

One x One Degree
Climate Change Atlas Tree Species
 Current and Potential Future Habitat, Capability, and Migration

Area of Region sq. km sq. mi FIA Plots
 9,083.3 3,507.1 311

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			High	12	21	Increase	28	31	Very Good	10	11	Likely	0	0
Hickory	6			Medium	36	52	No Change	12	14	Good	13	17	Infill	14	16
Maple	3	Abundant	5	Low	33	10	Decrease	26	21	Fair	10	12	Migrate	0	0
Oak	17	Common	16	FIA	4		New	3	3	Poor	17	12			
Pine	6	Rare	49				Unknown	16	16	Very Poor	10	11			
Other	36	Absent	11							FIA Only	4	4			
	70		81		85	83		85	85	Unknown	12	12			
											76	79			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	64.0	65.6	67.4	67.4	
	CCSM85	64.0	65.8	68.1	70.6	
	GFDL45	64.0	66.6	68.6	69.4	
	GFDL85	64.0	66.6	69.7	73.1	
	HAD45	64.0	65.9	68.3	69.7	
	HAD85	64.0	66.2	69.3	72.9	
Growing Season (May—Sep)	CCSM45	76.8	78.2	79.7	80.1	
	CCSM85	76.8	78.2	80.6	83.6	
	GFDL45	76.8	79.4	81.4	82.7	
	GFDL85	76.8	79.6	82.8	86.5	
	HAD45	76.8	79.2	81.3	82.8	
	HAD85	76.8	79.2	83.2	86.6	
Coldest Month Average	CCSM45	44.8	47.1	47.9	47.8	
	CCSM85	44.8	46.8	47.9	49.1	
	GFDL45	44.8	47.7	48.1	48.7	
	GFDL85	44.8	46.7	47.8	48.7	
	HAD45	44.8	45.1	46.7	47.2	
	HAD85	44.8	45.8	46.8	48.3	
Warmest Month Average	CCSM45	81.3	82.8	83.7	83.7	
	CCSM85	81.3	83.1	84.5	85.9	
	GFDL45	81.3	83.4	84.3	85.2	
	GFDL85	81.3	83.9	85.5	87.6	
	HAD45	81.3	84.0	85.1	85.6	
	HAD85	81.3	84.2	86.6	88.3	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	50.9	54.8	56.5	57.8	
	CCSM85	50.9	55.0	57.1	61.6	
	GFDL45	50.9	56.5	59.4	61.8	
	GFDL85	50.9	54.9	62.2	60.8	
	HAD45	50.9	52.4	53.2	53.3	
	HAD85	50.9	54.7	50.9	50.5	
Growing Season (May—Sep)	CCSM45	26.4	30.7	31.5	31.7	
	CCSM85	26.4	28.6	30.7	32.7	
	GFDL45	26.4	31.0	32.8	33.6	
	GFDL85	26.4	29.7	35.5	34.8	
	HAD45	26.4	26.4	26.8	25.8	
	HAD85	26.4	27.7	24.0	21.8	

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
loblolly pine	Pinus taeda	WDH	High	94.8	4900.9	42.4	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
sweetgum	Liquidambar styraciflua	WDH	High	90.4	1079.2	9.4	No change	No change	Medium	Abundant	Good	Good			1	2
red maple	Acer rubrum	WDH	High	89.5	672.3	5.8	No change	No change	High	Abundant	Very Good	Very Good			1	3
water oak	Quercus nigra	WDH	High	89.3	668.1	6.0	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
swamp tupelo	Nyssa biflora	NDH	Medium	60.1	505.8	6.2	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	5
longleaf pine	Pinus palustris	NSH	Medium	35.7	468.5	10.1	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	6
laurel oak	Quercus laurifolia	NDH	Medium	68.4	300.7	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	7
water tupelo	Nyssa aquatica	NSH	Medium	16.9	178.0	8.4	No change	No change	Low	Common	Poor	Poor			0	8
pond pine	Pinus serotina	NSH	Medium	15.7	154.3	6.0	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	9
willow oak	Quercus phellos	NSL	Low	34.3	150.6	3.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
bald cypress	Taxodium distichum	NSH	Medium	26.1	131.8	3.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
green ash	Fraxinus pennsylvanica	WSH	Low	34.1	123.0	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
redbay	Persea borbonia	NSL	Low	46.1	93.7	1.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	13
mockernut hickory	Carya alba	WDL	Medium	26.3	82.9	2.3	No change	No change	High	Common	Good	Good			1	14
blackgum	Nyssa sylvatica	WDL	Medium	41	80.6	1.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
swamp chestnut oak	Quercus michauxii	NSL	Low	22.5	72.9	2.8	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	16
black cherry	Prunus serotina	WDL	Medium	24.9	70.8	2.0	Sm. inc.	Lg. inc.	Low	Common	Fair	Good			1	17
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	22.7	62.4	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
live oak	Quercus virginiana	NDH	High	19.3	62.2	3.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	19
yellow-poplar	Liriodendron tulipifera	WDH	High	17.5	54.6	1.9	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	20
sweetbay	Magnolia virginiana	NSL	Medium	28.5	51.7	1.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	21
white oak	Quercus alba	WDH	Medium	18.6	49.8	2.3	No change	No change	High	Rare	Fair	Fair			1	22
black willow	Salix nigra	NSH	Low	12.5	46.5	2.8	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair			1	23
American elm	Ulmus americana	WDH	Medium	27	45.4	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	24
river birch	Betula nigra	NSL	Low	11.9	45.2	3.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	25
American holly	Ilex opaca	NSL	Medium	32	43.2	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	26
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	10.7	42.4	1.8	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	27
slash pine	Pinus elliotii	NDH	High	6.8	42.2	4.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	28
pond cypress	Taxodium ascendens	NSH	Medium	15.6	41.9	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	29
post oak	Quercus stellata	WDH	High	26.7	41.4	1.3	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	30
scarlet oak	Quercus coccinea	WDL	Medium	5.9	29.9	4.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
southern red oak	Quercus falcata	WDL	Medium	16	28.6	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	32
water elm	Planera aquatica	NSL	Low	6.5	27.9	4.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
slippery elm	Ulmus rubra	WSL	Low	13.5	23.6	1.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	34
loblolly-bay	Gordonia lasianthus	NSH	Medium	6.4	20.5	3.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	35
overcup oak	Quercus lyrata	NSL	Medium	10.2	19.9	1.8	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	1	36
flowering dogwood	Cornus florida	WDL	Medium	11.1	17.1	1.3	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
turkey oak	Quercus laevis	NSH	Medium	4.2	15.3	3.5	No change	No change	High	Rare	Fair	Fair	Infill +		1	38
eastern redcedar	Juniperus virginiana	WDH	Medium	3.8	15.3	3.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	39
Carolina ash	Fraxinus caroliniana	NSL	FIA	3.3	13.5	4.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	40
eastern cottonwood	Populus deltoides	NSH	Low	4.4	10.9	2.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	41
common persimmon	Diospyros virginiana	NSL	Low	13.2	10.8	0.8	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	42
water hickory	Carya aquatica	NSL	Medium	8.8	10.1	0.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	43
bitternut hickory	Carya cordiformis	WSL	Low	2.2	10.1	4.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	44
sugarberry	Celtis laevigata	NDH	Medium	3.3	10.1	3.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	45
sycamore	Platanus occidentalis	NSL	Low	3.3	9.9	3.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	46
sand hickory	Carya pallida	NSL	FIA	0.5	9.5	0.5	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
winged elm	Ulmus alata	WDL	Medium	6.6	8.4	1.3	No change	Lg. inc.	Medium	Rare	Poor	Good		Infill ++	1	48
shortleaf pine	Pinus echinata	WDH	High	2.2	7.2	3.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	49
southern magnolia	Magnolia grandiflora	NSL	Low	0.6	7.0	0.4	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	50
pignut hickory	Carya glabra	WDL	Medium	4.5	6.0	0.9	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	51
waterlocust	Gleditsia aquatica	NSLX	FIA	1.1	5.9	5.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	52
black oak	Quercus velutina	WDH	High	5.4	5.4	1.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	53
American beech	Fagus grandifolia	WDH	High	3.3	4.1	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +		2	54
pecan	Carya illinoensis	NSH	Low	3.3	3.5	1.0	Lg. dec.	No change	Low	Rare	Very Poor	Very Poor			2	55
black walnut	Juglans nigra	WDH	Low	1.2	2.9	0.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	56
sassafras	Sassafras albidum	WSL	Low	4.3	2.5	0.6	Very Lg. dec.	Sm. inc.	Medium	Rare	Lost	Fair		Infill +	1	57
blackjack oak	Quercus marilandica	NSL	Medium	3.3	2.3	0.7	Very Lg. dec.	No change	High	Rare	Lost	Fair		Infill +	2	58
red mulberry	Morus rubra	NSL	Low	3.3	2.3	0.7	Very Lg. dec.	Lg. dec.	Medium	Rare	Lost	Very Poor			0	59
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	1.7	2.0	0.4	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	60
bluejack oak	Quercus incana	NSL	Low	3.3	1.7	0.5	Very Lg. dec.	Sm. dec.	Medium	Rare	Lost	Very Poor			2	61
florida maple	Acer barbatum	NSL	Low	0.9	1.5	1.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	62
spruce pine	Pinus glabra	NSL	Low	0.2	1.4	0.2	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	63
northern red oak	Quercus rubra	WDH	Medium	1	0.9	0.7	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	64
honeylocust	Gleditsia triacanthos	NSH	Low	1.1	0.6	0.5	Sm. dec.	Lg. inc.	High	Rare	Poor	Good			2	65
Shumard oak	Quercus shumardii	NSL	Low	0.4	0.5	0.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	66
wild plum	Prunus americana	NSLX	FIA	1.1	0.4	0.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	67
boxelder	Acer negundo	WSH	Low	0.4	0.2	0.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	68
cabbage palmetto	Sabal palmetto	NDH	Medium	0.4	0.2	0.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	69
eastern redbud	Cercis canadensis	NSL	Low	0.4	0.1	0.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	70
sand pine	Pinus clausa	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	71
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	72
silver maple	Acer saccharinum	NSH	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	73
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	75
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	76
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	77
white ash	Fraxinus americana	WDL	Medium	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	78
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	79
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	80
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	81
nuttall oak	Quercus texana	NSH	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	82
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	83
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	84
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	85