

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	8,686.5	3,353.9	330

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			18	16	Increase	15	19	Very Good	4	4	Likely	0	0
Hickory	0			20	31	No Change	8	3	Good	12	13	Infill	5	8
Maple	4	Abundant	8	18	12	Decrease	8	9	Fair	4	7	Migrate	4	16
Oak	1	Common	10	3		New	20	22	Poor	8	4		9	24
Pine	2	Rare	16			Unknown	8	6	Very Poor	3	3			
Other	24	Absent	25				59	59	FIA Only	3	3			
	34		59						Unknown	5	3			
										39	37			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	39.8	41.6	44.0	44.1	
	CCSM85	39.8	42.3	44.9	48.4	
	GFDL45	39.8	42.7	46.4	48.0	
	GFDL85	39.8	43.3	47.9	53.3	
	HAD45	39.8	42.9	45.9	47.6	
	HAD85	39.8	43.1	47.3	52.9	
Growing Season (May—Sep)	CCSM45	58.9	60.9	62.8	63.1	
	CCSM85	58.9	61.2	63.6	67.4	
	GFDL45	58.9	62.3	65.9	67.7	
	GFDL85	58.9	62.6	67.3	72.8	
	HAD45	58.9	61.7	64.4	66.5	
	HAD85	58.9	61.5	66.0	72.0	
Coldest Month Average	CCSM45	9.7	11.4	13.3	13.7	
	CCSM85	9.7	12.5	14.0	16.6	
	GFDL45	9.7	12.5	15.6	16.8	
	GFDL85	9.7	13.6	16.7	19.7	
	HAD45	9.7	12.6	15.2	15.9	
	HAD85	9.7	14.2	16.8	20.5	
Warmest Month Average	CCSM45	65.4	67.4	68.7	68.7	
	CCSM85	65.4	67.9	69.7	71.5	
	GFDL45	65.4	68.5	70.5	71.8	
	GFDL85	65.4	68.6	71.7	74.4	
	HAD45	65.4	68.4	69.7	71.1	
	HAD85	65.4	68.2	70.7	74.8	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	44.9	43.9	43.4	48.5	
	CCSM85	44.9	46.2	45.9	47.9	
	GFDL45	44.9	49.8	52.8	51.4	
	GFDL85	44.9	48.7	51.1	52.4	
	HAD45	44.9	49.0	52.1	51.5	
	HAD85	44.9	49.7	50.3	54.1	
Growing Season (May—Sep)	CCSM45	20.3	20.2	19.0	20.9	
	CCSM85	20.3	21.1	20.6	19.6	
	GFDL45	20.3	20.0	20.0	19.6	
	GFDL85	20.3	20.6	20.0	18.6	
	HAD45	20.3	22.4	22.3	23.6	
	HAD85	20.3	21.4	22.2	24.1	

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>.

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
balsam fir	Abies balsamea	NDH	High	98.3	2698.3	18.9	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	1
red spruce	Picea rubens	NDH	High	92.4	1794.7	13.7	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	2
red maple	Acer rubrum	WDH	High	94.6	1251.1	9.0	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	3
American beech	Fagus grandifolia	WDH	High	77.5	898.6	7.6	No change	No change	Medium	Abundant	Good	Good			1	4
northern white-cedar	Thuja occidentalis	WSH	High	77.7	855.0	7.5	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	5
yellow birch	Betula alleghaniensis	NDL	High	89.3	834.7	6.2	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	6
sugar maple	Acer saccharum	WDH	High	73.9	697.4	6.3	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	7
paper birch	Betula papyrifera	WDH	High	92.9	643.4	4.9	No change	No change	Medium	Abundant	Good	Good			1	8
eastern white pine	Pinus strobus	WDH	High	65.8	377.9	4.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	9
eastern hemlock	Tsuga canadensis	NSH	High	44.9	300.3	4.1	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	10
striped maple	Acer pensylvanicum	NSL	Medium	74	222.9	2.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
white ash	Fraxinus americana	WDL	Medium	47.9	214.4	2.7	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	12
white spruce	Picea glauca	NSL	Medium	51.5	212.0	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	13
black spruce	Picea mariana	NSH	High	23.8	197.3	5.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
quaking aspen	Populus tremuloides	WDH	High	47.7	196.8	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
bigtooth aspen	Populus grandidentata	NSL	Medium	26.6	95.3	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	16
red pine	Pinus resinosa	NSH	Medium	4.7	87.5	13.9	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	17
black ash	Fraxinus nigra	WSH	Medium	20.7	82.6	1.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	18
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	28.2	46.9	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	19
tamarack (native)	Larix laricina	NSH	High	14.1	41.4	2.3	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	20
pin cherry	Prunus pensylvanica	NSL	Low	32.2	40.4	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	21
balsam poplar	Populus balsamifera	NSH	Medium	9.2	34.0	1.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	22
gray birch	Betula populifolia	NSL	Low	25.8	31.8	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	23
black cherry	Prunus serotina	WDL	Medium	9.3	23.0	0.8	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	1	24
northern red oak	Quercus rubra	WDH	Medium	11.2	18.9	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	25
American elm	Ulmus americana	WDH	Medium	7.7	17.5	1.8	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	26
mountain maple	Acer spicatum	NSL	Low	13.4	16.2	1.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	27
American basswood	Tilia americana	WSL	Medium	4.9	7.4	0.6	No change	Lg. inc.	Medium	Rare	Poor	Good		Infill ++	2	28
American mountain-ash	Sorbus americana	NSL	Low	5.9	6.7	0.7	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	29
American chestnut	Castanea dentata	NSLX	FIA	0.6	6.4	3.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	30
green ash	Fraxinus pennsylvanica	WSH	Low	2.4	5.3	1.3	No change	Lg. inc.	Medium	Rare	Poor	Good		Infill ++	2	31
butternut	Juglans cinerea	NSLX	FIA	0.1	3.8	0.4	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	32
serviceberry	Amelanchier spp.	NSL	Low	2.2	2.0	0.3	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	33
chokecherry	Prunus virginiana	NSLX	FIA	1.2	0.4	0.4	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
pitch pine	Pinus rigida	NSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	36
black maple	Acer nigrum	NSH	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	37
sweet birch	Betula lenta	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	38
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	39
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	40
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	41
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	42
shagbark hickory	Carya ovata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	43
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	44
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	45
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			0	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		Migrate +		3 49
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 50
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 51
white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 52
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 53
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 54
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				0 55
chestnut oak	Quercus prinus	NDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++		3 56
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 57
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 58
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 59