

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 9,813.8 3,789.1 67

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					
		Abundant	Common	Reliability	Adaptability	Scenario RCP45	Scenario RCP85	Scenario RCP45	Scenario RCP85	SHIFT RCP45	SHIFT RCP85				
Ash	2			High	9	18	Increase	14	15	Very Good	0	0	Likely	3	3
Hickory	5			Medium	18	28	No Change	12	10	Good	13	15	Infill	22	22
Maple	2	Rare	28	Low	22	7	Decrease	7	8	Fair	12	10	Migrate	4	7
Oak	8	Common	9	FIA	5		New	13	13	Poor	2	2			
Pine	0	Rare	28				Unknown	8	8	Very Poor	6	6			
Other	21	Absent	15							FIA Only	4	4			
	38		53		54	53		54	54	Unknown	3	3			
											40	40			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	56.7	58.6	60.5	60.8
	CCSM85	56.7	59.3	61.4	64.2
	GFDL45	56.7	62.2	61.9	63.0
	GFDL85	56.7	59.7	62.6	66.6
	HAD45	56.7	59.2	62.0	63.3
	HAD85	56.7	59.5	64.2	67.6
Growing Season May—Sep	CCSM45	73.7	75.9	77.6	78.1
	CCSM85	73.7	76.8	78.8	82.1
	GFDL45	73.7	80.9	79.9	82.0
	GFDL85	73.7	77.5	80.8	86.0
	HAD45	73.7	76.1	78.4	79.7
	HAD85	73.7	76.6	82.0	85.0
Coldest Month Average	CCSM45	30.4	32.5	33.7	34.3
	CCSM85	30.4	33.0	33.8	35.5
	GFDL45	30.4	34.7	34.9	34.9
	GFDL85	30.4	32.5	33.8	34.7
	HAD45	30.4	31.6	34.3	34.2
	HAD85	30.4	33.6	35.8	37.7
Warmest Month Average	CCSM45	80.1	82.6	83.6	84.1
	CCSM85	80.1	83.8	84.8	86.5
	GFDL45	80.1	84.7	86.0	87.6
	GFDL85	80.1	84.6	86.1	90.2
	HAD45	80.1	82.6	84.2	84.9
	HAD85	80.1	84.1	86.9	88.3

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	42.9	40.7	42.8	41.9
	CCSM85	42.9	41.9	43.0	43.7
	GFDL45	42.9	46.3	48.4	46.2
	GFDL85	42.9	46.4	53.8	51.2
	HAD45	42.9	44.9	44.8	45.7
	HAD85	42.9	45.2	40.8	44.2
Growing Season May—Sep	CCSM45	23.8	21.4	22.4	21.9
	CCSM85	23.8	22.5	22.3	22.6
	GFDL45	23.8	26.0	25.6	25.3
	GFDL85	23.8	26.2	30.0	27.6
	HAD45	23.8	24.1	24.5	24.8
	HAD85	23.8	24.5	20.5	21.7

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
Osage-orange	Maclura pomifera	NDH	Medium	56.4	549.7	18.9	Sm. dec.	Sm. dec.	High	Abundant	Good	Good	Infill ++	Infill ++	1	1
hackberry	Celtis occidentalis	WDH	Medium	64.4	391.2	14.8	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	2
American elm	Ulmus americana	WDH	Medium	69	374.0	14.6	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	3
post oak	Quercus stellata	WDH	High	19.4	364.2	30.6	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2	4
black walnut	Juglans nigra	WDH	Low	41.4	139.2	7.4	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	5
pecan	Carya illinoensis	NSH	Low	24.4	137.0	11.5	Sm. inc.	Lg. inc.	Low	Common	Fair	Good	Infill +	Infill ++	2	6
eastern redcedar	Juniperus virginiana	WDH	Medium	41.1	135.9	12.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	7
green ash	Fraxinus pennsylvanica	WDH	Low	37.4	113.3	5.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	8
black oak	Quercus velutina	WDH	High	13.1	93.4	14.0	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	9
red mulberry	Morus rubra	NSL	Low	34	84.1	7.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	10
eastern redbud	Cercis canadensis	NSL	Low	15.5	50.0	6.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	11
honeylocust	Gleditsia triacanthos	NSH	Low	26.1	38.4	5.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	12
blackjack oak	Quercus marilandica	NSL	Medium	15.1	31.7	5.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	13
pin oak	Quercus palustris	NSH	Low	10.9	31.6	9.0	No change	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	14
shagbark hickory	Carya ovata	WSL	Medium	4.5	29.4	8.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	15
common persimmon	Diospyros virginiana	NSL	Low	10.9	28.8	5.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	16
bitternut hickory	Carya cordiformis	WSL	Low	18.9	25.7	2.9	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	17
northern red oak	Quercus rubra	WDH	Medium	3.7	23.6	5.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	18
boxelder	Acer negundo	WSH	Low	7.7	18.8	3.8	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	19
white mulberry	Morus alba	NSL	FIA	0.3	18.6	6.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	20
eastern cottonwood	Populus deltoides	NSH	Low	7.6	14.2	10.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	21
black willow	Salix nigra	NSH	Low	9.8	13.5	5.0	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	2	22
sycamore	Platanus occidentalis	NSL	Low	11.4	11.3	3.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	23
Kentucky coffeetree	Gymnocladus dioicus	NSLX	FIA	1.2	9.8	2.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			2	24
black cherry	Prunus serotina	WDL	Medium	17.3	8.6	2.8	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	25
chinkapin oak	Quercus muehlenbergii	NSL	Medium	6.8	7.6	2.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	26
bur oak	Quercus macrocarpa	NDH	Medium	7	5.4	0.6	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	27
slippery elm	Ulmus rubra	WSL	Low	11.8	5.0	0.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	28
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	9.1	3.6	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	29
silver maple	Acer saccharinum	NSH	Low	3.5	3.3	1.6	No change	No change	High	Rare	Fair	Fair			0	30
chokecherry	Prunus virginiana	NSLX	FIA	1.9	2.8	5.0	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	31
Shumard oak	Quercus shumardii	NSL	Low	5.4	2.2	4.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	32
mockernut hickory	Carya alba	WDL	Medium	0.7	1.8	1.2	No change	Sm. inc.	High	Rare	Fair	Good			2	33
wild plum	Prunus americana	NSLX	FIA	9.9	1.3	0.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	34
pawpaw	Asimina triloba	NSL	Low	4.1	1.0	4.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
northern catalpa	Catalpa speciosa	NSHX	FIA	4.1	0.9	3.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	36
blue ash	Fraxinus quadrangulata	NSL	Low	4	0.6	2.4	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	37
black hickory	Carya texana	NDL	High	1.3	0.6	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	38
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	39
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	40
sugar maple	Acer saccharum	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	41
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	42
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	43
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	44
white ash	Fraxinus americana	WDL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	45
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	46
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	47



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white oak	Quercus alba	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	48
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	49
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	50
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	51
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	52
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	53
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	54