

U.S. Census Bureau Urban Areas
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

Area of Region sq. km sq. mi FIA Plots
 8,700.0 3,359.1 108

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	4			High	9	6	Increase	12	13	Very Good	4	5	Likely	0	0
Hickory	0			Medium	22	26	No Change	8	8	Good	7	7	Infill	2	1
Maple	1	Abundant	2	Low	9	8	Decrease	7	6	Fair	5	4	Migrate	0	1
Oak	5	Common	11	FIA	2		New	4	5	Poor	7	8		2	2
Pine	5	Rare	16				Unknown	11	10	Very Poor	4	3			
Other	14	Absent	10					42	42	FIA Only	2	2			
	29		39		42	40				Unknown	9	8			
											38	37			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	72.5	73.9	75.3	75.3	
Average	CCSM85	72.5	74.0	76.1	78.3	
	GFDL45	72.5	76.4	76.5	77.4	
	GFDL85	72.5	74.7	77.6	80.8	
	HAD45	72.5	73.9	76.0	77.1	
	HAD85	72.5	74.5	76.7	80.1	
Growing Season	CCSM45	80.6	81.7	82.9	83.1	
	CCSM85	80.6	81.8	84.0	86.4	
May—Sep	GFDL45	80.6	84.5	84.5	85.5	
	GFDL85	80.6	82.9	85.6	89.1	
	HAD45	80.6	82.6	84.3	85.4	
	HAD85	80.6	83.0	85.7	88.8	
Coldest Month	CCSM45	59.1	61.1	62.1	61.8	
Average	CCSM85	59.1	60.5	61.4	62.9	
	GFDL45	59.1	61.8	62.2	62.7	
	GFDL85	59.1	61.5	62.6	63.7	
	HAD45	59.1	59.0	60.2	60.8	
	HAD85	59.1	59.7	60.5	62.3	
Warmest Month	CCSM45	82.5	83.7	84.4	84.4	
Average	CCSM85	82.5	83.8	85.1	86.5	
	GFDL45	82.5	84.8	85.7	86.3	
	GFDL85	82.5	84.9	86.4	88.3	
	HAD45	82.5	84.7	85.4	85.9	
	HAD85	82.5	84.7	86.2	87.5	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	49.1	52.2	52.2	54.6	
Total	CCSM85	49.1	51.5	51.5	50.3	
	GFDL45	49.1	57.8	59.1	61.2	
	GFDL85	49.1	53.3	62.6	58.4	
	HAD45	49.1	49.3	48.7	50.8	
	HAD85	49.1	46.3	47.8	45.8	
Growing Season	CCSM45	31.1	33.5	32.2	34.3	
	CCSM85	31.1	32.9	32.6	30.3	
May—Sep	GFDL45	31.1	35.9	36.2	36.1	
	GFDL85	31.1	34.0	38.3	35.5	
	HAD45	31.1	31.3	30.4	29.0	
	HAD85	31.1	28.6	26.4	25.4	

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
slash pine	Pinus elliottii	NDH	High	62.1	717.2	30.9	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			2	1
pond cypress	Taxodium ascendens	NSH	Medium	44.8	513.6	36.6	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			0	2
longleaf pine	Pinus palustris	NSH	Medium	42.5	468.8	30.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	3
cabbage palmetto	Sabal palmetto	NDH	Medium	32.2	261.0	22.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			0	4
red maple	Acer rubrum	WDH	High	44.8	233.0	14.7	No change	No change	High	Common	Good	Good			0	5
live oak	Quercus virginiana	NDH	High	46	231.5	20.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			0	6
swamp tupelo	Nyssa biflora	NDH	Medium	48.3	175.1	8.6	No change	No change	Low	Common	Poor	Poor			0	7
bald cypress	Taxodium distichum	NSH	Medium	20.7	169.5	17.1	No change	No change	Medium	Common	Fair	Fair			0	8
laurel oak	Quercus laurifolia	NDH	Medium	44.8	108.5	9.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			2	9
loblolly-bay	Gordonia lasianthus	NSH	Medium	27.6	101.8	8.7	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +		2	10
sweetgum	Liquidambar styraciflua	WDH	High	10.3	90.7	13.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	11
sweetbay	Magnolia virginiana	NSL	Medium	29.9	59.4	8.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			2	12
sand pine	Pinus clausa	NDH	High	11.5	57.3	17.3	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			0	13
redbay	Persea borbonia	NSL	Low	36.8	44.7	2.4	No change	Sm. inc.	High	Rare	Fair	Good			0	14
water oak	Quercus nigra	WDH	High	11.5	37.1	4.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	15
pumpkin ash	Fraxinus profunda	NSH	FIA	2.3	29.0	12.2	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	16
pond pine	Pinus serotina	NSH	Medium	16.1	24.5	12.0	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	17
common persimmon	Diospyros virginiana	NSL	Low	6.9	17.4	5.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	18
turkey oak	Quercus laevis	NSH	Medium	10.3	17.2	9.2	Sm. inc.	No change	High	Rare	Good	Fair			0	19
American elm	Ulmus americana	WDH	Medium	18.4	13.7	2.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	20
loblolly pine	Pinus taeda	WDH	High	2.3	13.7	5.8	No change	No change	Medium	Rare	Poor	Poor			0	21
green ash	Fraxinus pennsylvanica	WSH	Low	1.1	12.1	10.1	No change	No change	Medium	Rare	Poor	Poor			0	22
southern magnolia	Magnolia grandiflora	NSL	Low	1.1	3.1	2.6	No change	No change	Medium	Rare	Poor	Poor			0	23
Carolina ash	Fraxinus caroliniana	NSL	FIA	9.2	2.7	4.5	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	24
blackgum	Nyssa sylvatica	WDL	Medium	5.7	2.4	2.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	25
white ash	Fraxinus americana	WDL	Medium	1.1	1.9	1.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	26
bluejack oak	Quercus incana	NSL	Low	4.6	1.1	3.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	27
black willow	Salix nigra	NSH	Low	4.6	1.1	3.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	28
eastern redcedar	Juniperus virginiana	WDH	Medium	4.6	0.2	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	29
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	30
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	31
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	32
pignut hickory	Carya glabra	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	33
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	34
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	35
American holly	Ilex opaca	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	36
black cherry	Prunus serotina	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	37
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	38
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	39
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	40
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	41
winged elm	Ulmus alata	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	42