

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 3,234.3 533

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	13	13	Increase	17	20	Very Good	3	3	Likely	0	0
Hickory	0			Medium	17	26	No Change	4	1	Good	13	14	Infill	6	8
Maple	5	Abundant	7	Low	17	10	Decrease	10	10	Fair	8	8	Migrate	2	16
Oak	3	Common	8	FIA	3		New	15	16	Poor	3	3		8	24
Pine	4	Rare	19				Unknown	4	3	Very Poor	2	1			
Other	20	Absent	16							FIA Only	2	2			
	34		50		50	49		50	50	Unknown	1	0			
											32	31			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	38.0	39.5	42.5	42.7	
	CCSM85	38.0	40.4	43.6	47.3	
	GFDL45	38.0	41.1	44.0	45.8	
	GFDL85	38.0	41.5	45.3	50.8	
	HAD45	38.0	41.3	44.7	46.8	
	HAD85	38.0	41.8	45.9	51.9	
Growing Season (May—Sep)	CCSM45	58.8	60.4	62.9	63.2	
	CCSM85	58.8	61.4	64.2	68.3	
	GFDL45	58.8	62.4	66.1	68.3	
	GFDL85	58.8	63.0	67.2	73.3	
	HAD45	58.8	61.9	64.6	66.9	
	HAD85	58.8	61.8	65.8	71.7	
Coldest Month Average	CCSM45	4.4	5.8	8.3	8.3	
	CCSM85	4.4	5.3	7.8	10.2	
	GFDL45	4.4	8.0	10.0	10.8	
	GFDL85	4.4	8.9	10.8	14.4	
	HAD45	4.4	6.6	10.7	10.6	
	HAD85	4.4	10.0	13.1	17.3	
Warmest Month Average	CCSM45	65.4	67.2	68.8	69.3	
	CCSM85	65.4	68.6	70.6	73.1	
	GFDL45	65.4	69.5	71.0	72.7	
	GFDL85	65.4	70.1	72.4	75.5	
	HAD45	65.4	68.6	69.8	71.7	
	HAD85	65.4	68.8	70.8	74.8	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	28.1	28.9	28.9	28.4	
	CCSM85	28.1	27.7	29.2	28.4	
	GFDL45	28.1	30.6	31.9	30.2	
	GFDL85	28.1	31.3	33.4	32.9	
	HAD45	28.1	29.5	27.8	28.8	
	HAD85	28.1	29.4	29.3	30.5	
Growing Season (May—Sep)	CCSM45	18.3	18.4	17.8	17.7	
	CCSM85	18.3	17.5	17.7	16.6	
	GFDL45	18.3	20.1	20.1	19.1	
	GFDL85	18.3	20.5	21.2	19.7	
	HAD45	18.3	18.5	16.5	16.9	
	HAD85	18.3	18.1	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	92	2690.2	20.1	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
black spruce	Picea mariana	NSH	High	93.7	2281.5	17.2	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	2
balsam fir	Abies balsamea	NDH	High	93.7	1412.6	11.0	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	3
tamarack (native)	Larix laricina	NSH	High	77.7	1137.1	10.7	No change	No change	Low	Abundant	Fair	Fair			0	4
paper birch	Betula papyrifera	WDH	High	91.6	914.9	7.0	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	5
red maple	Acer rubrum	WDH	High	80	599.9	5.1	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	6
black ash	Fraxinus nigra	WSH	Medium	64.8	515.8	5.5	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	7
northern white-cedar	Thuja occidentalis	WSH	High	48.9	443.8	7.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
jack pine	Pinus banksiana	NSH	Medium	36.2	385.3	5.7	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	9
red pine	Pinus resinosa	NSH	Medium	36.5	360.8	6.4	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	10
balsam poplar	Populus balsamifera	NSH	Medium	60.6	255.7	3.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
white spruce	Picea glauca	NSL	Medium	66.1	226.7	2.4	No change	Sm. inc.	Medium	Common	Fair	Good			1	12
eastern white pine	Pinus strobus	WDH	High	27.1	186.5	4.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	13
sugar maple	Acer saccharum	WDH	High	15.3	86.9	3.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	14
bigtooth aspen	Populus grandidentata	NSL	Medium	25.5	69.3	1.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
American basswood	Tilia americana	WSL	Medium	12.4	45.1	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	16
yellow birch	Betula alleghaniensis	NDL	High	14.8	39.4	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	17
peachleaf willow	Salix amygdaloides	NSLX	FIA	14	37.5	2.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	18
green ash	Fraxinus pennsylvanica	WSH	Low	11.4	29.9	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	19
mountain maple	Acer spicatum	NSL	Low	32.8	28.0	0.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	20
boxelder	Acer negundo	WSH	Low	2.2	28.0	4.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	21
American elm	Ulmus americana	WDH	Medium	15.4	23.3	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	22
chokecherry	Prunus virginiana	NSLX	FIA	12.3	21.8	1.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	23
bur oak	Quercus macrocarpa	NDH	Medium	6.3	21.1	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	24
northern red oak	Quercus rubra	WDH	Medium	11.4	20.0	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	25
black willow	Salix nigra	NSH	Low	15.6	14.3	0.6	Very Lg. dec.	Lg. inc.	Low	Rare	Lost	Fair		Infill +	1	26
silver maple	Acer saccharinum	NSH	Low	3.6	14.3	3.9	No change	Lg. inc.	High	Rare	Fair	Good		Infill ++	2	27
Scots pine	Pinus sylvestris	NSH	FIA	2.4	4.8	2.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	28
serviceberry	Amelanchier spp.	NSL	Low	12.1	4.4	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	29
pin cherry	Prunus pensylvanica	NSL	Low	5.4	2.6	0.3	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	30
northern pin oak	Quercus ellipsoidalis	NSH	Medium	3.4	1.6	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	31
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	1.3	1.2	0.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	32
black cherry	Prunus serotina	WDL	Medium	2.8	1.1	0.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	33
American mountain-ash	Sorbus americana	NSL	Low	2.7	0.9	0.1	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	34
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	35
eastern hemlock	Tsuga canadensis	NSH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	36
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	37
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	38
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	39
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	40
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	41
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	42
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	43
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	44
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	45
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	46
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	47



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black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	48
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	49
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	50