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	sq. km	sq. mi	FIA Plots
Area of Region	8,313.7	3,209.9	278

Species Information

The columns below provide breif 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
Ash	4
Hickory	4
Maple	3
Oak	17
Pine	6
Other	28
	62

Abundance	
Abundant	5
Common	15
Rare	42
Absent	13
	75

Model Reliability	
High	15
Medium	34
Low	27
FIA	3
	79

Adaptability	
19	
46	
11	
76	

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	20	24
No Change	13	12
Decrease	26	23
New	6	7
Unknown	14	13
	79	**79**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	9	8
Good	12	16
Fair	5	9
Poor	13	11
Very Poor	16	12
FIA Only	2	2
Unknown	11	10
	68	**68**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	2	2
Infill	7	12
Migrate	1	1
	10	**15**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	62.5	64.0	65.7	65.8	
Average	CCSM85	62.5	64.2	66.4	68.8	
	GFDL45	62.5	65.1	67.2	68.0	
	GFDL85	62.5	65.1	68.2	71.6	
	HAD45	62.5	64.2	66.8	68.1	
	HAD85	62.5	64.6	67.6	71.3	
Growing	CCSM45	75.5	76.8	78.3	78.6	
Season	CCSM85	75.5	76.9	79.1	82.0	
May—Sep	GFDL45	75.5	78.3	80.4	81.6	
	GFDL85	75.5	78.4	81.7	85.5	
	HAD45	75.5	77.8	79.9	81.3	
	HAD85	75.5	77.8	81.5	85.2	
Coldest	CCSM45	42.8	45.1	45.9	45.9	
Month	CCSM85	42.8	45.1	46.0	47.2	
Average	GFDL45	42.8	45.9	46.2	46.9	
	GFDL85	42.8	44.7	45.7	46.6	
	HAD45	42.8	43.0	44.7	45.2	
	HAD85	42.8	43.6	44.7	46.2	
Warmest	CCSM45	80.2	81.7	82.5	82.5	
Month	CCSM85	80.2	81.9	83.2	84.5	
Average	GFDL45	80.2	82.5	83.4	84.3	
	GFDL85	80.2	82.9	84.6	86.7	
	HAD45	80.2	82.6	83.8	84.4	
	HAD85	80.2	83.0	85.2	87.1	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	52.9	58.4	58.9	60.1	
Total	CCSM85	52.9	58.5	59.7	65.0	
	GFDL45	52.9	57.4	60.3	63.5	
	GFDL85	52.9	56.4	62.9	61.6	
	HAD45	52.9	54.7	56.0	55.1	
	HAD85	52.9	57.9	53.8	52.4	
Growing	CCSM45	27.9	33.7	33.6	33.9	
Season	CCSM85	27.9	31.2	33.0	35.5	
May—Sep	GFDL45	27.9	31.1	33.1	35.0	
	GFDL85	27.9	30.1	35.6	35.2	
	HAD45	27.9	27.9	28.4	27.1	
	HAD85	27.9	30.0	26.2	23.1	

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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U.S. Census Bureau Urban Areas
Climate Change Atlas Tree Species
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
loblolly pine	Pinus taeda	WDH	High	95.4	3762.3	37.7	No change	Sm. dec.	Medium	Abundant	Good	Fair			1	1
pond pine	Pinus serotina	NSH	Medium	51.4	1045.8	19.4	Sm. dec.	Sm. dec.	Low	Abundant	Fair	Fair			0	2
red maple	Acer rubrum	WDH	High	86	870.8	9.6	No change	No change	High	Abundant	Very Good	Very Good			1	3
longleaf pine	Pinus palustris	NSH	Medium	41.7	784.4	17.4	Sm. inc.	No change	Medium	Abundant	Very Good	Good			1	4
swamp tupelo	Nyssa biflora	NDH	Medium	72.3	548.9	7.4	Sm. inc.	Sm. inc.	Low	Abundant	Good	Good			1	5
sweetgum	Liquidambar styraciflua	WDH	High	77	449.0	5.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
loblolly-bay	Gordonia lasianthus	NSH	Medium	38	299.1	7.5	Sm. dec.	No change	Medium	Common	Poor	Fair			1	7
water oak	Quercus nigra	WDH	High	60.3	261.6	4.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
slash pine	Pinus elliottii	NDH	High	10.9	227.4	16.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	9
redbay	Persea borbonia	NSL	Low	64.5	220.6	3.1	No change	No change	High	Common	Good	Good			1	10
laurel oak	Quercus laurifolia	NDH	Medium	35.2	151.8	3.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	11
yellow-poplar	Liriodendron tulipifera	WDH	High	33.6	140.2	3.7	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	12
sweetbay	Magnolia virginiana	NSL	Medium	53.8	135.2	2.5	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	13
turkey oak	Quercus laevis	NSH	Medium	18.7	132.0	5.6	No change	Sm. dec.	High	Common	Good	Fair			1	14
pumpkin ash	Fraxinus profunda	NSH	FIA	7.9	88.4	9.4	Unknown	Unknown	NA	Common	FIA Only	FIA Only			0	15
American holly	Ilex opaca	NSL	Medium	48.6	83.0	1.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
green ash	Fraxinus pennsylvanica	WSH	Low	20.6	66.2	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
pond cypress	Taxodium ascendens	NSH	Medium	7.2	59.9	8.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	18
live oak	Quercus virginiana	NDH	High	9.5	52.0	5.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2	19
bald cypress	Taxodium distichum	NSH	Medium	25.4	51.4	2.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	20
southern red oak	Quercus falcata	WDL	Medium	14.4	47.3	3.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	21
water tupelo	Nyssa aquatica	NSH	Medium	4.8	44.8	9.2	No change	No change	Low	Rare	Very Poor	Very Poor			2	22
black cherry	Prunus serotina	WDL	Medium	17.7	38.7	2.3	No change	Lg. inc.	Low	Rare	Very Poor	Fair			1	23
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	19.1	36.1	2.0	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	24
blackgum	Nyssa sylvatica	WDL	Medium	25.3	32.3	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	25
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	4.6	32.3	5.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	26
white oak	Quercus alba	WDH	Medium	20	32.2	1.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	27
willow oak	Quercus phellos	NSL	Low	17.9	30.1	1.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	28
post oak	Quercus stellata	WDH	High	15.6	21.7	1.4	Lg. dec.	Lg. inc.	High	Rare	Poor	Good		Infill ++	1	29
American elm	Ulmus americana	WDH	Medium	9.6	20.8	2.1	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	30
Virginia pine	Pinus virginiana	NDH	High	8.1	17.6	1.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
mockernut hickory	Carya alba	WDL	Medium	12	15.3	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	32
pignut hickory	Carya glabra	WDL	Medium	3.6	13.2	3.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	33
swamp chestnut oak	Quercus michauxii	NSL	Low	7.2	13.0	1.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	34
river birch	Betula nigra	NSL	Low	4.8	12.6	2.6	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	35
flowering dogwood	Cornus florida	WDL	Medium	8.7	10.7	1.0	No change	No change	Medium	Rare	Poor	Poor			1	36
Carolina ash	Fraxinus caroliniana	NSL	FIA	3.6	9.7	2.7	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	37
sassafras	Sassafras albidum	WSL	Low	2	9.5	2.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	38
slippery elm	Ulmus rubra	WSL	Low	5.5	8.5	1.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	39
white ash	Fraxinus americana	WDL	Medium	2.4	6.9	2.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	40
overcup oak	Quercus lyrata	NSL	Medium	6	6.0	1.0	No change	No change	Low	Rare	Very Poor	Very Poor			2	41
sourwood	Oxydendrum arboreum	NDL	High	4.3	5.8	1.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	42
water hickory	Carya aquatica	NSL	Medium	1.2	4.7	3.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	43
scarlet oak	Quercus coccinea	WDL	Medium	2.4	4.3	1.7	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	44
sugarberry	Celtis laevigata	NDH	Medium	1.2	3.9	3.2	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	45
common persimmon	Diospyros virginiana	NSL	Low	5.1	3.9	1.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	46
bluejack oak	Quercus incana	NSL	Low	1.9	3.5	1.3	Very Lg. dec.	Sm. dec.	Medium	Rare	Lost	Very Poor			2	47

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

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
eastern white pine	Pinus strobus	WDH	High	1.2	3.2	2.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	48
black willow	Salix nigra	NSH	Low	2.4	2.6	1.1	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	49
florida maple	Acer barbatum	NSL	Low	2.3	2.5	1.0	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	50
winged elm	Ulmus alata	WDL	Medium	1.2	2.4	1.9	Sm. dec.	Lg. inc.	Medium	Rare	Very Poor	Good		Infill ++	2	51
ailanthus	Ailanthus altissima	NSL	FIA	0.8	2.3	1.2	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	52
eastern redcedar	Juniperus virginiana	WDH	Medium	3.8	2.2	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	53
sycamore	Platanus occidentalis	NSL	Low	1.2	2.1	1.7	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	54
boxelder	Acer negundo	WSH	Low	1.2	1.8	1.5	Very Lg. dec.	No change	High	Rare	Lost	Fair			0	55
shellbark hickory	Carya laciniosa	NSL	Low	1.2	0.8	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	56
chestnut oak	Quercus prinus	NDH	High	1.2	0.8	0.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	57
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	2.7	0.7	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	58
blackjack oak	Quercus marilandica	NSL	Medium	1.2	0.6	0.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	59
northern red oak	Quercus rubra	WDH	Medium	1.2	0.6	0.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	60
black oak	Quercus velutina	WDH	High	1.2	0.4	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	61
Osage-orange	Maclura pomifera	NDH	Medium	2.7	0.3	0.5	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	62
sand pine	Pinus clausa	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	63
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	64
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	66
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	67
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	68
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	69
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	70
red mulberry	Morus rubra	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	71
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat		Migrate +	3	72
swamp white oak	Quercus bicolor	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	74
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	75
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	76
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	77
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	78
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	79