

Area of Region    sq. km    sq. mi    FIA Plots  
39,095    15,094    33

### 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	7	12	Increase	3	3	Very Good	0	0
Hickory	0			Medium	11	19	No Change	5	5	Good	1	2
Maple	2	Abundant	0	Low	15	4	Decrease	5	5	Fair	4	4
Oak	1	Common	1	FIA	3		New	14	14	Poor	7	5
Pine	1	Rare	15				Unknown	9	9	Very Poor	1	2
Other	11	Absent	16							FIA Only	2	2
	<b>16</b>		<b>32</b>		<b>36</b>	<b>35</b>		<b>36</b>	<b>36</b>	Unknown	6	6
											<b>21</b>	<b>21</b>

### Potential Changes in Climate Variables

#### Temperature (°F)

Scenario	2009	2039	2069	2099
Annual	44.0	45.3	46.8	47.4
Average	44.0	45.7	47.4	49.6
GFDL45	44.0	48.3	47.2	48.3
GFDL85	44.0	45.9	48.2	51.3
HAD45	44.0	46.0	48.5	49.3
HAD85	44.0	46.4	49.9	52.4
Growing Season	57.3	58.7	60.5	61.0
May—Sep	57.3	59.2	61.0	63.8
GFDL45	57.3	63.0	61.4	63.0
GFDL85	57.3	59.8	62.3	66.2
HAD45	57.3	59.0	61.0	61.8
HAD85	57.3	59.4	62.7	65.1
Coldest Month	24.3	25.7	26.5	27.3
Average	24.3	25.9	26.6	27.9
GFDL45	24.3	26.5	26.7	27.0
GFDL85	24.3	26.0	27.0	28.0
HAD45	24.3	26.1	28.5	28.0
HAD85	24.3	28.3	30.9	32.2
Warmest Month	62.2	64.0	65.4	65.9
Average	62.2	65.1	66.1	68.2
GFDL45	62.2	64.8	65.8	66.8
GFDL85	62.2	65.5	66.5	69.1
HAD45	62.2	63.9	65.3	65.8
HAD85	62.2	64.9	66.7	68.3

#### Precipitation (in)

Scenario	2009	2039	2069	2099
Annual	18.3	19.5	18.6	18.3
Total	18.3	18.9	19.2	19.2
GFDL45	18.3	20.7	22.6	21.7
GFDL85	18.3	20.7	22.9	22.0
HAD45	18.3	20.7	19.9	20.7
HAD85	18.3	19.7	19.7	20.9
Growing Season	11.8	12.1	11.0	10.9
May—Sep	11.8	11.3	11.4	11.0
GFDL45	11.8	13.6	14.8	13.5
GFDL85	11.8	13.4	14.6	13.6
HAD45	11.8	12.8	12.3	12.4
HAD85	11.8	12.1	11.4	10.8

**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
eastern redcedar	Juniperus virginiana	WDH	Medium	28.6	61.2	41.3	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	2	1
green ash	Fraxinus pennsylvanica	WSH	Low	20.4	22.8	27.1	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	2
eastern cottonwood	Populus deltoides	NSH	Low	11.4	12.0	21.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	3
red mulberry	Morus rubra	NSL	Low	10.9	9.7	23.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	4
Siberian elm	Ulmus pumila	NDH	FIA	9.3	8.9	27.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	5
American elm	Ulmus americana	WDH	Medium	14.9	8.8	17.3	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	6
hackberry	Celtis occidentalis	WDH	Medium	11.6	8.6	14.0	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	7
peachleaf willow	Salix amygdaloides	NSLX	FIA	4.7	7.9	15.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	8
boxelder	Acer negundo	WSH	Low	9.3	7.7	24.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	9
black willow	Salix nigra	NSH	Low	3.7	6.3	48.4	Lg. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	10
bur oak	Quercus macrocarpa	NDH	Medium	3.7	3.3	25.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	11
jack pine	Pinus banksiana	NSH	Medium	2.2	3.2	6.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	12
honeylocust	Gleditsia triacanthos	NSH	Low	4.9	2.9	11.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	13
silver maple	Acer saccharinum	NSH	Low	1.8	0.8	12.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	14
northern catalpa	Catalpa speciosa	NSHX	FIA	1.8	0.3	4.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	15
slippery elm	Ulmus rubra	WSL	Low	1.8	0.1	1.1	No change	No change	Medium	Rare	Poor	Poor			0	16
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	17
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	18
eastern white pine	Pinus strobus	WDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	19
red maple	Acer rubrum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	20
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	21
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	22
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	23
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	24
black walnut	Juglans nigra	WDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	25
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	26
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	27
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	28
balsam poplar	Populus balsamifera	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	29
black cherry	Prunus serotina	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	30
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	31
northern red oak	Quercus rubra	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	32
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	33
black oak	Quercus velutina	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	34
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	35
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	36