

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
 8,985.5 3,469.3 105

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	16	21	Increase	18	16	Very Good	3	2
Hickory	3			Medium	21	30	No Change	10	11	Good	15	11
Maple	5	Abundant	2	Low	25	13	Decrease	18	19	Fair	9	14
Oak	7	Common	17	FIA	5		New	15	16	Poor	7	7
Pine	4	Rare	32				Unknown	6	5	Very Poor	9	9
Other	29	Absent	16							FIA Only	2	2
	51		67		67	64		67	67	Unknown	1	0
											46	45

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	46.9	48.8	51.7	51.6
	CCSM85	46.9	49.4	52.4	55.7
	GFDL45	46.9	50.8	52.6	53.8
	GFDL85	46.9	50.1	53.7	58.3
	HAD45	46.9	50.2	53.5	55.4
HAD85	46.9	50.4	54.8	60.4	
Growing Season May—Sep	CCSM45	64.6	66.4	68.9	69.1
	CCSM85	64.6	67.0	69.7	73.7
	GFDL45	64.6	69.5	71.8	73.5
	GFDL85	64.6	68.8	73.2	78.4
	HAD45	64.6	68.3	70.7	73.2
HAD85	64.6	67.8	72.7	78.4	
Coldest Month Average	CCSM45	19.8	21.6	24.5	24.3
	CCSM85	19.8	22.6	25.0	27.0
	GFDL45	19.8	22.3	23.9	24.4
	GFDL85	19.8	23.1	24.6	26.8
	HAD45	19.8	21.4	25.2	25.2
HAD85	19.8	23.6	26.4	30.3	
Warmest Month Average	CCSM45	70.8	73.1	74.6	74.9
	CCSM85	70.8	74.1	75.8	78.0
	GFDL45	70.8	74.3	76.0	77.2
	GFDL85	70.8	75.1	77.3	80.3
	HAD45	70.8	75.0	76.4	78.2
HAD85	70.8	75.3	78.3	82.5	

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	32.3	31.9	31.0	32.5
	CCSM85	32.3	32.4	32.1	33.1
	GFDL45	32.3	34.4	37.9	37.3
	GFDL85	32.3	35.0	38.4	39.6
	HAD45	32.3	33.3	34.9	34.4
HAD85	32.3	35.0	33.0	36.6	
Growing Season May—Sep	CCSM45	16.4	16.6	15.8	16.3
	CCSM85	16.4	16.5	16.2	15.7
	GFDL45	16.4	16.8	18.6	18.4
	GFDL85	16.4	17.7	17.8	18.1
	HAD45	16.4	16.1	15.2	15.7
HAD85	16.4	16.7	13.4	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
red maple	Acer rubrum	WDH	High	45.5	1040.3	20.1	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	1
green ash	Fraxinus pennsylvanica	WSH	Low	55.1	1023.9	23.6	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	2
bigtooth aspen	Populus grandidentata	NSL	Medium	29.2	486.6	15.5	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	3
quaking aspen	Populus tremuloides	WDH	High	36.4	456.0	13.8	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	4
northern red oak	Quercus rubra	WDH	Medium	38.3	341.9	10.1	No change	Sm. dec.	High	Common	Good	Fair			1	5
white oak	Quercus alba	WDH	Medium	23.3	270.5	11.8	Sm. inc.	No change	High	Common	Very Good	Good			1	6
black cherry	Prunus serotina	WDL	Medium	48	265.5	7.6	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	7
eastern white pine	Pinus strobus	WDH	High	15.7	222.7	7.0	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	8
Scots pine	Pinus sylvestris	NSH	FIA	11.1	215.2	28.1	Unknown	Unknown	NA	Common	NNIS	NNIS			0	9
northern pin oak	Quercus ellipsoidalis	NSH	Medium	9.4	210.9	16.9	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	10
eastern cottonwood	Populus deltoides	NSH	Low	15	199.5	16.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
paper birch	Betula papyrifera	WDH	High	21	180.6	6.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	12
red pine	Pinus resinosa	NSH	Medium	10.6	173.2	20.1	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	13
American elm	Ulmus americana	WDH	Medium	46.9	140.4	5.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
boxelder	Acer negundo	WSH	Low	8.6	131.1	10.7	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	15
silver maple	Acer saccharinum	NSH	Low	21.5	118.9	6.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	16
white ash	Fraxinus americana	WDL	Medium	20.9	106.0	7.0	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	17
swamp white oak	Quercus bicolor	NSL	Low	19	94.7	5.3	Sm. inc.	No change	Medium	Common	Good	Fair	Infill ++	Infill +	1	18
black oak	Quercus velutina	WDH	High	9.6	91.4	7.1	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	19
sassafras	Sassafras albidum	WSL	Low	16.8	49.1	10.6	Lg. inc.	Sm. inc.	Medium	Rare	Good	Fair	Infill ++	Infill +	1	20
jack pine	Pinus banksiana	NSH	Medium	2.4	48.4	13.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	21
American basswood	Tilia americana	WSL	Medium	21.2	40.9	4.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	22
American beech	Fagus grandifolia	WDL	High	10.5	40.1	7.6	Lg. inc.	No change	Medium	Rare	Good	Poor	Infill ++	Infill +	2	23
peachleaf willow	Salix amygdaloides	NSLX	FIA	1.1	38.7	34.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	24
slippery elm	Ulmus rubra	WSL	Low	4.5	36.7	8.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	25
blackgum	Nyssa sylvatica	WDL	Medium	5.6	36.1	5.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	26
hackberry	Celtis occidentalis	WDH	Medium	2.2	35.7	16.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	27
serviceberry	Amelanchier spp.	NSL	Low	12.4	30.8	2.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
black ash	Fraxinus nigra	WSH	Medium	9.6	29.4	2.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	29
eastern redcedar	Juniperus virginiana	WDH	Medium	0.1	29.4	2.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	30
Norway spruce	Picea abies	NSH	FIA	0.1	27.7	2.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	31
bur oak	Quercus macrocarpa	NDH	Medium	12.6	26.2	4.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	32
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	11.3	25.5	3.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	33
pin oak	Quercus palustris	NSH	Low	1.2	19.2	2.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	34
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	12.3	18.7	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
sugar maple	Acer saccharum	WDH	High	13.4	18.3	3.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	36
black willow	Salix nigra	NSH	Low	10.8	15.9	4.2	Sm. dec.	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	37
rock elm	Ulmus thomasii	NSLX	FIA	1.1	15.7	14.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	38
pin cherry	Prunus pensylvanica	NSL	Low	6.4	12.3	4.1	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	39
black walnut	Juglans nigra	WDH	Low	1.1	10.6	9.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
tamarack (native)	Larix laricina	NSH	High	0.9	8.4	6.4	No change	No change	Low	Rare	Very Poor	Very Poor			2	41
black maple	Acer nigrum	NSH	Low	1.1	6.2	5.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	42
balsam poplar	Populus balsamifera	NSH	Medium	3.3	5.6	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	43
shagbark hickory	Carya ovata	WSL	Medium	2.6	4.5	2.3	Lg. inc.	Sm. inc.	Medium	Rare	Good	Fair		Infill +	2	44
northern white-cedar	Thuja occidentalis	WSH	High	0.9	4.2	3.1	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	45
white mulberry	Morus alba	NSL	FIA	2.9	3.8	8.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	46
balsam fir	Abies balsamea	NDH	High	0.9	2.0	1.5	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	47



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red mulberry	Morus rubra	NSL	Low	3	1.5	3.7	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			0	48
bitternut hickory	Carya cordiformis	WSL	Low	2.6	0.8	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	49
yellow birch	Betula alleghaniensis	NDL	High	3	0.5	1.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	50
pignut hickory	Carya glabra	WDL	Medium	1.5	0.1	0.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	51
eastern hemlock	Tsuga canadensis	NSH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	52
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	53
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	54
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	55
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	56
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	57
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	58
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	59
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	60
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	61
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	62
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	63
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	64
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	65
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	66
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	67