

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 5,194.8 2,005.7 177

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	2			High	23	19	Increase	18	21	Very Good	7	6	Likely	1	1
Hickory	3			Medium	26	39	No Change	11	6	Good	12	15	Infill	6	8
Maple	5	Abundant	6	Low	20	12	Decrease	14	16	Fair	7	7	Migrate	4	9
Oak	6	Common	14	FIA	3		New	19	20	Poor	9	5			
Pine	4	Rare	26				Unknown	10	9	Very Poor	6	8			
Other	26	Absent	24							FIA Only	1	1			
	46		70		72	70		72	72	Unknown	7	6			
											49	48			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	50.1	51.8	53.7	54.0	
	CCSM85	50.1	52.3	54.5	57.3	
	GFDL45	50.1	53.0	55.3	56.5	
	GFDL85	50.1	53.0	56.5	60.6	
	HAD45	50.1	52.3	55.8	57.4	
	HAD85	50.1	52.2	56.6	61.1	
Growing Season (May—Sep)	CCSM45	65.8	67.7	69.2	69.5	
	CCSM85	65.8	67.8	70.0	73.2	
	GFDL45	65.8	68.8	71.5	72.6	
	GFDL85	65.8	68.8	72.7	76.9	
	HAD45	65.8	67.9	71.2	73.3	
	HAD85	65.8	67.0	72.2	76.8	
Coldest Month (Average)	CCSM45	26.4	27.7	29.1	29.8	
	CCSM85	26.4	28.6	29.7	31.6	
	GFDL45	26.4	29.8	31.1	32.1	
	GFDL85	26.4	29.8	31.5	33.6	
	HAD45	26.4	27.8	30.1	30.5	
	HAD85	26.4	28.8	30.7	33.5	
Warmest Month (Average)	CCSM45	72.2	74.1	75.0	74.9	
	CCSM85	72.2	74.2	75.6	77.1	
	GFDL45	72.2	74.8	76.3	77.3	
	GFDL85	72.2	75.4	77.7	80.1	
	HAD45	72.2	74.4	76.0	77.1	
	HAD85	72.2	73.3	75.9	78.8	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	49.9	49.5	49.1	54.5	
	CCSM85	49.9	50.7	52.2	56.3	
	GFDL45	49.9	53.3	56.4	54.4	
	GFDL85	49.9	52.2	55.2	57.1	
	HAD45	49.9	50.6	55.1	54.6	
	HAD85	49.9	54.0	54.9	56.3	
Growing Season (May—Sep)	CCSM45	19.4	21.1	19.7	21.3	
	CCSM85	19.4	20.3	20.9	21.0	
	GFDL45	19.4	18.8	18.6	19.0	
	GFDL85	19.4	19.4	18.4	18.8	
	HAD45	19.4	19.8	20.4	19.7	
	HAD85	19.4	19.9	19.9	20.4	

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	95	3378.9	23.6	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
eastern white pine	Pinus strobus	WDH	High	70.8	1370.4	12.6	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	2
black oak	Quercus velutina	WDH	High	68.9	841.4	7.0	No change	No change	Medium	Abundant	Good	Good			1	3
northern red oak	Quercus rubra	WDH	Medium	70.5	832.9	8.6	No change	Sm. dec.	High	Abundant	Very Good	Good			1	4
white oak	Quercus alba	WDH	Medium	82	820.5	6.7	No change	No change	High	Abundant	Very Good	Very Good			1	5
scarlet oak	Quercus coccinea	WDL	Medium	69.8	819.3	8.6	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	6
sweet birch	Betula lenta	NDH	High	55.1	414.4	5.3	No change	No change	Low	Common	Poor	Poor			0	7
black cherry	Prunus serotina	WDL	Medium	39	306.2	5.4	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	8
white ash	Fraxinus americana	WDL	Medium	42	209.6	4.0	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	9
blackgum	Nyssa sylvatica	WDL	Medium	47.3	181.8	2.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
yellow birch	Betula alleghaniensis	NDL	High	44.5	178.9	3.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
eastern hemlock	Tsuga canadensis	NSH	High	19.1	151.3	5.9	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	12
pitch pine	Pinus rigida	NSH	High	21	129.5	4.9	No change	Lg. dec.	Medium	Common	Fair	Poor			1	13
gray birch	Betula populifolia	NSL	Low	25.9	128.9	3.4	No change	No change	Medium	Common	Fair	Fair			1	14
eastern redcedar	Juniperus virginiana	WDH	Medium	22.6	111.3	3.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
pignut hickory	Carya glabra	WDL	Medium	28.5	104.8	2.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	16
mockernut hickory	Carya alba	WDL	Medium	20.6	80.7	1.8	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
sassafras	Sassafras albidum	WSL	Low	38.5	76.9	1.4	Lg. inc.	Sm. inc.	Medium	Common	Very Good	Good			1	18
American beech	Fagus grandifolia	WDH	High	25.6	69.0	1.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
American elm	Ulmus americana	WDH	Medium	17.5	62.7	2.4	Sm. dec.	Sm. inc.	Medium	Common	Poor	Good			1	20
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	9.4	47.1	3.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	21
quaking aspen	Populus tremuloides	WDH	High	9	44.7	1.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	22
sugar maple	Acer saccharum	WDH	High	25	41.2	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	23
pin cherry	Prunus pensylvanica	NSL	Low	5.1	39.2	4.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	24
shagbark hickory	Carya ovata	WSL	Medium	16.7	38.9	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	25
bigtooth aspen	Populus grandidentata	NSL	Medium	23.3	36.4	1.1	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	26
green ash	Fraxinus pennsylvanica	WSH	Low	8.9	31.7	1.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	27
chestnut oak	Quercus prinus	NDH	High	7.7	28.0	3.6	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	28
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	15.1	20.8	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	29
hackberry	Celtis occidentalis	WDH	Medium	0.9	18.8	4.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	30
Norway maple	Acer platanoides	NSL	FIA	1.6	16.4	7.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	31
silver maple	Acer saccharinum	NSH	Low	0.7	15.4	2.9	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	32
balsam poplar	Populus balsamifera	NSH	Medium	1.9	14.7	7.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
balsam fir	Abies balsamea	NDH	High	1.9	14.2	7.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	34
paper birch	Betula papyrifera	WDH	High	2.5	7.8	1.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	35
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	5.6	7.3	0.7	No change	Sm. inc.	High	Rare	Fair	Good		Infill ++	1	36
swamp white oak	Quercus bicolor	NSL	Low	3.8	5.7	1.5	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	37
yellow-poplar	Liriodendron tulipifera	WDH	High	3.9	5.4	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	38
American holly	Ilex opaca	NSL	Medium	5.1	4.2	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good		Infill ++	1	39
boxelder	Acer negundo	WSH	Low	0.7	4.1	0.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	40
black locust	Robinia pseudoacacia	NDH	Low	2.7	2.5	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	41
American chestnut	Castanea dentata	NSLX	FIA	6.5	2.0	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	42
red pine	Pinus resinosa	NSH	Medium	1.9	1.8	0.9	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	43
flowering dogwood	Cornus florida	WDL	Medium	1.2	1.4	0.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	44
American mountain-ash	Sorbus americana	NSL	Low	1.9	0.9	0.5	No change	No change	Low	Rare	Very Poor	Very Poor			0	45
Scots pine	Pinus sylvestris	NSH	FIA	1.9	0.7	0.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	46
tamarack (native)	Larix laricina	NSH	High	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	47



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shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	48
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	49
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	50
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	51
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	52
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	53
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	54
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	55
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	56
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	57
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	58
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	59
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	60
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	61
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	62
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	63
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	64
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	65
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	66
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	67
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	68
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	69
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	70
American basswood	Tilia americana	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	71
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72