

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	15,379	5,937.7	205

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	Scenario	Scenario	Scenario	SHIFT	SHIFT
				High		RCP45	RCP85	RCP45	RCP85	RCP45	RCP85
Ash	3			6	11	Increase	1	2	Very Good	1	1
Hickory	2			15	19	No Change	9	9	Good	2	2
Maple	1	Abundant	2	Low	6	Decrease	18	17	Fair	5	6
Oak	8	Common	7	FIA	3	New	0	0	Poor	11	11
Pine	1	Rare	22			Unknown	9	9	Very Poor	9	8
Other	16	Absent	6						FIA Only	3	3
	31		37	37	36		37	37	Unknown	6	6
										4	5

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	56.0	57.1	57.9	58.3	
	CCSM85	56.0	57.3	58.7	60.3	
	GFDL45	56.0	58.6	59.0	60.0	
	GFDL85	56.0	57.9	60.1	62.5	
	HAD45	56.0	57.4	59.1	59.7	
HAD85	56.0	57.8	59.9	62.1		
Growing Season (May—Sep)	CCSM45	64.5	65.4	66.0	66.5	
	CCSM85	64.5	65.7	67.0	68.8	
	GFDL45	64.5	67.6	67.9	69.5	
	GFDL85	64.5	66.9	69.3	72.3	
	HAD45	64.5	65.9	67.2	67.7	
HAD85	64.5	66.2	68.5	70.4		
Coldest Month (Average)	CCSM45	43.0	44.6	45.0	45.2	
	CCSM85	43.0	44.4	45.1	46.0	
	GFDL45	43.0	45.5	45.4	45.5	
	GFDL85	43.0	43.7	44.5	44.8	
	HAD45	43.0	43.4	44.5	44.8	
HAD85	43.0	45.2	46.1	47.2		
Warmest Month (Average)	CCSM45	67.3	68.0	68.5	68.6	
	CCSM85	67.3	68.5	69.0	69.9	
	GFDL45	67.3	70.3	70.6	71.5	
	GFDL85	67.3	70.4	71.5	73.4	
	HAD45	67.3	68.9	69.4	69.8	
HAD85	67.3	69.2	70.4	71.1		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	23.2	24.6	26.3	23.4	
	CCSM85	23.2	24.2	25.6	24.9	
	GFDL45	23.2	22.3	26.3	20.7	
	GFDL85	23.2	22.1	23.0	21.8	
	HAD45	23.2	24.1	23.1	24.1	
HAD85	23.2	23.7	21.6	23.1		
Growing Season (May—Sep)	CCSM45	11.0	12.4	12.5	11.3	
	CCSM85	11.0	11.9	11.8	11.0	
	GFDL45	11.0	10.6	13.6	10.1	
	GFDL85	11.0	10.9	11.3	10.7	
	HAD45	11.0	10.8	10.7	11.7	
HAD85	11.0	11.1	10.0	10.7		

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>.

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
ashe juniper	Juniperus ashei	NDH	High	35.3	1533.0	38.8	No change	No change	Medium	Abundant	Good	Good			0	1
live oak	Quercus virginiana	NDH	High	61.4	1264.7	25.3	No change	No change	Medium	Abundant	Good	Good			1	2
post oak	Quercus stellata	WDH	High	42.7	479.0	18.9	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	3
cedar elm	Ulmus crassifolia	NDH	Medium	45.3	315.0	13.0	No change	Sm. inc.	Low	Common	Poor	Fair			1	4
sugarberry	Celtis laevigata	NDH	Medium	31.9	160.0	9.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	5
pecan	Carya illinoensis	NSH	Low	6	103.7	21.8	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	6
blackjack oak	Quercus marilandica	NSL	Medium	24.4	103.7	8.3	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	7
black hickory	Carya texana	NDL	High	7.2	84.3	11.2	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	8
green ash	Fraxinus pennsylvanica	WSH	Low	4.6	60.3	27.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	9
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	36	52.2	4.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
black walnut	Juglans nigra	WDH	Low	3.9	45.4	2.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	11
hackberry	Celtis occidentalis	WDH	Medium	27.9	42.0	5.8	Sm. dec.	No change	High	Rare	Poor	Fair			1	12
black cherry	Prunus serotina	WDL	Medium	5	22.3	5.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	13
eastern redcedar	Juniperus virginiana	WDH	Medium	9.2	21.0	3.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	14
white ash	Fraxinus americana	WDL	Medium	3.2	13.7	6.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	15
winged elm	Ulmus alata	WDL	Medium	1.1	10.4	7.8	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	16
water oak	Quercus nigra	WDH	High	3.1	9.9	19.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	17
sycamore	Platanus occidentalis	NSL	Low	2.8	6.8	1.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	18
American elm	Ulmus americana	WDH	Medium	2.7	5.4	2.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	19
Osage-orange	Maclura pomifera	NDH	Medium	4.3	5.1	4.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	20
Texas ash	Fraxinus texensis	NDH	FIA	1.3	4.6	3.6	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	21
Shumard oak	Quercus shumardii	NSL	Low	1.3	2.6	2.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	22
loblolly pine	Pinus taeda	WDH	High	0.1	2.6	0.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	23
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	0.6	2.6	3.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	24
black willow	Salix nigra	NSH	Low	2	1.2	5.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	25
boxelder	Acer negundo	WSH	Low	2	0.8	3.6	No change	Sm. dec.	High	Rare	Fair	Poor			0	26
honeylocust	Gleditsia triacanthos	NSH	Low	2	0.4	2.1	No change	No change	High	Rare	Fair	Fair			0	27
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0.6	0.4	0.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	28
southern red oak	Quercus falcata	WDL	Medium	1.9	0.3	1.4	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			0	29
durand oak	Quercus sinuata var. sinuata	NSL	FIA	0.7	0.2	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	30
red mulberry	Morus rubra	NSL	Low	2.6	0.2	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	31
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	32
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	33
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	34
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	35
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	36
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	37