

One x One Degree
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

Area of Region sq. km sq. mi FIA Plots
 9,130.7 3,525.4 99

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	12	20	Increase	17	17	Very Good	4	3	Likely	0	0
Hickory	2			Medium	21	30	No Change	8	8	Good	12	13	Infill	23	22
Maple	5	Abundant	1	Low	25	10	Decrease	13	13	Fair	9	9	Migrate	8	14
Oak	6	Common	19	FIA	6		New	18	18	Poor	5	5			
Pine	3	Rare	24				Unknown	8	8	Very Poor	7	7			
Other	25	Absent	20							FIA Only	2	2			
	44		64		64	60		64	64	Unknown	2	2			
											41	41			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	47.7	49.7	52.4	52.4	
Average	CCSM85	47.7	50.4	53.1	56.2	
	GFDL45	47.7	53.3	53.3	54.4	
	GFDL85	47.7	50.9	54.3	58.8	
	HAD45	47.7	50.6	54.2	55.9	
	HAD85	47.7	51.0	55.6	60.7	
Growing Season	CCSM45	66.3	68.4	70.6	71.0	
	CCSM85	66.3	69.1	71.5	75.2	
May—Sep	GFDL45	66.3	73.1	72.8	74.6	
	GFDL85	66.3	70.2	74.1	79.4	
	HAD45	66.3	69.3	71.8	73.9	
	HAD85	66.3	69.2	74.0	78.9	
Coldest Month	CCSM45	18.2	19.8	22.6	22.4	
	CCSM85	18.2	20.9	22.8	24.8	
Average	GFDL45	18.2	21.8	23.2	23.6	
	GFDL85	18.2	22.1	23.5	25.4	
	HAD45	18.2	19.4	23.6	23.7	
	HAD85	18.2	22.4	25.9	29.0	
Warmest Month	CCSM45	72.4	74.7	76.2	76.8	
	CCSM85	72.4	76.0	77.8	79.5	
Average	GFDL45	72.4	75.6	77.2	78.5	
	GFDL85	72.4	76.7	78.6	81.8	
	HAD45	72.4	75.6	77.2	78.5	
	HAD85	72.4	76.5	79.4	82.8	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	35.1	35.0	34.5	35.1	
Total	CCSM85	35.1	35.1	35.2	35.4	
	GFDL45	35.1	37.4	41.8	41.2	
	GFDL85	35.1	38.7	43.3	43.0	
	HAD45	35.1	36.3	37.8	37.2	
	HAD85	35.1	37.3	35.0	37.5	
Growing Season	CCSM45	19.2	19.7	18.9	19.2	
	CCSM85	19.2	18.7	18.8	18.0	
May—Sep	GFDL45	19.2	19.6	22.5	21.9	
	GFDL85	19.2	21.1	22.3	21.5	
	HAD45	19.2	19.1	17.9	18.4	
	HAD85	19.2	19.1	15.7	16.1	

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
black cherry	Prunus serotina	WDL	Medium	79.9	625.8	16.5	Sm. dec.	Lg. dec.	Low	Abundant	Fair	Poor	Infill +	Infill +	0	1
boxelder	Acer negundo	WSH	Low	62.9	396.0	13.6	Sm. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	2
American elm	Ulmus americana	WDH	Medium	49.4	302.1	8.4	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	3
eastern white pine	Pinus strobus	WDH	High	19.3	261.7	22.2	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	4
bur oak	Quercus macrocarpa	NDH	Medium	56.6	245.7	13.3	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	5
green ash	Fraxinus pennsylvanica	WSH	Low	29.8	240.8	9.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	6
red pine	Pinus resinosa	NSH	Medium	15.1	179.2	15.3	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			2	7
black walnut	Juglans nigra	WDH	Low	46.8	172.8	10.0	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	8
quaking aspen	Populus tremuloides	WDH	High	20.7	142.3	9.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	9
white oak	Quercus alba	WDH	Medium	46.1	128.1	9.1	Sm. inc.	No change	High	Common	Very Good	Good	Infill ++	Infill ++	1	10
American basswood	Tilia americana	WSL	Medium	26.6	127.9	12.3	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	1	11
white ash	Fraxinus americana	WDL	Medium	32.8	119.4	7.2	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	12
black locust	Robinia pseudoacacia	NDH	Low	11.9	107.7	14.7	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	1	13
shagbark hickory	Carya ovata	WSL	Medium	47.7	101.2	5.0	Sm. inc.	No change	Medium	Common	Good	Fair	Infill ++	Infill +	1	14
northern red oak	Quercus rubra	WDH	Medium	43.5	81.7	5.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
sugar maple	Acer saccharum	WDH	High	18.4	77.7	9.7	Lg. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	16
black willow	Salix nigra	NSH	Low	11.1	56.1	7.8	No change	Sm. inc.	Low	Common	Poor	Fair	Infill +	Infill +	2	17
hackberry	Celtis occidentalis	WDH	Medium	13.1	56.0	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			2	18
northern pin oak	Quercus ellipsoidalis	NSH	Medium	22.7	52.3	5.5	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +		2	19
Norway spruce	Picea abies	NSH	FIA	8.3	51.8	13.2	Unknown	Unknown	NA	Common	NNIS	NNIS			0	20
Siberian elm	Ulmus pumila	NDH	FIA	5.7	36.0	6.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	21
black oak	Quercus velutina	WDH	High	10	33.3	5.8	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	22
Scots pine	Pinus sylvestris	NSH	FIA	5.5	30.6	17.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	23
eastern cottonwood	Populus deltoides	NSH	Low	16.7	26.5	6.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	24
black ash	Fraxinus nigra	WSH	Medium	4.7	21.2	3.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	25
red maple	Acer rubrum	WDH	High	4.9	21.1	1.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	26
eastern redcedar	Juniperus virginiana	WDH	Medium	16	19.6	3.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	27
slippery elm	Ulmus rubra	WSL	Low	21.5	19.5	4.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	28
silver maple	Acer saccharinum	NSH	Low	8.2	19.5	5.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	29
bitternut hickory	Carya cordiformis	WSL	Low	24.1	16.8	3.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	30
pin cherry	Prunus pensylvanica	NSL	Low	0.1	12.9	1.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	31
red mulberry	Morus rubra	NSL	Low	9.2	12.2	2.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	32
tamarack (native)	Larix laricina	NSH	High	1	8.2	1.7	No change	No change	Low	Rare	Very Poor	Very Poor			0	33
honeylocust	Gleditsia triacanthos	NSH	Low	3.7	7.2	2.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	34
white mulberry	Morus alba	NSL	FIA	7.9	7.1	3.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	35
peachleaf willow	Salix amygdaloides	NSLX	FIA	5.9	6.3	2.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	36
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	1.1	5.9	5.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
Osage-orange	Maclura pomifera	NDH	Medium	1.1	3.8	3.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	38
swamp white oak	Quercus bicolor	NSL	Low	1.1	2.9	2.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	39
black maple	Acer nigrum	NSH	Low	4.4	2.8	10.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	40
chokecherry	Prunus virginiana	NSLX	FIA	3.4	1.7	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	41
northern white-cedar	Thuja occidentalis	WSH	High	4.4	1.6	5.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	42
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	7.9	1.4	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	43
white spruce	Picea glauca	NSL	Medium	0.7	1.0	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	44
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	45
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	46
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	47



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black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	48
mockernut hickory	<i>Carya alba</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	49
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	50
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	51
common persimmon	<i>Diospyros virginiana</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	52
American beech	<i>Fagus grandifolia</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	53
yellow-poplar	<i>Liriodendron tulipifera</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	54
cucumbertree	<i>Magnolia acuminata</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	55
sycamore	<i>Platanus occidentalis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	56
shingle oak	<i>Quercus imbricaria</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	57
blackjack oak	<i>Quercus marilandica</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	58
chinkapin oak	<i>Quercus muehlenbergii</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	59
pin oak	<i>Quercus palustris</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	60
Shumard oak	<i>Quercus shumardii</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	61
post oak	<i>Quercus stellata</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	62
sassafras	<i>Sassafras albidum</i>	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	63
American mountain-ash	<i>Sorbus americana</i>	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	64