

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 10,306 3,979.1 245

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	21	RCP45	RCP85	Very Good	11	13	Likely	2	2
Ash	2			Medium	31	50	12	Good	14	16	Infill	8	12
Hickory	7			Low	33	8	19	Fair	10	10	Migrate	4	4
Maple	5	Abundant	5	FIA	2		7	Poor	13	13			
Oak	13	Common	25				9	Very Poor	15	11			
Pine	3	Rare	35				9	FIA Only	2	2			
Other	35	Absent	12				7	Unknown	5	5			
	65		77		79	79	79		70	70		14	18

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	63.4	65.0	66.7	67.1	
	CCSM85	63.4	65.6	67.9	70.6	
	GFDL45	63.4	66.4	67.8	69.0	
	GFDL85	63.4	66.2	69.0	72.6	
	HAD45	63.4	65.6	68.6	69.6	
	HAD85	63.4	66.0	70.2	73.8	
Growing Season (May—Sep)	CCSM45	77.7	79.2	80.6	81.0	
	CCSM85	77.7	80.1	82.2	85.6	
	GFDL45	77.7	81.3	82.6	85.1	
	GFDL85	77.7	81.4	84.5	88.9	
	HAD45	77.7	80.4	83.3	83.9	
	HAD85	77.7	80.9	86.3	89.4	
Coldest Month (Average)	CCSM45	42.1	44.3	45.4	45.4	
	CCSM85	42.1	44.7	45.7	47.2	
	GFDL45	42.1	45.8	46.1	46.1	
	GFDL85	42.1	43.2	44.7	45.2	
	HAD45	42.1	42.9	44.8	45.2	
	HAD85	42.1	44.2	45.9	47.7	
Warmest Month (Average)	CCSM45	83.1	84.1	84.7	84.9	
	CCSM85	83.1	85.2	85.9	87.6	
	GFDL45	83.1	88.0	88.3	89.9	
	GFDL85	83.1	87.6	89.1	92.5	
	HAD45	83.1	86.4	87.8	88.0	
	HAD85	83.1	87.2	90.0	91.0	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	49.9	50.7	53.1	52.3	
	CCSM85	49.9	50.8	53.9	53.8	
	GFDL45	49.9	52.2	59.6	52.3	
	GFDL85	49.9	52.0	56.0	56.1	
	HAD45	49.9	50.1	52.1	55.6	
	HAD85	49.9	54.8	46.4	50.6	
Growing Season (May—Sep)	CCSM45	19.2	20.6	19.1	20.0	
	CCSM85	19.2	19.1	18.4	18.6	
	GFDL45	19.2	20.8	24.4	20.9	
	GFDL85	19.2	21.1	22.7	22.2	
	HAD45	19.2	18.5	18.3	18.9	
	HAD85	19.2	19.9	14.3	15.0	

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
loblolly pine	Pinus taeda	WDH	High	72.2	2956.6	29.2	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	77.3	1469.1	13.7	No change	No change	Medium	Abundant	Good	Good			1	2
post oak	Quercus stellata	WDH	High	54.8	642.1	8.7	Sm. inc.	Lg. inc.	High	Abundant	Very Good	Very Good			1	3
water oak	Quercus nigra	WDH	High	66.3	521.4	5.8	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	4
winged elm	Ulmus alata	WDL	Medium	75.8	502.6	5.1	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	5
willow oak	Quercus phellos	NSL	Low	45.7	442.2	7.2	No change	No change	Medium	Common	Fair	Fair			1	6
southern red oak	Quercus falcata	WDL	Medium	57	422.7	6.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	7
eastern redcedar	Juniperus virginiana	WDH	Medium	35.4	336.1	6.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
green ash	Fraxinus pennsylvanica	WSH	Low	31.9	314.6	7.0	No change	Sm. inc.	Medium	Common	Fair	Good			1	9
shortleaf pine	Pinus echinata	WDH	High	41.3	312.9	5.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	34.9	274.4	5.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
sugarberry	Celtis laevigata	NDH	Medium	31.3	260.7	6.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	12
white oak	Quercus alba	WDH	Medium	39.4	233.9	4.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	13
mockernut hickory	Carya alba	WDL	Medium	40	176.9	3.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	14
American elm	Ulmus americana	WDH	Medium	32.2	160.7	3.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	15
red maple	Acer rubrum	WDH	High	41.7	154.4	2.7	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	16
Osage-orange	Maclura pomifera	NDH	Medium	19.5	135.0	5.8	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	17
blackgum	Nyssa sylvatica	WDL	Medium	33	101.3	2.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
common persimmon	Diospyros virginiana	NSL	Low	24.6	98.4	3.5	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	19
overcup oak	Quercus lyrata	NSL	Medium	13.3	94.4	4.1	No change	Sm. inc.	Low	Common	Poor	Fair			1	20
cedar elm	Ulmus crassifolia	NDH	Medium	11.3	89.4	6.8	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	1	21
bitternut hickory	Carya cordiformis	WDL	Low	13.2	72.1	4.4	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	22
flowering dogwood	Cornus florida	WDL	Medium	23.8	65.9	2.6	Sm. dec.	No change	Medium	Common	Poor	Fair			1	23
eastern cottonwood	Populus deltoides	NSH	Low	3.1	65.5	16.3	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	24
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	20.8	63.9	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	25
black hickory	Carya texana	NDL	High	19.8	60.1	1.9	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	26
white ash	Fraxinus americana	WDL	Medium	15.4	59.7	3.0	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	27
boxelder	Acer negundo	WSH	Low	8.3	58.3	5.0	No change	No change	High	Common	Good	Good			1	28
Shumard oak	Quercus shumardii	NSL	Low	7.6	56.8	5.9	Sm. dec.	No change	High	Common	Fair	Good		Infill ++	1	29
black cherry	Prunus serotina	WDL	Medium	18.2	50.4	1.5	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	30
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	15.4	49.4	2.7	Lg. inc.	Sm. inc.	High	Rare	Good	Good			1	31
water elm	Planera aquatica	NSL	Low	3.4	44.8	5.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
American holly	Ilex opaca	NSL	Medium	18.9	40.5	1.7	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	33
black willow	Salix nigra	NSH	Low	7.7	39.5	3.5	No change	Sm. inc.	Low	Rare	Very Poor	Poor			1	34
black oak	Quercus velutina	WDH	High	12	39.1	2.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	35
honeylocust	Gleditsia triacanthos	NSH	Low	11.3	37.0	2.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	36
water hickory	Carya aquatica	NSL	Medium	7.4	35.6	2.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
shagbark hickory	Carya ovata	WSL	Medium	12.1	34.7	3.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	38
slippery elm	Ulmus rubra	WSL	Low	11.1	30.3	1.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	39
sycamore	Platanus occidentalis	NSL	Low	6.7	24.4	1.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	40
river birch	Betula nigra	NSL	Low	4.4	22.8	4.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	41
sassafras	Sassafras albidum	WSL	Low	9	20.0	1.5	No change	No change	Medium	Rare	Poor	Poor			1	42
pecan	Carya illinoensis	NSH	Low	5.7	18.9	3.2	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	1	43
blackjack oak	Quercus marilandica	NSL	Medium	6.8	18.1	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	44
silver maple	Acer saccharinum	NSH	Low	1.2	17.2	2.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	45
bald cypress	Taxodium distichum	NSH	Medium	2.1	13.9	1.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
swamp chestnut oak	Quercus michauxii	NSL	Low	3.3	13.6	3.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	47



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black walnut	Juglans nigra	WDH	Low	5.1	12.0	1.8	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	48	
slash pine	Pinus elliotii	NDH	High	1	11.6	11.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	49	
red mulberry	Morus rubra	NSL	Low	6.4	9.6	1.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	50	
eastern redbud	Cercis canadensis	NSL	Low	3.8	8.1	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51	
hackberry	Celtis occidentalis	WDH	Medium	1.6	7.6	1.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	52	
pignut hickory	Carya glabra	WDL	Medium	4.9	6.7	1.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	53	
waterlocust	Gleditsia aquatica	NSLX	FIA	1.1	6.7	1.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	54	
American basswood	Tilia americana	WSL	Medium	2.1	5.7	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	55	
florida maple	Acer barbatum	NSL	Low	2.4	5.6	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	56	
American beech	Fagus grandifolia	WDH	High	1	5.5	5.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good		Infill +	2	57	
bur oak	Quercus macrocarpa	NDH	Medium	1.9	4.3	2.2	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	58	
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	1	4.0	4.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	59	
bluejack oak	Quercus incana	NSL	Low	0.7	4.0	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	60	
sugar maple	Acer saccharum	WDH	High	0.4	3.2	1.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	61	
wild plum	Prunus americana	NSLX	FIA	2.1	2.8	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	62	
black locust	Robinia pseudoacacia	NDH	Low	1.9	2.4	1.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	63	
southern magnolia	Magnolia grandiflora	NSL	Low	1	1.3	1.3	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	64	
pawpaw	Asimina triloba	NSL	Low	1	0.3	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	65	
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	66	
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	Migrate +	3	67
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	68	
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Likely +	Likely +	3	69
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	70	
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71	
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	72	
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Likely +	Likely +	3	73
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	Migrate +	3	74
redbay	Persea borbonia	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	75	
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	76	
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	77	
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	Migrate +	3	78
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	Migrate ++	3	79