

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 9,273.2 3,580.4 232

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			
						RCP45	RCP85	RCP45	RCP85	RCP45	RCP85			
Ash	2			High	24	Increase	19	21	Very Good	9	11	Likely	1	1
Hickory	4			Medium	32	No Change	17	11	Good	11	11	Infill	10	8
Maple	5	Abundant	8	Low	34	Decrease	17	21	Fair	11	9	Migrate	10	20
Oak	9	Common	19	FIA	9	New	29	34	Poor	13	11		21	29
Pine	3	Rare	35			Unknown	17	12	Very Poor	8	9			
Other	39	Absent	35						FIA Only	5	5			
	62		97				99	99	Unknown	8	3			
										65	59			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	48.1	50.0	52.2	52.5	
	CCSM85	48.1	50.4	53.0	56.1	
	GFDL45	48.1	51.2	54.0	55.2	
	GFDL85	48.1	51.4	55.3	59.5	
	HAD45	48.1	50.9	54.3	55.9	
	HAD85	48.1	51.0	55.2	60.3	
Growing Season (May—Sep)	CCSM45	64.8	66.9	68.7	69.2	
	CCSM85	64.8	67.1	69.6	73.5	
	GFDL45	64.8	68.1	71.5	72.8	
	GFDL85	64.8	68.7	72.9	77.4	
	HAD45	64.8	67.9	70.8	73.0	
	HAD85	64.8	67.3	72.1	77.6	
Coldest Month Average	CCSM45	22.5	24.3	26.1	26.6	
	CCSM85	22.5	25.1	26.3	28.4	
	GFDL45	22.5	25.8	27.2	28.0	
	GFDL85	22.5	25.9	27.5	29.6	
	HAD45	22.5	24.4	27.1	27.4	
	HAD85	22.5	25.6	27.7	30.6	
Warmest Month Average	CCSM45	70.7	73.3	74.4	74.5	
	CCSM85	70.7	73.6	75.2	77.3	
	GFDL45	70.7	73.6	75.7	76.9	
	GFDL85	70.7	74.9	77.4	80.2	
	HAD45	70.7	74.2	75.7	77.0	
	HAD85	70.7	73.9	76.5	80.3	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	48.6	49.9	49.7	54.4	
	CCSM85	48.6	50.2	53.4	55.8	
	GFDL45	48.6	54.2	57.7	56.0	
	GFDL85	48.6	51.8	56.0	59.4	
	HAD45	48.6	50.7	52.1	51.9	
	HAD85	48.6	52.7	51.9	54.8	
Growing Season (May—Sep)	CCSM45	22.2	24.7	24.1	25.9	
	CCSM85	22.2	23.3	25.7	25.0	
	GFDL45	22.2	23.1	23.4	24.4	
	GFDL85	22.2	22.5	23.4	24.3	
	HAD45	22.2	23.5	21.7	22.1	
	HAD85	22.2	22.7	21.8	22.5	

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.

Cite as: Iverson, L.R.; Prasad, A.M.; Peters, M.P.; Matthews, S.N. 2019. Facilitating Adaptive Forest Management under Climate Change: A Spatially Specific Synthesis of 125 Species for Habitat Changes and Assisted Migration over the Eastern United States. *Forests*. 10(11): 989. <https://doi.org/10.3390/f10110989>.

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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	90.1	1738.3	15.3	No change	Sm. dec.	High	Abundant	Very Good	Good			1	1
chestnut oak	Quercus prinus	NDH	High	54.1	1005.3	12.7	No change	No change	High	Abundant	Very Good	Very Good			1	2
sugar maple	Acer saccharum	WDH	High	67.8	876.9	9.9	No change	No change	High	Abundant	Very Good	Very Good			1	3
northern red oak	Quercus rubra	WDH	Medium	62.9	842.6	9.9	No change	No change	High	Abundant	Very Good	Very Good			1	4
eastern white pine	Pinus strobus	WDH	High	41.1	612.8	11.3	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
sweet birch	Betula lenta	NDH	High	61.9	569.8	7.1	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	6
white oak	Quercus alba	WDH	Medium	57.3	559.3	6.8	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	7
white ash	Fraxinus americana	WDL	Medium	56.3	522.3	6.6	Sm. inc.	No change	Low	Abundant	Good	Fair			1	8
eastern hemlock	Tsuga canadensis	NSH	High	45.8	477.5	8.1	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	9
American beech	Fagus grandifolia	WDH	High	38.1	447.8	9.1	No change	No change	Medium	Common	Fair	Fair			1	10
black cherry	Prunus serotina	WDL	Medium	43.4	302.4	5.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	11
yellow birch	Betula alleghaniensis	NDL	High	44.1	242.0	4.4	No change	Sm. dec.	Medium	Common	Fair	Poor			1	12
eastern redcedar	Juniperus virginiana	WDH	Medium	23.3	221.3	10.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	13
scarlet oak	Quercus coccinea	WDL	Medium	15.8	215.0	5.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
pignut hickory	Carya glabra	WDL	Medium	39.9	195.3	3.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	15
swamp white oak	Quercus bicolor	NSL	Low	9.6	189.6	19.3	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	16
black oak	Quercus velutina	WDH	High	38.4	174.6	3.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
American elm	Ulmus americana	WDH	Medium	30.4	173.1	5.2	No change	No change	Medium	Common	Fair	Fair			1	18
eastern cottonwood	Populus deltoides	NSH	Low	2.8	87.9	21.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	19
pin oak	Quercus palustris	NSH	Low	10.3	86.0	9.3	No change	No change	Low	Common	Poor	Poor			0	20
shagbark hickory	Carya ovata	WSL	Medium	25.8	76.2	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	28.3	74.1	2.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	22
pitch pine	Pinus rigida	NSH	High	13.6	71.2	4.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	23
yellow-poplar	Liriodendron tulipifera	WDH	High	8.5	69.6	4.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	24
serviceberry	Amelanchier spp.	NSL	Low	28.7	63.9	1.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	25
green ash	Fraxinus pennsylvanica	WSH	Low	11.6	62.1	8.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	26
quaking aspen	Populus tremuloides	WDH	High	14	60.2	5.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	27
blackgum	Nyssa sylvatica	WDL	Medium	26.5	50.0	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	28
red spruce	Picea rubens	NDH	High	7.2	49.2	5.3	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	29
ailanthus	Ailanthus altissima	NSL	FIA	5	47.4	4.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	30
white spruce	Picea glauca	NSL	Medium	2.8	43.9	10.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
black walnut	Juglans nigra	WDH	Low	3.9	42.9	5.8	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	32
bigtooth aspen	Populus grandidentata	NSL	Medium	9.7	41.8	1.8	No change	No change	Medium	Rare	Poor	Poor			1	33
black locust	Robinia pseudoacacia	NDH	Low	2.7	36.3	3.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	34
black spruce	Picea mariana	NSH	High	1.1	34.8	32.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
gray birch	Betula populifolia	NSL	Low	9.7	34.6	3.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	36
Norway maple	Acer platanoides	NSL	FIA	1.7	34.1	5.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	37
American basswood	Tilia americana	WSL	Medium	11.1	33.7	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	38
Norway spruce	Picea abies	NSH	FIA	3.8	32.2	6.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	39
sassafras	Sassafras albidum	WSL	Low	15.3	27.0	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	40
bitternut hickory	Carya cordiformis	WSL	Low	6	26.9	2.7	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	41
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	17.9	22.2	1.2	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	42
striped maple	Acer pensylvanicum	NSL	Medium	11.8	21.1	1.5	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	43
balsam fir	Abies balsamea	NDH	High	1.1	17.1	15.8	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	44
black willow	Salix nigra	NSH	Low	1.1	14.0	13.0	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	45
mockernut hickory	Carya alba	WDL	Medium	14.4	13.9	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	46
red pine	Pinus resinosa	NSH	Medium	1.1	13.1	12.2	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	47



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river birch	Betula nigra	NSL	Low	0.1	11.6	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor				0 48
boxelder	Acer negundo	WSH	Low	1.2	10.5	3.1	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++		2 49
flowering dogwood	Cornus florida	WDL	Medium	7.4	7.3	0.9	No change	No change	Medium	Rare	Poor	Poor				1 50
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	2.4	7.0	1.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 51
northern pin oak	Quercus ellipsoidalis	NSH	Medium	1.1	5.9	5.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor				0 52
paper birch	Betula papyrifera	WDH	High	1.2	4.1	0.8	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +			2 53
hackberry	Celtis occidentalis	WDH	Medium	2.2	3.3	1.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +		2 54
sycamore	Platanus occidentalis	NSL	Low	1.1	3.1	2.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good				2 55
American chestnut	Castanea dentata	NSLX	FIA	2.4	2.2	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 56
butternut	Juglans cinerea	NSLX	FIA	0.1	2.0	0.2	Unknown	Unknown	Low	Rare	FIA Only	FIA Only				0 57
pin cherry	Prunus pensylvanica	NSL	Low	1.1	1.9	1.8	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +			1 58
chokecherry	Prunus virginiana	NSLX	FIA	2.2	1.5	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 59
white mulberry	Morus alba	NSL	FIA	0.6	1.2	0.7	Unknown	Unknown	NA	Rare	NNIS	NNIS				0 60
slippery elm	Ulmus rubra	WSL	Low	1.1	1.0	0.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +		2 61
northern catalpa	Catalpa speciosa	NSHX	FIA	1.1	0.7	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 62
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 63
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++		3 64
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 65
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 66
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 67
black maple	Acer nigrum	NSH	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown				0 68
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +		3 69
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 70
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +		3 71
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat				0 72
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				3 73
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 74
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 75
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				0 76
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 77
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 78
American holly	Ilex opaca	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +		3 79
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++		3 80
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 81
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 82
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat				0 83
water tupelo	Nyssa aquatica	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				3 84
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 85
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 86
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat				3 87
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 88
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 89
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 90
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				3 91
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 92
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +		3 93
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 94

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water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	95
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	96
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	97
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	98
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	99