

	sq. km	sq. mi	FIA Plots
Area of Region	39,437	15,227	171

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	Increase	RCP45	RCP85	Very Good	0	0		
Ash	2			Medium	31	46	No Change	30	25	Good	2	4	
Hickory	6			Low	30	8	Decrease	20	24	Fair	18	14	
Maple	2	Abundant	0	FIA	1		New	5	5	Poor	25	24	
Oak	14	Common	7					Unknown	12	12	Very Poor	13	14
Pine	3	Rare	52							FIA Only	1	1	
Other	32	Absent	15							Unknown	11	11	
											70	68	
											39	33	

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099	
Annual	70.3	71.8	73.1	73.4	
Average	70.3	72.0	74.2	76.3	
GFDL45	70.3	75.5	74.4	75.7	
GFDL85	70.3	72.8	75.9	79.1	
HAD45	70.3	72.2	74.6	75.6	
HAD85	70.3	72.6	75.5	78.7	
Growing Season	81.3	82.6	83.5	83.9	
May—Sep	81.3	82.8	84.7	87.0	
GFDL45	81.3	87.5	85.9	87.8	
GFDL85	81.3	84.3	87.6	91.4	
HAD45	81.3	83.3	85.1	85.9	
HAD85	81.3	83.5	86.6	89.2	
Coldest Month	52.6	54.8	55.7	55.8	
Average	52.6	54.9	56.0	57.3	
GFDL45	52.6	55.9	56.1	56.3	
GFDL85	52.6	53.9	55.2	55.8	
HAD45	52.6	53.6	55.2	55.9	
HAD85	52.6	55.6	56.9	58.6	
Warmest Month	84.5	85.5	86.0	86.2	
Average	84.5	85.9	86.6	87.7	
GFDL45	84.5	87.9	88.5	89.5	
GFDL85	84.5	88.1	89.6	91.9	
HAD45	84.5	86.6	87.4	87.8	
HAD85	84.5	86.9	88.5	89.5	

Precipitation (in)

Scenario	2009	2039	2069	2099	
Annual	42.0	45.0	48.1	45.2	
Total	42.0	45.0	45.7	43.8	
GFDL45	42.0	43.0	49.9	39.6	
GFDL85	42.0	41.9	43.1	41.5	
HAD45	42.0	43.5	41.3	43.5	
HAD85	42.0	45.4	41.4	42.9	
Growing Season	20.1	22.8	23.7	21.5	
May—Sep	20.1	22.5	21.7	19.5	
GFDL45	20.1	21.5	27.5	20.1	
GFDL85	20.1	21.5	22.0	21.8	
HAD45	20.1	19.8	19.3	21.2	
HAD85	20.1	21.6	19.7	19.8	

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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Section 255D

EcoMap 2007
Climate Change Atlas Tree Species

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

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
live oak	Quercus virginiana	NDH	High	34.8	220.1	25.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	1
loblolly pine	Pinus taeda	WDH	High	14.2	218.6	26.4	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	2	2
sugarberry	Celtis laevigata	NDH	Medium	38.8	109.3	16.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	0	3
post oak	Quercus stellata	WDH	High	12.5	92.1	12.3	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	4
water oak	Quercus nigra	WDH	High	28.9	90.7	10.4	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	5
cedar elm	Ulmus crassifolia	NDH	Medium	25.9	51.1	13.4	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1	6
pecan	Carya illinoensis	NSH	Low	19	51.1	16.2	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	7
green ash	Fraxinus pennsylvanica	WSH	Low	19	25.7	8.2	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	8
willow oak	Quercus phellos	NSL	Low	5.3	21.6	9.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	9
hackberry	Celtis occidentalis	WDH	Medium	6.8	18.8	24.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	10
sweetgum	Liquidambar styraciflua	WDH	High	5.1	18.2	3.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	11
American elm	Ulmus americana	WDH	Medium	17.8	13.2	6.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	12
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	11.3	8.2	2.8	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	13
southern red oak	Quercus falcata	WDL	Medium	6.6	7.9	3.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	14
white ash	Fraxinus americana	WDL	Medium	5.7	6.2	7.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	15
eastern redcedar	Juniperus virginiana	WDH	Medium	6.1	5.8	4.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	16
winged elm	Ulmus alata	WDL	Medium	3.1	5.1	3.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	17
Osage-orange	Maclura pomifera	NDH	Medium	10.3	3.9	3.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	18
boxelder	Acer negundo	WSH	Low	10	3.9	6.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	19
river birch	Betula nigra	NSL	Low	0	3.7	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	20
laurel oak	Quercus laurifolia	NDH	Medium	0.4	3.5	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	21
sycamore	Platanus occidentalis	NSL	Low	2.5	3.4	3.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	22
slippery elm	Ulmus rubra	WSL	Low	4.5	3.1	3.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	23
water elm	Planera aquatica	NSL	Low	0	2.5	0.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	24
waterlocust	Gleditsia aquatica	NSLX	FIA	1	2.2	0.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	25
Shumard oak	Quercus shumardii	NSL	Low	1.6	2.1	3.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	26
overcup oak	Quercus lyrata	NSL	Medium	0	2.1	0.8	No change	No change	Low	Rare	Very Poor	Very Poor			2	27
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	4.6	2.0	3.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	28
swamp chestnut oak	Quercus michauxii	NSL	Low	1.1	1.8	1.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	29
eastern cottonwood	Populus deltoides	NSH	Low	0.7	1.7	3.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	30
black cherry	Prunus serotina	WDL	Medium	3.3	1.6	1.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	31
black willow	Salix nigra	NSH	Low	4.3	1.4	4.1	Sm. inc.	Sm. inc.	Low	Rare	Poor	Poor	Infill +	Infill +	2	32
water hickory	Carya aquatica	NSL	Medium	1.1	1.3	1.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	33
shortleaf pine	Pinus echinata	WDH	High	0.5	1.3	1.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	34
American holly	Ilex opaca	NSL	Medium	2.2	1.2	1.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	35
mockernut hickory	Carya alba	WDL	Medium	3	1.1	4.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	36
black hickory	Carya texana	NDL	High	2.5	1.0	2.0	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	37
white oak	Quercus alba	WDH	Medium	1.3	0.9	2.9	No change	Sm. dec.	High	Rare	Fair	Poor	Infill +		2	38
blackgum	Nyssa sylvatica	WDL	Medium	1.7	0.9	0.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	39
red mulberry	Morus rubra	NSL	Low	0.9	0.7	1.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	40
blackjack oak	Quercus marilandica	NSL	Medium	2.7	0.7	0.6	No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2	41
bald cypress	Taxodium distichum	NSH	Medium	1.1	0.6	1.7	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	42
common persimmon	Diospyros virginiana	NSL	Low	2.1	0.6	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	43
honeylocust	Gleditsia triacanthos	NSH	Low	3.1	0.6	1.8	No change	No change	High	Rare	Fair	Fair	Infill +		2	44
red maple	Acer rubrum	WDH	High	0.1	0.5	0.1	Sm. inc.	Sm. inc.	High	Rare	Good	Good			2	45
water tupelo	Nyssa aquatica	NSH	Medium	1.1	0.4	0.4	No change	No change	Low	Rare	Very Poor	Very Poor			2	46
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0.3	0.3	0.5	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	47



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIaiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
redbay	Persea borbonia	NSL	Low	0.4	0.3	0.6	No change	No change	High	Rare	Fair	Fair	Infill +		2	48
southern magnolia	Magnolia grandiflora	NSL	Low	0.3	0.3	1.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
bitternut hickory	Carya cordiformis	WSL	Low	0.3	0.2	1.0	Lg. dec.	Very Lg. dec.	High	Rare	Poor	Lost			0	50
sweetbay	Magnolia virginiana	NSL	Medium	2.1	0.2	1.7	No change	Sm. dec.	Medium	Rare	Poor	Very Poor	Infill +		2	51
slash pine	Pinus elliottii	NDH	High	0	0.2	0.1	No change	Very Lg. dec.	Medium	Rare	Poor	Lost			0	52
shagbark hickory	Carya ovata	WSL	Medium	0.2	0.2	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	53
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	0.5	0.1	1.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	54
bur oak	Quercus macrocarpa	NDH	Medium	0	0.1	0.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	55
black walnut	Juglans nigra	WDH	Low	0	0.1	0.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	56
black oak	Quercus velutina	WDH	High	1.1	0.1	1.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	57
sassafras	Sassafras albidum	WSL	Low	1.1	0.1	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	58
flowering dogwood	Cornus florida	WDL	Medium	0	0.0	0.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	59
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	60
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	61
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	62
florida maple	Acer barbatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	63
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	64
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	66
American beech	Fagus grandifolia	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	67
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	68
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	69
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	70
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71
Nuttall oak	Quercus texana	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	72
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	74
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	75

