

**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    5,813.4    2,244.6      216

**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	Scenario	Scenario	Scenario	SHIFT	SHIFT
				High	Low	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Ash	3			20	17	Increase	17	16	Very Good	4	4
Hickory	0			22	33	No Change	4	5	Good	12	12
Maple	5	Abundant	6	19	12	Decrease	9	9	Fair	8	7
Oak	1	Common	15	1		New	27	27	Poor	4	4
Pine	3	Rare	10			Unknown	5	5	Very Poor	2	2
Other	19	Absent	28	<b>62</b>	<b>62</b>		<b>62</b>	<b>62</b>	FIA Only	1	1
	<b>31</b>		<b>59</b>						Unknown	4	4
										<b>10</b>	<b>13</b>
										<b>10</b>	<b>18</b>
										<b>35</b>	<b>34</b>

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	40.9	42.5	45.7	45.6	
Average	CCSM85	40.9	43.4	46.5	50.1	
	GFDL45	40.9	44.2	47.2	48.7	
	GFDL85	40.9	44.5	48.4	53.7	
	HAD45	40.9	44.4	47.6	49.7	
	HAD85	40.9	44.7	48.8	54.9	
Growing Season	CCSM45	59.5	60.9	63.4	63.5	
	CCSM85	59.5	61.6	64.3	68.1	
May—Sep	GFDL45	59.5	64.1	68.1	70.3	
	GFDL85	59.5	64.6	69.4	75.7	
	HAD45	59.5	62.7	64.8	67.3	
	HAD85	59.5	62.5	66.3	72.1	
Coldest Month	CCSM45	12.7	14.0	16.9	16.4	
	CCSM85	12.7	14.4	16.8	19.5	
Average	GFDL45	12.7	15.1	17.1	17.6	
	GFDL85	12.7	15.9	17.7	20.6	
	HAD45	12.7	15.1	19.2	19.3	
	HAD85	12.7	17.9	20.7	25.5	
Warmest Month	CCSM45	65.8	67.6	69.2	69.4	
	CCSM85	65.8	68.5	70.3	72.4	
Average	GFDL45	65.8	70.6	72.5	74.0	
	GFDL85	65.8	71.3	73.9	76.7	
	HAD45	65.8	69.2	70.0	71.8	
	HAD85	65.8	69.2	71.2	75.1	

**Precipitation (in)**

Scenario	2009	2039	2069	2099		
Annual	CCSM45	31.0	32.2	32.2	32.1	
Total	CCSM85	31.0	31.0	31.7	32.3	
	GFDL45	31.0	33.5	35.2	34.8	
	GFDL85	31.0	33.2	36.6	37.3	
	HAD45	31.0	32.8	33.9	33.8	
	HAD85	31.0	33.2	34.8	36.3	
Growing Season	CCSM45	15.8	16.3	15.4	15.6	
	CCSM85	15.8	15.5	15.5	14.7	
May—Sep	GFDL45	15.8	16.8	17.4	17.3	
	GFDL85	15.8	17.0	18.1	17.5	
	HAD45	15.8	16.0	15.6	15.1	
	HAD85	15.8	16.2	14.7	15.3	

**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	77.3	1787.2	16.3	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	83.7	1443.0	12.0	No change	No change	High	Abundant	Very Good	Very Good			1	2
northern white-cedar	Thuja occidentalis	WSH	High	67.6	1283.2	11.1	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	3
balsam fir	Abies balsamea	NDH	High	93.5	1238.8	9.3	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	4
quaking aspen	Populus tremuloides	WDH	High	64.2	1058.5	10.5	No change	No change	Medium	Abundant	Good	Good			1	5
black spruce	Picea mariana	NSH	High	63.4	590.7	7.5	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	6
jack pine	Pinus banksiana	NSH	Medium	25.2	496.8	16.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	7
balsam poplar	Populus balsamifera	NSH	Medium	27.5	400.3	6.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
black ash	Fraxinus nigra	WSH	Medium	41.1	317.5	5.1	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	9
eastern hemlock	Tsuga canadensis	NSH	High	49.3	298.2	4.0	Sm. inc.	No change	Low	Common	Fair	Poor			1	10
white spruce	Picea glauca	NSL	Medium	70	293.8	2.8	No change	No change	Medium	Common	Fair	Fair			1	11
red pine	Pinus resinosa	NSH	Medium	28.9	289.5	7.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	12
tamarack (native)	Larix laricina	NSH	High	26.4	284.8	8.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	13
paper birch	Betula papyrifera	WDH	High	66.6	284.6	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
eastern white pine	Pinus strobus	WDH	High	43.8	252.4	4.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	15
bigtooth aspen	Populus grandidentata	NSL	Medium	36.1	244.0	6.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
yellow birch	Betula alleghaniensis	NDL	High	52.5	198.1	2.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
northern red oak	Quercus rubra	WDH	Medium	25.3	183.1	6.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
black cherry	Prunus serotina	WDL	Medium	47.3	154.0	2.2	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	19
American basswood	Tilia americana	WSL	Medium	17.7	113.9	3.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	44.2	75.2	1.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	21
American elm	Ulmus americana	WDH	Medium	9.5	30.4	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	22
pin cherry	Prunus pennsylvanica	NSL	Low	5.1	30.2	4.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	23
American beech	Fagus grandifolia	WDH	High	2.8	29.7	6.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	24
green ash	Fraxinus pennsylvanica	WSH	Low	9.2	19.2	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	25
silver maple	Acer saccharinum	NSH	Low	3.4	14.1	4.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	26
white ash	Fraxinus americana	WDL	Medium	3.8	13.2	1.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	27
striped maple	Acer pensylvanicum	NSL	Medium	9.6	10.8	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
mountain maple	Acer spicatum	NSL	Low	9	3.6	0.4	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			1	29
serviceberry	Amelanchier spp.	NSL	Low	4.1	2.7	0.4	No change	No change	Medium	Rare	Poor	Poor			1	30
chokecherry	Prunus virginiana	NSLX	FIA	6	2.3	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	31
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	32
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	33
red spruce	Picea rubens	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	34
boxelder	Acer negundo	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	35
sweet birch	Betula lenta	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	36
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	37
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	38
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	39
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	40
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	41
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	42
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	43
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	44
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	45
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	46
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	47



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eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	48
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	49
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	50
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	51
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	52
bur oak	Quercus macrocarpa	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	53
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	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
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	57
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	58
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	59
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	60
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	61
slippery elm	Ulmus rubra	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	62