

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

sq. km sq. mi FIA Plots
 Area of Region 3,469.8 1,339.7 202

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	Low	RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Ash	3			15	17	Increase	13	13	Very Good	5	5
Hickory	0			22	29	No Change	6	4	Good	7	7
Maple	5	Abundant	10	18	11	Decrease	13	15	Fair	11	10
Oak	2	Common	11	2	2	New	23	23	Poor	6	5
Pine	3	Rare	13			Unknown	2	2	Very Poor	3	3
Other	21	Absent	23						FIA Only	2	2
	34		57	57	57		57	57	Unknown	0	0
										34	32

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	41.3	42.9	46.1	45.9	
Average	CCSM85	41.3	43.8	46.9	50.5	
	GFDL45	41.3	44.5	47.8	49.4	
	GFDL85	41.3	45.1	49.1	54.6	
	HAD45	41.3	44.7	48.0	49.9	
	HAD85	41.3	45.1	49.1	55.2	
Growing Season	CCSM45	59.4	60.7	63.1	63.3	
	CCSM85	59.4	61.4	64.2	67.9	
May—Sep	GFDL45	59.4	63.8	68.1	70.3	
	GFDL85	59.4	64.6	69.6	75.8	
	HAD45	59.4	62.5	64.6	67.0	
	HAD85	59.4	62.3	66.0	71.8	
Coldest Month	CCSM45	13.0	14.5	17.6	16.9	
	CCSM85	13.0	15.4	17.6	20.5	
Average	GFDL45	13.0	14.9	17.3	17.9	
	GFDL85	13.0	15.9	17.9	21.0	
	HAD45	13.0	14.9	19.1	19.5	
	HAD85	13.0	17.5	20.1	25.4	
Warmest Month	CCSM45	65.7	67.4	69.0	69.3	
	CCSM85	65.7	68.3	70.1	72.0	
Average	GFDL45	65.7	70.7	72.7	74.2	
	GFDL85	65.7	71.5	74.1	76.9	
	HAD45	65.7	68.8	69.6	71.5	
	HAD85	65.7	69.0	71.0	75.0	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	31.9	32.8	33.0	33.2	
Total	CCSM85	31.9	32.8	32.3	33.8	
	GFDL45	31.9	33.9	36.0	35.5	
	GFDL85	31.9	33.8	36.6	36.9	
	HAD45	31.9	33.6	35.4	34.5	
	HAD85	31.9	34.7	35.6	37.4	
Growing Season	CCSM45	15.5	16.1	15.6	15.6	
	CCSM85	15.5	15.6	14.7	14.6	
May—Sep	GFDL45	15.5	15.7	16.9	16.5	
	GFDL85	15.5	16.3	16.4	15.6	
	HAD45	15.5	15.9	14.9	14.8	
	HAD85	15.5	16.2	14.1	14.7	

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	82.2	1681.1	10.7	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
balsam fir	Abies balsamea	NDH	High	87.3	1676.1	11.5	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	2
northern white-cedar	Thuja occidentalis	WSH	High	58.7	1522.7	13.5	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	3
red maple	Acer rubrum	WDH	High	78.9	1398.2	9.7	No change	No change	High	Abundant	Very Good	Very Good			1	4
paper birch	Betula papyrifera	WDH	High	84.4	893.1	5.4	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	5
sugar maple	Acer saccharum	WDH	High	53.7	787.3	8.5	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	6
white spruce	Picea glauca	NSL	Medium	79.3	658.3	5.0	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	7
black spruce	Picea mariana	NSH	High	62.3	571.4	7.5	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	8
red pine	Pinus resinosa	NSH	Medium	31.2	566.3	17.5	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	9
balsam poplar	Populus balsamifera	NSH	Medium	58.6	501.0	5.2	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	10
jack pine	Pinus banksiana	NSH	Medium	25.2	401.1	15.0	Sm. dec.	Lg. dec.	High	Common	Fair	Fair			1	11
bigtooth aspen	Populus grandidentata	NSL	Medium	44.2	280.2	4.0	No change	No change	Medium	Common	Fair	Fair			1	12
tamarack (native)	Larix laricina	NSH	High	49.7	233.1	3.1	No change	No change	Low	Common	Poor	Poor			0	13
eastern white pine	Pinus strobus	WDH	High	44.3	177.3	3.5	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	14
black ash	Fraxinus nigra	WSH	Medium	43.5	176.7	3.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	15
northern red oak	Quercus rubra	WDH	Medium	19.7	151.1	3.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	16
yellow birch	Betula alleghaniensis	NDL	High	28.4	140.1	2.8	No change	Sm. dec.	Medium	Common	Fair	Poor			1	17
white ash	Fraxinus americana	WDL	Medium	4.8	131.2	6.4	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	18
green ash	Fraxinus pennsylvanica	WSH	Low	22.6	101.1	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
American elm	Ulmus americana	WDH	Medium	19.9	54.0	1.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	20
pin cherry	Prunus pensylvanica	NSL	Low	10.8	53.1	1.7	Lg. dec.	Very Lg. dec.	Medium	Common	Poor	Lost			0	21
black cherry	Prunus serotina	WDL	Medium	19.8	46.0	2.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	22
serviceberry	Amelanchier spp.	NSL	Low	35	44.4	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	23
American beech	Fagus grandifolia	WDH	High	23.4	35.4	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	24
American basswood	Tilia americana	WSL	Medium	13.1	32.3	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	25
striped maple	Acer pensylvanicum	NSL	Medium	3.7	17.5	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	26
eastern hemlock	Tsuga canadensis	NSH	High	7.3	16.8	1.8	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	1	27
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	20.2	15.1	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	28
mountain maple	Acer spicatum	NSL	Low	16.1	14.9	0.4	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			1	29
boxelder	Acer negundo	WSH	Low	1	9.5	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	30
bur oak	Quercus macrocarpa	NDH	Medium	2.9	7.2	2.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	31
chokecherry	Prunus virginiana	NSLX	FIA	5.8	2.2	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	32
American mountain-ash	Sorbus americana	NSL	Low	5.7	0.5	0.1	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	33
peachleaf willow	Salix amygdaloides	NSLX	FIA	2.9	0.2	0.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	34
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	35
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	36
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	37
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	38
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	39
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	40
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	41
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	42
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	43
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	44
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	45
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	46
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	47



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swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	48
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	49
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	50
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	51
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	52
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	53
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	54
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	55
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	56
slippery elm	Ulmus rubra	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	57