

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	7,056.3	2,724.5	11

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	0			High	2	Increase	0	0	Very Good	0	0
Hickory	0			Medium	6	No Change	2	2	Good	0	0
Maple	0	Abundant	0	Low	5	Decrease	1	1	Fair	1	1
Oak	2	Common	1	FIA	0	New	5	5	Poor	2	2
Pine	0	Rare	2			Unknown	5	5	Very Poor	0	0
Other	1	Absent	10				13	13	FIA Only	0	0
	3		13						Unknown	5	5
										8	8

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	72.2	73.6	75.1	75.5	
	CCSM85	72.2	73.9	76.0	78.3	
	GFDL45	72.2	77.8	76.6	77.9	
	GFDL85	72.2	74.8	78.1	81.4	
	HAD45	72.2	74.2	76.4	77.5	
	HAD85	72.2	74.6	77.2	80.4	
Growing Season (May—Sep)	CCSM45	82.4	83.7	84.7	85.1	
	CCSM85	82.4	83.9	85.9	88.2	
	GFDL45	82.4	89.0	87.4	89.1	
	GFDL85	82.4	85.6	89.0	92.8	
	HAD45	82.4	84.2	86.0	86.9	
	HAD85	82.4	84.5	87.1	90.0	
Coldest Month Average	CCSM45	55.4	57.4	58.3	58.6	
	CCSM85	55.4	57.5	58.5	60.0	
	GFDL45	55.4	58.5	58.7	58.9	
	GFDL85	55.4	56.8	58.0	58.8	
	HAD45	55.4	56.5	58.0	58.8	
	HAD85	55.4	58.7	60.0	61.7	
Warmest Month Average	CCSM45	85.2	86.4	86.9	87.1	
	CCSM85	85.2	86.8	87.5	88.6	
	GFDL45	85.2	88.7	89.6	90.4	
	GFDL85	85.2	88.9	90.4	92.7	
	HAD45	85.2	87.2	87.8	88.5	
	HAD85	85.2	87.4	88.8	90.1	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	29.2	32.4	32.6	30.7	
	CCSM85	29.2	32.2	31.8	28.7	
	GFDL45	29.2	29.3	33.2	25.3	
	GFDL85	29.2	28.5	28.4	27.3	
	HAD45	29.2	30.7	29.2	29.8	
	HAD85	29.2	31.6	31.4	30.8	
Growing Season (May—Sep)	CCSM45	15.8	17.6	17.4	16.3	
	CCSM85	15.8	18.6	17.1	14.9	
	GFDL45	15.8	16.4	20.2	14.1	
	GFDL85	15.8	16.4	16.0	15.7	
	HAD45	15.8	15.3	14.7	15.6	
	HAD85	15.8	17.7	16.2	15.4	

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>.

One x One Degree
Climate Change Atlas Tree Species

USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

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
live oak	<i>Quercus virginiana</i>	NDH	High	23.7	181.9	65.5	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	1
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	1.8	8.2	2.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	2
post oak	<i>Quercus stellata</i>	WDH	High	5.1	0.7	1.7	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	3
pond cypress	<i>Taxodium ascendens</i>	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	4
pawpaw	<i>Asimina triloba</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	5
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum</i> ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	6
pecan	<i>Carya illinoensis</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	7
flowering dogwood	<i>Cornus florida</i>	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	8
silverbell	<i>Halesia</i> spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	9
American holly	<i>Ilex opaca</i>	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	10
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	11
cabbage palmetto	<i>Sabal palmetto</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	12
cedar elm	<i>Ulmus crassifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	13