

	sq. km	sq. mi	FIA Plots
Area of Region	79,543	30,712	71

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	11	13	Increase	4	4	Very Good	0	0
Hickory	0			Medium	16	26	No Change	6	5	Good	5	5
Maple	1	Abundant	0	Low	17	7	Decrease	6	7	Fair	0	0
Oak	1	Common	1	FIA	5		New	22	22	Poor	6	5
Pine	1	Rare	20				Unknown	11	11	Very Poor	5	4
Other	17	Absent	27							FIA Only	3	3
	21		48		49	46		49	49	Unknown	6	6
											25	23

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	40.6	42.3	44.9	45.6	
Average	CCSM85	40.6	43.0	46.4	50.0	
	GFDL45	40.6	46.9	45.3	46.9	
	GFDL85	40.6	43.4	46.8	51.7	
	HAD45	40.6	44.1	47.9	49.9	
	HAD85	40.6	44.5	49.4	55.0	
Growing Season	CCSM45	62.7	64.8	67.2	67.8	
	CCSM85	62.7	65.5	68.6	72.7	
May—Sep	GFDL45	62.7	70.4	68.5	70.5	
	GFDL85	62.7	66.0	69.7	75.5	
	HAD45	62.7	65.9	68.7	71.0	
	HAD85	62.7	65.7	69.9	75.4	
Coldest Month	CCSM45	5.7	7.2	9.5	9.6	
	CCSM85	5.7	6.7	9.1	11.6	
Average	GFDL45	5.7	9.0	10.1	10.7	
	GFDL85	5.7	9.5	11.1	14.0	
	HAD45	5.7	8.7	12.6	12.3	
	HAD85	5.7	11.5	16.2	19.1	
Warmest Month	CCSM45	69.7	72.5	73.9	74.5	
	CCSM85	69.7	73.4	75.6	78.0	
Average	GFDL45	69.7	73.4	75.0	76.3	
	GFDL85	69.7	73.6	75.7	79.2	
	HAD45	69.7	73.5	74.9	76.8	
	HAD85	69.7	73.2	75.8	79.4	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	19.9	19.5	20.0	19.2	
Total	CCSM85	19.9	19.7	19.7	19.7	
	GFDL45	19.9	22.3	24.5	23.2	
	GFDL85	19.9	23.1	25.1	24.6	
	HAD45	19.9	20.7	19.7	20.4	
	HAD85	19.9	20.6	20.2	22.1	
Growing Season	CCSM45	13.8	13.1	13.3	12.7	
	CCSM85	13.8	13.0	13.0	12.3	
May—Sep	GFDL45	13.8	15.7	17.1	15.7	
	GFDL85	13.8	15.7	17.0	16.0	
	HAD45	13.8	13.6	12.6	12.3	
	HAD85	13.8	13.3	12.2	11.8	

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
bur oak	Quercus macrocarpa	NDH	Medium	10.8	52.4	27.6	No change	No change	High	Common	Good	Good			2	1
quaking aspen	Populus tremuloides	WDH	High	3	46.3	34.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	2
green ash	Fraxinus pennsylvanica	WSH	Low	14.2	39.5	19.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	3
boxelder	Acer negundo	WSH	Low	12.7	33.2	20.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	4
American elm	Ulmus americana	WDH	Medium	8.8	16.1	16.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	5
eastern cottonwood	Populus deltoides	NSH	Low	2.7	12.9	29.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	6
balsam poplar	Populus balsamifera	NSH	Medium	1.1	7.7	7.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	7
American basswood	Tilia americana	WSL	Medium	2.3	3.4	10.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	8
Siberian elm	Ulmus pumila	NDH	FIA	2.5	3.1	19.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	9
peachleaf willow	Salix amygdaloides	NSLX	FIA	0.3	2.8	14.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	10
chokecherry	Prunus virginiana	NSLX	FIA	4.3	1.6	2.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	11
Scots pine	Pinus sylvestris	NSH	FIA	0.5	1.1	34.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	12
slippery elm	Ulmus rubra	WSL	Low	1	0.6	9.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	13
white spruce	Picea glauca	NSL	Medium	0.5	0.6	18.0	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	14
eastern redcedar	Juniperus virginiana	WDH	Medium	1	0.4	6.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	15
wild plum	Prunus americana	NSLX	FIA	0.5	0.4	13.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	16
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	1.2	0.4	1.8	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	17
serviceberry	Amelanchier spp.	NSL	Low	1.2	0.2	0.5	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	18
pin cherry	Prunus pensylvanica	NSL	Low	0.7	0.2	0.4	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	19
hackberry	Celtis occidentalis	WDH	Medium	0.1	0.1	0.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	20
paper birch	Betula papyrifera	WDH	High	0.5	0.0	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	21
balsam fir	Abies balsamea	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	22
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	NA	Absent	New Habitat	New Habitat			0	23
red pine	Pinus resinosa	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +		3	24
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	25
red maple	Acer rubrum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	26
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	27
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	28
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	29
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	30
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	31
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	32
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	33
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	34
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	35
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	36
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	37
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	38
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	39
black cherry	Prunus serotina	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	40
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	41
northern pin oak	Quercus ellipsoidalis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +		3	42
northern red oak	Quercus rubra	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	43
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	44
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	45
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	46
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	47

Climate Change Atlas Tree Species

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 mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	48
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	49