

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	95,969	37,054	5,219

**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					
					Scenario	Scenario	Scenario	Scenario	SHIFT	SHIFT				
				Reliability	Adaptability	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85			
Ash	3			High	23	Increase	22	23	Very Good	7	7	Likely	0	0
Hickory	2			Medium	30	No Change	13	11	Good	14	16	Infill	13	10
Maple	7	Abundant	4	Low	31	Decrease	17	18	Fair	9	10	Migrate	6	11
Oak	7	Common	24	FIA	8	New	23	27	Poor	14	10		<b>19</b>	<b>21</b>
Pine	4	Rare	32			Unknown	17	13	Very Poor	8	9			
Other	37	Absent	31				<b>92</b>	<b>92</b>	FIA Only	5	5			
	<b>60</b>		<b>91</b>						Unknown	9	5			
										<b>66</b>	<b>62</b>			

**Potential Changes in Climate Variables**

Temperature (°F)					
	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	41.7	43.4	46.5	46.5
	CCSM85	41.7	44.3	47.3	50.9
	GFDL45	41.7	44.9	47.7	49.1
	GFDL85	41.7	45.2	48.8	54.1
	HAD45	41.7	45.0	48.4	50.4
	HAD85	41.7	45.4	49.6	55.4
Growing Season (May—Sep)	CCSM45	61.2	62.9	65.5	65.6
	CCSM85	61.2	63.7	66.4	70.5
	GFDL45	61.2	65.2	68.7	70.8
	GFDL85	61.2	65.6	70.0	76.0
	HAD45	61.2	64.4	66.9	69.3
	HAD85	61.2	64.3	68.5	74.2
Coldest Month (Average)	CCSM45	11.0	12.4	15.1	15.1
	CCSM85	11.0	12.8	15.1	17.6
	GFDL45	11.0	14.1	16.0	16.4
	GFDL85	11.0	14.9	16.6	19.6
	HAD45	11.0	12.9	17.1	17.0
	HAD85	11.0	16.1	19.1	23.2
Warmest Month (Average)	CCSM45	67.4	69.5	71.0	71.4
	CCSM85	67.4	70.5	72.3	74.7
	GFDL45	67.4	71.5	73.2	74.7
	GFDL85	67.4	72.3	74.6	77.8
	HAD45	67.4	70.9	72.1	73.8
	HAD85	67.4	71.4	73.5	77.4

Precipitation (in)					
	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	31.3	32.3	31.9	32.2
	CCSM85	31.3	31.2	31.6	32.2
	GFDL45	31.3	34.0	35.7	34.4
	GFDL85	31.3	34.1	37.1	36.6
	HAD45	31.3	32.6	33.2	33.5
	HAD85	31.3	32.7	34.0	35.4
Growing Season (May—Sep)	CCSM45	18.1	18.4	17.4	18.0
	CCSM85	18.1	17.9	17.5	16.7
	GFDL45	18.1	19.5	19.8	18.8
	GFDL85	18.1	19.6	20.3	18.8
	HAD45	18.1	17.9	17.0	17.1
	HAD85	18.1	17.8	16.2	16.5

**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
quaking aspen	Populus tremuloides	WDH	High	83.8	1317.6	13.8	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
sugar maple	Acer saccharum	WDH	High	75.2	1259.0	15.3	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	89.8	1234.4	12.1	No change	No change	High	Abundant	Very Good	Very Good			1	3
balsam fir	Abies balsamea	NDH	High	70.1	621.6	8.0	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	4
northern white-cedar	Thuja occidentalis	WSH	High	43.4	432.6	8.8	No change	No change	Medium	Common	Fair	Fair			1	5
red pine	Pinus resinosa	NSH	Medium	34.7	386.5	10.3	No change	No change	Low	Common	Poor	Poor			0	6
black ash	Fraxinus nigra	WSH	Medium	63.1	378.9	5.5	No change	No change	Low	Common	Poor	Poor			0	7
paper birch	Betula papyrifera	WDH	High	73.4	376.3	4.3	No change	No change	Medium	Common	Fair	Fair			1	8
eastern white pine	Pinus strobus	WDH	High	48.9	357.5	6.4	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	9
northern red oak	Quercus rubra	WDH	Medium	53.2	345.0	5.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
American basswood	Tilia americana	WSL	Medium	59.2	315.6	4.9	Sm. inc.	No change	Medium	Common	Good	Fair			1	11
black spruce	Picea mariana	NSH	High	39.6	262.1	5.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	12
tamarack (native)	Larix laricina	NSH	High	37.5	253.6	6.3	No change	No change	Low	Common	Poor	Poor			0	13
green ash	Fraxinus pennsylvanica	WSH	Low	37	245.9	6.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
yellow birch	Betula alleghaniensis	NDL	High	58	226.1	3.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	15
eastern hemlock	Tsuga canadensis	NSH	High	40.3	219.3	5.2	No change	Sm. dec.	Low	Common	Poor	Poor			0	16
white spruce	Picea glauca	NSL	Medium	51.7	214.3	3.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	17
bigtooth aspen	Populus grandidentata	NSL	Medium	42.6	213.7	4.2	Sm. inc.	No change	Medium	Common	Good	Fair			1	18
American elm	Ulmus americana	WDH	Medium	53.3	206.3	3.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
white ash	Fraxinus americana	WDL	Medium	46.8	175.9	3.5	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	20
northern pin oak	Quercus ellipsoidalis	NSH	Medium	18.7	175.5	7.2	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	21
black cherry	Prunus serotina	WDL	Medium	61.8	161.4	2.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	22
jack pine	Pinus banksiana	NSH	Medium	15.6	153.5	8.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	23
bur oak	Quercus macrocarpa	NDH	Medium	19.8	100.4	4.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	24
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	53.8	97.9	1.6	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	25
white oak	Quercus alba	WDH	Medium	15	68.9	3.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	26
silver maple	Acer saccharinum	NSH	Low	6.1	57.6	8.8	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	27
boxelder	Acer negundo	WSH	Low	7	52.8	5.8	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	28
balsam poplar	Populus balsamifera	NSH	Medium	10.1	40.0	2.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	29
bitternut hickory	Carya cordiformis	WSL	Low	11.3	29.1	2.4	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	30
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	21	25.3	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
American beech	Fagus grandifolia	WDH	High	5.4	20.4	3.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	32
eastern cottonwood	Populus deltoides	NSH	Low	1.7	19.7	9.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	33
Scots pine	Pinus sylvestris	NSH	FIA	1.9	19.1	8.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	34
black willow	Salix nigra	NSH	Low	2.7	15.3	7.4	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	35
chokecherry	Prunus virginiana	NSLX	FIA	12.6	13.8	0.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	36
serviceberry	Amelanchier spp.	NSL	Low	15.9	11.1	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
slippery elm	Ulmus rubra	WSL	Low	5.2	9.0	1.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	38
pin cherry	Prunus pensylvanica	NSL	Low	9.6	8.8	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
butternut	Juglans cinerea	NSLX	FIA	2.8	7.3	2.0	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	40
black oak	Quercus velutina	WDH	High	0.7	7.0	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	41
swamp white oak	Quercus bicolor	NSL	Low	2.2	6.1	2.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	42
hackberry	Celtis occidentalis	WDH	Medium	0.4	3.0	4.7	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	43
Norway spruce	Picea abies	NSH	FIA	0.8	2.9	3.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	44
peachleaf willow	Salix amygdaloides	NSLX	FIA	0.7	2.9	3.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	45
rock elm	Ulmus thomasii	NSLX	FIA	1.9	2.7	1.7	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	46
mountain maple	Acer spicatum	NSL	Low	3.7	2.2	0.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	47

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honeylocust	Gleditsia triacanthos	NSH	Low	0.1	2.0	19.4	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	48
eastern redcedar	Juniperus virginiana	WDH	Medium	0.4	2.0	14.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	49
black maple	Acer nigrum	NSH	Low	0.4	1.8	4.2	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	50
shagbark hickory	Carya ovata	WSL	Medium	1.4	1.7	6.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	51
Ohio buckeye	Aesculus glabra	NSL	Low	0.1	1.1	10.4	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	52
American mountain-ash	Sorbus americana	NSL	Low	0.6	0.9	0.7	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	53
Siberian elm	Ulmus pumila	NDH	FIA	0.1	0.8	6.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	54
striped maple	Acer pensylvanicum	NSL	Medium	0.6	0.7	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	55
black locust	Robinia pseudoacacia	NDH	Low	0.1	0.5	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	56
black walnut	Juglans nigra	WDH	Low	0.4	0.5	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	57
pin oak	Quercus palustris	NSH	Low	0.1	0.3	2.5	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +		2	58
wild plum	Prunus americana	NSLX	FIA	0.1	0.1	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	59
river birch	Betula nigra	NSL	Low	0.1	0.0	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	60
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	61
red spruce	Picea rubens	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	62
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	63
florida maple	Acer barbatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	64
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
sweet birch	Betula lenta	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	66
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	67
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			2	68
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			2	70
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	71
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	72
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	73
American holly	Ilex opaca	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	74
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	75
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	76
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	77
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	78
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	79
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	80
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	81
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	82
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	83
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	84
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	85
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			2	86
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	87
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	88
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	89
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	90
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	91
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	92