

	sq. km	sq. mi	FIA Plots
Area of Region	37,442	14,457	170

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	3		High	20	Increase	11	12	Very Good	2	1	Likely	1	1
Hickory	4		Medium	31	No Change	15	13	Good	8	12	Infill	23	24
Maple	4	Abundant	Low	9	Decrease	16	17	Fair	9	6	Migrate	3	7
Oak	10	Common	FIA	8	New	9	9	Poor	10	11			
Pine	1	Rare			Unknown	12	12	Very Poor	13	11			
Other	28	Absent						FIA Only	5	5			
	50	61				63	63	Unknown	4	4			
									51	50			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	43.1	44.4	46.0	46.4	
	CCSM85	43.1	44.9	46.7	48.8	
	GFDL45	43.1	46.6	46.5	47.4	
	GFDL85	43.1	45.1	47.3	50.2	
	HAD45	43.1	44.9	47.2	48.3	
HAD85	43.1	45.3	48.4	51.3		
Growing Season May—Sep	CCSM45	56.1	57.6	59.1	59.6	
	CCSM85	56.1	58.2	59.9	62.4	
	GFDL45	56.1	60.5	60.2	61.5	
	GFDL85	56.1	58.6	61.0	64.7	
	HAD45	56.1	57.7	59.5	60.9	
HAD85	56.1	58.2	61.4	64.1		
Coldest Month Average	CCSM45	22.3	23.8	25.2	25.5	
	CCSM85	22.3	24.1	25.2	26.5	
	GFDL45	22.3	24.7	25.3	25.6	
	GFDL85	22.3	24.4	25.5	26.7	
	HAD45	22.3	23.4	25.9	25.9	
HAD85	22.3	25.4	27.8	29.6		
Warmest Month Average	CCSM45	60.3	61.9	62.9	63.4	
	CCSM85	60.3	63.0	64.1	65.6	
	GFDL45	60.3	62.6	63.5	64.5	
	GFDL85	60.3	63.0	64.1	66.7	
	HAD45	60.3	61.9	63.2	63.8	
HAD85	60.3	63.0	64.9	66.6		

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	22.9	22.6	22.9	22.2	
	CCSM85	22.9	22.4	23.0	23.4	
	GFDL45	22.9	24.9	26.8	26.2	
	GFDL85	22.9	25.3	27.5	27.0	
	HAD45	22.9	25.1	25.0	25.0	
HAD85	22.9	23.6	23.7	25.5		
Growing Season May—Sep	CCSM45	14.1	13.7	13.7	13.1	
	CCSM85	14.1	13.2	13.2	13.1	
	GFDL45	14.1	15.2	15.9	15.2	
	GFDL85	14.1	15.6	16.1	15.2	
	HAD45	14.1	14.7	14.2	14.3	
HAD85	14.1	13.7	12.9	12.8		

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>.

HUC 071000 Des Moines

HUC 6 Watershed Climate Change Atlas Tree Species

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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
American elm	Ulmus americana	WDH	Medium	47.3	148.5	9.1	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	1
white oak	Quercus alba	WDH	Medium	16.1	98.8	12.8	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	2
Osage-orange	Maclura pomifera	NDH	Medium	12.3	95.9	16.1	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	3
shagbark hickory	Carya ovata	WSL	Medium	24.8	92.0	6.7	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	4
hackberry	Celtis occidentalis	WDH	Medium	35	76.7	6.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	5
bur oak	Quercus macrocarpa	NDH	Medium	25.4	73.0	10.8	Sm. inc.	No change	High	Common	Very Good	Good	Infill ++	Infill ++	2	6
black walnut	Juglans nigra	WDH	Low	31.9	69.9	6.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	7
silver maple	Acer saccharinum	NSH	Low	15	63.3	16.2	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	8
boxelder	Acer negundo	WSH	Low	25	56.3	9.2	Sm. dec.	No change	High	Common	Fair	Good	Infill +	Infill ++	2	9
eastern cottonwood	Populus deltoides	NSH	Low	16.4	50.8	19.1	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	10
green ash	Fraxinus pennsylvanica	WSH	Low	14.1	46.2	10.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	11
red mulberry	Morus rubra	NSL	Low	24.5	45.6	7.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	12
black oak	Quercus velutina	WDH	High	18	45.5	5.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	13
shingle oak	Quercus imbricaria	NDH	Medium	10.4	41.0	6.4	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	14
slippery elm	Ulmus rubra	WSL	Low	30	41.0	4.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	15
honeylocust	Gleditsia triacanthos	NSH	Low	16.6	39.1	6.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	16
bitternut hickory	Carya cordiformis	WSL	Low	19.2	35.9	4.3	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	17
eastern redcedar	Juniperus virginiana	WDH	Medium	15.7	35.1	6.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	18
northern red oak	Quercus rubra	WDH	Medium	21.4	34.6	6.0	No change	Sm. dec.	High	Rare	Fair	Poor	Infill +	Infill +	2	19
white ash	Fraxinus americana	WDL	Medium	16.2	31.4	4.8	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	20
black cherry	Prunus serotina	WDL	Medium	26.7	30.4	3.3	No change	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	21
black locust	Robinia pseudoacacia	NDH	Low	8.8	28.6	6.5	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	22
American basswood	Tilia americana	WSL	Medium	15.5	28.5	6.6	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	23
Ohio buckeye	Aesculus glabra	NSL	Low	5.8	14.5	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	24
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	17.9	13.5	4.0	Lg. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	25
northern pin oak	Quercus ellipsoidalis	NSH	Medium	3.2	7.2	2.7	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	26
black willow	Salix nigra	NSH	Low	5.9	6.3	4.0	No change	No change	Low	Rare	Very Poor	Very Poor			2	27
swamp white oak	Quercus bicolor	NSL	Low	2.3	6.3	3.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	28
northern catalpa	Catalpa speciosa	NSHX	FIA	0.1	5.9	1.9	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	29
river birch	Betula nigra	NSL	Low	2.6	4.4	3.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	30
Siberian elm	Ulmus pumila	NDH	FIA	6.2	3.8	8.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	31
black maple	Acer nigrum	NSH	Low	4.8	3.7	3.1	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	32
white mulberry	Morus alba	NSL	FIA	0.6	2.7	2.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	33
wild plum	Prunus americana	NSLX	FIA	5.3	2.3	4.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	34
chinkapin oak	Quercus muehlenbergii	NSL	Medium	3.3	2.0	2.6	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	35
sycamore	Platanus occidentalis	NSL	Low	2.2	1.8	4.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	36
pin oak	Quercus palustris	NSH	Low	0	1.2	0.8	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	37
black ash	Fraxinus nigra	WSH	Medium	2	1.0	2.1	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	38
serviceberry	Amelanchier spp.	NSL	Low	3.4	1.0	1.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
peachleaf willow	Salix amygdaloides	NSLX	FIA	1	0.9	11.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	40
eastern redbud	Cercis canadensis	NSL	Low	1.2	0.8	0.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	41
mockernut hickory	Carya alba	WDL	Medium	2.5	0.7	1.1	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	42
post oak	Quercus stellata	WDH	High	0.3	0.3	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	43
ailanthus	Ailanthus altissima	NSL	FIA	1.1	0.2	2.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	44
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0.8	0.1	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
red maple	Acer rubrum	WDH	High	1	0.1	1.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	46
chokecherry	Prunus virginiana	NSLX	FIA	0.8	0.1	1.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			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
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	0.9	0.1	1.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only				0 48
red pine	Pinus resinosa	NSH	Medium	1	0.1	0.9	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor				0 49
pignut hickory	Carya glabra	WDL	Medium	0.9	0.0	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor				0 50
jack pine	Pinus banksiana	NSH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown				0 51
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +		3 52
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 53
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +		3 54
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 55
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +		3 56
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++		3 57
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown				0 58
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +		3 59
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown				0 60
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++		3 61
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++		3 62
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat				0 63