

	sq. km	sq. mi	FIA Plots
Area of Region	38,664	14,928	1,022

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	26	25	Increase	24	24	Very Good	6	8	Likely	0	0
Hickory	5			Medium	28	49	No Change	9	8	Good	17	17	Infill	14	15
Maple	7	Abundant	7	Low	31	16	Decrease	31	32	Fair	12	8	Migrate	4	12
Oak	10	Common	22	FIA	9		New	15	18	Poor	13	14		18	27
Pine	7	Rare	44				Unknown	15	12	Very Poor	14	12			
Other	41	Absent	19							FIA Only	5	5			
	73		92		94	90		94	94	Unknown	6	3			
											73	67			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	45.8	47.8	50.2	50.3	
Average	CCSM85	45.8	48.2	50.8	54.0	
	GFDL45	45.8	48.7	52.0	53.2	
	GFDL85	45.8	49.3	53.2	57.7	
	HAD45	45.8	48.9	52.3	54.0	
	HAD85	45.8	49.0	53.3	58.6	
Growing Season	CCSM45	62.5	64.6	66.6	67.0	
	CCSM85	62.5	64.8	67.4	71.3	
May—Sep	GFDL45	62.5	65.6	69.7	71.2	
	GFDL85	62.5	66.8	71.2	76.0	
	HAD45	62.5	65.9	68.7	71.1	
	HAD85	62.5	65.4	70.3	76.3	
Coldest Month	CCSM45	20.1	22.1	24.1	24.3	
	CCSM85	20.1	22.9	24.1	26.2	
Average	GFDL45	20.1	23.2	24.7	25.4	
	GFDL85	20.1	23.6	25.2	27.4	
	HAD45	20.1	21.9	24.9	25.0	
	HAD85	20.1	23.2	25.5	28.7	
Warmest Month	CCSM45	68.3	70.7	71.9	72.2	
	CCSM85	68.3	71.1	72.8	75.0	
Average	GFDL45	68.3	71.3	73.6	74.8	
	GFDL85	68.3	72.7	75.3	78.2	
	HAD45	68.3	72.1	73.7	75.4	
	HAD85	68.3	72.1	75.1	79.5	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	42.0	42.5	42.0	45.4	
Total	CCSM85	42.0	43.1	44.5	45.8	
	GFDL45	42.0	46.3	48.2	47.4	
	GFDL85	42.0	43.8	47.4	49.4	
	HAD45	42.0	43.3	44.5	43.7	
	HAD85	42.0	44.7	43.3	46.8	
Growing Season	CCSM45	20.0	20.7	20.1	21.5	
	CCSM85	20.0	20.3	21.1	20.4	
May—Sep	GFDL45	20.0	20.9	20.5	20.7	
	GFDL85	20.0	19.9	20.2	20.2	
	HAD45	20.0	20.6	19.0	19.4	
	HAD85	20.0	20.1	18.7	19.9	

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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Section 211F

EcoMap 2007
Climate Change Atlas Tree Species

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Current and Potential Future Habitat, Capability, and Migration

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	87.2	2038.1	16.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
sugar maple	Acer saccharum	WDH	High	73.4	1411.1	13.9	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
white ash	Fraxinus americana	WDL	Medium	73.3	1059.0	10.5	No change	No change	Low	Abundant	Fair	Fair			0	3
eastern hemlock	Tsuga canadensis	NSH	High	55.8	777.8	10.8	Sm. dec.	Lg. dec.	Low	Abundant	Fair	Poor			0	4
American beech	Fagus grandifolia	WDH	High	56.7	614.1	7.2	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	5
black cherry	Prunus serotina	WDL	Medium	61.8	566.0	6.7	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	6
eastern white pine	Pinus strobus	WDH	High	45.4	560.5	9.5	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	7
northern red oak	Quercus rubra	WDH	Medium	47.1	484.1	6.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	8
sweet birch	Betula lenta	NDH	High	43.8	300.2	4.7	Sm. inc.	No change	Low	Common	Fair	Poor			1	9
chestnut oak	Quercus prinus	NDH	High	17.2	291.0	9.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	10
quaking aspen	Populus tremuloides	WDH	High	33.2	286.1	6.2	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	11
white oak	Quercus alba	WDH	Medium	22	244.6	7.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	12
yellow birch	Betula alleghaniensis	NDL	High	35.6	194.6	4.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	13
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	46.1	172.5	2.8	Sm. dec.	No change	High	Common	Fair	Good			1	14
red pine	Pinus resinosa	NSH	Medium	10.8	140.6	10.7	Lg. dec.	Very Lg. dec.	Low	Common	Very Poor	Lost			0	15
American basswood	Tilia americana	WSL	Medium	25.3	137.7	3.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
Norway spruce	Picea abies	NSH	FIA	10.9	136.1	9.6	Unknown	Unknown	NA	Common	NNIS	NNIS			0	17
American elm	Ulmus americana	WDH	Medium	22.9	118.2	3.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	18
Scots pine	Pinus sylvestris	NSH	FIA	8.4	103.0	10.4	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
bigtooth aspen	Populus grandidentata	NSL	Medium	17.6	87.6	3.5	Sm. inc.	Sm. dec.	Medium	Common	Good	Poor			1	20
scarlet oak	Quercus coccinea	WDL	Medium	8.9	83.1	5.7	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	21
black oak	Quercus velutina	WDL	High	12.9	73.9	3.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	22
bitternut hickory	Carya cordiformis	WSL	Low	13.3	67.8	3.2	No change	Lg. inc.	High	Common	Good	Very Good			1	23
shagbark hickory	Carya ovata	WSL	Medium	15.6	66.9	3.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	24
black locust	Robinia pseudoacacia	NDH	Low	6	66.7	8.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	25
serviceberry	Amelanchier spp.	NSL	Low	28.9	63.0	1.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	26
white spruce	Picea glauca	NSL	Medium	3.5	60.9	16.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	27
green ash	Fraxinus pennsylvanica	WSH	Low	3.6	57.9	10.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	28
pignut hickory	Carya glabra	WDL	Medium	13.2	54.9	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	29
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	22.7	45.6	1.5	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	30
black willow	Salix nigra	NSH	Low	2.9	43.2	13.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	31
eastern cottonwood	Populus deltoides	NSH	Low	3.1	37.0	10.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	32
sassafras	Sassafras albidum	WSL	Low	6.2	34.8	2.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	33
pin cherry	Prunus pensylvanica	NSL	Low	6.2	34.1	3.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	34
red spruce	Picea rubens	NDH	High	4.8	32.6	6.2	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	35
silver maple	Acer saccharinum	NSH	Low	1.1	28.4	20.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	36
paper birch	Betula papyrifera	WDH	High	6.6	26.1	2.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
striped maple	Acer pensylvanicum	NSL	Medium	12.7	25.1	1.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	38
pitch pine	Pinus rigida	NSH	High	5	22.3	3.1	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		1	39
blackgum	Nyssa sylvatica	WDL	Medium	5.9	21.2	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	40
eastern redcedar	Juniperus virginiana	WDH	Medium	1.5	20.9	2.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	41
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	0.6	17.6	3.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	42
black walnut	Juglans nigra	WDH	Low	3.2	16.5	2.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	43
butternut	Juglans cinerea	NSLX	FIA	2.2	15.7	2.9	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	44
gray birch	Betula populifolia	NSL	Low	5.9	15.5	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
northern white-cedar	Thuja occidentalis	WSH	High	1.1	12.8	7.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	46
boxelder	Acer negundo	WSH	Low	1.4	12.6	6.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
sycamore	Platanus occidentalis	NSL	Low	1.8	12.4	6.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	48
yellow-poplar	Liriodendron tulipifera	WDH	High	3.7	11.8	2.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	49
chokecherry	Prunus virginiana	NSLX	FIA	2.9	10.0	2.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	50
black ash	Fraxinus nigra	WSH	Medium	0.7	9.1	8.7	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	51
black spruce	Picea mariana	NSH	High	0.3	8.4	32.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	52
mockernut hickory	Carya alba	WDL	Medium	2.7	6.8	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	53
swamp white oak	Quercus bicolor	NSL	Low	0.3	6.1	4.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	54
balsam fir	Abies balsamea	NDH	High	0.9	6.1	3.8	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	55
tamarack (native)	Larix laricina	NSH	High	0.7	5.4	5.6	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	56
jack pine	Pinus banksiana	NSH	Medium	0.2	3.9	2.5	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	57
bur oak	Quercus macrocarpa	NDH	Medium	0.3	3.3	5.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	58
slippery elm	Ulmus rubra	WSL	Low	0.9	3.1	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	59
ailanthus	Ailanthus altissima	NSL	FIA	0.1	2.1	0.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	60
cucumbertree	Magnolia acuminata	NSL	Low	1.5	2.0	0.7	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	61
flowering dogwood	Cornus florida	WDL	Medium	1.4	1.5	0.6	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good		Infill ++	2	62
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	1.4	0.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	63
American chestnut	Castanea dentata	NSLX	FIA	0.8	1.3	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	64
Virginia pine	Pinus virginiana	NDH	High	0.4	1.2	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	65
shellbark hickory	Carya laciniosa	NSL	Low	0.2	0.9	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	66
hackberry	Celtis occidentalis	WDH	Medium	0.1	0.5	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	67
mountain maple	Acer spicatum	NSL	Low	0.3	0.4	1.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	68
Norway maple	Acer platanoides	NSL	FIA	0.2	0.3	0.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	69
Table Mountain pine	Pinus pungens	NSL	Low	0.1	0.3	0.5	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			0	70
northern catalpa	Catalpa speciosa	NSHX	FIA	0.1	0.2	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	71
American mountain-ash	Sorbus americana	NSL	Low	0.3	0.1	0.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	72
pin oak	Quercus palustris	NSH	Low	0	0.1	0.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	73
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	74
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	75
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	76
black maple	Acer nigrum	NSH	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	77
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	78
pecan	Carya illinoensis	NSH	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	79
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	80
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			2	81
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	82
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	83
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown			3	84
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	85
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	86
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	87
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	88
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	89
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	90
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	91
water oak	Quercus nigra	WDH	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	92
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	93
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	94

