

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

sq. km sq. mi FIA Plots
 Area of Region 9,105.0 3,515.4 216

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	Scenario	Scenario	Scenario	SHIFT	SHIFT				
				High		RCP45	RCP85	RCP45	RCP85	RCP45	RCP85				
Ash	3			23	18	Increase	18	23	Very Good	5	5	Likely	1	1	
Hickory	3			22	39	No Change	6	4	Good	13	17	Infill	7	9	
Maple	6	Abundant	4	Low	24	16	Decrease	24	21	Fair	4	4	Migrate	2	9
Oak	8	Common	18	FIA	7		New	15	15	Poor	13	9			
Pine	3	Rare	33				Unknown	13	13	Very Poor	7	9			
Other	32	Absent	21							FIA Only	4	4			
	55		76		76	73		76	76	Unknown	6	6			
											52	54			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	48.3	50.1	52.2	52.5	
Average	CCSM85	48.3	50.6	53.1	56.1	
	GFDL45	48.3	51.1	54.0	55.2	
	GFDL85	48.3	51.4	55.2	59.6	
	HAD45	48.3	51.1	54.3	55.9	
	HAD85	48.3	51.1	55.3	60.4	
Growing Season	CCSM45	65.0	67.1	68.8	69.2	
	CCSM85	65.0	67.3	69.7	73.2	
May—Sep	GFDL45	65.0	67.9	71.2	72.5	
	GFDL85	65.0	68.3	72.5	77.1	
	HAD45	65.0	67.8	70.6	72.8	
	HAD85	65.0	67.3	72.0	77.5	
Coldest Month	CCSM45	22.7	24.2	25.9	26.6	
	CCSM85	22.7	25.4	26.4	28.6	
Average	GFDL45	22.7	26.1	27.7	28.8	
	GFDL85	22.7	26.5	28.4	30.7	
	HAD45	22.7	25.1	27.6	27.9	
	HAD85	22.7	26.1	28.2	31.2	
Warmest Month	CCSM45	71.4	73.9	74.8	74.8	
	CCSM85	71.4	74.1	75.6	77.3	
Average	GFDL45	71.4	74.1	75.7	76.9	
	GFDL85	71.4	74.8	77.3	79.9	
	HAD45	71.4	74.4	75.8	77.1	
	HAD85	71.4	73.7	76.2	79.9	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	48.1	47.1	45.4	51.7	
Total	CCSM85	48.1	47.4	49.8	53.7	
	GFDL45	48.1	51.8	54.3	53.0	
	GFDL85	48.1	50.2	53.1	55.8	
	HAD45	48.1	49.6	53.2	51.9	
	HAD85	48.1	51.6	52.1	53.3	
Growing Season	CCSM45	19.5	20.5	18.6	20.4	
	CCSM85	19.5	19.2	20.5	20.7	
May—Sep	GFDL45	19.5	19.1	18.5	18.9	
	GFDL85	19.5	19.6	18.3	18.4	
	HAD45	19.5	20.6	20.5	20.2	
	HAD85	19.5	19.5	19.4	20.3	

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>.



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
eastern white pine	Pinus strobus	WDH	High	83	2986.1	25.2	Lg. dec.	Lg. dec.	Low	Abundant	Poor	Poor			0	1
red maple	Acer rubrum	WDH	High	87.5	2763.8	22.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
northern red oak	Quercus rubra	WDH	Medium	74.6	1116.8	9.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	3
black oak	Quercus velutina	WDH	High	60.8	587.5	7.7	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
eastern hemlock	Tsuga canadensis	NSH	High	40.6	469.9	7.6	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	5
white oak	Quercus alba	WDH	Medium	53.9	375.1	4.6	Lg. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	6
white ash	Fraxinus americana	WDL	Medium	44.7	291.8	4.6	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	7
scarlet oak	Quercus coccinea	WDL	Medium	31.3	254.6	6.5	Lg. inc.	Sm. inc.	Medium	Common	Very Good	Good			1	8
sweet birch	Betula lenta	NDH	High	51.3	250.2	3.7	Sm. inc.	No change	Low	Common	Fair	Poor			1	9
yellow birch	Betula alleghaniensis	NDL	High	29.8	173.2	3.9	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
black cherry	Prunus serotina	WDL	Medium	34.1	164.3	3.0	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	11
American elm	Ulmus americana	WDH	Medium	25.9	160.6	5.2	Sm. dec.	No change	Medium	Common	Poor	Fair			1	12
pignut hickory	Carya glabra	WDL	Medium	20.2	140.5	4.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	13
American beech	Fagus grandifolia	WDH	High	27.9	128.7	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
sugar maple	Acer saccharum	WDH	High	21.4	119.4	2.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	15
black walnut	Juglans nigra	WDL	Low	1.1	109.8	100.0	Very Lg. dec.	Lg. dec.	Medium	Common	Lost	Poor			0	16
paper birch	Betula papyrifera	WDH	High	35.9	107.0	1.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	17
bigtooth aspen	Populus grandidentata	NSL	Medium	10.9	68.6	4.5	Sm. inc.	No change	Medium	Common	Good	Fair			1	18
swamp white oak	Quercus bicolor	NSL	Low	8.3	64.4	8.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	19
gray birch	Betula populifolia	NSL	Low	17.6	62.3	2.9	No change	Sm. inc.	Medium	Common	Fair	Good			1	20
quaking aspen	Populus tremuloides	WDH	High	16	58.5	2.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	21
shagbark hickory	Carya ovata	WSL	Medium	13.7	57.1	2.4	No change	Sm. inc.	Medium	Common	Fair	Good			1	22
Siberian elm	Ulmus pumila	NDH	FIA	0.5	36.6	14.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	23
American basswood	Tilia americana	WSL	Medium	9.8	32.9	3.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	24
Norway maple	Acer platanoides	NSL	FIA	6.9	30.5	4.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	25
blackgum	Nyssa sylvatica	WDL	Medium	7.2	26.8	1.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	26
pitch pine	Pinus rigida	NSH	High	9.5	26.5	2.6	No change	Sm. dec.	Medium	Rare	Poor	Very Poor			1	27
red spruce	Picea rubens	NDH	High	5.6	25.6	2.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	28
green ash	Fraxinus pennsylvanica	WSH	Low	6.2	20.1	2.6	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	29
black willow	Salix nigra	NSH	Low	2.6	19.6	3.1	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	30
silver maple	Acer saccharinum	NSH	Low	1.8	16.9	6.3	Sm. dec.	Sm. inc.	High	Rare	Poor	Good		Infill ++	2	31
chestnut oak	Quercus prinus	NDH	High	2.2	14.6	6.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	32
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	0.5	14.1	1.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	33
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	9.7	13.9	1.4	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	34
red pine	Pinus resinosa	NSH	Medium	3.6	13.3	1.3	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	35
mockernut hickory	Carya alba	WDL	Medium	2.8	10.5	3.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	36
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	6.9	10.5	0.7	Sm. dec.	Sm. inc.	High	Rare	Poor	Good			1	37
eastern redcedar	Juniperus virginiana	WDH	Medium	3.1	8.1	0.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	38
sassafras	Sassafras albidum	WSL	Low	3.7	7.0	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	39
American chestnut	Castanea dentata	NSLX	FIA	5.9	6.1	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	40
black locust	Robinia pseudoacacia	NDH	Low	0.4	4.0	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	41
striped maple	Acer pensylvanicum	NSL	Medium	0.7	3.9	0.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	42
balsam fir	Abies balsamea	NDH	High	2	2.6	1.0	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	43
pin cherry	Prunus pensylvanica	NSL	Low	1.9	2.5	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	44
tamarack (native)	Larix laricina	NSH	High	3.3	2.5	0.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	45
eastern cottonwood	Populus deltoides	NSH	Low	1.1	2.4	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
boxelder	Acer negundo	WSH	Low	0.7	2.3	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	47



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pin oak	Quercus palustris	NSH	Low	1.1	1.6	1.4	Very Lg. dec.	Sm. inc.	Low	Rare	Lost	Poor		Infill +	2	48
black ash	Fraxinus nigra	WSH	Medium	2.2	1.3	0.6	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	49
Norway spruce	Picea abies	NSH	FIA	0.9	0.9	0.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	50
northern catalpa	Catalpa speciosa	NSHX	FIA	1.1	0.7	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	51
butternut	Juglans cinerea	NSLX	FIA	3.5	0.7	1.9	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	52
serviceberry	Amelanchier spp.	NSL	Low	1.1	0.6	0.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	53
bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	1.1	0.6	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	54
flowering dogwood	Cornus florida	WDL	Medium	1.1	0.4	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	55
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	56
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	57
Virginia pine	Pinus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	58
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	59
Ohio buckeye	Aesculus glabra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	60
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	Unknown	High	Absent	New Habitat	Unknown			0	61
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	62
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			0	63
American holly	Ilex opaca	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	64
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	65
yellow-poplar	Liriodendron tulipifera	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	66
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	67
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	68
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	69
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	70
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	71
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	72
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	73
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	74
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	75
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	76