

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 8,686.5 3,353.9 541

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	15	18	Increase	20	21	Very Good	6	7	Likely	1	1
Hickory	1			Medium	22	29	No Change	6	4	Good	16	16	Infill	6	6
Maple	6	Abundant	6	Low	19	12	Decrease	12	13	Fair	7	7	Migrate	4	11
Oak	5	Common	19	FIA	5		New	15	17	Poor	6	5			
Pine	4	Rare	18				Unknown	8	6	Very Poor	3	2			
Other	24	Absent	18							FIA Only	3	3			
	43		61		61	59		61	61	Unknown	3	1			
											44	41			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	41.1	42.9	46.0	46.0	
Average	CCSM85	41.1	43.7	46.8	50.4	
	GFDL45	41.1	44.1	47.0	48.4	
	GFDL85	41.1	44.5	48.1	53.3	
	HAD45	41.1	44.4	47.9	49.8	
	HAD85	41.1	44.8	49.0	54.8	
Growing Season	CCSM45	61.0	62.8	65.6	65.7	
	CCSM85	61.0	63.7	66.5	70.7	
May—Sep	GFDL45	61.0	64.6	68.2	70.3	
	GFDL85	61.0	65.3	69.5	75.4	
	HAD45	61.0	64.4	67.1	69.5	
	HAD85	61.0	64.4	68.8	74.6	
Coldest Month	CCSM45	9.3	10.7	13.4	13.6	
	CCSM85	9.3	10.9	13.1	15.7	
Average	GFDL45	9.3	12.6	14.5	14.9	
	GFDL85	9.3	13.2	15.0	18.1	
	HAD45	9.3	10.9	15.1	15.0	
	HAD85	9.3	14.3	17.3	21.1	
Warmest Month	CCSM45	67.2	69.2	70.8	71.3	
	CCSM85	67.2	70.4	72.2	74.8	
Average	GFDL45	67.2	71.0	72.6	74.2	
	GFDL85	67.2	71.8	74.1	77.5	
	HAD45	67.2	70.9	72.2	74.0	
	HAD85	67.2	71.5	73.8	77.9	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	31.7	33.1	32.1	32.7	
Total	CCSM85	31.7	31.5	31.7	32.3	
	GFDL45	31.7	34.6	36.0	34.4	
	GFDL85	31.7	34.6	37.3	36.3	
	HAD45	31.7	33.0	33.4	33.8	
	HAD85	31.7	32.5	34.1	35.4	
Growing Season	CCSM45	19.5	19.8	18.5	19.3	
	CCSM85	19.5	19.2	18.7	17.9	
May—Sep	GFDL45	19.5	20.9	21.2	19.8	
	GFDL85	19.5	21.0	21.5	19.5	
	HAD45	19.5	19.3	18.2	18.4	
	HAD85	19.5	18.7	17.4	17.6	

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	92.9	2147.5	16.9	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
red maple	Acer rubrum	WDH	High	97.7	1923.0	15.3	No change	Sm. dec.	High	Abundant	Very Good	Good			1	2
sugar maple	Acer saccharum	WDH	High	87.8	1302.6	10.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
black ash	Fraxinus nigra	WSH	Medium	86.6	771.2	6.6	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	4
balsam fir	Abies balsamea	NDH	High	84.5	715.0	6.6	Lg. dec.	Sm. dec.	Low	Abundant	Poor	Fair			0	5
tamarack (native)	Larix laricina	NSH	High	56.7	531.0	6.8	No change	No change	Low	Abundant	Fair	Fair			0	6
American basswood	Tilia americana	WSL	Medium	73.5	416.3	4.3	Sm. inc.	No change	Medium	Common	Good	Fair			1	7
black spruce	Picea mariana	NSH	High	44.9	347.5	5.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
American elm	Ulmus americana	WDH	Medium	72.6	343.1	3.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	9
paper birch	Betula papyrifera	WDH	High	77.3	337.3	3.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
yellow birch	Betula alleghaniensis	NDL	High	80.6	316.1	2.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
black cherry	Prunus serotina	WDL	Medium	81	273.9	2.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	12
eastern hemlock	Tsuga canadensis	NSH	High	54.3	245.5	3.6	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	13
white spruce	Picea glauca	NSL	Medium	56.2	186.8	2.6	No change	Sm. inc.	Medium	Common	Fair	Good			1	14
northern white-cedar	Thuja occidentalis	WSH	High	29.5	185.3	4.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	15
white ash	Fraxinus americana	WDL	Medium	60.1	172.4	2.0	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	16
green ash	Fraxinus pennsylvanica	WSH	Low	50.4	141.2	2.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
red pine	Pinus resinosa	NSH	Medium	13.1	131.1	7.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	18
eastern white pine	Pinus strobus	WDH	High	36.5	117.9	2.6	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	19
northern red oak	Quercus rubra	WDH	Medium	43.1	109.6	2.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
bur oak	Quercus macrocarpa	NDH	Medium	21.1	100.6	3.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	21
bigtooth aspen	Populus grandidentata	NSL	Medium	35.1	89.6	1.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	22
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	55.6	77.6	1.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	23
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	53.4	69.4	1.0	No change	No change	Medium	Common	Fair	Fair			1	24
boxelder	Acer negundo	WSH	Low	1	55.9	3.7	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	25
Scots pine	Pinus sylvestris	NSH	FIA	0.4	43.2	12.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	26
silver maple	Acer saccharinum	NSH	Low	2.5	35.5	5.1	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	27
chokecherry	Prunus virginiana	NSLX	FIA	24.5	32.2	1.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	28
butternut	Juglans cinerea	NSLX	FIA	5.8	19.3	2.5	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	29
black maple	Acer nigrum	NSH	Low	1.7	15.4	3.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	14.6	14.6	1.0	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	31
slippery elm	Ulmus rubra	WSL	Low	7.9	11.0	0.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	32
bitternut hickory	Carya cordiformis	WSL	Low	8.5	9.8	0.3	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	33
serviceberry	Amelanchier spp.	NSL	Low	11	7.3	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	34
white oak	Quercus alba	WDH	Medium	2.4	1.4	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	35
Norway spruce	Picea abies	NSH	FIA	1.2	0.9	0.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	36
rock elm	Ulmus thomasii	NSLX	FIA	3.5	0.8	0.2	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	37
jack pine	Pinus banksiana	NSH	Medium	0.1	0.6	0.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	38
mountain maple	Acer spicatum	NSL	Low	2.2	0.5	0.2	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	39
northern pin oak	Quercus ellipsoidalis	NSH	Medium	1.1	0.4	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	40
balsam poplar	Populus balsamifera	NSH	Medium	1.2	0.4	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	41
swamp white oak	Quercus bicolor	NSL	Low	0.3	0.4	0.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	42
black walnut	Juglans nigra	WDH	Low	1.2	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
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	45
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	46
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	47

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sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				0 48
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 49
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 50
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 51
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 52
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 53
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 54
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				3 55
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 56
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +		3 57
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 58
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 59
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 60
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				0 61