

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	6,024.8	2,326.2	163

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	21	22	Increase	11	11	Very Good	5	5	Likely	1	1
Hickory	3			Medium	27	39	No Change	11	9	Good	7	7	Infill	10	11
Maple	6	Abundant	6	Low	26	15	Decrease	23	25	Fair	12	11	Migrate	9	15
Oak	4	Common	22	FIA	4		New	26	28	Poor	11	12		20	27
Pine	3	Rare	21				Unknown	7	5	Very Poor	8	8			
Other	30	Absent	28					78	78	FIA Only	2	2			
	49		77		78	76				Unknown	3	1			
											48	46			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	44.3	46.1	48.9	48.8	
	CCSM85	44.3	46.8	49.6	53.0	
	GFDL45	44.3	47.8	51.1	52.6	
	GFDL85	44.3	48.0	52.5	57.8	
	HAD45	44.3	47.6	51.0	52.8	
Average	HAD85	44.3	47.7	51.9	57.9	
	CCSM45	62.8	64.7	66.8	67.1	
	CCSM85	62.8	65.1	67.7	71.7	
	GFDL45	62.8	66.6	70.4	72.1	
	GFDL85	62.8	67.2	72.0	77.6	
May—Sep	HAD45	62.8	66.0	68.8	71.3	
	HAD85	62.8	65.7	70.3	76.6	
	CCSM45	14.2	15.9	18.6	18.6	
	CCSM85	14.2	17.3	18.8	21.3	
	GFDL45	14.2	17.6	20.1	21.4	
Average	GFDL85	14.2	18.6	21.0	24.3	
	HAD45	14.2	16.9	20.4	20.7	
	HAD85	14.2	18.4	21.1	25.2	
	CCSM45	69.0	71.2	72.6	72.7	
	CCSM85	69.0	71.9	73.6	75.8	
Month	GFDL45	69.0	72.3	74.6	75.8	
	GFDL85	69.0	73.3	76.2	79.1	
	HAD45	69.0	72.6	74.0	75.8	
	HAD85	69.0	72.5	75.4	80.0	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	40.4	39.6	39.1	42.2	
	CCSM85	40.4	41.5	40.8	41.2	
	GFDL45	40.4	44.4	45.8	45.1	
	GFDL85	40.4	42.2	44.5	46.0	
	HAD45	40.4	42.7	44.2	44.5	
Total	HAD85	40.4	44.2	42.7	46.8	
	CCSM45	18.4	18.3	16.7	18.5	
	CCSM85	18.4	18.4	17.5	16.5	
	GFDL45	18.4	19.3	18.1	18.0	
	GFDL85	18.4	18.4	17.9	16.4	
May—Sep	HAD45	18.4	18.8	17.6	18.7	
	HAD85	18.4	19.0	16.7	17.8	

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	78.6	1449.2	12.6	No change	Sm. dec.	High	Abundant	Very Good	Good			1	1
American elm	Ulmus americana	WDH	Medium	67.4	867.3	11.5	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	2
sugar maple	Acer saccharum	WDH	High	61.2	857.4	9.8	No change	No change	High	Abundant	Very Good	Very Good			1	3
eastern white pine	Pinus strobus	WDH	High	47	840.1	15.2	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	4
black cherry	Prunus serotina	WDL	Medium	64.7	783.2	8.1	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	5
eastern hemlock	Tsuga canadensis	NSH	High	40.1	511.6	8.8	Sm. dec.	Lg. dec.	Low	Abundant	Fair	Poor			0	6
American beech	Fagus grandifolia	WDH	High	42.6	454.2	4.1	No change	Sm. dec.	Medium	Common	Fair	Poor			1	7
northern white-cedar	Thuja occidentalis	WSH	High	25.3	431.1	16.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
white ash	Fraxinus americana	WDL	Medium	62.6	364.7	4.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	9
yellow birch	Betula alleghaniensis	NDL	High	45	325.4	3.6	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	10
red spruce	Picea rubens	NDH	High	14.5	230.5	3.5	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	11
bitternut hickory	Carya cordiformis	WSL	Low	24.4	230.0	7.9	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	12
American basswood	Tilia americana	WSL	Medium	29.8	217.1	7.0	No change	No change	Medium	Common	Fair	Fair			1	13
northern red oak	Quercus rubra	WDH	Medium	34.8	207.7	5.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	14
red pine	Pinus resinosa	NSH	Medium	9.4	207.5	19.6	Sm. dec.	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	15
quaking aspen	Populus tremuloides	WDH	High	33.3	206.2	5.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
gray birch	Betula populifolia	NSL	Low	32.9	202.8	5.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	17
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	42.6	198.7	4.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	18
balsam fir	Abies balsamea	NDH	High	18.2	138.0	2.8	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	19
green ash	Fraxinus pennsylvanica	WSH	Low	17.5	135.3	7.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
black ash	Fraxinus nigra	WSH	Medium	28.7	129.7	4.3	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	21
silver maple	Acer saccharinum	NSH	Low	8.3	119.2	14.4	No change	No change	High	Common	Good	Good			1	22
serviceberry	Amelanchier spp.	NSL	Low	38.3	103.5	2.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	23
bigtooth aspen	Populus grandidentata	NSL	Medium	17.3	100.3	4.3	Sm. inc.	No change	Medium	Common	Good	Fair			1	24
bur oak	Quercus macrocarpa	NDH	Medium	14.3	85.6	6.4	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	25
paper birch	Betula papyrifera	WDH	High	21	71.7	2.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	26
striped maple	Acer pensylvanicum	NSL	Medium	15.9	61.0	1.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	27
eastern redcedar	Juniperus virginiana	WDH	Medium	3.7	59.1	5.8	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	2	28
slippery elm	Ulmus rubra	WSL	Low	16.3	48.1	3.2	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	29
white spruce	Picea glauca	NSL	Medium	1.7	47.3	28.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	30
swamp white oak	Quercus bicolor	NSL	Low	4.3	41.5	7.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	31
black willow	Salix nigra	NSH	Low	1.7	41.5	25.0	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	32
pin cherry	Prunus pensylvanica	NSL	Low	2.5	38.9	11.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	33
tamarack (native)	Larix laricina	NSH	High	6.4	35.3	3.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	34
butternut	Juglans cinerea	NSLX	FIA	10.2	34.0	1.9	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	35
white oak	Quercus alba	WDLX	Medium	12.9	29.8	2.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	36
shagbark hickory	Carya ovata	WSL	Medium	8	29.4	3.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	37
balsam poplar	Populus balsamifera	NSH	Medium	5.8	22.2	6.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	38
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	16.1	21.6	1.0	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	39
pignut hickory	Carya glabra	WDL	Medium	1.7	12.6	7.6	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	40
Scots pine	Pinus sylvestris	NSH	FIA	4.4	12.0	2.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	41
hackberry	Celtis occidentalis	WDH	Medium	1.7	11.8	7.1	No change	No change	High	Rare	Fair	Fair		Infill +	2	42
Norway spruce	Picea abies	NSH	FIA	1.7	7.7	4.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	43
boxelder	Acer negundo	WSH	Low	1.7	4.2	2.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	44
black locust	Robinia pseudoacacia	NDH	Low	1.7	3.1	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	45
American mountain-ash	Sorbus americana	NSL	Low	1.7	1.4	0.9	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	46
chokecherry	Prunus virginiana	NSLX	FIA	3.3	1.2	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	47



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black spruce	<i>Picea mariana</i>	NSH	High	2.9	1.1	0.3	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	48
mountain maple	<i>Acer spicatum</i>	NSL	Low	1.7	0.7	0.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	49
jack pine	<i>Pinus banksiana</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate +	3	50
Virginia pine	<i>Pinus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	51
sweet birch	<i>Betula lenta</i>	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	52
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum ssp.</i>	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	53
pecan	<i>Carya illinoensis</i>	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	54
black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	55
mockernut hickory	<i>Carya alba</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	56
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	57
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	58
flowering dogwood	<i>Cornus florida</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	59
common persimmon	<i>Diospyros virginiana</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	60
honeylocust	<i>Gleditsia triacanthos</i>	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	61
American holly	<i>Ilex opaca</i>	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	62
black walnut	<i>Juglans nigra</i>	WDL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	63
sweetgum	<i>Liquidambar styraciflua</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	64
yellow-poplar	<i>Liriodendron tulipifera</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	65
blackgum	<i>Nyssa sylvatica</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	66
sycamore	<i>Platanus occidentalis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	67
eastern cottonwood	<i>Populus deltoides</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	68
scarlet oak	<i>Quercus coccinea</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
northern pin oak	<i>Quercus ellipsoidalis</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	70
shingle oak	<i>Quercus imbricaria</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	71
chinkapin oak	<i>Quercus muehlenbergii</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72
pin oak	<i>Quercus palustris</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	73
chestnut oak	<i>Quercus prinus</i>	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	74
Shumard oak	<i>Quercus shumardii</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	75
post oak	<i>Quercus stellata</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	76
black oak	<i>Quercus velutina</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	77
sassafras	<i>Sassafras albidum</i>	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	78