

One x One Degree
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

Area of Region sq. km sq. mi FIA Plots
 5,903.5 2,279.4 367

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	17	16	Increase	13	13	Very Good	4	4	Likely	0	0
Hickory	0			Medium	21	31	No Change	10	9	Good	12	11	Infill	2	3
Maple	4	Abundant	7	Low	20	13	Decrease	8	9	Fair	5	7	Migrate	7	14
Oak	3	Common	14	FIA	4		New	23	24	Poor	7	7		9	17
Pine	4	Rare	14				Unknown	8	7	Very Poor	3	0			
Other	21	Absent	26							FIA Only	2	2			
	35		61		62	60		62	62	Unknown	4	3			
											37	34			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	40.5	42.1	45.2	45.3	
Average	40.5	43.0	46.1	49.7	
	40.5	43.7	46.6	48.1	
	40.5	44.0	47.7	53.1	
	40.5	43.8	47.2	49.2	
	40.5	44.2	48.4	54.2	
Growing Season	60.1	61.7	64.3	64.5	
	60.1	62.5	65.3	69.4	
May—Sep	60.1	64.1	67.7	69.9	
	60.1	64.7	68.9	75.2	
	60.1	63.5	66.1	68.5	
	60.1	63.3	67.5	73.5	
Coldest Month	9.6	10.8	13.4	13.4	
	9.6	11.0	13.3	15.9	
Average	9.6	12.7	14.8	15.3	
	9.6	13.6	15.5	18.7	
	9.6	11.7	15.9	15.8	
	9.6	15.1	18.0	22.0	
Warmest Month	66.6	68.4	70.0	70.4	
	66.6	69.4	71.3	73.8	
Average	66.6	70.8	72.4	74.1	
	66.6	71.6	73.9	77.1	
	66.6	70.3	71.5	73.4	
	66.6	70.6	72.7	76.8	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	32.3	34.0	33.5	33.5	
Total	32.3	31.8	32.7	33.0	
	32.3	35.4	36.8	35.3	
	32.3	35.1	38.4	37.8	
	32.3	33.8	33.8	34.3	
	32.3	33.7	35.4	36.6	
Growing Season	18.5	19.2	17.9	18.3	
	18.5	18.0	17.9	16.7	
May—Sep	18.5	20.3	20.2	19.3	
	18.5	20.1	21.3	19.5	
	18.5	18.3	17.1	17.1	
	18.5	18.0	16.6	16.6	

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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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
sugar maple	Acer saccharum	WDH	High	87.3	2302.6	15.2	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
quaking aspen	Populus tremuloides	WDH	High	94	1689.7	11.2	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	2
red maple	Acer rubrum	WDH	High	97.2	1493.7	9.6	No change	No change	High	Abundant	Very Good	Very Good			1	3
balsam fir	Abies balsamea	NDH	High	92.7	1288.9	8.5	Lg. dec.	Sm. dec.	Low	Abundant	Poor	Fair			0	4
northern white-cedar	Thuja occidentalis	WSH	High	70.8	743.3	7.3	No change	No change	Medium	Abundant	Good	Good			1	5
black ash	Fraxinus nigra	WSH	Medium	84.2	622.8	4.6	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	6
paper birch	Betula papyrifera	WDH	High	63.9	517.5	4.1	No change	No change	Medium	Abundant	Good	Good			1	7
yellow birch	Betula alleghaniensis	NDL	High	82.1	465.9	3.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	8
American basswood	Tilia americana	WSL	Medium	64.2	417.9	3.9	Sm. inc.	No change	Medium	Common	Good	Fair			1	9
tamarack (native)	Larix laricina	NSH	High	42.6	415.0	4.9	No change	No change	Low	Common	Poor	Poor			0	10
black spruce	Picea mariana	NSH	High	50.4	364.7	3.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
eastern hemlock	Tsuga canadensis	NSH	High	66.3	320.7	3.4	No change	No change	Low	Common	Poor	Poor			0	12
red pine	Pinus resinosa	NSH	Medium	31.7	315.6	5.5	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	13
eastern white pine	Pinus strobus	WDH	High	41.8	297.1	3.7	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	14
white spruce	Picea glauca	NSL	Medium	73.8	263.3	2.0	No change	No change	Medium	Common	Fair	Fair			1	15
northern red oak	Quercus rubra	WDH	Medium	45.2	214.9	3.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	16
bigtooth aspen	Populus grandidentata	NSL	Medium	41.2	188.2	2.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	17
black cherry	Prunus serotina	WDL	Medium	70.3	164.0	1.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	18
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	65.9	153.6	1.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	19
American elm	Ulmus americana	WDH	Medium	41.3	101.5	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
white ash	Fraxinus americana	WDL	Medium	41.1	99.4	1.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	21
green ash	Fraxinus pennsylvanica	WSH	Low	28.5	41.0	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	22
serviceberry	Amelanchier spp.	NSL	Low	15	22.2	1.0	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	23
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	8.5	20.2	1.7	No change	No change	Medium	Rare	Poor	Poor			1	24
jack pine	Pinus banksiana	NSH	Medium	6	15.8	2.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	25
chokecherry	Prunus virginiana	NSLX	FIA	18.7	9.7	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	26
northern pin oak	Quercus ellipsoidalis	NSH	Medium	6.6	8.1	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	27
Norway spruce	Picea abies	NSH	FIA	1.7	7.4	4.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	28
pin cherry	Prunus pensylvanica	NSL	Low	3.4	5.0	1.5	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	29
mountain maple	Acer spicatum	NSL	Low	5.5	4.8	0.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	30
black willow	Salix nigra	NSH	Low	3.4	3.6	1.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	31
bur oak	Quercus macrocarpa	NDH	Medium	1.7	2.2	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	32
peachleaf willow	Salix amygdaloides	NSLX	FIA	3.4	1.0	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	33
Scots pine	Pinus sylvestris	NSH	FIA	0.1	0.9	0.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	34
silver maple	Acer saccharinum	NSH	Low	1.7	0.5	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	35
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	36
red spruce	Picea rubens	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	37
boxelder	Acer negundo	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	38
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	39
sweet birch	Betula lenta	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	40
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	41
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	42
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	43
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	44
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	45
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	46
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	47

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USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	48
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	49
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	50
balsam poplar	Populus balsamifera	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	51
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	52
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	53
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	54
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	55
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	56
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	57
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	58
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	59
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	60
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	61
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	62