

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

Area of Region sq. km sq. mi FIA Plots
 9,273.2 3,580.4 55

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				
		Abundant	0	High	4	15	Increase	11	13	Very Good	2	2	Likely	1	1
Ash	3			Medium	19	23	No Change	9	5	Good	8	8	Infill	24	23
Hickory	2			Low	20	6	Decrease	12	14	Fair	5	7	Migrate	2	8
Maple	3	Common	10	FIA	3		New	9	9	Poor	11	8			
Oak	7	Rare	25				Unknown	5	5	Very Poor	5	5			
Pine	0	Absent	9							FIA Only	1	1			
Other	20									Unknown	2	2			
	35		44		46	44		46	46		34	33			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	49.6	51.6	53.9	54.5	
Average	CCSM85	49.6	52.3	55.0	58.0	
	GFDL45	49.6	55.7	54.8	56.0	
	GFDL85	49.6	52.6	55.9	60.2	
	HAD45	49.6	52.2	55.6	57.3	
	HAD85	49.6	52.9	57.5	61.8	
Growing Season	CCSM45	68.7	71.0	73.0	73.9	
	CCSM85	68.7	71.9	74.5	77.9	
May—Sep	GFDL45	68.7	76.4	74.9	76.9	
	GFDL85	68.7	72.6	76.1	81.6	
	HAD45	68.7	71.1	73.8	75.8	
	HAD85	68.7	71.8	76.8	80.9	
Coldest Month	CCSM45	19.0	21.1	23.1	23.7	
	CCSM85	19.0	21.6	23.2	25.1	
Average	GFDL45	19.0	22.5	23.3	23.8	
	GFDL85	19.0	22.1	23.7	25.3	
	HAD45	19.0	20.4	24.0	24.0	
	HAD85	19.0	23.5	26.9	29.5	
Warmest Month	CCSM45	75.0	77.3	78.8	79.4	
	CCSM85	75.0	79.0	80.7	82.6	
Average	GFDL45	75.0	78.5	80.0	81.6	
	GFDL85	75.0	79.2	80.7	84.7	
	HAD45	75.0	77.3	79.3	80.1	
	HAD85	75.0	79.1	82.1	84.5	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	35.2	34.3	35.3	33.7	
Total	CCSM85	35.2	34.1	35.0	36.0	
	GFDL45	35.2	37.9	40.4	40.0	
	GFDL85	35.2	38.4	42.0	41.2	
	HAD45	35.2	38.6	38.9	39.1	
	HAD85	35.2	36.2	36.2	38.4	
Growing Season	CCSM45	21.6	20.7	21.1	19.9	
	CCSM85	21.6	20.0	20.2	20.3	
May—Sep	GFDL45	21.6	22.9	23.7	23.2	
	GFDL85	21.6	23.5	24.5	23.0	
	HAD45	21.6	22.4	22.0	22.5	
	HAD85	21.6	21.0	19.7	19.4	

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-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
Osage-orange	Maclura pomifera	NDH	Medium	20.9	296.7	29.5	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	1
American elm	Ulmus americana	WDH	Medium	76.6	253.1	9.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	2
hackberry	Celtis occidentalis	WDH	Medium	72.6	156.2	7.6	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	3
boxelder	Acer negundo	WSH	Low	45.5	148.0	13.1	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	4
silver maple	Acer saccharinum	NSH	Low	27	113.8	15.4	No change	Sm. dec.	High	Common	Good	Fair	Infill ++	Infill +	1	5
red mulberry	Morus rubra	NSL	Low	48.4	107.7	11.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	6
slippery elm	Ulmus rubra	WSL	Low	55.1	87.9	6.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	7
black walnut	Juglans nigra	WDH	Low	42	75.4	6.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	8
honeylocust	Gleditsia triacanthos	NSH	Low	40.5	67.0	9.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	9
bur oak	Quercus macrocarpa	NDH	Medium	39.2	54.3	9.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	10
northern red oak	Quercus rubra	WDH	Medium	40.5	49.8	7.5	No change	Sm. dec.	High	Rare	Fair	Poor	Infill +	Infill +	1	11
eastern cottonwood	Populus deltoides	NSH	Low	31.8	45.8	16.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	12
shagbark hickory	Carya ovata	WSL	Medium	27.4	40.5	4.5	Sm. inc.	No change	Medium	Rare	Fair	Poor	Infill +	Infill +	1	13
bitternut hickory	Carya cordiformis	WSL	Low	26.6	40.3	2.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	14
eastern redcedar	Juniperus virginiana	WDH	Medium	18.3	39.8	4.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	15
shingle oak	Quercus imbricaria	NDH	Medium	3.9	33.6	5.0	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	16
black cherry	Prunus serotina	WDL	Medium	53	31.0	4.4	Sm. inc.	No change	Low	Rare	Poor	Very Poor	Infill +		1	17
American basswood	Tilia americana	WSL	Medium	22.6	29.2	5.8	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	18
black oak	Quercus velutina	WDH	High	19.8	25.8	3.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	19
green ash	Fraxinus pennsylvanica	WSH	Low	12.2	24.9	4.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	20
white oak	Quercus alba	WDH	Medium	25.1	23.7	7.3	Lg. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	21
black willow	Salix nigra	NSH	Low	14.1	20.0	11.5	Sm. dec.	Sm. inc.	Low	Rare	Very Poor	Poor			2	22
white ash	Fraxinus americana	WDL	Medium	29.7	17.1	2.0	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	23
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	14	15.4	3.4	Lg. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	24
black locust	Robinia pseudoacacia	NDH	Low	15.4	10.6	8.8	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	1	25
wild plum	Prunus americana	NSLX	FIA	11.3	7.0	8.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	26
Ohio buckeye	Aesculus glabra	NSL	Low	12.6	6.2	3.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	27
Siberian elm	Ulmus pumila	NDH	FIA	4.3	3.7	13.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	28
sycamore	Platanus occidentalis	NSL	Low	8.6	2.6	4.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	29
chinkapin oak	Quercus muehlenbergii	NSL	Medium	6	2.1	2.8	No change	No change	Medium	Rare	Poor	Poor			0	30
northern pin oak	Quercus ellipsoidalis	NSH	Medium	4.7	1.2	1.3	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	31
black ash	Fraxinus nigra	WSH	Medium	4.3	1.1	3.9	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	32
black maple	Acer nigrum	NSH	Low	8.6	1.0	1.9	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	33
ailanthus	Ailanthus altissima	NSL	FIA	4.3	0.7	2.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	34
serviceberry	Amelanchier spp.	NSL	Low	4.3	0.2	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	36
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	37
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	38
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	39
mockernut hickory	Carya alba	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	40
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	41
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	42
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	43
pin oak	Quercus palustris	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	44
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	45
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	46

