

### Current and Potential Future Habitat, Capability, and Migration

sq. km    sq. mi    FIA Plots  
Area of Region    30,906    11,933    1,478

#### 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	21	24	Increase	20	20	Very Good	10	9	Likely	0	0
Hickory	2			Medium	28	46	No Change	14	12	Good	14	14	Infill	13	13
Maple	5	Abundant	5	Low	30	15	Decrease	15	17	Fair	8	10	Migrate	9	13
Oak	7	Common	29	FIA	10		New	23	27	Poor	9	8			
Pine	4	Rare	25				Unknown	17	13	Very Poor	7	6			
Other	38	Absent	28							FIA Only	6	6			
	<b>59</b>		<b>87</b>		<b>89</b>	<b>85</b>		<b>89</b>	<b>89</b>	Unknown	7	3			
											<b>61</b>	<b>56</b>			

#### Potential Changes in Climate Variables

##### Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	41.4	42.9	45.3	45.4	
Average	CCSM85	41.4	43.5	45.9	48.7	
	GFDL45	41.4	43.7	46.0	47.1	
	GFDL85	41.4	44.1	46.9	50.9	
	HAD45	41.4	43.9	46.7	48.2	
	HAD85	41.4	44.2	47.7	52.2	
Growing Season	CCSM45	57.0	58.6	60.7	60.9	
	CCSM85	57.0	59.3	61.4	64.7	
May—Sep	GFDL45	57.0	59.8	62.6	64.3	
	GFDL85	57.0	60.4	63.7	68.3	
	HAD45	57.0	59.6	61.8	63.6	
	HAD85	57.0	59.6	63.3	67.7	
Coldest Month	CCSM45	16.5	17.9	20.1	20.2	
	CCSM85	16.5	18.3	20.1	22.0	
Average	GFDL45	16.5	19.2	20.6	20.9	
	GFDL85	16.5	19.7	21.0	23.2	
	HAD45	16.5	17.7	21.1	21.0	
	HAD85	16.5	20.3	22.9	25.8	
Warmest Month	CCSM45	62.0	63.9	65.1	65.5	
	CCSM85	62.0	64.8	66.2	68.1	
Average	GFDL45	62.0	64.9	66.2	67.5	
	GFDL85	62.0	65.6	67.4	70.1	
	HAD45	62.0	64.7	65.9	67.1	
	HAD85	62.0	65.4	67.4	70.5	

##### Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	26.3	26.6	26.3	26.6	
Total	CCSM85	26.3	26.2	26.7	26.8	
	GFDL45	26.3	28.4	30.5	29.2	
	GFDL85	26.3	29.0	31.2	30.6	
	HAD45	26.3	27.1	28.0	28.1	
	HAD85	26.3	27.4	27.6	29.2	
Growing Season	CCSM45	15.9	15.8	15.2	15.9	
	CCSM85	15.9	15.6	15.7	14.8	
May—Sep	GFDL45	15.9	16.7	17.8	16.6	
	GFDL85	15.9	17.3	17.5	16.3	
	HAD45	15.9	15.7	15.1	15.3	
	HAD85	15.9	15.6	14.0	14.4	

**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-DGP30 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>.

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
red maple	Acer rubrum	WDH	High	78.8	1143.6	11.8	No change	Sm. dec.	High	Abundant	Very Good	Good			1	1
quaking aspen	Populus tremuloides	WDH	High	70.4	1097.7	12.7	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	2
sugar maple	Acer saccharum	WDH	High	53.8	706.8	10.2	No change	No change	High	Abundant	Very Good	Very Good			1	3
eastern white pine	Pinus strobus	WDH	High	54.1	618.7	8.9	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	4
red pine	Pinus resinosa	NSH	Medium	39.8	609.8	11.4	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	5
American elm	Ulmus americana	WDH	Medium	61.9	487.5	6.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
northern red oak	Quercus rubra	WDH	Medium	59.5	467.1	6.1	Sm. inc.	No change	High	Common	Very Good	Good			1	7
black oak	Quercus velutina	WDH	High	30.7	418.9	10.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
white oak	Quercus alba	WDH	Medium	41.7	392.2	6.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
black cherry	Prunus serotina	WDL	Medium	70.4	345.4	3.5	Lg. inc.	Sm. inc.	Low	Common	Good	Fair			1	10
balsam fir	Abies balsamea	NDH	High	36.3	344.7	7.2	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	11
paper birch	Betula papyrifera	WDH	High	54.2	287.8	4.0	No change	No change	Medium	Common	Fair	Fair			1	12
jack pine	Pinus banksiana	NSH	Medium	25.9	284.0	10.2	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	13
northern pin oak	Quercus ellipsoidalis	NSH	Medium	31.8	280.3	6.8	No change	No change	High	Common	Good	Good			1	14
boxelder	Acer negundo	WSH	Low	22.2	267.9	7.5	No change	No change	High	Common	Good	Good			1	15
American basswood	Tilia americana	WSL	Medium	47.7	249.2	4.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
tamarack (native)	Larix laricina	NSH	High	25	240.8	7.0	No change	No change	Low	Common	Poor	Poor			0	17
bigtooth aspen	Populus grandidentata	NSL	Medium	41	236.9	4.6	No change	No change	Medium	Common	Fair	Fair			1	18
black spruce	Picea mariana	NSH	High	23.1	231.9	7.4	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	19
black ash	Fraxinus nigra	WSH	Medium	35	228.0	4.8	No change	Sm. dec.	Low	Common	Poor	Poor			0	20
white ash	Fraxinus americana	WDL	Medium	44.9	215.2	4.0	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	21
shagbark hickory	Carya ovata	WSL	Medium	25.2	193.6	6.2	Sm. inc.	No change	Medium	Common	Good	Fair	Infill ++	Infill +	1	22
bitternut hickory	Carya cordiformis	WSL	Low	28.3	168.6	5.1	No change	No change	High	Common	Good	Good			1	23
bur oak	Quercus macrocarpa	NDH	Medium	26.6	157.7	3.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	24
green ash	Fraxinus pennsylvanica	WSH	Low	26	145.2	5.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
silver maple	Acer saccharinum	NSH	Low	11.5	134.6	10.9	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	26
black walnut	Juglans nigra	WDH	Low	11.2	120.9	6.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	27
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	39.1	106.8	2.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	28
eastern redcedar	Juniperus virginiana	WSL	Medium	10.5	102.0	8.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	29
northern white-cedar	Thuja occidentalis	WSH	High	10	98.2	5.0	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	30
eastern hemlock	Tsuga canadensis	NSH	High	21.3	94.3	3.0	No change	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	31
yellow birch	Betula alleghaniensis	NDL	High	28.2	94.1	2.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	32
white spruce	Picea glauca	NSL	Medium	23.4	90.1	2.8	No change	Sm. inc.	Medium	Common	Fair	Good			1	33
slippery elm	Ulmus rubra	WSL	Low	23.5	89.7	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	34
black locust	Robinia pseudoacacia	NDH	Low	4.8	78.1	7.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	35
red mulberry	Morus rubra	NSL	Low	4.1	42.0	7.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	36
Scots pine	Pinus sylvestris	NSH	FIA	5.2	38.3	5.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	37
river birch	Betula nigra	NSL	Low	2.5	37.1	12.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	38
swamp white oak	Quercus bicolor	NSL	Low	5.1	28.4	4.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	39
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	20.2	24.6	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	40
black willow	Salix nigra	NSH	Low	2.6	23.2	7.5	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	41
hackberry	Celtis occidentalis	WDH	Medium	9.8	22.8	2.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	42
butternut	Juglans cinerea	NSLX	FIA	6	21.1	2.6	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	43
white mulberry	Morus alba	NSL	FIA	3.1	11.0	1.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	44
pin cherry	Prunus pensylvanica	NSL	Low	6.1	8.3	0.6	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	45
chokecherry	Prunus virginiana	NSLX	FIA	6	8.3	0.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	46
serviceberry	Amelanchier spp.	NSL	Low	11	6.9	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47

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eastern cottonwood	Populus deltoides	NSH	Low	2	6.7	2.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	48
peachleaf willow	Salix amygdaloides	NSLX	FIA	0.6	4.9	4.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	49
wild plum	Prunus americana	NSLX	FIA	0.6	2.9	4.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	50
Norway spruce	Picea abies	NSH	FIA	0.6	2.3	3.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	51
honeylocust	Gleditsia triacanthos	NSH	Low	0.3	1.9	5.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	52
rock elm	Ulmus thomasii	NSLX	FIA	0.9	1.8	1.7	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	53
balsam poplar	Populus balsamifera	NSH	Medium	0.8	0.9	0.4	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	54
chinkapin oak	Quercus muehlenbergii	NSLX	Medium	0.3	0.8	2.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	55
northern catalpa	Catalpa speciosa	NSHX	FIA	0.3	0.7	2.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	56
Siberian elm	Ulmus pumila	NDH	FIA	0.7	0.6	0.5	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	57
mountain maple	Acer spicatum	NSL	Low	0.9	0.3	0.2	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	58
American mountain-ash	Sorbus americana	NSL	Low	0.3	0.2	0.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	59
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	60
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	61
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	62
black maple	Acer nigrum	NSH	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	63
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	64
Ohio buckeye	Aesculus glabra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	65
sweet birch	Betula lenta	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	66
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			2	67
pignut hickory	Carya glabra	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	68
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	69
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	70
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	71
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	72
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	73
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	74
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	75
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	76
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	77
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	78
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	79
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	80
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	81
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	82
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	83
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	84
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	85
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	86
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	87
sassafras	Sassafras albidum	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	88
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	89