	22.1	22.9	21.2	22.4	
	HAD85	22.1	22.2	22.1	23.5	
Growing Season (May—Sep)	CCSM45	15.4	15.2	15.0	14.2	
	CCSM85	15.4	14.7	14.6	14.0	
	GFDL45	15.4	17.3	18.1	17.9	
	GFDL85	15.4	17.9	18.4	18.1	
	HAD45	15.4	15.4	13.4	13.6	
	HAD85	15.4	14.5	13.4	12.9	

**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
quaking aspen	Populus tremuloides	WDH	High	69	2927.2	56.1	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair	Infill +	Infill +	0	1
balsam poplar	Populus balsamifera	NSH	Medium	55.4	728.7	18.5	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair	Infill +	Infill +	0	2
bur oak	Quercus macrocarpa	NDH	Medium	53.9	485.4	13.1	Sm. inc.	No change	High	Common	Very Good	Good	Infill ++	Infill ++	1	3
green ash	Fraxinus pennsylvanica	WSH	Low	33.3	172.1	9.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	4
boxelder	Acer negundo	WSH	Low	37.2	123.4	12.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	5
American elm	Ulmus americana	WDH	Medium	23.4	98.2	8.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2	6
balsam fir	Abies balsamea	NDH	High	1.5	52.2	13.3	Sm. dec.	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	7
black ash	Fraxinus nigra	WSH	Medium	12.3	43.7	3.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	8
chokecherry	Prunus virginiana	NSLX	FIA	21.3	10.4	1.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	9
white spruce	Picea glauca	NSL	Medium	1.5	9.8	3.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	10
paper birch	Betula papyrifera	WDH	High	1.5	8.8	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	11
slippery elm	Ulmus rubra	WSL	Low	1.2	7.3	6.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	12
peachleaf willow	Salix amygdaloides	NSLX	FIA	2.8	4.4	2.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	13
pin cherry	Prunus pensylvanica	NSL	Low	1.2	4.2	3.5	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	14
jack pine	Pinus banksiana	NSH	Medium	2.2	3.9	5.8	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	15
American basswood	Tilia americana	WSL	Medium	6.2	1.6	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	16
tamarack (native)	Larix laricina	NSH	High	1.2	1.5	1.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	17
eastern cottonwood	Populus deltoides	NSH	Low	1.3	1.2	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	18
serviceberry	Amelanchier spp.	NSL	Low	9.1	0.9	0.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	19
hackberry	Celtis occidentalis	WDH	Medium	1.3	0.7	0.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	20
black willow	Salix nigra	NSH	Low	1.6	0.5	0.5	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2	21
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	22
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	23
black spruce	Picea mariana	NSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	24
red pine	Pinus resinosa	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	25
eastern white pine	Pinus strobus	WDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	26
northern white-cedar	Thuja occidentalis	WSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	27
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	28
red maple	Acer rubrum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	29
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	30
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	31
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	32
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	33
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	34
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	35
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	36
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	37
bigtooth aspen	Populus grandidentata	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	38
black cherry	Prunus serotina	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	39
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	40
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	41
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	42
northern red oak	Quercus rubra	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	43
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	44
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	45
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	46
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	47

