

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	9,549.4	3,687.0	46

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	2			High	10	20	Increase	12	16	Very Good	1	2
Hickory	6			Medium	22	32	No Change	9	8	Good	10	11
Maple	5	Abundant	0	Low	27	9	Decrease	24	21	Fair	6	7
Oak	10	Common	10	FIA	3		New	12	12	Poor	14	13
Pine	1	Rare	38				Unknown	5	5	Very Poor	14	10
Other	24	Absent	14							FIA Only	2	2
	48		62		62	61		62	62	Unknown	2	2
											49	47

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	53.4	55.4	57.3	57.6	
	CCSM85	53.4	55.9	58.2	61.1	
	GFDL45	53.4	59.4	58.7	59.6	
	GFDL85	53.4	56.3	59.6	63.6	
	HAD45	53.4	56.2	59.5	61.2	
	HAD85	53.4	56.5	61.2	65.5	
Growing Season (May—Sep)	CCSM45	71.0	73.2	74.7	75.6	
	CCSM85	71.0	73.9	76.0	79.5	
	GFDL45	71.0	78.4	77.2	78.7	
	GFDL85	71.0	74.5	78.4	83.3	
	HAD45	71.0	74.1	77.0	79.1	
	HAD85	71.0	74.5	80.2	84.3	
Coldest Month Average	CCSM45	25.1	26.9	28.6	28.8	
	CCSM85	25.1	28.2	29.4	30.8	
	GFDL45	25.1	29.6	30.2	30.8	
	GFDL85	25.1	28.4	29.8	30.7	
	HAD45	25.1	26.8	29.6	29.7	
	HAD85	25.1	28.4	31.1	33.1	
Warmest Month Average	CCSM45	76.7	78.9	80.0	80.8	
	CCSM85	76.7	80.1	81.7	83.4	
	GFDL45	76.7	79.9	81.5	82.5	
	GFDL85	76.7	80.5	82.4	85.5	
	HAD45	76.7	80.1	82.3	83.2	
	HAD85	76.7	81.8	85.3	87.7	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	38.7	37.1	40.4	39.2	
	CCSM85	38.7	39.0	40.2	40.7	
	GFDL45	38.7	43.6	46.2	47.4	
	GFDL85	38.7	42.7	48.8	49.9	
	HAD45	38.7	40.5	42.5	41.9	
	HAD85	38.7	41.7	40.2	43.4	
Growing Season (May—Sep)	CCSM45	18.5	17.5	18.7	17.2	
	CCSM85	18.5	17.4	17.8	17.1	
	GFDL45	18.5	20.6	20.8	21.5	
	GFDL85	18.5	20.3	21.7	21.7	
	HAD45	18.5	18.8	17.9	17.9	
	HAD85	18.5	18.7	16.0	16.2	

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.

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
shingle oak	Quercus imbricaria	NDH	Medium	29.5	166.8	14.6	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	1
American elm	Ulmus americana	WDH	Medium	57.7	106.1	8.5	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	2
Osage-orange	Maclura pomifera	NDH	Medium	18.8	101.9	8.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	3
white oak	Quercus alba	WDH	Medium	32.1	96.9	8.2	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	4
black cherry	Prunus serotina	WDL	Medium	40.7	80.1	5.0	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	5
black walnut	Juglans nigra	WDH	Low	49.2	79.0	8.8	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	1	6
silver maple	Acer saccharinum	NSH	Low	25.7	66.8	23.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	7
black oak	Quercus velutina	WDH	High	18.8	62.8	4.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	8
shagbark hickory	Carya ovata	WSL	Medium	29.8	54.8	8.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	9
honeylocust	Gleditsia triacanthos	NSH	Low	30	53.0	11.4	No change	Sm. inc.	High	Common	Good	Very Good	Infill ++	Infill ++	1	10
hackberry	Celtis occidentalis	WDH	Medium	44	50.0	7.9	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	11
sassafras	Sassafras albidum	WSL	Low	20.7	49.0	8.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	12
post oak	Quercus stellata	WDH	High	11.4	33.7	6.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	13
green ash	Fraxinus pennsylvanica	WSH	Low	17.8	23.5	9.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	14
red mulberry	Morus rubra	NSL	Low	28	23.0	4.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	15
northern red oak	Quercus rubra	WDH	Medium	15.1	20.4	3.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	16
slippery elm	Ulmus rubra	WSL	Low	25.5	17.0	2.8	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	17
white ash	Fraxinus americana	WDL	Medium	17.6	16.8	3.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	18
bur oak	Quercus macrocarpa	NDH	Medium	12.4	16.1	4.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	19
pin oak	Quercus palustris	NSH	Low	13.6	15.8	11.1	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			2	20
pignut hickory	Carya glabra	WDL	Medium	14.6	14.6	3.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	21
bitternut hickory	Carya cordiformis	WSL	Low	17.6	13.6	2.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	22
sugar maple	Acer saccharum	WDH	High	22.2	12.7	3.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	23
black locust	Robinia pseudoacacia	NDH	Low	8.4	12.5	23.8	Lg. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	24
sycamore	Platanus occidentalis	NSL	Low	5.6	12.4	4.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	25
boxelder	Acer negundo	WSH	Low	23.2	12.3	5.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	26
chinkapin oak	Quercus muehlenbergii	NSL	Medium	17.2	11.0	2.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	27
Ohio buckeye	Aesculus glabra	NSL	Low	4.4	8.7	9.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	28
eastern redbud	Cercis canadensis	NSL	Low	7.6	7.4	3.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	29
black willow	Salix nigra	NSH	Low	3.8	4.9	17.2	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	30
American basswood	Tilia americana	WSL	Medium	0.8	4.6	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
mockernut hickory	Carya alba	WDL	Medium	12	3.9	1.4	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	32
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	10.7	3.8	1.6	Lg. dec.	No change	High	Rare	Poor	Fair			0	33
eastern cottonwood	Populus deltoides	NSH	Low	5.7	3.7	5.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	34
common persimmon	Diospyros virginiana	NSL	Low	4.2	3.1	3.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	35
red maple	Acer rubrum	WDH	High	4.2	2.6	9.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	36
wild plum	Prunus americana	NSLX	FIA	1	2.5	2.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	37
Shumard oak	Quercus shumardii	NSL	Low	0.7	2.3	1.4	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	38
eastern white pine	Pinus strobus	WDH	High	4.2	1.7	6.4	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	39
pawpaw	Asimina triloba	NSL	Low	3.8	1.6	5.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	40
butternut	Juglans cinerea	NSLX	FIA	0.7	1.5	1.0	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	41
serviceberry	Amelanchier spp.	NSL	Low	0.7	0.9	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	42
white mulberry	Morus alba	NSL	FIA	1.9	0.8	1.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	43
swamp white oak	Quercus bicolor	NSL	Low	2.7	0.8	2.0	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	44
black hickory	Carya texana	NDL	High	0.1	0.8	0.1	No change	Lg. inc.	Medium	Rare	Poor	Good			2	45
eastern redcedar	Juniperus virginiana	WDH	Medium	4.2	0.4	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	46
shellbark hickory	Carya laciniosa	NSL	Low	3.2	0.4	1.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47



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black maple	Acer nigrum	NSH	Low	1.4	0.1	0.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	48
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	49
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	50
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	51
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	52
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	53
sweetgum	Liquidambar styraciflua	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	54
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	55
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	56
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	57
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	58
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	59
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	60
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	61
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	62