

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 3,525.4 101

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	13	20	Increase	16	17	Very Good	5	5	Likely	1	1
Hickory	2			Medium	22	32	No Change	6	4	Good	12	11	Infill	21	21
Maple	4	Abundant	1	Low	22	9	Decrease	18	19	Fair	7	7	Migrate	7	12
Oak	7	Common	19	FIA	8		New	15	16	Poor	3	4			
Pine	3	Rare	28				Unknown	10	9	Very Poor	11	9			
Other	29	Absent	17							FIA Only	4	4			
	48		65		65	61		65	65	Unknown	2	1		29	34
											44	41			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	47.2	49.3	51.9	52.0	
Average	CCSM85	47.2	50.0	52.7	55.8	
	GFDL45	47.2	52.4	52.7	53.9	
	GFDL85	47.2	50.4	53.8	58.3	
	HAD45	47.2	50.1	53.7	55.5	
	HAD85	47.2	50.6	55.2	60.2	
Growing Season	CCSM45	66.1	68.4	70.6	71.0	
	CCSM85	66.1	69.2	71.6	75.3	
May—Sep	GFDL45	66.1	72.4	72.5	74.4	
	GFDL85	66.1	70.0	73.9	79.3	
	HAD45	66.1	69.2	71.8	74.0	
	HAD85	66.1	69.2	74.2	79.1	
Coldest Month	CCSM45	16.9	18.7	21.5	21.3	
	CCSM85	16.9	19.6	21.5	23.6	
Average	GFDL45	16.9	20.5	21.8	22.2	
	GFDL85	16.9	20.6	22.2	24.1	
	HAD45	16.9	18.1	22.3	22.3	
	HAD85	16.9	21.2	24.7	27.7	
Warmest Month	CCSM45	72.2	74.6	76.1	76.7	
	CCSM85	72.2	76.1	77.9	79.7	
Average	GFDL45	72.2	75.4	77.0	78.4	
	GFDL85	72.2	76.5	78.4	81.8	
	HAD45	72.2	75.3	77.2	78.3	
	HAD85	72.2	76.5	79.4	82.9	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	35.8	35.4	35.3	35.8	
Total	CCSM85	35.8	35.5	35.5	35.8	
	GFDL45	35.8	38.5	42.6	41.8	
	GFDL85	35.8	39.5	43.8	43.3	
	HAD45	35.8	37.5	38.5	38.2	
	HAD85	35.8	37.9	36.0	38.8	
Growing Season	CCSM45	20.2	20.3	19.9	20.2	
	CCSM85	20.2	19.5	19.4	18.8	
May—Sep	GFDL45	20.2	20.8	23.5	22.7	
	GFDL85	20.2	22.0	23.2	22.1	
	HAD45	20.2	20.4	19.1	19.7	
	HAD85	20.2	20.2	17.0	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
black cherry	Prunus serotina	WDL	Medium	59.4	555.7	12.0	Sm. dec.	Lg. dec.	Low	Abundant	Fair	Poor	Infill +	Infill +	0	1
bur oak	Quercus macrocarpa	NDH	Medium	34.4	455.9	11.8	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	1	2
boxelder	Acer negundo	WSH	Low	48.8	408.9	9.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	3
black walnut	Juglans nigra	WDH	Low	47.9	391.0	10.5	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	4
American elm	Ulmus americana	WDH	Medium	53.1	369.2	8.5	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	1	5
white oak	Quercus alba	WDH	Medium	48.4	256.4	7.7	Sm. inc.	Sm. dec.	High	Common	Very Good	Fair	Infill ++	Infill +	1	6
slippery elm	Ulmus rubra	WSL	Low	48.3	170.9	4.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	7
American basswood	Tilia americana	WSL	Medium	26	155.8	7.6	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	1	8
black oak	Quercus velutina	WDH	High	37.5	135.7	5.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	9
hackberry	Celtis occidentalis	WDH	Medium	43.4	134.1	5.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	10
shagbark hickory	Carya ovata	WSL	Medium	36.9	114.4	7.4	Sm. inc.	No change	Medium	Common	Good	Fair	Infill ++	Infill +	1	11
bitternut hickory	Carya cordiformis	WSL	Low	28.3	103.2	6.2	No change	Sm. inc.	High	Common	Good	Very Good	Infill ++	Infill ++	1	12
eastern white pine	Pinus strobus	WDH	High	16	100.6	16.7	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			2	13
black locust	Robinia pseudoacacia	NDH	Low	5.8	94.1	8.4	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	14
northern red oak	Quercus rubra	WDH	Medium	26.2	93.7	6.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	15
Scots pine	Pinus sylvestris	NSH	FIA	1.1	93.0	84.9	Unknown	Unknown	NA	Common	NNIS	NNIS			0	16
green ash	Fraxinus pennsylvanica	WSH	Low	21.2	85.4	5.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	17
red mulberry	Morus rubra	NSL	Low	23.6	81.7	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	18
sugar maple	Acer saccharum	WDH	High	14.5	77.9	8.3	Lg. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	19
white ash	Fraxinus americana	WDL	Medium	14.7	58.6	6.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	1	20
white mulberry	Morus alba	NSL	FIA	17	46.1	7.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	21
quaking aspen	Populus tremuloides	WDH	High	10.1	44.8	4.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	22
northern pin oak	Quercus ellipsoidalis	NSH	Medium	13.2	44.0	4.2	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost	Infill +		2	23
Norway spruce	Picea abies	NSH	FIA	1.1	31.4	28.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	24
black willow	Salix nigra	NSH	Low	5.2	27.9	8.8	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	25
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	15.7	27.8	3.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	26
silver maple	Acer saccharinum	NSH	Low	3.3	25.0	4.1	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	27
bigtooth aspen	Populus grandidentata	NSL	Medium	3.8	24.7	3.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
red pine	Pinus resinosa	NSH	Medium	4.6	15.1	3.6	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	29
honeylocust	Gleditsia triacanthos	NSH	Low	12.9	13.5	5.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	30
butternut	Juglans cinerea	NSLX	FIA	2.4	12.6	3.5	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	31
paper birch	Betula papyrifera	WDH	High	0.5	12.1	1.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	32
black ash	Fraxinus nigra	WSH	Medium	3.9	10.0	1.8	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	33
eastern redcedar	Juniperus virginiana	WDH	Medium	2.7	6.4	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	34
balsam fir	Abies balsamea	NDH	High	1.1	5.1	4.7	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	35
black maple	Acer nigrum	NSH	Low	5.4	5.1	3.9	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	36
yellow birch	Betula alleghaniensis	NDL	High	1.1	4.5	4.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
Osage-orange	Maclura pomifera	NDH	Medium	3.2	3.8	10.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	38
northern white-cedar	Thuja occidentalis	WSH	High	2	3.4	5.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
serviceberry	Amelanchier spp.	NSL	Low	1.4	3.3	1.0	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	40
flowering dogwood	Cornus florida	WDL	Medium	1.1	3.3	3.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	41
Siberian elm	Ulmus pumila	NDH	FIA	1.3	2.0	0.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	42
swamp white oak	Quercus bicolor	NSL	Low	0.3	1.5	0.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	43
eastern cottonwood	Populus deltoides	NSH	Low	6	1.4	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	44
peachleaf willow	Salix amygdaloides	NSLX	FIA	4.8	1.0	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	45
northern catalpa	Catalpa speciosa	NSHX	FIA	1.6	0.6	0.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	46
pin oak	Quercus palustris	NSH	Low	4.4	0.3	1.2	Lg. dec.	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
chokecherry	Prunus virginiana	NSLX	FIA	3.9	0.2	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 48
red maple	Acer rubrum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +		3 49
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 50
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 51
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 52
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 53
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				3 54
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 55
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 56
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 57
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 58
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 59
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 60
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 61
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 62
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 63
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 64
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 65