

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	8,837.4	3,412.1	333

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	Scenario	Scenario	Scenario	SHIFT	SHIFT
				High	Low	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Ash	3			15	17	Increase	17	17	Very Good	5	5
Hickory	0			22	32	No Change	5	7	Good	14	14
Maple	3	Abundant	8	21	11	Decrease	17	15	Fair	6	8
Oak	6	Common	16	FIA	4	New	15	15	Poor	5	4
Pine	4	Rare	19			Unknown	8	8	Very Poor	8	7
Other	27	Absent	19						FIA Only	2	2
	43		62	62	60		62	62	Unknown	4	4
										44	44

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	43.5	45.3	48.4	48.2	
	CCSM85	43.5	46.0	49.1	52.5	
	GFDL45	43.5	46.4	49.4	50.7	
	GFDL85	43.5	46.9	50.7	55.5	
	HAD45	43.5	46.9	50.1	52.1	
HAD85	43.5	47.2	51.5	57.3		
Growing Season (May—Sep)	CCSM45	61.5	63.1	65.5	65.7	
	CCSM85	61.5	63.7	66.5	70.4	
	GFDL45	61.5	65.2	69.1	71.0	
	GFDL85	61.5	66.0	70.6	76.2	
	HAD45	61.5	65.0	67.2	69.8	
HAD85	61.5	64.6	69.0	74.8		
Coldest Month Average	CCSM45	16.2	18.0	21.1	20.5	
	CCSM85	16.2	19.2	21.5	23.8	
	GFDL45	16.2	18.2	20.1	20.6	
	GFDL85	16.2	19.2	20.8	23.3	
	HAD45	16.2	18.0	21.8	22.1	
HAD85	16.2	20.2	23.0	27.4		
Warmest Month Average	CCSM45	67.6	69.7	71.2	71.6	
	CCSM85	67.6	70.6	72.4	74.4	
	GFDL45	67.6	71.5	73.3	74.6	
	GFDL85	67.6	72.2	74.6	77.5	
	HAD45	67.6	71.5	72.5	74.3	
HAD85	67.6	71.8	74.2	78.4		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	31.5	31.4	30.5	31.9	
	CCSM85	31.5	32.2	31.0	32.3	
	GFDL45	31.5	33.6	36.3	35.5	
	GFDL85	31.5	34.2	36.7	37.2	
	HAD45	31.5	33.0	34.3	33.9	
HAD85	31.5	34.1	33.4	36.6		
Growing Season (May—Sep)	CCSM45	16.2	16.8	15.7	16.4	
	CCSM85	16.2	16.8	15.6	15.4	
	GFDL45	16.2	16.6	18.0	17.5	
	GFDL85	16.2	17.5	17.2	16.8	
	HAD45	16.2	16.2	15.2	15.6	
HAD85	16.2	16.6	14.1	15.0		

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
jack pine	Pinus banksiana	NSH	Medium	51.8	1409.0	23.1	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	82	1358.2	10.1	No change	No change	High	Abundant	Very Good	Very Good			1	2
red pine	Pinus resinosa	NSH	Medium	55.3	1255.6	16.7	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	3
quaking aspen	Populus tremuloides	WDH	High	66.4	1175.1	10.9	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
bigtooth aspen	Populus grandidentata	NSL	Medium	64	970.8	9.6	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	5
northern red oak	Quercus rubra	WDH	Medium	59.2	946.2	10.6	No change	Sm. dec.	High	Abundant	Very Good	Good			1	6
sugar maple	Acer saccharum	WDH	High	24.1	543.0	14.8	No change	No change	High	Abundant	Very Good	Very Good			1	7
northern pin oak	Quercus ellipsoidalis	NSH	Medium	46.1	533.8	9.1	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	8
eastern white pine	Pinus strobus	WDH	High	52.9	493.9	6.7	No change	No change	Low	Common	Poor	Poor			0	9
northern white-cedar	Thuja occidentalis	WSH	High	21.4	452.2	17.4	Sm. dec.	No change	Medium	Common	Poor	Fair			1	10
white oak	Quercus alba	WDH	Medium	40.6	366.5	6.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	11
black cherry	Prunus serotina	WDL	Medium	57.4	322.9	3.9	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	12
balsam fir	Abies balsamea	NDH	High	42.2	316.8	5.9	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	13
green ash	Fraxinus pennsylvanica	WSH	Low	14.8	305.2	7.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
paper birch	Betula papyrifera	WDH	High	41.7	183.4	2.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	15
black oak	Quercus velutina	WDH	High	25.8	162.4	3.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	16
American basswood	Tilia americana	WSL	Medium	21.4	157.2	4.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
American beech	Fagus grandifolia	WDH	High	10.7	107.7	6.1	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	18
tamarack (native)	Larix laricina	NSH	High	17.3	94.2	4.3	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	19
white ash	Fraxinus americana	WDL	Medium	14.8	66.8	2.2	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	20
black spruce	Picea mariana	NSH	High	18.2	60.5	2.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	21
balsam poplar	Populus balsamifera	NSH	Medium	12.1	59.5	2.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	22
black ash	Fraxinus nigra	WSH	Medium	11.8	54.0	2.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	23
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	14.7	53.7	1.9	Sm. dec.	Lg. dec.	High	Common	Fair	Fair			1	24
serviceberry	Amelanchier spp.	NSL	Low	19.4	48.4	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	25
American elm	Ulmus americana	WDH	Medium	17.2	44.6	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	26
Scots pine	Pinus sylvestris	NSH	FIA	5.2	42.0	6.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	27
eastern hemlock	Tsuga canadensis	NSH	High	5.6	39.8	5.0	No change	No change	Low	Rare	Very Poor	Very Poor			0	28
silver maple	Acer saccharinum	NSH	Low	2.6	36.0	9.0	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	29
white spruce	Picea glauca	NSL	Medium	6.5	26.7	3.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	30
pin cherry	Prunus pensylvanica	NSL	Low	2.5	17.7	5.1	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	31
Norway spruce	Picea abies	NSH	FIA	1.1	13.6	12.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	32
yellow birch	Betula alleghaniensis	NDL	High	5.1	6.7	1.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	33
swamp white oak	Quercus bicolor	NSL	Low	1.4	4.4	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	34
pin oak	Quercus palustris	NSH	Low	0.3	4.4	1.0	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	35
eastern cottonwood	Populus deltoides	NSH	Low	1.1	3.0	2.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	36
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	3.4	2.7	0.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
slippery elm	Ulmus rubra	WSL	Low	1	2.5	1.9	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	38
chokecherry	Prunus virginiana	NSLX	FIA	3.8	1.9	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	39
peachleaf willow	Salix amygdaloides	NSLX	FIA	1.1	1.0	0.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	40
black willow	Salix nigra	NSH	Low	1.1	0.9	0.8	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	41
flowering dogwood	Cornus florida	WDL	Medium	1.1	0.6	0.5	Very Lg. dec.	No change	Medium	Rare	Lost	Poor		Infill +	2	42
eastern redcedar	Juniperus virginiana	WDH	Medium	1.1	0.3	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	43
boxelder	Acer negundo	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	44
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	45
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	46
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	47



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pignut hickory	<i>Carya glabra</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	48
shagbark hickory	<i>Carya ovata</i>	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	49
mockernut hickory	<i>Carya alba</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	50
hackberry	<i>Celtis occidentalis</i>	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	51
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	52
black walnut	<i>Juglans nigra</i>	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	53
yellow-poplar	<i>Liriodendron tulipifera</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	54
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	55
blackgum	<i>Nyssa sylvatica</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	56
sycamore	<i>Platanus occidentalis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	57
bur oak	<i>Quercus macrocarpa</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	58
post oak	<i>Quercus stellata</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	59
black locust	<i>Robinia pseudoacacia</i>	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	60
sassafras	<i>Sassafras albidum</i>	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	61
American mountain-ash	<i>Sorbus americana</i>	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	62