

	sq. km	sq. mi	FIA Plots
Area of Region	8,400.0	3,243.3	296

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									
Hickory	2									
Maple	2	Abundant 4	High 12	13	Increase 20	25	Very Good 7	8	Likely 2	2
Oak	8	Common 10	Medium 28	42	No Change 11	5	Good 13	12	Infill 7	11
Pine	5	Rare 30	Low 25	11	Decrease 11	12	Fair 3	7	Migrate 0	4
Other	25	Absent 20	FIA 2		New 10	12	Poor 9	5		
	44	64	67	66	Unknown 15	13	Very Poor 10	9		
					67	67	FIA Only 2	2		
							Unknown 13	11		
							57	54		

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	68.2	69.8	71.6	71.5	
Average	CCSM85	68.2	70.0	72.3	74.7	
	GFDL45	68.2	70.7	72.7	73.4	
	GFDL85	68.2	70.7	73.7	77.1	
	HAD45	68.2	70.3	72.8	74.2	
	HAD85	68.2	70.8	74.0	77.8	
Growing Season	CCSM45	78.9	80.2	81.6	82.0	
	CCSM85	78.9	80.3	82.6	85.4	
May—Sep	GFDL45	78.9	81.3	83.2	84.2	
	GFDL85	78.9	81.5	84.3	88.2	
	HAD45	78.9	81.9	84.1	85.7	
	HAD85	78.9	82.2	86.4	90.0	
Coldest Month	CCSM45	51.6	53.9	54.8	54.4	
Average	CCSM85	51.6	53.5	54.6	56.0	
	GFDL45	51.6	54.3	54.7	55.3	
	GFDL85	51.6	53.9	55.0	55.9	
	HAD45	51.6	51.4	52.6	53.5	
	HAD85	51.6	52.2	53.1	54.9	
Warmest Month	CCSM45	81.8	83.3	84.2	84.4	
Average	CCSM85	81.8	83.4	84.8	86.4	
	GFDL45	81.8	84.1	84.9	85.6	
	GFDL85	81.8	84.2	85.6	87.7	
	HAD45	81.8	85.3	86.5	87.1	
	HAD85	81.8	85.5	88.1	89.6	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	50.2	54.1	55.6	56.7	
Total	CCSM85	50.2	53.3	56.0	57.4	
	GFDL45	50.2	57.3	58.7	60.9	
	GFDL85	50.2	54.6	61.3	58.9	
	HAD45	50.2	48.1	48.0	50.9	
	HAD85	50.2	48.3	46.2	46.7	
Growing Season	CCSM45	27.0	29.4	29.6	29.5	
May—Sep	CCSM85	27.0	28.2	30.6	31.1	
	GFDL45	27.0	32.5	33.0	33.8	
	GFDL85	27.0	31.3	35.9	34.9	
	HAD45	27.0	25.8	25.3	24.9	
	HAD85	27.0	25.1	21.9	21.6	

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	89.3	4748.5	53.2	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	1
pond cypress	Taxodium ascendens	NSH	Medium	63.1	785.0	12.4	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	2
swamp tupelo	Nyssa biflora	NDH	Medium	67.9	688.9	10.2	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	3
loblolly pine	Pinus taeda	WDH	High	38.1	539.2	14.2	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	4
laurel oak	Quercus laurifolia	NDH	Medium	35.7	465.8	13.0	No change	No change	Medium	Common	Fair	Fair			1	5
water oak	Quercus nigra	WDH	High	40.5	398.8	9.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
longleaf pine	Pinus palustris	NSH	Medium	26.2	363.4	13.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	7
loblolly-bay	Gordonia lasianthus	NSH	Medium	50	343.6	6.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
red maple	Acer rubrum	WDH	High	52.4	299.9	5.7	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	9
live oak	Quercus virginiana	NDH	High	27.4	192.3	7.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
sweetgum	Liquidambar styraciflua	WDH	High	28.6	191.1	6.7	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	11
sweetbay	Magnolia virginiana	NSL	Medium	51.2	143.5	2.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
redbay	Persea borbonia	NSL	Low	44	86.5	2.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
black cherry	Prunus serotina	WDL	Medium	14.3	55.3	3.9	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	14
common persimmon	Diospyros virginiana	NSL	Low	4.8	43.7	9.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	15
sand pine	Pinus clausa	NDH	High	2.4	38.1	16.0	No change	No change	Low	Rare	Very Poor	Very Poor			2	16
blackgum	Nyssa sylvatica	WDL	Medium	16.7	30.6	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	17
green ash	Fraxinus pennsylvanica	WSH	Low	4.8	30.4	6.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	18
pignut hickory	Carya glabra	WDL	Medium	4.8	23.7	5.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	19
pond pine	Pinus serotina	NSH	Medium	7.1	22.2	3.1	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	1	20
southern magnolia	Magnolia grandiflora	NSL	Low	7.1	18.1	2.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	21
ogeechee tupelo	Nyssa ogeche	NSLX	FIA	2.4	14.9	6.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	22
bald cypress	Taxodium distichum	NSH	Medium	7.1	14.8	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	23
post oak	Quercus stellata	WDH	High	4.8	11.4	2.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	24
water tupelo	Nyssa aquatica	NSH	Medium	1.2	9.2	7.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	25
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	4.8	8.4	1.8	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	26
American elm	Ulmus americana	WDH	Medium	3.6	5.3	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	27
American basswood	Tilia americana	WSL	Medium	1.2	5.2	4.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	28
American holly	Ilex opaca	NSL	Medium	6	5.1	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
southern red oak	Quercus falcata	WDL	Medium	1.2	5.1	4.2	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	30
water elm	Planera aquatica	NSL	Low	1.2	4.6	3.9	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	31
bluejack oak	Quercus incana	NSL	Low	1.2	4.4	3.7	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	32
swamp chestnut oak	Quercus michauxii	NSL	Low	2.4	3.7	1.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	3.6	2.8	0.8	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			0	34
flowering dogwood	Cornus florida	WDL	Medium	1.2	2.7	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
river birch	Betula nigra	NSL	Low	1.2	2.5	2.1	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	36
mockernut hickory	Carya alba	WDL	Medium	1.2	1.9	1.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	37
winged elm	Ulmus alata	WDL	Medium	2.4	1.7	0.7	No change	Lg. inc.	Medium	Rare	Poor	Good			2	38
florida maple	Acer barbatum	NSL	Low	1.2	1.6	1.4	Sm. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	39
sugarberry	Celtis laevigata	NDH	Medium	1.2	1.0	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
cucumbertree	Magnolia acuminata	NSL	Low	1.2	0.8	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	41
turkey oak	Quercus laevis	NSH	Medium	1.2	0.8	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	42
eastern redbud	Cercis canadensis	NSL	Low	1.2	0.6	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	43
Carolina ash	Fraxinus caroliniana	NSL	FIA	1.2	0.4	0.3	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	44
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	45
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	46
spruce pine	Pinus glabra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	47

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
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	48
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	49
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	50
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	51
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	52
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	53
black hickory	Carya texana	NDL	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	54
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	55
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	56
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	57
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	58
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	59
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	60
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +		3	61
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	62
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	63
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	64
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	65
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	66
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	67