

	sq. km	sq. mi	FIA Plots
Area of Region	17,390	6,714.1	560

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	19	24	Very Good	2	3	Likely	0	0
Hickory	4			Medium	23	43	No Change	9	6	Good	19	22	Infill	8	10
Maple	6	Abundant	9	Low	29	14	Decrease	24	22	Fair	8	7	Migrate	2	9
Oak	5	Common	13	FIA	6		New	13	19	Poor	14	11		10	19
Pine	4	Rare	36				Unknown	17	11	Very Poor	9	8			
Other	36	Absent	23					82	82	FIA Only	3	3			
	58		81		82	79				Unknown	11	5			
											66	59			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	43.7	45.7	48.0	48.2	
	CCSM85	43.7	46.2	48.8	52.1	
	GFDL45	43.7	46.7	50.1	51.5	
	GFDL85	43.7	47.2	51.5	56.4	
	HAD45	43.7	46.8	49.9	51.7	
	HAD85	43.7	46.9	51.1	56.7	
Growing Season (May—Sep)	CCSM45	61.4	63.6	65.4	65.9	
	CCSM85	61.4	63.8	66.3	70.1	
	GFDL45	61.4	64.6	68.3	69.9	
	GFDL85	61.4	65.2	69.8	75.0	
	HAD45	61.4	64.5	67.1	69.5	
	HAD85	61.4	64.1	68.6	74.7	
Coldest Month Average	CCSM45	16.2	18.0	20.1	20.4	
	CCSM85	16.2	19.2	20.4	22.9	
	GFDL45	16.2	19.4	21.7	22.9	
	GFDL85	16.2	20.3	22.5	25.3	
	HAD45	16.2	19.0	21.9	22.2	
	HAD85	16.2	20.2	22.6	26.2	
Warmest Month Average	CCSM45	67.5	70.0	71.1	71.2	
	CCSM85	67.5	70.4	72.1	74.1	
	GFDL45	67.5	70.4	72.4	73.7	
	GFDL85	67.5	71.3	74.2	77.0	
	HAD45	67.5	70.8	72.2	73.6	
	HAD85	67.5	70.3	72.9	77.2	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	45.3	44.5	42.7	47.9	
	CCSM85	45.3	44.8	46.5	48.9	
	GFDL45	45.3	49.3	51.8	50.1	
	GFDL85	45.3	47.6	50.2	52.4	
	HAD45	45.3	48.3	50.2	49.3	
	HAD85	45.3	49.3	49.2	51.9	
Growing Season (May—Sep)	CCSM45	20.5	20.7	19.2	20.8	
	CCSM85	20.5	20.0	21.0	20.4	
	GFDL45	20.5	20.8	19.9	20.1	
	GFDL85	20.5	20.7	20.0	19.3	
	HAD45	20.5	22.2	21.5	22.1	
	HAD85	20.5	21.0	20.9	22.3	

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 M211B

EcoMap 2007
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Northern Research Station
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Iverson, Peters, Prasad, Matthews

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	94.4	1829.3	12.2	No change	No change	High	Abundant	Very Good	Very Good			1	1
eastern white pine	Pinus strobus	WDH	High	79	1574.3	13.3	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	2
eastern hemlock	Tsuga canadensis	NSH	High	79.7	1386.1	11.8	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	3
sugar maple	Acer saccharum	WDH	High	82.8	1342.1	10.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	4
northern red oak	Quercus rubra	WDH	Medium	62.4	741.7	7.6	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	5
balsam fir	Abies balsamea	NDH	High	51.3	721.9	9.1	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	6
American beech	Fagus grandifolia	WDH	High	83	631.5	4.8	No change	No change	Medium	Abundant	Good	Good			1	7
paper birch	Betula papyrifera	WDH	High	82.6	549.0	4.3	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	8
yellow birch	Betula alleghaniensis	NDL	High	77.5	533.2	4.1	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	9
white ash	Fraxinus americana	WDL	Medium	76.9	474.0	3.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	10
red spruce	Picea rubens	NDH	High	62.9	464.2	4.9	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	11
sweet birch	Betula lenta	NDH	High	32.9	299.6	6.0	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	12
black cherry	Prunus serotina	WDL	Medium	63.2	265.3	3.1	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	13
quaking aspen	Populus tremuloides	WDH	High	46.4	223.2	3.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
northern white-cedar	Thuja occidentalis	WSH	High	13.1	180.5	9.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	15
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	43.2	103.4	1.7	No change	Sm. inc.	High	Common	Good	Very Good			1	16
striped maple	Acer pensylvanicum	NSL	Medium	44	91.1	1.2	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	17
white spruce	Picea glauca	NSL	Medium	15.1	86.6	4.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	18
American elm	Ulmus americana	WDH	Medium	22.7	77.0	2.0	No change	Sm. inc.	Medium	Common	Fair	Good			1	19
pin cherry	Prunus pensylvanica	NSL	Low	19.5	59.6	1.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	20
balsam poplar	Populus balsamifera	NSH	Medium	8.4	52.6	2.8	Lg. dec.	Very Lg. dec.	Medium	Common	Poor	Lost			0	21
gray birch	Betula populifolia	NSL	Low	19.7	52.4	1.4	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	22
bigtooth aspen	Populus grandidentata	NSL	Medium	18.9	49.9	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	23
white oak	Quercus alba	WDH	Medium	10	44.7	2.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	24
American basswood	Tilia americana	WSL	Medium	16.6	44.1	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	25
Norway spruce	Picea abies	NSH	FIA	2.2	31.5	13.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	26
black ash	Fraxinus nigra	WSH	Medium	9.7	25.5	1.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	27
black oak	Quercus velutina	WDH	High	3.9	24.8	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	28
red pine	Pinus resinosa	NSH	Medium	4.7	23.4	2.4	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	29
boxelder	Acer negundo	WSH	Low	1.2	20.6	17.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	30
bitternut hickory	Carya cordiformis	WSL	Low	6.5	19.3	2.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	31
Siberian elm	Ulmus pumila	NDH	FIA	0.1	19.2	8.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	32
silver maple	Acer saccharinum	NSH	Low	1	17.8	13.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	33
tamarack (native)	Larix laricina	NSH	High	4.5	13.7	2.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	34
scarlet oak	Quercus coccinea	WDL	Medium	1.2	12.1	4.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	35
Scots pine	Pinus sylvestris	NSH	FIA	1.5	9.5	4.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	36
pignut hickory	Carya glabra	WDL	Medium	0.9	8.9	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	37
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	4.3	8.4	1.5	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	38
serviceberry	Amelanchier spp.	NSL	Low	7.6	7.8	0.6	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	39
mountain maple	Acer spicatum	NSL	Low	4.4	6.3	0.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	40
shagbark hickory	Carya ovata	WSL	Medium	1.6	5.8	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	41
black locust	Robinia pseudoacacia	NDH	Low	0.5	5.0	2.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	42
butternut	Juglans cinerea	NSLX	FIA	3.2	4.2	1.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	43
black walnut	Juglans nigra	WDH	Low	0.4	3.7	4.0	No change	Lg. inc.	Medium	Rare	Poor	Good			2	44
black spruce	Picea mariana	NSH	High	1.2	3.3	2.9	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	45
pitch pine	Pinus rigida	NSH	High	1.6	3.2	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	46
American mountain-ash	Sorbus americana	NSL	Low	1.3	3.0	0.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
blackgum	<i>Nyssa sylvatica</i>	WDL	Medium	1.3	2.8	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good				2 48
eastern cottonwood	<i>Populus deltoides</i>	NSH	Low	0.6	2.0	3.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 49
mockernut hickory	<i>Carya alba</i>	WDL	Medium	0.8	1.6	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good				2 50
green ash	<i>Fraxinus pennsylvanica</i>	WSH	Low	1.7	1.6	0.4	No change	Lg. inc.	Medium	Rare	Poor	Good				2 51
chokecherry	<i>Prunus virginiana</i>	NSLX	FIA	2.3	1.2	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 52
sassafras	<i>Sassafras albidum</i>	WSL	Low	0.3	1.0	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 53
American chestnut	<i>Castanea dentata</i>	NSLX	FIA	0.7	0.6	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 54
Atlantic white-cedar	<i>Chamaecyparis thyoides</i>	NSH	Low	0.6	0.4	0.7	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor				0 55
eastern redcedar	<i>Juniperus virginiana</i>	WDH	Medium	0.4	0.3	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 56
chestnut oak	<i>Quercus prinus</i>	NDH	High	0.8	0.3	0.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good				2 57
flowering dogwood	<i>Cornus florida</i>	WDL	Medium	0.3	0.2	0.2	Lg. dec.	Lg. inc.	Medium	Rare	Very Poor	Good				2 58
jack pine	<i>Pinus banksiana</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 59
shortleaf pine	<i>Pinus echinata</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 60
Table Mountain pine	<i>Pinus pungens</i>	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat				3 61
Virginia pine	<i>Pinus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 62
black maple	<i>Acer nigrum</i>	NSH	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 63
Ohio buckeye	<i>Aesculus glabra</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 64
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum ssp.</i>	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat				0 65
black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 66
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat				0 67
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 68
common persimmon	<i>Diospyros virginiana</i>	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			Migrate +	3 69
sweetgum	<i>Liquidambar styraciflua</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++		3 70
yellow-poplar	<i>Liriodendron tulipifera</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 71
cucumbertree	<i>Magnolia acuminata</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 72
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 73
mountain or Fraser magnolia	<i>Magnolia fraseri</i>	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat				0 74
sourwood	<i>Oxydendrum arboreum</i>	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 75
redbay	<i>Persea borbonia</i>	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 76
sycamore	<i>Platanus occidentalis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 77
swamp white oak	<i>Quercus bicolor</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 78
southern red oak	<i>Quercus falcata</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 79
chinkapin oak	<i>Quercus muehlenbergii</i>	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +		3 80
post oak	<i>Quercus stellata</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 81
slippery elm	<i>Ulmus rubra</i>	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 82

