

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	4,758.0	1,837.1	95

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	21	Increase	9	12	Very Good	1	3	Likely	1	1
Hickory	3			Medium	27	No Change	14	8	Good	13	12	Infill	9	8
Maple	5	Abundant	5	Low	26	Decrease	21	24	Fair	8	7	Migrate	8	14
Oak	4	Common	19	FIA	4	New	24	26	Poor	9	7			
Pine	3	Rare	24			Unknown	10	8	Very Poor	12	11			
Other	30	Absent	27						FIA Only	2	2			
	48		75		78		78		Unknown	6	4		18	23
										51	46			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	47.2	49.2	51.8	51.8
	CCSM85	47.2	49.7	52.4	55.6
	GFDL45	47.2	51.2	53.7	55.0
	GFDL85	47.2	50.8	55.0	59.9
	HAD45	47.2	50.5	53.9	55.7
	HAD85	47.2	50.6	54.9	60.6
Growing Season May—Sep	CCSM45	64.4	66.5	68.6	68.9
	CCSM85	64.4	66.7	69.2	73.2
	GFDL45	64.4	68.9	72.0	73.5
	GFDL85	64.4	68.8	73.5	78.7
	HAD45	64.4	67.8	70.7	73.1
	HAD85	64.4	67.5	72.2	78.4
Coldest Month Average	CCSM45	20.3	22.3	24.7	24.7
	CCSM85	20.3	23.6	25.0	27.2
	GFDL45	20.3	23.2	25.4	26.2
	GFDL85	20.3	24.1	26.1	28.9
	HAD45	20.3	22.4	25.8	26.0
	HAD85	20.3	23.8	26.6	30.3
Warmest Month Average	CCSM45	70.6	72.9	74.2	74.4
	CCSM85	70.6	73.4	75.1	77.3
	GFDL45	70.6	73.7	76.1	77.1
	GFDL85	70.6	74.9	77.6	80.5
	HAD45	70.6	74.4	75.9	77.7
	HAD85	70.6	74.4	77.5	82.0

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	42.4	42.0	40.6	44.3
	CCSM85	42.4	43.4	43.1	43.6
	GFDL45	42.4	46.4	48.0	47.3
	GFDL85	42.4	43.9	47.1	48.7
	HAD45	42.4	43.8	45.4	45.3
	HAD85	42.4	45.1	43.9	47.9
Growing Season May—Sep	CCSM45	18.3	18.0	16.6	18.4
	CCSM85	18.3	18.0	17.5	16.4
	GFDL45	18.3	19.3	18.5	18.2
	GFDL85	18.3	18.1	17.9	17.2
	HAD45	18.3	18.3	17.0	18.0
	HAD85	18.3	18.3	16.5	17.4

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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One x One Degree
Climate Change Atlas Tree Species

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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	71.5	1543.8	19.7	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
sugar maple	Acer saccharum	WDH	High	66.9	886.4	11.2	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
white ash	Fraxinus americana	WDL	Medium	71.8	706.8	9.1	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	3
green ash	Fraxinus pennsylvanica	WSH	Low	44.7	627.5	12.3	No change	Sm. inc.	Medium	Abundant	Good	Very Good			1	4
black cherry	Prunus serotina	WDL	Medium	67.3	563.7	7.5	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	5
American elm	Ulmus americana	WDH	Medium	73	449.0	4.2	No change	Sm. inc.	Medium	Common	Fair	Good			1	6
eastern hemlock	Tsuga canadensis	NSH	High	37.2	433.6	11.2	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	7
quaking aspen	Populus tremuloides	WDH	High	38.6	417.2	10.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
silver maple	Acer saccharinum	NSH	Low	27	372.2	14.2	No change	No change	High	Common	Good	Good			1	9
boxelder	Acer negundo	WSH	Low	12.3	265.9	13.9	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	10
eastern white pine	Pinus strobus	WDH	High	20.6	229.7	7.1	Sm. inc.	Sm. dec.	Low	Common	Fair	Poor			1	11
eastern redcedar	Juniperus virginiana	WDH	Medium	3.7	216.1	14.4	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	12
American basswood	Tilia americana	WSL	Medium	38.3	187.5	4.4	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	13
Norway spruce	Picea abies	NSH	FIA	8.8	181.0	17.1	Unknown	Unknown	NA	Common	NNIS	NNIS			0	14
eastern cottonwood	Populus deltoides	NSH	Low	7.3	155.0	9.6	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	15
yellow birch	Betula alleghaniensis	NDL	High	43.5	142.4	4.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	16
American beech	Fagus grandifolia	WDH	High	47.8	125.8	2.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
white spruce	Picea glauca	NSL	Medium	5.3	108.3	17.1	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	18
bitternut hickory	Carya cordiformis	WSL	Low	40.6	102.9	4.1	No change	Sm. inc.	High	Common	Good	Very Good			1	19
shagbark hickory	Carya ovata	WSL	Medium	20.6	94.7	3.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	20
black walnut	Juglans nigra	WDH	Low	8.4	76.8	5.9	No change	No change	Medium	Common	Fair	Fair			1	21
blackgum	Nyssa sylvatica	WDL	Medium	6.4	60.4	4.1	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	22
northern red oak	Quercus rubra	WDH	Medium	13.6	52.0	1.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	23
black ash	Fraxinus nigra	WSH	Medium	13.8	50.1	1.7	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	24
swamp white oak	Quercus bicolor	NSL	Low	7.4	48.0	5.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	25
butternut	Juglans cinerea	NSLX	FIA	10.6	47.4	3.5	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	26
Scots pine	Pinus sylvestris	NSH	FIA	2.1	44.5	21.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	27
bigtooth aspen	Populus grandidentata	NSL	Medium	5.1	39.5	4.6	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		1	28
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	31.5	35.9	1.9	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
black spruce	Picea mariana	NSH	High	2.1	32.2	15.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
red pine	Pinus resinosa	NSH	Medium	4.2	29.9	7.1	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	31
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	13.5	28.4	1.7	Sm. inc.	Sm. inc.	High	Rare	Good	Good			1	32
gray birch	Betula populifolia	NSL	Low	3.8	25.3	5.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
black willow	Salix nigra	NSH	Low	4.5	24.2	2.4	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	34
tamarack (native)	Larix laricina	NSH	High	2.1	21.8	10.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	35
serviceberry	Amelanchier spp.	NSL	Low	22	20.7	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
paper birch	Betula papyrifera	WDH	High	2.9	17.4	2.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	37
striped maple	Acer pensylvanicum	NSL	Medium	10.5	13.6	3.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	38
cucumbertree	Magnolia acuminata	NSL	Low	10.5	10.1	2.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
slippery elm	Ulmus rubra	WSL	Low	6.7	9.5	0.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	40
black locust	Robinia pseudoacacia	NDH	Low	2.7	8.9	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	41
yellow-poplar	Liriodendron tulipifera	WDH	High	21.5	8.2	0.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	42
northern white-cedar	Thuja occidentalis	WSH	High	2.1	8.2	3.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	43
white oak	Quercus alba	WDH	Medium	2.1	4.6	2.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	44
pin cherry	Prunus pensylvanica	NSL	Low	0.8	3.8	0.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	45
chokecherry	Prunus virginiana	NSLX	FIA	11.2	3.4	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	46
bur oak	Quercus macrocarpa	NDH	Medium	2.1	3.3	1.6	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	47



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pignut hickory	<i>Carya glabra</i>	WDL	Medium	1.7	1.6	0.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	48
shortleaf pine	<i>Pinus echinata</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	49
pitch pine	<i>Pinus rigida</i>	NSH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	50
loblolly pine	<i>Pinus taeda</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	51
sweet birch	<i>Betula lenta</i>	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	52
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum ssp.</i>	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	53
black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	54
mockernut hickory	<i>Carya alba</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	55
hackberry	<i>Celtis occidentalis</i>	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	56
eastern redbud	<i>Cercis canadensis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	57
flowering dogwood	<i>Cornus florida</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	58
common persimmon	<i>Diospyros virginiana</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	59
honeylocust	<i>Gleditsia triacanthos</i>	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	60
American holly	<i>Ilex opaca</i>	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	61
sweetgum	<i>Liquidambar styraciflua</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	62
mountain or Fraser magnolia	<i>Magnolia fraseri</i>	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	63
sycamore	<i>Platanus occidentalis</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	64
balsam poplar	<i>Populus balsamifera</i>	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	65
scarlet oak	<i>Quercus coccinea</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	66
southern red oak	<i>Quercus falcata</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	67
overcup oak	<i>Quercus lyrata</i>	NSL	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	68
blackjack oak	<i>Quercus marilandica</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	69
chinkapin oak	<i>Quercus muehlenbergii</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	70
pin oak	<i>Quercus palustris</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	71
willow oak	<i>Quercus phellos</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72
chestnut oak	<i>Quercus prinus</i>	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	73
Shumard oak	<i>Quercus shumardii</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	74
post oak	<i>Quercus stellata</i>	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	75
black oak	<i>Quercus velutina</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	76
sassafras	<i>Sassafras albidum</i>	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	77
winged elm	<i>Ulmus alata</i>	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	78