

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 8,376.7 3,234.3 535

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	12	13	Increase	15	18	Very Good	7	7	Likely	0	0
Hickory	0			Medium	17	24	No Change	4	4	Good	7	9	Infill	3	4
Maple	5	Abundant	7	Low	17	11	Decrease	13	10	Fair	10	11	Migrate	7	12
Oak	3	Common	13	FIA	2		New	13	13	Poor	3	2		10	16
Pine	3	Rare	14				Unknown	3	3	Very Poor	5	1			
Other	21	Absent	13							FIA Only	2	2			
	34		47		48	48		48	48	Unknown	1	1			
											35	33			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	39.3	40.8	43.7	44.1	
	CCSM85	39.3	41.6	45.0	48.6	
	GFDL45	39.3	42.2	45.0	46.8	
	GFDL85	39.3	42.6	46.4	51.6	
	HAD45	39.3	42.4	46.1	48.1	
	HAD85	39.3	43.0	47.2	53.2	
Growing Season (May—Sep)	CCSM45	60.4	62.0	64.5	64.9	
	CCSM85	60.4	63.1	65.9	70.0	
	GFDL45	60.4	63.7	67.2	69.4	
	GFDL85	60.4	64.4	68.4	74.2	
	HAD45	60.4	63.5	66.5	68.8	
	HAD85	60.4	63.4	67.6	73.7	
Coldest Month Average	CCSM45	4.8	6.5	8.9	9.0	
	CCSM85	4.8	5.9	8.5	10.9	
	GFDL45	4.8	8.6	10.5	11.3	
	GFDL85	4.8	9.4	11.2	14.7	
	HAD45	4.8	6.9	11.0	10.9	
	HAD85	4.8	10.5	13.6	17.8	
Warmest Month Average	CCSM45	67.0	68.9	70.5	71.0	
	CCSM85	67.0	70.4	72.4	75.0	
	GFDL45	67.0	70.9	72.3	74.1	
	GFDL85	67.0	71.4	73.6	76.7	
	HAD45	67.0	70.4	71.8	73.7	
	HAD85	67.0	70.6	72.7	76.8	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	27.8	28.5	28.4	27.7	
	CCSM85	27.8	27.4	28.3	27.8	
	GFDL45	27.8	30.7	32.1	30.1	
	GFDL85	27.8	31.2	33.3	32.8	
	HAD45	27.8	29.2	27.3	29.0	
	HAD85	27.8	29.2	28.9	30.2	
Growing Season (May—Sep)	CCSM45	18.2	18.3	17.5	17.4	
	CCSM85	18.2	17.4	17.1	16.2	
	GFDL45	18.2	20.5	20.6	19.5	
	GFDL85	18.2	20.8	21.4	20.1	
	HAD45	18.2	18.5	16.5	17.1	
	HAD85	18.2	18.2	16.3	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
quaking aspen	Populus tremuloides	WDH	High	97	3133.1	23.1	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
balsam fir	Abies balsamea	NDH	High	96.1	1095.4	7.7	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	2
black ash	Fraxinus nigra	WSH	Medium	91.6	1065.6	8.3	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	3
tamarack (native)	Larix laricina	NSH	High	69.2	1035.2	9.2	No change	No change	Low	Abundant	Fair	Fair			0	4
black spruce	Picea mariana	NSH	High	73.2	1001.6	8.4	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	5
northern white-cedar	Thuja occidentalis	WSH	High	57.4	974.7	10.6	Sm. dec.	No change	Medium	Abundant	Fair	Good			1	6
paper birch	Betula papyrifera	WDH	High	93.9	763.4	5.8	No change	No change	Medium	Abundant	Good	Good			1	7
balsam poplar	Populus balsamifera	NSH	Medium	68.9	464.2	4.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
red pine	Pinus resinosa	NSH	Medium	38	387.5	8.2	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	9
red maple	Acer rubrum	WDH	High	79.8	386.5	3.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	10
American basswood	Tilia americana	WSL	Medium	48.9	298.4	4.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
sugar maple	Acer saccharum	WDH	High	45.3	280.3	4.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	12
white spruce	Picea glauca	NSL	Medium	63	255.6	2.9	Sm. dec.	No change	Medium	Common	Poor	Fair			1	13
jack pine	Pinus banksiana	NSH	Medium	22.3	137.4	4.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	14
bur oak	Quercus macrocarpa	NDH	Medium	31.4	133.6	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
bigtooth aspen	Populus grandidentata	NSL	Medium	40.5	116.5	2.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
American elm	Ulmus americana	WDH	Medium	57.6	110.8	1.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
green ash	Fraxinus pennsylvanica	WSH	Low	34.8	108.0	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
northern red oak	Quercus rubra	WDH	Medium	27.2	75.5	2.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	19
eastern white pine	Pinus strobus	WDH	High	22.3	64.3	2.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	20
yellow birch	Betula alleghaniensis	NDL	High	18.7	29.3	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	21
silver maple	Acer saccharinum	NSH	Low	5.5	29.2	4.3	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	22
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	22.7	27.6	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	23
mountain maple	Acer spicatum	NSL	Low	26.2	19.7	0.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	24
boxelder	Acer negundo	WSH	Low	7.6	18.6	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	25
chokecherry	Prunus virginiana	NSLX	FIA	24.2	18.0	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	26
pin cherry	Prunus pensylvanica	NSL	Low	8.8	7.7	0.8	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	27
serviceberry	Amelanchier spp.	NSL	Low	11.2	3.7	0.3	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	28
American mountain-ash	Sorbus americana	NSL	Low	2.4	2.5	1.0	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	29
black cherry	Prunus serotina	WDL	Medium	4.5	2.3	0.4	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	30
northern pin oak	Quercus ellipsoidalis	NSH	Medium	1.3	1.0	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	31
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	1.2	0.7	0.6	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair			0	32
peachleaf willow	Salix amygdaloides	NSLX	FIA	0.6	0.7	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	33
black willow	Salix nigra	NSH	Low	1.2	0.5	0.4	Lg. dec.	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	34
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	35
eastern hemlock	Tsuga canadensis	NSH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +		3	36
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	37
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	38
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	39
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	40
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	41
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	42
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	43
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	44
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	45
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	46
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	47



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slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	48