

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
 2,739.0 1,057.5 39

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	18	19	Increase	10	7	Very Good	4	2	Likely	3	3
Hickory	1			Medium	25	36	No Change	10	11	Good	8	9	Infill	8	12
Maple	4	Abundant	5	Low	20	10	Decrease	25	27	Fair	12	12	Migrate	4	6
Oak	7	Common	26	FIA	4		New	14	14	Poor	10	12			
Pine	5	Rare	18				Unknown	8	8	Very Poor	11	10			
Other	29	Absent	16							FIA Only	2	2			
	49		65		67	65		67	67	Unknown	4	4			
											51	51			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	48.9	50.8	53.6	53.6	
Average	CCSM85	48.9	51.5	54.3	57.5	
	GFDL45	48.9	52.1	54.5	55.5	
	GFDL85	48.9	52.0	55.5	59.9	
	HAD45	48.9	52.1	55.5	57.4	
	HAD85	48.9	52.4	57.0	62.2	
Growing Season	CCSM45	65.8	67.7	70.0	70.4	
	CCSM85	65.8	68.4	70.8	74.7	
May—Sep	GFDL45	65.8	69.6	72.7	74.3	
	GFDL85	65.8	69.8	74.0	79.1	
	HAD45	65.8	69.4	72.1	74.4	
	HAD85	65.8	69.2	74.5	79.9	
Coldest Month	CCSM45	23.2	24.9	27.6	27.4	
	CCSM85	23.2	26.0	28.0	30.0	
Average	GFDL45	23.2	26.0	27.2	27.5	
	GFDL85	23.2	26.5	27.7	29.4	
	HAD45	23.2	24.8	28.5	28.5	
	HAD85	23.2	27.0	29.8	33.1	
Warmest Month	CCSM45	72.0	74.2	75.6	76.1	
	CCSM85	72.0	75.3	77.0	78.9	
Average	GFDL45	72.0	75.3	77.0	78.1	
	GFDL85	72.0	76.3	78.3	81.2	
	HAD45	72.0	76.1	77.9	79.3	
	HAD85	72.0	76.7	80.1	83.9	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	37.6	36.9	36.3	37.2	
Total	CCSM85	37.6	37.4	37.3	37.9	
	GFDL45	37.6	40.1	44.5	44.6	
	GFDL85	37.6	41.1	45.9	47.5	
	HAD45	37.6	38.5	41.1	40.2	
	HAD85	37.6	40.6	38.0	41.2	
Growing Season	CCSM45	18.1	18.3	17.9	17.6	
	CCSM85	18.1	17.5	17.6	16.7	
May—Sep	GFDL45	18.1	18.6	21.0	21.3	
	GFDL85	18.1	20.0	21.1	21.7	
	HAD45	18.1	17.5	16.9	17.3	
	HAD85	18.1	17.8	14.7	15.5	

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	39.8	1044.7	12.9	No change	Sm. dec.	High	Abundant	Very Good	Good			1	1
black cherry	Prunus serotina	WDL	Medium	52.9	977.5	11.8	No change	Sm. dec.	Low	Abundant	Fair	Fair			0	2
green ash	Fraxinus pennsylvanica	WSH	Low	38.6	839.6	15.3	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	3
silver maple	Acer saccharinum	NSH	Low	11.7	529.2	13.8	Sm. inc.	No change	High	Abundant	Very Good	Very Good			1	4
sassafras	Sassafras albidum	WSL	Low	31.8	508.7	7.9	Sm. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	5
black oak	Quercus velutina	WDH	High	20.5	497.0	9.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
northern red oak	Quercus rubra	WDH	Medium	25.7	471.2	6.8	No change	Sm. dec.	High	Common	Good	Fair			1	7
Scots pine	Pinus sylvestris	NSH	FIA	17	413.0	21.3	Unknown	Unknown	NA	Common	NNIS	NNIS			0	8
white oak	Quercus alba	WDH	Medium	14.4	363.4	7.9	Sm. inc.	No change	High	Common	Very Good	Good			1	9
sugar maple	Acer saccharum	WDH	High	30	329.2	9.5	Sm. inc.	No change	High	Common	Very Good	Good			1	10
American elm	Ulmus americana	WDH	Medium	47.6	324.3	4.8	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	11
eastern white pine	Pinus strobus	WDH	High	25.3	313.4	4.4	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	12
northern catalpa	Catalpa speciosa	NSHX	FIA	2.3	288.8	50.8	Unknown	Unknown	Medium	Common	FIA Only	FIA Only			0	13
yellow-poplar	Liriodendron tulipifera	WDH	High	18.4	279.3	11.5	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	14
jack pine	Pinus banksiana	NSH	Medium	18.3	250.5	4.3	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	15
bigtooth aspen	Populus grandidentata	NSL	Medium	17.5	208.1	9.2	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	16
eastern cottonwood	Populus deltoides	NSH	Low	13.8	200.9	7.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	17
red pine	Pinus resinosa	NSH	Medium	5.8	156.0	7.5	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	18
American beech	Fagus grandifolia	WDH	High	19.7	146.7	3.9	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	1	19
American basswood	Tilia americana	WSL	Medium	17.2	138.2	5.2	Sm. inc.	Sm. dec.	Medium	Common	Good	Poor			1	20
black willow	Salix nigra	NSH	Low	1.8	134.7	2.6	Sm. dec.	No change	Low	Common	Poor	Poor		Infill +	0	21
bitternut hickory	Carya cordiformis	WSL	Low	17.6	120.1	6.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	22
white ash	Fraxinus americana	WDL	Medium	25.2	117.9	2.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	23
pin oak	Quercus palustris	NSH	Low	7.3	103.1	14.1	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	24
black locust	Robinia pseudoacacia	NDH	Low	5.3	81.4	8.0	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	25
slippery elm	Ulmus rubra	WSL	Low	8.6	72.1	9.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	26
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	7.3	63.9	8.8	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	27
loblolly pine	Pinus taeda	WDH	High	3.7	62.8	17.2	No change	Sm. inc.	Medium	Common	Fair	Good		Infill ++	2	28
yellow birch	Betula alleghaniensis	NDL	High	10.4	59.0	2.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	29
quaking aspen	Populus tremuloides	WDH	High	9.7	58.9	5.0	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	30
black walnut	Juglans nigra	WDH	Low	3.7	58.1	15.9	No change	No change	Medium	Common	Fair	Fair			1	31
eastern hemlock	Tsuga canadensis	NSH	High	4.4	35.4	3.0	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	32
swamp white oak	Quercus bicolor	NSL	Low	3.2	32.5	7.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	33
scarlet oak	Quercus coccinea	WDL	Medium	3.7	30.2	8.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	34
blackgum	Nyssa sylvatica	WDL	Medium	5.2	26.0	2.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	35
black ash	Fraxinus nigra	WSH	Medium	5.6	25.3	1.7	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	36
Norway spruce	Picea abies	NSH	FIA	3.7	25.2	6.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	37
Osage-orange	Maclura pomifera	NDH	Medium	2.3	24.5	4.3	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	38
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	5.1	19.5	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	39
northern pin oak	Quercus ellipsoidalis	NSH	Medium	6	16.7	1.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	40
paper birch	Betula papyrifera	WDH	High	4	16.1	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	41
northern white-cedar	Thuja occidentalis	WSH	High	3.7	15.1	4.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	42
sycamore	Platanus occidentalis	NSL	Low	2.2	14.2	0.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	43
serviceberry	Amelanchier spp.	NSL	Low	0.7	9.9	0.6	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	44
boxelder	Acer negundo	WSH	Low	1.6	5.1	0.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	45
eastern redcedar	Juniperus virginiana	WDH	Medium	6.7	1.8	0.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	46
tamarack (native)	Larix laricina	NSH	High	3.7	1.7	0.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	47



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chokecherry	Prunus virginiana	NSLX	FIA	3.7	1.1	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 48
flowering dogwood	Cornus florida	WDL	Medium	1.7	0.9	0.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 49
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 50
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +			3 51
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +		3 52
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +		3 53
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 54
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 55
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat				3 56
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +		3 57
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 58
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 59
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown				0 60
balsam poplar	Populus balsamifera	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 61
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 62
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 63
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat				3 64
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 65
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				0 66
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++		3 67