

**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    6,517.9    2,516.6      270

**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	15	16	Increase	18	18	Very Good	6	6	Likely	3	3
Hickory	1			Medium	22	32	No Change	6	6	Good	11	13	Infill	4	5
Maple	5	Abundant	6	Low	19	10	Decrease	13	13	Fair	8	7	Migrate	4	8
Oak	5	Common	19	FIA	3		New	16	16	Poor	8	7			
Pine	4	Rare	15				Unknown	6	6	Very Poor	3	3			
Other	22	Absent	17							FIA Only	2	2			
	<b>40</b>		<b>57</b>		<b>59</b>	<b>58</b>		<b>59</b>	<b>59</b>	Unknown	3	3			
											<b>41</b>	<b>41</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	42.5	44.2	47.3	47.2	
Average	CCSM85	42.5	45.0	48.0	51.6	
	GFDL45	42.5	45.7	48.6	50.0	
	GFDL85	42.5	46.0	49.8	54.9	
	HAD45	42.5	45.9	49.2	51.2	
	HAD85	42.5	46.2	50.4	56.3	
Growing Season	CCSM45	61.2	62.8	65.3	65.4	
	CCSM85	61.2	63.4	66.1	70.0	
May—Sep	GFDL45	61.2	65.4	69.2	71.3	
	GFDL85	61.2	66.0	70.6	76.5	
	HAD45	61.2	64.5	66.6	69.0	
	HAD85	61.2	64.2	68.1	73.8	
Coldest Month	CCSM45	13.6	15.0	17.8	17.5	
	CCSM85	13.6	15.6	18.0	20.6	
Average	GFDL45	13.6	16.1	18.0	18.5	
	GFDL85	13.6	17.1	18.7	21.5	
	HAD45	13.6	15.6	19.6	19.8	
	HAD85	13.6	18.2	21.3	25.9	
Warmest Month	CCSM45	67.4	69.4	70.8	71.2	
	CCSM85	67.4	70.2	72.0	74.1	
Average	GFDL45	67.4	71.7	73.6	75.1	
	GFDL85	67.4	72.5	75.0	77.9	
	HAD45	67.4	70.8	71.6	73.5	
	HAD85	67.4	71.0	73.0	77.0	

**Precipitation (in)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	30.0	30.7	30.3	31.0	
Total	CCSM85	30.0	30.6	30.5	31.6	
	GFDL45	30.0	32.3	34.1	33.5	
	GFDL85	30.0	32.3	35.2	36.0	
	HAD45	30.0	31.1	32.5	32.7	
	HAD85	30.0	32.0	33.4	34.7	
Growing Season	CCSM45	16.4	16.7	15.8	16.6	
	CCSM85	16.4	16.7	16.2	15.7	
May—Sep	GFDL45	16.4	17.4	17.9	17.5	
	GFDL85	16.4	17.6	18.0	17.7	
	HAD45	16.4	16.2	15.7	15.7	
	HAD85	16.4	16.7	15.0	15.5	

**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
northern white-cedar	Thuja occidentalis	WSH	High	83.5	2328.8	18.6	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	62.6	1119.3	13.3	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	70	961.8	9.4	No change	No change	High	Abundant	Very Good	Very Good			1	3
quaking aspen	Populus tremuloides	WDH	High	85.9	899.5	7.3	No change	No change	Medium	Abundant	Good	Good			1	4
balsam fir	Abies balsamea	NDH	High	84.9	850.6	6.6	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	5
black ash	Fraxinus nigra	WSH	Medium	69.5	606.6	5.5	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	6
eastern white pine	Pinus strobus	WDH	High	53.6	499.8	6.8	No change	No change	Low	Common	Poor	Poor			0	7
white spruce	Picea glauca	NSL	Medium	65.5	443.7	3.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
balsam poplar	Populus balsamifera	NSH	Medium	55.6	407.5	4.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	9
tamarack (native)	Larix laricina	NSH	High	56.7	390.3	5.3	No change	No change	Low	Common	Poor	Poor			0	10
paper birch	Betula papyrifera	WDH	High	76.7	340.6	3.0	No change	No change	Medium	Common	Fair	Fair			1	11
red pine	Pinus resinosa	NSH	Medium	29.5	294.7	7.2	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	12
American basswood	Tilia americana	WSL	Medium	39.6	263.6	4.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	13
American elm	Ulmus americana	WDH	Medium	49.7	238.4	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
black spruce	Picea mariana	NSH	High	47.4	219.7	3.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	15
eastern hemlock	Tsuga canadensis	NSH	High	35.6	212.5	3.7	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	16
green ash	Fraxinus pennsylvanica	WSH	Low	37.9	205.2	4.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
bigtooth aspen	Populus grandidentata	NSL	Medium	34.2	200.7	4.0	Sm. inc.	No change	Medium	Common	Good	Fair			1	18
northern red oak	Quercus rubra	WDH	Medium	33.6	156.0	3.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	19
white ash	Fraxinus americana	WDL	Medium	40.1	154.7	2.4	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	20
jack pine	Pinus banksiana	NSH	Medium	13.1	132.5	6.7	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	21
northern pin oak	Quercus ellipsoidalis	NSH	Medium	15.5	104.5	5.7	Lg. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	22
black cherry	Prunus serotina	WDL	Medium	40.7	91.3	1.3	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	23
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	43.8	85.1	1.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	24
yellow birch	Betula alleghaniensis	NDL	High	34.8	78.9	1.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	25
silver maple	Acer saccharinum	NSH	Low	4.6	49.2	10.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	26
Scots pine	Pinus sylvestris	NSH	FIA	3.1	41.8	13.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	27
American beech	Fagus grandifolia	WDH	High	21	29.6	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	28
boxelder	Acer negundo	WSH	Low	5.7	27.6	4.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	29
bitternut hickory	Carya cordiformis	WSL	Low	1.5	11.3	0.5	No change	Sm. inc.	High	Rare	Fair	Good			2	30
serviceberry	Amelanchier spp.	NSL	Low	12.7	9.3	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
chokecherry	Prunus virginiana	NSLX	FIA	9.5	9.2	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	32
bur oak	Quercus macrocarpa	NDH	Medium	5.9	7.6	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	33
mountain maple	Acer spicatum	NSL	Low	3.3	7.5	0.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	34
white oak	Quercus alba	WDH	Medium	2.6	6.5	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	35
pin oak	Quercus palustris	NSH	Low	1.5	3.8	2.5	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair		Infill +	2	36
pin cherry	Prunus pennsylvanica	NSL	Low	3.7	3.7	0.7	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	37
peachleaf willow	Salix amygdaloides	NSLX	FIA	3.1	1.8	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	1.5	0.7	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
slippery elm	Ulmus rubra	WSL	Low	0.2	0.2	0.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			0	40
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	41
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	42
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	43
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	44
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	45
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	46
American holly	Ilex opaca	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	47



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black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	48
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	49
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	50
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	51
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				52
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	53
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	54
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	55
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	56
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	57
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	58
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	59