

**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  
 10,188    3,933.4    310

**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	2			High	17	23	Increase	26	31	Very Good	15	16	Likely	0	0
Hickory	5			Medium	36	54	No Change	19	17	Good	7	14	Infill	21	21
Maple	2	Abundant	5	Low	35	12	Decrease	25	22	Fair	11	8	Migrate	0	2
Oak	17	Common	23	FIA	3		New	6	7	Poor	22	17			
Pine	6	Rare	45				Unknown	15	14	Very Poor	12	11			
Other	41	Absent	14							FIA Only	1	1			
	<b>73</b>		<b>87</b>		<b>91</b>	<b>89</b>		<b>91</b>	<b>91</b>	Unknown	12	11			
											<b>80</b>	<b>78</b>			

**Potential Changes in Climate Variables**

**Temperature (°F)**

Scenario	2009	2039	2069	2099	
Annual	62.5	64.2	66.2	66.3	
Average	62.5	64.4	66.8	69.6	
GFDL45	62.5	65.2	67.2	68.0	
GFDL85	62.5	65.2	68.4	71.9	
HAD45	62.5	64.5	67.2	68.7	
HAD85	62.5	64.8	68.4	72.4	
Growing Season	76.1	77.7	79.4	79.9	
May—Sep	76.1	77.8	80.3	83.7	
GFDL45	76.1	79.0	81.2	82.5	
GFDL85	76.1	79.1	82.5	86.6	
HAD45	76.1	78.8	81.3	82.9	
HAD85	76.1	78.8	83.5	87.7	
Coldest Month	42.0	44.3	45.2	45.0	
Average	42.0	44.1	45.2	46.4	
GFDL45	42.0	45.1	45.5	46.1	
GFDL85	42.0	44.0	45.0	45.9	
HAD45	42.0	42.4	44.0	44.5	
HAD85	42.0	43.1	44.1	45.7	
Warmest Month	81.0	82.8	83.8	83.9	
Average	81.0	83.1	84.6	86.2	
GFDL45	81.0	83.4	84.3	85.3	
GFDL85	81.0	83.9	85.6	88.0	
HAD45	81.0	84.1	85.5	86.1	
HAD85	81.0	84.5	87.4	89.7	

**Precipitation (in)**

Scenario	2009	2039	2069	2099	
Annual	46.0	51.2	52.2	54.6	
Total	46.0	50.9	53.6	60.2	
GFDL45	46.0	50.7	54.6	57.4	
GFDL85	46.0	50.1	56.8	57.0	
HAD45	46.0	48.0	49.9	49.5	
HAD85	46.0	50.8	46.9	47.2	
Growing Season	22.9	27.6	28.2	29.7	
May—Sep	22.9	25.8	27.8	31.3	
GFDL45	22.9	26.8	29.5	30.6	
GFDL85	22.9	26.1	31.7	31.7	
HAD45	22.9	23.4	24.0	23.8	
HAD85	22.9	25.4	21.9	20.1	

**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>.

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
loblolly pine	Pinus taeda	WDH	High	95.9	4519.1	33.4	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	89.3	1330.1	11.1	No change	No change	Medium	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	84.4	1000.1	9.3	No change	No change	High	Abundant	Very Good	Very Good			1	3
water oak	Quercus nigra	WDH	High	74.8	789.5	7.3	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
swamp tupelo	Nyssa biflora	NDH	Medium	61.6	511.1	7.2	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	5
longleaf pine	Pinus palustris	NSH	Medium	25.3	388.9	11.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	6
yellow-poplar	Liriodendron tulipifera	WDH	High	38.2	310.9	6.0	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	7
laurel oak	Quercus laurifolia	NDH	Medium	42.1	178.3	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
black cherry	Prunus serotina	WDL	Medium	36.2	157.1	2.5	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	9
American holly	Ilex opaca	NSL	Medium	39.2	156.1	3.2	No change	Sm. inc.	Medium	Common	Fair	Good			1	10
blackgum	Nyssa sylvatica	WDL	Medium	51.9	146.3	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	11
southern red oak	Quercus falcata	WDL	Medium	23.5	133.4	4.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	12
willow oak	Quercus phellos	NSL	Low	32.8	103.0	2.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	13
blackjack oak	Quercus marilandica	NSL	Medium	14.1	101.6	5.6	Lg. dec.	No change	High	Common	Fair	Good			1	14
green ash	Fraxinus pennsylvanica	WSH	Low	22.9	97.1	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
water tupelo	Nyssa aquatica	NSH	Medium	8.9	84.0	5.3	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	16
mockernut hickory	Carya alba	WDL	Medium	27.3	82.3	2.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
slash pine	Pinus elliottii	NDH	High	11.1	81.8	6.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	18
white oak	Quercus alba	WDH	Medium	26.8	81.6	1.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	19
pond pine	Pinus serotina	NSH	Medium	17.4	81.1	3.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	20
sweetbay	Magnolia virginiana	NSL	Medium	35.1	79.6	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
turkey oak	Quercus laevis	NSH	Medium	9	69.3	4.4	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	22
black willow	Salix nigra	NSH	Low	9.9	65.4	5.1	No change	No change	Low	Common	Poor	Poor			0	23
swamp chestnut oak	Quercus michauxii	NSL	Low	14.5	63.4	3.4	Sm. dec.	No change	Medium	Common	Poor	Fair			1	24
bald cypress	Taxodium distichum	NSH	Medium	15.9	60.9	2.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
redbay	Persea borbonia	NSL	Low	35.4	59.9	1.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	26
post oak	Quercus stellata	WDH	High	31	57.7	1.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	27
American elm	Ulmus americana	WDH	Medium	13	55.0	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	28
sugarberry	Celtis laevigata	NDH	Medium	8.8	44.5	5.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	29
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	14.2	39.6	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	30
pignut hickory	Carya glabra	WDL	Medium	14.4	38.8	2.6	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
northern red oak	Quercus rubra	WDH	Medium	3.1	36.7	9.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +		2	32
flowering dogwood	Cornus florida	WDL	Medium	19.9	34.2	0.9	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	33
slippery elm	Ulmus rubra	WSL	Low	12.4	32.4	1.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	34
pond cypress	Taxodium ascendens	NSH	Medium	5.7	28.9	3.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	35
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	5.9	24.0	4.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	36
hackberry	Celtis occidentalis	WDH	Medium	2.8	22.0	6.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	37
shortleaf pine	Pinus echinata	WDH	High	2.9	19.9	4.5	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	38
black oak	Quercus velutina	WDH	High	7	19.5	1.7	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	39
water hickory	Carya aquatica	NSL	Medium	6	19.3	2.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	40
river birch	Betula nigra	NSL	Low	5.1	18.0	1.8	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	41
common persimmon	Diospyros virginiana	NSL	Low	16.5	17.8	1.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	42
loblolly-bay	Gordonia lasianthus	NSH	Medium	5.9	16.6	6.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	43
sourwood	Oxydendrum arboreum	NDL	High	7.3	16.2	1.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	44
sycamore	Platanus occidentalis	NSL	Low	5.8	14.2	2.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	45
American beech	Fagus grandifolia	WDH	High	2.9	12.1	2.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	46
eastern redcedar	Juniperus virginiana	WDH	Medium	3.6	11.8	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	47



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Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	1	11.2	11.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	48
winged elm	Ulmus alata	WDL	Medium	8.2	10.2	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	49
scarlet oak	Quercus coccinea	WDL	Medium	4.9	9.9	1.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	50
water elm	Planera aquatica	NSL	Low	3	9.4	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	51
sassafras	Sassafras albidum	WSL	Low	7.2	9.3	1.0	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	52
bluejack oak	Quercus incana	NSL	Low	4.9	9.0	1.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	53
pecan	Carya illinoensis	NSH	Low	2.9	6.7	2.3	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	54
southern magnolia	Magnolia grandiflora	NSL	Low	3.8	6.6	1.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	55
overcup oak	Quercus lyrata	NSL	Medium	4	6.3	1.0	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	56
live oak	Quercus virginiana	NDH	High	1.1	5.3	2.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	57
boxelder	Acer negundo	WSH	Low	2.9	3.7	1.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	58
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	1.3	3.5	1.2	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	59
eastern cottonwood	Populus deltoides	NSH	Low	2	3.3	1.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
bitternut hickory	Carya cordiformis	WSL	Low	1	2.2	2.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	61
red mulberry	Morus rubra	NSL	Low	2	2.1	1.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	62
black walnut	Juglans nigra	WDH	Low	1	1.8	1.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	63
white ash	Fraxinus americana	WDL	Medium	1.8	1.3	0.6	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	64
eastern redbud	Cercis canadensis	NSL	Low	2.7	1.3	0.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	65
pitch pine	Pinus rigida	NSH	High	1	1.2	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	66
white mulberry	Morus alba	NSL	FIA	0.9	1.2	1.1	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	67
Shumard oak	Quercus shumardii	NSL	Low	0.8	1.2	1.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	68
wild plum	Prunus americana	NSLX	FIA	1	1.0	1.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	69
American basswood	Tilia americana	WSL	Medium	0.3	0.9	0.3	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	70
ailanthus	Ailanthus altissima	NSL	FIA	1	0.6	0.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	71
pawpaw	Asimina triloba	NSL	Low	1	0.4	0.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	72
black locust	Robinia pseudoacacia	NDH	Low	1	0.3	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	73
sand pine	Pinus clausa	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	74
Virginia pine	Pinus virginiana	NDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	75
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	76
silver maple	Acer saccharinum	NSH	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	77
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	78
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	79
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	80
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	81
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	82
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	83
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	84
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	85
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	86
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	87
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	88
nuttall oak	Quercus texana	NSH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	89
chestnut oak	Quercus prinus	NDH	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	90
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	91