

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 3,234.3 303

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		
		Abundant	Common	High	Low	Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT	
				Reliability	Adaptability	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85	
Ash	2					Increase	16	17	Very Good	7	7	
Hickory	0					No Change	8	4	Good	9	9	
Maple	5	4		High	12	15	Decrease	8	11	Fair	9	8
Oak	3	18		Medium	19	27	New	15	15	Poor	3	5
Pine	3			Low	19	10	Unknown	5	5	Very Poor	3	0
Other	21	18		FIA	2				FIA Only	2	2	
	34	52			52	52			Unknown	3	3	
							52	52		36	34	

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	39.5	41.1	44.0	44.5	
Average	CCSM85	39.5	41.8	45.3	49.0	
	GFDL45	39.5	43.5	44.7	46.4	
	GFDL85	39.5	42.5	46.1	51.1	
	HAD45	39.5	42.6	46.3	48.3	
	HAD85	39.5	43.1	47.5	53.4	
Growing Season	CCSM45	61.3	63.0	65.5	66.0	
	CCSM85	61.3	63.9	67.0	71.0	
May—Sep	GFDL45	61.3	65.8	67.5	69.5	
	GFDL85	61.3	64.8	68.6	74.3	
	HAD45	61.3	64.3	67.3	69.5	
	HAD85	61.3	64.2	68.2	74.3	
Coldest Month	CCSM45	4.1	5.9	8.2	8.4	
	CCSM85	4.1	5.3	8.1	10.6	
Average	GFDL45	4.1	7.6	9.3	9.9	
	GFDL85	4.1	8.4	10.1	13.3	
	HAD45	4.1	6.2	10.3	10.0	
	HAD85	4.1	9.6	13.1	17.2	
Warmest Month	CCSM45	68.1	70.2	71.7	72.2	
	CCSM85	68.1	71.5	73.7	76.1	
Average	GFDL45	68.1	71.7	73.1	74.7	
	GFDL85	68.1	72.0	74.2	77.4	
	HAD45	68.1	71.4	72.9	74.9	
	HAD85	68.1	71.5	73.8	77.7	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	25.2	25.9	26.2	25.2	
Total	CCSM85	25.2	25.4	25.6	25.4	
	GFDL45	25.2	28.2	29.9	28.3	
	GFDL85	25.2	29.1	30.7	30.3	
	HAD45	25.2	26.6	24.8	26.7	
	HAD85	25.2	26.6	25.8	27.7	
Growing Season	CCSM45	17.2	17.2	16.8	16.6	
	CCSM85	17.2	16.6	16.4	15.6	
May—Sep	GFDL45	17.2	19.5	20.3	19.1	
	GFDL85	17.2	19.8	20.6	19.6	
	HAD45	17.2	17.4	15.6	16.1	
	HAD85	17.2	17.2	15.2	15.2	

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	90.5	2206.5	23.1	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	1
bur oak	Quercus macrocarpa	NDH	Medium	89.1	1005.9	12.1	No change	Sm. dec.	High	Abundant	Very Good	Good			1	2
American basswood	Tilia americana	WSL	Medium	66.1	601.8	8.9	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	3
black ash	Fraxinus nigra	WSH	Medium	65.2	510.9	7.5	No change	No change	Low	Abundant	Fair	Fair			0	4
paper birch	Betula papyrifera	WDH	High	57.5	467.6	6.0	No change	Sm. dec.	Medium	Common	Fair	Poor			1	5
sugar maple	Acer saccharum	WDH	High	48	404.3	7.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	6
balsam fir	Abies balsamea	NDH	High	42	390.3	7.1	Lg. dec.	Sm. dec.	Low	Common	Very Poor	Poor			0	7
balsam poplar	Populus balsamifera	NSH	Medium	55.9	359.7	5.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
green ash	Fraxinus pennsylvanica	WSH	Low	67.8	320.5	4.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	9
American elm	Ulmus americana	WDH	Medium	73	283.6	3.8	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	10
red pine	Pinus resinosa	NSH	Medium	27	269.5	5.8	No change	No change	Low	Common	Poor	Poor			0	11
tamarack (native)	Larix laricina	NSH	High	24.2	264.6	8.7	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	12
northern red oak	Quercus rubra	WDH	Medium	51.5	246.5	4.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	13
jack pine	Pinus banksiana	NSH	Medium	26.3	194.4	4.8	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	14
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	41.4	142.7	2.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	15
red maple	Acer rubrum	WDH	High	35.9	126.1	3.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	16
northern white-cedar	Thuja occidentalis	WSH	High	5.9	113.0	12.0	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	17
boxelder	Acer negundo	WSH	Low	32.6	106.2	4.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
bigtooth aspen	Populus grandidentata	NSL	Medium	21.3	104.6	3.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	19
white spruce	Picea glauca	NSL	Medium	34	104.6	2.2	No change	Sm. inc.	Medium	Common	Fair	Good			1	20
eastern white pine	Pinus strobus	WDH	High	17.1	91.4	2.9	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	21
black spruce	Picea mariana	NSH	High	16.1	90.9	3.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	22
black cherry	Prunus serotina	WDL	Medium	24.8	35.2	1.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	23
northern pin oak	Quercus ellipsoidalis	NSH	Medium	8.1	30.2	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	24
chokecherry	Prunus virginiana	NSLX	FIA	36.7	18.9	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	25
silver maple	Acer saccharinum	NSH	Low	1.2	17.8	14.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	26
serviceberry	Amelanchier spp.	NSL	Low	13.1	12.6	0.9	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	27
pin cherry	Prunus pensylvanica	NSL	Low	6.1	10.2	0.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	28
mountain maple	Acer spicatum	NSL	Low	12	5.4	0.4	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	29
eastern cottonwood	Populus deltoides	NSH	Low	1.5	4.3	4.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	30
yellow birch	Betula alleghaniensis	NDL	High	1.2	2.6	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	31
rock elm	Ulmus thomasii	NSLX	FIA	1.2	0.5	0.4	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	32
hackberry	Celtis occidentalis	WDH	Medium	1.8	0.3	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	33
slippery elm	Ulmus rubra	WSL	Low	1.8	0.1	0.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			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
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	36
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	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			0	39
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	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			3	41
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	42
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	43
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	44
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			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	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	47



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Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 48
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 49
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 50
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 51
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				0 52