

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 3,525.4 237

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	24	22	Increase	23	23	Very Good	7	7	Likely	4	4
Hickory	4			Medium	25	44	No Change	5	5	Good	15	14	Infill	9	9
Maple	5	Abundant	7	Low	32	16	Decrease	21	21	Fair	8	10	Migrate	7	16
Oak	7	Common	23	FIA	3		New	25	29	Poor	9	7			
Pine	3	Rare	22				Unknown	10	6	Very Poor	8	8			
Other	30	Absent	32							FIA Only	1	1			
	52		84		84	82		84	84	Unknown	7	3			
											55	50			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	44.8	46.8	49.1	49.3	
	CCSM85	44.8	47.2	49.8	53.0	
	GFDL45	44.8	47.8	51.2	52.4	
	GFDL85	44.8	48.4	52.5	57.1	
	HAD45	44.8	47.9	51.1	52.9	
Growing Season (May-Sep)	CCSM45	61.7	63.9	65.6	66.2	
	CCSM85	61.7	64.1	66.6	70.5	
	GFDL45	61.7	64.9	68.9	70.4	
	GFDL85	61.7	65.9	70.4	75.4	
	HAD45	61.7	64.9	67.7	70.0	
Coldest Month Average	CCSM45	18.5	20.5	22.5	22.8	
	CCSM85	18.5	21.4	22.6	24.8	
	GFDL45	18.5	21.7	23.6	24.5	
	GFDL85	18.5	22.4	24.3	26.7	
	HAD45	18.5	20.7	23.7	23.9	
Warmest Month Average	CCSM45	67.6	70.2	71.3	71.5	
	CCSM85	67.6	70.5	72.1	74.3	
	GFDL45	67.6	70.6	72.8	74.1	
	GFDL85	67.6	72.0	74.7	77.5	
	HAD45	67.6	71.0	72.6	74.1	
HAD85	67.6	70.9	73.6	78.1		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	44.0	43.8	42.7	46.9	
	CCSM85	44.0	44.4	46.2	48.1	
	GFDL45	44.0	48.4	50.1	49.0	
	GFDL85	44.0	45.9	49.4	51.6	
	HAD45	44.0	45.9	47.3	46.3	
Growing Season (May-Sep)	CCSM45	20.2	20.8	19.8	21.3	
	CCSM85	20.2	20.4	21.5	20.5	
	GFDL45	20.2	20.8	20.1	20.6	
	GFDL85	20.2	20.2	20.1	19.9	
	HAD45	20.2	21.5	20.2	20.6	
HAD85	20.2	20.3	20.2	21.2		

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
sugar maple	Acer saccharum	WDH	High	86.7	2086.7	16.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
red maple	Acer rubrum	WDH	High	86.3	1560.1	12.7	No change	No change	High	Abundant	Very Good	Very Good			1	2
white ash	Fraxinus americana	WDL	Medium	88.4	963.3	8.0	No change	No change	Low	Abundant	Fair	Fair			0	3
eastern hemlock	Tsuga canadensis	NSH	High	58	896.5	10.5	Sm. dec.	Lg. dec.	Low	Abundant	Fair	Poor			0	4
American beech	Fagus grandifolia	WDH	High	68.7	826.2	7.7	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	5
eastern white pine	Pinus strobus	WDH	High	50.6	589.5	7.8	No change	No change	Low	Abundant	Fair	Fair			0	6
northern red oak	Quercus rubra	WDH	Medium	55.5	538.5	6.9	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	7
black cherry	Prunus serotina	WDL	Medium	57.8	495.7	5.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	8
quaking aspen	Populus tremuloides	WDH	High	34.8	408.7	9.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	9
yellow birch	Betula alleghaniensis	NDL	High	47	347.3	4.5	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	10
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	55.8	292.1	3.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	11
American basswood	Tilia americana	WSL	Medium	40.9	220.0	3.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
American elm	Ulmus americana	WDH	Medium	30.6	219.7	3.8	No change	Sm. inc.	Medium	Common	Fair	Good			1	13
sweet birch	Betula lenta	NDH	High	37.7	168.8	3.6	Lg. inc.	Sm. inc.	Low	Common	Good	Fair			1	14
red pine	Pinus resinosa	NSH	Medium	7.9	158.8	17.9	Lg. dec.	Very Lg. dec.	Low	Common	Very Poor	Lost			0	15
paper birch	Betula papyrifera	WDH	High	31.3	110.7	3.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	16
shagbark hickory	Carya ovata	WSL	Medium	14	98.0	5.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
serviceberry	Amelanchier spp.	NSL	Low	29.5	96.1	2.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	18
chestnut oak	Quercus prinus	NDH	High	5.6	94.7	6.0	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	19
Norway spruce	Picea abies	NSH	FIA	4.4	78.7	6.4	Unknown	Unknown	NA	Common	NNIS	NNIS			0	20
bigtooth aspen	Populus grandidentata	NSL	Medium	17.9	75.7	3.0	Sm. inc.	No change	Medium	Common	Good	Fair			1	21
bitternut hickory	Carya cordiformis	WSL	Low	12	74.6	4.4	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	22
Scots pine	Pinus sylvestris	NSH	FIA	8.3	71.8	6.4	Unknown	Unknown	NA	Common	NNIS	NNIS			0	23
red spruce	Picea rubens	NDH	High	10.8	70.0	6.8	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	24
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	24.5	63.1	1.5	Sm. dec.	No change	Medium	Common	Poor	Fair			1	25
striped maple	Acer pensylvanicum	NSL	Medium	29.3	62.5	1.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
white oak	Quercus alba	WDH	Medium	9.3	60.0	3.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	27
pignut hickory	Carya glabra	WDL	Medium	9.1	57.4	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	28
balsam fir	Abies balsamea	NDH	High	6.5	54.4	8.0	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	29
black oak	Quercus velutina	WDH	High	4.2	51.4	3.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	30
black locust	Robinia pseudoacacia	NDH	Low	4	47.9	10.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	31
green ash	Fraxinus pennsylvanica	WSH	Low	3.8	40.3	8.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	32
white spruce	Picea glauca	NSL	Medium	2.2	27.3	12.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	33
gray birch	Betula populifolia	NSL	Low	5.4	25.1	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
tamarack (native)	Larix laricina	NSH	High	4.8	20.8	3.1	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	35
black ash	Fraxinus nigra	WSH	Medium	2.8	13.1	1.2	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	36
river birch	Betula nigra	NSL	Low	0.4	11.8	3.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
black willow	Salix nigra	NSH	Low	2.4	10.5	2.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	38
pin cherry	Prunus pensylvanica	NSL	Low	5.8	8.8	1.3	No change	Lg. dec.	Medium	Rare	Poor	Very Poor			1	39
American mountain-ash	Sorbus americana	NSL	Low	3.3	8.3	2.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	40
boxelder	Acer negundo	WSH	Low	1.1	7.6	1.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	41
eastern redcedar	Juniperus virginiana	WDH	Medium	4.6	7.1	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	42
eastern cottonwood	Populus deltoides	NSH	Low	0.7	5.9	3.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	43
butternut	Juglans cinerea	NSLX	FIA	4.7	5.6	0.9	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	44
sycamore	Platanus occidentalis	NSL	Low	0.4	3.9	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	45
black walnut	Juglans nigra	WDH	Low	0.7	3.5	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	46
mockernut hickory	Carya alba	WDL	Medium	2.2	2.7	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	47



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scarlet oak	Quercus coccinea	WDL	Medium	1.1	1.8	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	48
pin oak	Quercus palustris	NSH	Low	0.4	1.8	0.6	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	49
mountain maple	Acer spicatum	NSL	Low	0.9	0.8	0.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	50
swamp white oak	Quercus bicolor	NSL	Low	0.3	0.7	0.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	51
slippery elm	Ulmus rubra	WSL	Low	0.1	0.4	0.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 52
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	53
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	54
pitch pine	Pinus rigida	NSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	55
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	56
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	57
northern white-cedar	Thuja occidentalis	WSH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	58
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	59
pawpaw	Asimina triloba	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	60
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	61
pecan	Carya illinoensis	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	62
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	63
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	64
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	65
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	66
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	67
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	68
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	69
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	70
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	71
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	72
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	75
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	76
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	77
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	78
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	79
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	80
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	81
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	82
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	83
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	84