

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	8,785.5	3,392.1	318

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	22	17	Increase	14	16	Very Good	3	4	Likely	1	1
Hickory	1			Medium	21	37	No Change	7	9	Good	10	9	Infill	5	6
Maple	6	Abundant	6	Low	24	15	Decrease	18	14	Fair	10	12	Migrate	8	17
Oak	2	Common	19	FIA	4		New	24	27	Poor	11	9			
Pine	3	Rare	18				Unknown	8	5	Very Poor	5	5			
Other	28	Absent	28							FIA Only	2	2			
	43		71		71	69		71	71	Unknown	4	1			
											45	42			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	42.2	44.1	46.8	46.7	
	CCSM85	42.2	44.7	47.5	50.9	
	GFDL45	42.2	45.3	49.1	50.6	
	GFDL85	42.2	46.0	50.5	55.8	
	HAD45	42.2	45.5	48.9	50.7	
HAD85	42.2	45.6	49.8	55.8		
Growing Season May—Sep	CCSM45	60.6	62.6	64.6	64.9	
	CCSM85	60.6	62.9	65.5	69.5	
	GFDL45	60.6	63.9	68.0	69.8	
	GFDL85	60.6	64.9	69.6	75.3	
	HAD45	60.6	63.8	66.6	69.1	
HAD85	60.6	63.5	67.9	74.3		
Coldest Month Average	CCSM45	12.9	14.5	17.2	17.1	
	CCSM85	12.9	16.0	17.4	19.9	
	GFDL45	12.9	16.1	18.8	20.1	
	GFDL85	12.9	17.3	19.7	23.0	
	HAD45	12.9	15.7	19.2	19.5	
HAD85	12.9	17.1	19.9	24.0		
Warmest Month Average	CCSM45	66.6	68.8	70.2	70.3	
	CCSM85	66.6	69.5	71.2	73.4	
	GFDL45	66.6	69.8	72.0	73.3	
	GFDL85	66.6	70.9	73.8	76.6	
	HAD45	66.6	70.1	71.5	73.2	
HAD85	66.6	69.9	72.7	77.3		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	43.5	42.4	42.1	45.4	
	CCSM85	43.5	44.6	44.2	44.7	
	GFDL45	43.5	47.6	49.2	48.4	
	GFDL85	43.5	45.5	47.9	49.3	
	HAD45	43.5	46.2	47.7	48.0	
HAD85	43.5	47.6	46.3	50.6		
Growing Season May—Sep	CCSM45	20.9	20.7	19.2	21.1	
	CCSM85	20.9	21.1	20.5	19.2	
	GFDL45	20.9	21.8	20.6	20.6	
	GFDL85	20.9	21.0	20.5	18.9	
	HAD45	20.9	21.8	20.6	21.7	
HAD85	20.9	21.6	19.7	21.1		

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
red maple	Acer rubrum	WDH	High	91.9	1818.2	14.1	No change	No change	High	Abundant	Very Good	Very Good			1	1
American beech	Fagus grandifolia	WDH	High	79.1	1575.7	14.3	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	2
sugar maple	Acer saccharum	WDH	High	79	1494.1	13.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
red spruce	Picea rubens	NDH	High	71.2	975.1	10.2	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	4
yellow birch	Betula alleghaniensis	NDL	High	80.6	898.0	8.1	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	5
balsam fir	Abies balsamea	NDH	High	67.1	844.2	9.2	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	6
eastern white pine	Pinus strobus	WDH	High	36.8	480.4	10.8	Lg. inc.	Sm. inc.	Low	Common	Good	Fair			1	7
black cherry	Prunus serotina	WDL	Medium	61.4	408.3	4.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	8
quaking aspen	Populus tremuloides	WDH	High	37.5	388.7	6.6	No change	No change	Medium	Common	Fair	Fair			1	9
eastern hemlock	Tsuga canadensis	NSH	High	39.2	336.9	7.0	Lg. inc.	Sm. inc.	Low	Common	Good	Fair			1	10
white ash	Fraxinus americana	WDL	Medium	41.4	273.2	4.6	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	11
American elm	Ulmus americana	WDH	Medium	26.8	254.2	7.8	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
northern white-cedar	Thuja occidentalis	WSH	High	31.1	242.1	4.9	No change	Sm. inc.	Medium	Common	Fair	Good			1	13
paper birch	Betula papyrifera	WDH	High	36.7	147.3	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
black spruce	Picea mariana	NSH	High	13.1	122.6	6.4	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	15
tamarack (native)	Larix laricina	NSH	High	24.2	117.3	3.3	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	16
American basswood	Tilia americana	WSL	Medium	19	117.2	5.1	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	17
black ash	Fraxinus nigra	WSH	Medium	19.4	112.8	5.0	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	18
striped maple	Acer pensylvanicum	NSL	Medium	49.9	112.4	1.8	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	19
gray birch	Betula populifolia	NSL	Low	27.4	108.6	2.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	20
bigtooth aspen	Populus grandidentata	NSL	Medium	21.4	108.1	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
red pine	Pinus resinosa	NSH	Medium	4.5	103.1	22.6	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	22
bitternut hickory	Carya cordiformis	WSL	Low	6.1	74.6	2.8	Sm. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	1	23
Norway spruce	Picea abies	NSH	FIA	8	66.4	6.9	Unknown	Unknown	NA	Common	NNIS	NNIS			0	24
Scots pine	Pinus sylvestris	NSH	FIA	6.7	56.8	8.3	Unknown	Unknown	NA	Common	NNIS	NNIS			0	25
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	20.3	37.4	1.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	26
green ash	Fraxinus pennsylvanica	WSH	Low	5	31.8	2.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	27
pin cherry	Prunus pensylvanica	NSL	Low	12.6	31.2	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
boxelder	Acer negundo	WSH	Low	2.3	30.4	13.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	29
butternut	Juglans cinerea	NSLX	FIA	4.6	13.2	1.9	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	30
serviceberry	Amelanchier spp.	NSL	Low	7.1	13.0	0.8	No change	No change	Medium	Rare	Poor	Poor			1	31
black willow	Salix nigra	NSH	Low	1.1	11.1	9.7	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	32
balsam poplar	Populus balsamifera	NSH	Medium	2.4	10.6	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
silver maple	Acer saccharinum	NSH	Low	1.1	10.5	9.2	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	34
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	7.8	10.1	1.2	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	35
mountain maple	Acer spicatum	NSL	Low	7.3	7.9	0.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	36
black locust	Robinia pseudoacacia	NDH	Low	1.1	4.3	3.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	37
chokecherry	Prunus virginiana	NSLX	FIA	2.3	3.7	1.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	38
American mountain-ash	Sorbus americana	NSL	Low	0.7	1.7	0.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	39
swamp white oak	Quercus bicolor	NSL	Low	1.1	1.5	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
sweet birch	Betula lenta	NDH	High	1.1	1.1	0.9	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	41
northern red oak	Quercus rubra	WDH	Medium	1.1	1.0	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	42
slippery elm	Ulmus rubra	WSL	Low	1.1	0.3	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	43
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	44
white spruce	Picea glauca	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	45
jack pine	Pinus banksiana	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	46
pitch pine	Pinus rigida	NSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	47



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cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat				0 48
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++		3 49
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 50
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 51
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 52
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 53
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 54
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 55
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++		3 56
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 57
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				0 58
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 59
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 60
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 61
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 62
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 63
northern pin oak	Quercus ellipsoidalalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 64
water oak	Quercus nigra	WDH	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				0 65
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +		3 66
willow oak	Quercus phellos	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				0 67
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 68
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 69
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 70
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 71