

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 10,642 4,108.9 372

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	3											
Hickory	3											
Maple	2	Abundant	4	High	12	13	Increase	24	27	Very Good	8	9
Oak	9	Common	10	Medium	30	45	No Change	10	8	Good	14	14
Pine	5	Rare	37	Low	28	13	Decrease	15	14	Fair	4	6
Other	29	Absent	19	FIA	2		New	6	9	Poor	8	5
	51		70		72	71	Unknown	17	14	Very Poor	14	12
								72	72	FIA Only	2	2
										Unknown	15	12
											65	60

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	68.0	69.6	71.4	71.3	
Average	CCSM85	68.0	69.8	72.1	74.5	
	GFDL45	68.0	70.6	72.4	73.2	
	GFDL85	68.0	70.5	73.5	76.9	
	HAD45	68.0	70.0	72.6	74.0	
	HAD85	68.0	70.6	73.8	77.6	
Growing Season	CCSM45	78.9	80.2	81.6	81.9	
	CCSM85	78.9	80.3	82.6	85.3	
May—Sep	GFDL45	78.9	81.3	83.1	84.2	
	GFDL85	78.9	81.4	84.3	88.2	
	HAD45	78.9	81.8	84.1	85.6	
	HAD85	78.9	82.1	86.5	90.0	
Coldest Month	CCSM45	51.2	53.5	54.4	54.0	
	CCSM85	51.2	53.1	54.2	55.6	
Average	GFDL45	51.2	53.9	54.2	54.8	
	GFDL85	51.2	53.4	54.5	55.4	
	HAD45	51.2	50.9	52.2	53.1	
	HAD85	51.2	51.7	52.6	54.5	
Warmest Month	CCSM45	81.8	83.3	84.2	84.4	
	CCSM85	81.8	83.4	84.8	86.5	
Average	GFDL45	81.8	84.1	84.9	85.6	
	GFDL85	81.8	84.3	85.7	87.8	
	HAD45	81.8	85.4	86.5	87.2	
	HAD85	81.8	85.6	88.2	89.7	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	49.8	53.6	55.1	56.3	
Total	CCSM85	49.8	52.8	55.6	57.1	
	GFDL45	49.8	56.7	58.1	60.4	
	GFDL85	49.8	54.1	60.7	58.3	
	HAD45	49.8	47.6	47.6	50.6	
	HAD85	49.8	48.1	45.8	46.6	
Growing Season	CCSM45	26.4	28.8	28.9	29.0	
	CCSM85	26.4	27.6	30.1	30.6	
May—Sep	GFDL45	26.4	31.8	32.4	33.1	
	GFDL85	26.4	30.7	35.2	34.3	
	HAD45	26.4	25.2	24.7	24.4	
	HAD85	26.4	24.6	21.4	21.2	

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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Current and Potential Future Habitat, Capability, and Migration

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
slash pine	Pinus elliottii	NDH	High	91.8	6312.8	45.4	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
swamp tupelo	Nyssa biflora	NDH	Medium	70.7	825.3	8.4	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	2
pond cypress	Taxodium ascendens	NSH	Medium	64.4	785.9	9.9	Sm. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	3
loblolly pine	Pinus taeda	WDH	High	37.8	588.3	9.3	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good			1	4
laurel oak	Quercus laurifolia	NDH	Medium	35.4	469.0	7.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	5
water oak	Quercus nigra	WDH	High	39.4	445.4	6.4	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	6
red maple	Acer rubrum	WDH	High	54.7	353.1	3.8	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	7
loblolly-bay	Gordonia lasianthus	NSH	Medium	53	348.8	5.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	8
longleaf pine	Pinus palustris	NSH	Medium	23.2	343.8	10.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	9
live oak	Quercus virginiana	NDH	High	24.5	240.3	4.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	10
sweetgum	Liquidambar styraciflua	WDH	High	23.4	199.8	4.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
sweetbay	Magnolia virginiana	NSL	Medium	52	164.9	2.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
redbay	Persea borbonia	NSL	Low	52.1	116.7	1.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
black cherry	Prunus serotina	WDL	Medium	12.1	64.4	2.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	14
common persimmon	Diospyros virginiana	NSL	Low	4.7	34.9	2.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	15
pond pine	Pinus serotina	NSH	Medium	8	34.0	2.5	No change	No change	Low	Rare	Very Poor	Poor			1	16
green ash	Fraxinus pennsylvanica	WSH	Low	3.4	31.8	2.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	17
bald cypress	Taxodium distichum	NSH	Medium	6.8	31.6	2.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	18
sand pine	Pinus clausa	NDH	High	1.3	30.1	15.5	No change	No change	Low	Rare	Very Poor	Very Poor			2	19
blackgum	Nyssa sylvatica	WDL	Medium	15.1	29.6	1.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	20
ogeechee tupelo	Nyssa ogeche	NSLX	FIA	7.3	24.4	4.0	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	21
pignut hickory	Carya glabra	WDL	Medium	4.1	20.7	2.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	22
black willow	Salix nigra	NSH	Low	0.3	20.6	6.8	No change	No change	Low	Rare	Very Poor	Very Poor			2	23
southern magnolia	Magnolia grandiflora	NSL	Low	6.3	19.5	2.2	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	24
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	4.6	15.2	1.8	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	25
post oak	Quercus stellata	WDH	High	3.4	12.8	2.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	26
river birch	Betula nigra	NSL	Low	1.3	11.5	2.8	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	27
American elm	Ulmus americana	WDH	Medium	2.4	9.6	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	28
water tupelo	Nyssa aquatica	NSH	Medium	1.4	8.3	0.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	29
American holly	Ilex opaca	NSL	Medium	4.4	4.6	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.1	4.2	0.6	Sm. dec.	No change	High	Rare	Poor	Fair			0	31
American basswood	Tilia americana	WSL	Medium	0.9	4.1	4.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
southern red oak	Quercus falcata	WDL	Medium	0.9	4.0	4.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	33
water elm	Planera aquatica	NSL	Low	0.9	3.7	3.9	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	34
bluejack oak	Quercus incana	NSL	Low	0.9	3.5	3.7	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2	35
pecan	Carya illinoensis	NSH	Low	0.4	3.1	1.4	No change	No change	Low	Rare	Very Poor	Very Poor			2	36
mockernut hickory	Carya alba	WDL	Medium	2.3	3.0	0.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	37
swamp chestnut oak	Quercus michauxii	NSL	Low	1.3	2.9	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	38
flowering dogwood	Cornus florida	WDL	Medium	0.9	2.2	2.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	39
cabbage palmetto	Sabal palmetto	NDH	Medium	0.3	1.9	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	40
turkey oak	Quercus laevis	NSH	Medium	1.2	1.6	0.5	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	41
winged elm	Ulmus alata	WDH	Medium	0.7	1.4	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	42
florida maple	Acer barbatum	NSL	Low	0.9	1.3	1.4	Sm. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	43
hackberry	Celtis occidentalis	WDH	Medium	0.4	1.2	0.5	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	44
eastern redcedar	Juniperus virginiana	WDH	Medium	0.4	0.8	0.4	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	45
sugarberry	Celtis laevigata	NDH	Medium	0.3	0.8	0.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	46
cucumbertree	Magnolia acuminata	NSL	Low	0.3	0.6	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47

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USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
willow oak	Quercus phellos	NSL	Low	0.9	0.5	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	48
eastern redbud	Cercis canadensis	NSL	Low	0.9	0.5	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	49
Carolina ash	Fraxinus caroliniana	NSL	FIA	0.4	0.3	0.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	50
white ash	Fraxinus americana	WDL	Medium	0.2	0.2	0.0	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	51
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	52
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	53
spruce pine	Pinus glabra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	54
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	55
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	56
gray birch	Betula populifolia	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	57
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	58
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	59
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	60
black hickory	Carya texana	NDL	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	61
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	62
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	63
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	64
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	65
sycamore	Platanus occidentalis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	66
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	67
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	68
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +		3	69
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	70
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	71
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	72