

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 8,985.5 3,469.3 255

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	24	22	Increase	19	19	Very Good	3	4	Likely	0	0
Hickory	3			Medium	25	40	No Change	11	10	Good	19	18	Infill	10	8
Maple	5	Abundant	9	Low	26	15	Decrease	18	19	Fair	11	11	Migrate	6	13
Oak	3	Common	18	FIA	4		New	19	23	Poor	6	5		16	21
Pine	4	Rare	25				Unknown	12	8	Very Poor	9	7			
Other	34	Absent	27							FIA Only	2	2			
	52		79		79	77		79	79	Unknown	8	4			
											58	51			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	44.0	45.9	48.5	48.5	
	CCSM85	44.0	46.5	49.2	52.4	
	GFDL45	44.0	47.0	50.6	52.0	
	GFDL85	44.0	47.7	51.9	56.9	
	HAD45	44.0	47.2	50.6	52.3	
	HAD85	44.0	47.3	51.6	57.3	
Growing Season (May—Sep)	CCSM45	61.8	63.8	65.8	66.2	
	CCSM85	61.8	64.1	66.6	70.5	
	GFDL45	61.8	65.0	69.3	70.9	
	GFDL85	61.8	66.1	70.8	76.2	
	HAD45	61.8	65.1	67.8	70.3	
	HAD85	61.8	64.7	69.4	75.6	
Coldest Month Average	CCSM45	15.7	17.6	20.0	20.1	
	CCSM85	15.7	18.8	20.2	22.6	
	GFDL45	15.7	19.0	21.3	22.2	
	GFDL85	15.7	20.0	22.0	24.9	
	HAD45	15.7	17.9	21.3	21.6	
	HAD85	15.7	19.3	22.0	25.8	
Warmest Month Average	CCSM45	67.7	69.9	71.2	71.4	
	CCSM85	67.7	70.6	72.2	74.4	
	GFDL45	67.7	70.9	73.2	74.4	
	GFDL85	67.7	72.1	74.9	77.7	
	HAD45	67.7	71.3	72.8	74.6	
	HAD85	67.7	71.3	74.2	78.8	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	49.2	48.5	47.0	51.4	
	CCSM85	49.2	50.1	50.2	51.0	
	GFDL45	49.2	53.8	55.6	54.4	
	GFDL85	49.2	51.0	54.3	56.3	
	HAD45	49.2	51.2	53.1	52.6	
	HAD85	49.2	52.6	51.4	56.1	
Growing Season (May—Sep)	CCSM45	21.3	21.0	19.3	21.4	
	CCSM85	21.3	21.2	20.9	19.5	
	GFDL45	21.3	22.4	21.4	21.1	
	GFDL85	21.3	21.2	20.9	19.9	
	HAD45	21.3	21.7	20.3	21.3	
	HAD85	21.3	21.4	19.8	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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Current and Potential Future Habitat, Capability, and Migration

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	82.1	2261.6	20.7	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
sugar maple	Acer saccharum	WDH	High	77.1	1436.9	13.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
black cherry	Prunus serotina	WDL	Medium	71.4	837.5	8.0	No change	No change	Low	Abundant	Fair	Fair			0	3
eastern hemlock	Tsuga canadensis	NSH	High	58.6	750.7	8.9	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	4
yellow birch	Betula alleghaniensis	NDL	High	58.7	708.6	8.7	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	5
white ash	Fraxinus americana	WDL	Medium	54.4	662.8	7.8	No change	No change	Low	Abundant	Fair	Fair			0	6
American beech	Fagus grandifolia	WDH	High	61.3	652.1	7.6	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	7
American elm	Ulmus americana	WDH	Medium	41	587.4	7.9	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	8
eastern white pine	Pinus strobus	WDH	High	38.5	583.1	12.4	Sm. inc.	No change	Low	Abundant	Good	Fair			1	9
balsam fir	Abies balsamea	NDH	High	30	400.0	9.4	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	10
quaking aspen	Populus tremuloides	WDH	High	30.7	340.1	8.0	No change	No change	Medium	Common	Fair	Fair			1	11
red spruce	Picea rubens	NDH	High	41.1	311.7	5.5	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	12
boxelder	Acer negundo	WSH	Low	6.3	172.6	15.0	No change	No change	High	Common	Good	Good			1	13
eastern cottonwood	Populus deltoides	NSH	Low	7.2	150.9	16.1	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	14
green ash	Fraxinus pennsylvanica	WSH	Low	14	136.0	7.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
red pine	Pinus resinosa	NSH	Medium	9.7	126.1	8.0	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	16
northern red oak	Quercus rubra	WDH	Medium	8	108.5	8.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	17
black willow	Salix nigra	NSH	Low	6.5	108.3	12.6	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	18
American basswood	Tilia americana	WSL	Medium	17.5	101.2	3.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	20.9	97.9	2.7	No change	Sm. inc.	High	Common	Good	Very Good			1	20
bitternut hickory	Carya cordiformis	WSL	Low	10	91.2	6.1	No change	No change	High	Common	Good	Good			1	21
Scots pine	Pinus sylvestris	NSH	FIA	8.3	80.6	6.7	Unknown	Unknown	NA	Common	NNIS	NNIS			0	22
tamarack (native)	Larix laricina	NSH	High	7.9	71.8	7.4	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	23
Norway spruce	Picea abies	NSH	FIA	5.5	69.3	7.5	Unknown	Unknown	NA	Common	NNIS	NNIS			0	24
silver maple	Acer saccharinum	NSH	Low	4.5	62.0	13.9	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	25
northern white-cedar	Thuja occidentalis	WSH	High	4.8	59.7	9.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	26
serviceberry	Amelanchier spp.	NSL	Low	18.8	55.3	1.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	27
gray birch	Betula populifolia	NSL	Low	12.9	45.8	2.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
eastern redcedar	Juniperus virginiana	WDH	Medium	0.1	37.1	2.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	29
white spruce	Picea glauca	NSL	Medium	6.3	34.4	5.1	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	30
striped maple	Acer pensylvanicum	NSL	Medium	19.1	31.6	1.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
black ash	Fraxinus nigra	WSH	Medium	12.6	28.9	1.7	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	32
shagbark hickory	Carya ovata	WSL	Medium	0.7	27.3	3.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	33
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	8.8	22.6	1.3	No change	No change	Medium	Rare	Poor	Poor			1	34
blackgum	Nyssa sylvatica	WDL	Medium	2.1	16.5	6.9	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	35
pitch pine	Pinus rigida	NSH	High	2.2	16.2	7.3	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
pignut hickory	Carya glabra	WDL	Medium	0.6	13.5	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	37
bigtooth aspen	Populus grandidentata	NSL	Medium	2.6	12.8	2.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	38
black walnut	Juglans nigra	WDH	Low	0.9	11.2	8.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	39
pin cherry	Prunus pensylvanica	NSL	Low	5	10.2	1.8	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	40
paper birch	Betula papyrifera	WDH	High	6.1	9.1	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	41
butternut	Juglans cinerea	NSLX	FIA	1.3	7.8	3.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	42
black locust	Robinia pseudoacacia	NDH	Low	1.1	7.2	6.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	43
sycamore	Platanus occidentalis	NSL	Low	2.2	6.1	2.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	44
sweet birch	Betula lenta	NDH	High	2.2	4.6	2.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	45
hackberry	Celtis occidentalis	WDH	Medium	1.1	3.0	2.7	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	46
slippery elm	Ulmus rubra	WSL	Low	1.1	2.6	2.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	47



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white oak	Quercus alba	WDH	Medium	1.1	1.5	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	48
yellow-poplar	Liriodendron tulipifera	WDH	High	1.1	1.2	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	49
swamp white oak	Quercus bicolor	NSL	Low	1.1	1.0	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	50
black spruce	Picea mariana	NSH	High	1.1	0.8	0.7	No change	Very Lg. dec.	Medium	Rare	Poor	Lost	Infill +		2	51
chokecherry	Prunus virginiana	NSLX	FIA	0.2	0.6	0.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	52
jack pine	Pinus banksiana	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate +	3	53
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	54
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	55
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	56
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	57
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	58
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	59
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	60
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	61
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	62
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	63
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	64
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	65
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	66
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	67
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	68
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	69
northern pin oak	Quercus ellipsoidalalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	70
southern red oak	Quercus falcata	WDL	Medium	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	71
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	73
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	74
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	75
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	76
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	77
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	78
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	79