

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	9,813.8	3,789.1	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	1			High	5	9	Increase	4	4	Very Good	0	0	Likely	2	2
Hickory	1			Medium	13	26	No Change	5	9	Good	2	2	Infill	9	11
Maple	1	Abundant	0	Low	17	4	Decrease	9	5	Fair	7	8	Migrate	3	4
Oak	4	Common	2	FIA	6		New	11	11	Poor	3	4			
Pine	0	Rare	22				Unknown	12	12	Very Poor	6	4			
Other	17	Absent	16							FIA Only	4	4			
	24		40		41	39		41	41	Unknown	6	6			
											28	28			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	57.2	59.1	60.9	61.4	
	CCSM85	57.2	59.6	61.6	64.4	
	GFDL45	57.2	63.4	62.2	63.4	
	GFDL85	57.2	60.0	63.0	67.1	
	HAD45	57.2	59.5	62.4	63.2	
	HAD85	57.2	59.9	64.7	67.5	
Growing Season (May—Sep)	CCSM45	74.8	77.1	79.0	79.5	
	CCSM85	74.8	77.7	79.8	83.2	
	GFDL45	74.8	83.2	81.0	83.2	
	GFDL85	74.8	78.6	82.1	87.3	
	HAD45	74.8	76.8	79.0	79.7	
	HAD85	74.8	77.5	82.6	84.9	
Coldest Month (Average)	CCSM45	30.7	32.8	33.9	34.6	
	CCSM85	30.7	32.9	33.5	35.3	
	GFDL45	30.7	34.5	34.7	34.9	
	GFDL85	30.7	32.2	33.5	34.3	
	HAD45	30.7	32.0	34.3	34.3	
	HAD85	30.7	34.1	36.3	38.0	
Warmest Month (Average)	CCSM45	81.5	84.0	85.3	85.8	
	CCSM85	81.5	84.8	86.0	87.9	
	GFDL45	81.5	86.0	87.2	88.8	
	GFDL85	81.5	86.1	87.6	91.9	
	HAD45	81.5	83.3	84.9	85.3	
	HAD85	81.5	85.2	87.6	88.9	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	33.7	32.3	33.4	32.5	
	CCSM85	33.7	33.6	34.2	34.9	
	GFDL45	33.7	35.8	38.5	37.1	
	GFDL85	33.7	36.7	41.3	38.8	
	HAD45	33.7	37.0	35.4	37.0	
	HAD85	33.7	34.5	31.7	35.5	
Growing Season (May—Sep)	CCSM45	19.7	17.5	18.1	17.8	
	CCSM85	19.7	18.8	18.6	19.2	
	GFDL45	19.7	21.0	22.0	21.5	
	GFDL85	19.7	22.0	24.7	22.7	
	HAD45	19.7	21.2	21.4	21.3	
	HAD85	19.7	19.4	17.3	18.7	

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
Osage-orange	Maclura pomifera	NDH	Medium	18.4	111.5	16.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	1
hackberry	Celtis occidentalis	WDH	Medium	24.5	65.6	25.4	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	2
red mulberry	Morus rubra	NSL	Low	23.6	36.4	12.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	3
eastern cottonwood	Populus deltoides	NSH	Low	11.1	35.0	28.8	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	4
American elm	Ulmus americana	WDH	Medium	20.8	30.5	10.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	5
black locust	Robinia pseudoacacia	NDH	Low	1.9	24.6	44.2	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	6
northern catalpa	Catalpa speciosa	NSHX	FIA	12.3	17.3	14.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	7
black willow	Salix nigra	NSH	Low	7.1	16.4	20.1	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	8
honeylocust	Gleditsia triacanthos	NSH	Low	7.3	14.5	11.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	9
peachleaf willow	Salix amygdaloides	NSLX	FIA	4.1	13.3	52.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	10
white mulberry	Morus alba	NSL	FIA	0.9	12.7	10.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	11
green ash	Fraxinus pennsylvanica	WSH	Low	6.1	11.4	4.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	12
black walnut	Juglans nigra	WDH	Low	7.6	8.3	7.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	13
eastern redcedar	Juniperus virginiana	WDH	Medium	13.1	8.0	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	14
wild plum	Prunus americana	NSLX	FIA	4.5	7.6	13.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	15
pecan	Carya illinoensis	NSH	Low	0.4	4.6	1.8	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	16
boxelder	Acer negundo	WSH	Low	5	3.8	4.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	17
Siberian elm	Ulmus pumila	NDH	FIA	2.6	3.7	9.3	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	18
slippery elm	Ulmus rubra	WSL	Low	4.4	2.9	5.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	19
bur oak	Quercus macrocarpa	NDH	Medium	0.4	1.5	0.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	20
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	3.4	1.0	3.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			2	21
northern red oak	Quercus rubra	WDH	Medium	0.4	0.3	0.1	Sm. dec.	No change	High	Rare	Poor	Fair			0	22
blackjack oak	Quercus marilandica	NSL	Medium	0.4	0.1	0.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	23
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0.4	0.1	0.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	24
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	25
Ohio buckeye	Aesculus glabra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	26
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	27
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	28
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	29
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	30
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	31
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	32
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	33
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	34
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	35
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	36
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	37
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	38
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	39
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	40
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	41