

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 4,680.9 1,807.3 281

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	15	15	Increase	14	12	Very Good	4	3	Likely	0	0
Ash	3			Medium	21	29	No Change	6	6	Good	12	10	Infill	4	4
Hickory	0			Low	16	10	Decrease	10	12	Fair	7	10	Migrate	5	12
Maple	3	Abundant	10	FIA	2		New	20	20	Poor	4	4			
Oak	2	Common	10				Unknown	4	4	Very Poor	3	2			
Pine	3	Rare	12							FIA Only	2	2			
Other	21	Absent	20							Unknown	2	2			
	32		52		54	54		54	54		34	33		9	16

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	41.9	43.5	46.8	46.6	
Average	CCSM85	41.9	44.4	47.5	51.1	
	GFDL45	41.9	45.3	48.3	49.7	
	GFDL85	41.9	45.6	49.4	54.7	
	HAD45	41.9	45.4	48.7	50.7	
	HAD85	41.9	45.7	49.8	56.0	
Growing Season	CCSM45	59.8	61.2	63.5	63.6	
	CCSM85	59.8	61.8	64.5	68.2	
May—Sep	GFDL45	59.8	64.5	68.5	70.7	
	GFDL85	59.8	65.0	69.9	76.1	
	HAD45	59.8	63.0	65.1	67.6	
	HAD85	59.8	62.7	66.5	72.4	
Coldest Month	CCSM45	15.1	16.6	19.5	18.9	
	CCSM85	15.1	17.3	19.6	22.3	
Average	GFDL45	15.1	17.3	19.2	19.8	
	GFDL85	15.1	18.0	19.8	22.7	
	HAD45	15.1	17.4	21.5	21.7	
	HAD85	15.1	20.1	22.8	27.8	
Warmest Month	CCSM45	66.0	67.7	69.3	69.5	
	CCSM85	66.0	68.6	70.4	72.3	
Average	GFDL45	66.0	70.9	72.9	74.4	
	GFDL85	66.0	71.7	74.3	77.0	
	HAD45	66.0	69.3	70.1	72.1	
	HAD85	66.0	69.4	71.4	75.4	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	31.8	33.0	33.0	33.1	
Total	CCSM85	31.8	32.2	32.3	33.4	
	GFDL45	31.8	34.1	35.9	35.7	
	GFDL85	31.8	33.8	37.1	38.1	
	HAD45	31.8	33.5	34.8	34.7	
	HAD85	31.8	34.2	35.8	37.5	
Growing Season	CCSM45	15.6	16.2	15.4	15.5	
	CCSM85	15.6	15.4	15.1	14.5	
May—Sep	GFDL45	15.6	16.3	17.3	17.1	
	GFDL85	15.6	16.6	17.4	17.2	
	HAD45	15.6	16.0	15.1	15.1	
	HAD85	15.6	16.2	14.4	15.3	

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-DGP30 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>.

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
red maple	Acer rubrum	WDH	High	94.7	1821.8	11.3	No change	No change	High	Abundant	Very Good	Very Good			1	1
sugar maple	Acer saccharum	WDH	High	71.2	1816.4	14.2	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	2
northern white-cedar	Thuja occidentalis	WSH	High	71.6	1223.8	8.8	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	3
jack pine	Pinus banksiana	NSH	Medium	46.5	1054.6	13.9	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	4
red pine	Pinus resinosa	NSH	Medium	53.6	933.5	11.0	No change	No change	Low	Abundant	Fair	Fair			0	5
balsam fir	Abies balsamea	NDH	High	84.7	841.2	5.3	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	6
eastern white pine	Pinus strobus	WDH	High	70.2	784.7	7.6	Sm. inc.	No change	Low	Abundant	Good	Fair			1	7
quaking aspen	Populus tremuloides	WDH	High	62.8	716.0	6.4	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	8
black spruce	Picea mariana	NSH	High	65.9	540.8	5.3	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	9
American beech	Fagus grandifolia	WDH	High	61.9	525.7	4.6	No change	No change	Medium	Abundant	Good	Good			1	10
black cherry	Prunus serotina	WDL	Medium	73.5	419.3	4.1	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	11
eastern hemlock	Tsuga canadensis	NSH	High	63.2	373.8	3.5	No change	Sm. dec.	Low	Common	Poor	Poor			0	12
tamarack (native)	Larix laricina	NSH	High	39	358.8	6.3	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	13
paper birch	Betula papyrifera	WDH	High	56.5	332.7	3.3	Sm. inc.	No change	Medium	Common	Good	Fair			1	14
white spruce	Picea glauca	NSL	Medium	70.1	287.7	2.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	15
yellow birch	Betula alleghaniensis	NDL	High	61.4	176.8	1.7	No change	No change	Medium	Common	Fair	Fair			1	16
bigtooth aspen	Populus grandidentata	NSL	Medium	35.8	173.6	2.5	Lg. inc.	Sm. inc.	Medium	Common	Very Good	Good			1	17
black ash	Fraxinus nigra	WSH	Medium	35.1	142.5	2.2	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	18
balsam poplar	Populus balsamifera	NSH	Medium	16.8	131.0	1.4	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	19
American basswood	Tilia americana	WSL	Medium	13.8	66.8	3.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	26.3	46.2	0.8	Sm. inc.	Sm. inc.	High	Rare	Good	Good			1	21
northern red oak	Quercus rubra	WDH	Medium	8.1	43.7	3.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	22
American elm	Ulmus americana	WDH	Medium	14.1	26.4	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	23
pin cherry	Prunus pensylvanica	NSL	Low	14.5	22.2	0.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	24
green ash	Fraxinus pennsylvanica	WSH	Low	4.9	19.5	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	25
peachleaf willow	Salix amygdaloides	NSLX	FIA	4.5	12.8	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	26
serviceberry	Amelanchier spp.	NSL	Low	16.6	9.2	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	27
white ash	Fraxinus americana	WDL	Medium	0.4	6.7	0.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	28
northern pin oak	Quercus ellipsoidalis	NSH	Medium	2.1	3.8	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	29
chokecherry	Prunus virginiana	NSLX	FIA	2.1	0.5	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	30
American mountain-ash	Sorbus americana	NSL	Low	2.1	0.5	0.2	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	31
mountain maple	Acer spicatum	NSL	Low	2.1	0.2	0.1	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			1	32
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	33
boxelder	Acer negundo	WSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	34
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	35
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	36
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	37
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	38
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	39
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	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			0	42
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	43
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	44
eastern cottonwood	Populus deltoides	NSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	45
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	46
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	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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scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	48
bur oak	Quercus macrocarpa	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	49
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	50
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	51
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	52
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	53
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	54