

sq. km sq. mi FIA Plots
Area of Region 15,266 5,894.4 779

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	Scenario	Scenario	Scenario	SHIFT	SHIFT				
				High		RCP45	RCP85	RCP45	RCP85	RCP45	RCP85				
Ash	3			15	19	Increase	15	14	Very Good	2	2	Likely	0	0	
Hickory	0			23	32	No Change	7	6	Good	15	14	Infill	5	5	
Maple	6	Abundant	9	Low	22	11	Decrease	12	14	Fair	7	7	Migrate	6	13
Oak	3	Common	11	FIA	3		New	25	25	Poor	6	7		11	18
Pine	4	Rare	17					Unknown	4	4	Very Poor	4	2		
Other	21	Absent	25							FIA Only	2	2			
										Unknown	1	1			
											37	35			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	41.6	43.2	46.5	46.3	
Average	CCSM85	41.6	44.2	47.2	50.9	
	GFDL45	41.6	45.0	48.0	49.5	
	GFDL85	41.6	45.3	49.2	54.6	
	HAD45	41.6	45.1	48.3	50.3	
	HAD85	41.6	45.4	49.5	55.6	
Growing Season	CCSM45	59.5	60.8	63.2	63.3	
	CCSM85	59.5	61.5	64.2	67.9	
May—Sep	GFDL45	59.5	64.1	68.2	70.4	
	GFDL85	59.5	64.7	69.6	75.8	
	HAD45	59.5	62.6	64.8	67.2	
	HAD85	59.5	62.4	66.2	72.0	
Coldest Month	CCSM45	14.4	16.0	18.9	18.2	
	CCSM85	14.4	16.7	18.9	21.7	
Average	GFDL45	14.4	16.3	18.4	19.0	
	GFDL85	14.4	17.2	19.1	22.0	
	HAD45	14.4	16.4	20.6	20.9	
	HAD85	14.4	19.1	21.7	26.9	
Warmest Month	CCSM45	65.8	67.6	69.1	69.3	
	CCSM85	65.8	68.4	70.2	72.1	
Average	GFDL45	65.8	70.8	72.8	74.3	
	GFDL85	65.8	71.5	74.1	76.9	
	HAD45	65.8	69.1	69.9	71.8	
	HAD85	65.8	69.2	71.2	75.2	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	31.6	32.6	32.7	32.8	
Total	CCSM85	31.6	32.2	32.0	33.3	
	GFDL45	31.6	33.7	35.6	35.3	
	GFDL85	31.6	33.5	36.6	37.2	
	HAD45	31.6	33.2	34.7	34.2	
	HAD85	31.6	34.1	35.4	37.1	
Growing Season	CCSM45	15.4	16.0	15.4	15.4	
	CCSM85	15.4	15.3	14.7	14.4	
May—Sep	GFDL45	15.4	15.9	16.9	16.7	
	GFDL85	15.4	16.3	16.8	16.3	
	HAD45	15.4	15.7	14.8	14.8	
	HAD85	15.4	16.1	14.2	14.9	

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 212R

EcoMap 2007

Climate Change Atlas Tree Species

USDA Forest Service
Northern Research Station
Landscape Change Research Group
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
northern white-cedar	Thuja occidentalis	WSH	High	73	1601.3	15.0	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
red maple	Acer rubrum	WDH	High	88.8	1366.9	11.4	No change	No change	High	Abundant	Very Good	Very Good			1	2
sugar maple	Acer saccharum	WDH	High	63.1	1121.0	12.7	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
balsam fir	Abies balsamea	NDH	High	89.7	995.0	7.8	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	4
quaking aspen	Populus tremuloides	WDH	High	64.5	852.3	8.2	No change	No change	Medium	Abundant	Good	Good			1	5
jack pine	Pinus banksiana	NSH	Medium	34.6	667.5	17.2	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	6
red pine	Pinus resinosa	NSH	Medium	41.4	660.4	12.5	No change	No change	Low	Abundant	Fair	Fair			0	7
black spruce	Picea mariana	NSH	High	68.1	558.0	6.8	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	8
eastern white pine	Pinus strobus	WDH	High	58.4	506.9	6.9	Sm. inc.	No change	Low	Abundant	Good	Fair			1	9
paper birch	Betula papyrifera	WDH	High	74.3	478.6	4.3	No change	Sm. dec.	Medium	Common	Fair	Poor			1	10
white spruce	Picea glauca	NSL	Medium	68.2	376.8	3.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
American beech	Fagus grandifolia	WDH	High	47.9	330.1	4.8	No change	No change	Medium	Common	Fair	Fair			1	12
tamarack (native)	Larix laricina	NSH	High	44	269.4	5.2	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	13
eastern hemlock	Tsuga canadensis	NSH	High	38.5	267.0	5.7	No change	Sm. dec.	Low	Common	Poor	Poor			0	14
balsam poplar	Populus balsamifera	NSH	Medium	36.3	245.2	4.3	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	15
bigtooth aspen	Populus grandidentata	NSL	Medium	34.1	189.2	3.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
black cherry	Prunus serotina	WDL	Medium	39.6	182.0	3.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	17
yellow birch	Betula alleghaniensis	NDL	High	46.2	150.1	2.4	No change	No change	Medium	Common	Fair	Fair			1	18
black ash	Fraxinus nigra	WSH	Medium	39.5	125.1	2.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	19
northern red oak	Quercus rubra	WDH	Medium	12.4	82.8	4.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	20
white ash	Fraxinus americana	WDL	Medium	4.8	46.2	4.9	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	1	21
green ash	Fraxinus pennsylvanica	WSH	Low	11.5	43.4	2.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	22
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	18.5	33.0	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	23
silver maple	Acer saccharinum	NSH	Low	0.7	32.8	50.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	24
American basswood	Tilia americana	WSL	Medium	10.4	30.8	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	25
pin cherry	Prunus pensylvanica	NSL	Low	9.5	26.2	1.6	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	26
American elm	Ulmus americana	WDH	Medium	12.2	23.3	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	27
serviceberry	Amelanchier spp.	NSL	Low	18.9	21.6	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
peachleaf willow	Salix amygdaloides	NSLX	FIA	5.9	14.5	2.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	29
striped maple	Acer pensylvanicum	NSL	Medium	4.5	12.2	1.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	30
mountain maple	Acer spicatum	NSL	Low	6.6	4.3	0.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	31
Scots pine	Pinus sylvestris	NSH	FIA	0.7	4.3	6.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	32
chokecherry	Prunus virginiana	NSLX	FIA	4.1	2.8	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	33
boxelder	Acer negundo	WSH	Low	0.2	2.2	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	34
bur oak	Quercus macrocarpa	NDH	Medium	0.7	1.6	2.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	35
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0.7	1.2	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	36
American mountain-ash	Sorbus americana	NSL	Low	3.5	1.0	0.2	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	37
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	38
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	39
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	40
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	41
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	42
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	43
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	44
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	45
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	46
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	48
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	49
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	50
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	51
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	52
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	53
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	54
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	55
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	56
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	57
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	58
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	59
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	60
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	61
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	62
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	63

