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

	sq. km	sq. mi	FIA Plots
Area of Region	9,000.0	3,474.9	251

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		Abundance		Model Reliability	Adaptability	Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85	Capability to Cope or Persist	Scenario RCP45	Scenario RCP85	Migration Potential	SHIFT RCP45	SHIFT RCP85
Ash	2														
Hickory	7		Abundance		Reliability	Adaptability		RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Maple	3		Abundant	3	High	12	20	Increase	19	21	Very Good	5	6	Likely	3	3
Oak	12		Common	15	Medium	30	45	No Change	17	17	Good	12	13	Infill	25	28
Pine	4		Rare	42	Low	31	8	Decrease	24	22	Fair	9	9	Migrate	1	1
Other	32		Absent	12	FIA	0		New	4	4	Poor	20	20		29	32
	60			**72**		**73**	**73**	Unknown	9	9	Very Poor	13	11			
									73	**73**	FIA Only	0	0			
											Unknown	9	9			
												68	**68**			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	68.2	69.8	71.1	71.4	
Average	CCSM85	68.2	70.2	72.5	74.6	
	GFDL45	68.2	71.4	72.2	73.5	
	GFDL85	68.2	70.7	73.7	77.0	
	HAD45	68.2	70.3	72.9	73.8	
	HAD85	68.2	70.6	73.9	77.2	
Growing	CCSM45	80.3	81.7	82.5	83.0	
Season	CCSM85	80.3	82.2	84.2	86.7	
May—Sep	GFDL45	80.3	84.1	84.7	86.9	
	GFDL85	80.3	83.3	86.6	90.6	
	HAD45	80.3	82.6	84.8	85.4	
	HAD85	80.3	82.9	86.6	89.3	
Coldest	CCSM45	49.4	51.9	52.6	52.7	
Month	CCSM85	49.4	52.0	53.1	54.4	
Average	GFDL45	49.4	52.9	53.0	53.0	
	GFDL85	49.4	50.5	51.7	52.1	
	HAD45	49.4	50.1	51.8	52.4	
	HAD85	49.4	52.0	53.3	55.1	
Warmest	CCSM45	84.1	85.1	85.5	85.8	
Month	CCSM85	84.1	85.8	86.5	87.7	
Average	GFDL45	84.1	87.9	88.1	89.5	
	GFDL85	84.1	87.8	89.4	91.9	
	HAD45	84.1	86.7	87.6	87.9	
	HAD85	84.1	87.1	89.0	89.9	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	48.9	49.1	55.5	52.5	
Total	CCSM85	48.9	50.2	53.5	52.9	
	GFDL45	48.9	50.1	58.4	48.3	
	GFDL85	48.9	48.9	51.2	49.6	
	HAD45	48.9	50.3	47.3	51.0	
	HAD85	48.9	52.0	45.4	48.0	
Growing	CCSM45	21.2	22.5	24.8	22.5	
Season	CCSM85	21.2	21.6	22.3	20.5	
May—Sep	GFDL45	21.2	22.9	29.3	22.2	
	GFDL85	21.2	22.8	24.1	24.1	
	HAD45	21.2	20.9	20.1	22.1	
	HAD85	21.2	21.8	18.9	19.2	

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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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	92.2	3657.2	47.7	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	1
water oak	Quercus nigra	WDH	High	88.9	777.9	11.0	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	2
sweetgum	Liquidambar styraciflua	WDH	High	72.2	742.1	11.6	No change	No change	Medium	Abundant	Good	Good			1	3
post oak	Quercus stellata	WDH	High	42.2	275.5	6.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	4
southern red oak	Quercus falcata	WDL	Medium	61.1	255.1	4.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	5
winged elm	Ulmus alata	WDL	Medium	52.2	238.1	5.0	No change	Sm. inc.	Medium	Common	Fair	Good			1	6
sugarberry	Celtis laevigata	NDH	Medium	41.1	197.7	7.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	7
shortleaf pine	Pinus echinata	WDH	High	28.9	194.5	6.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	8
white oak	Quercus alba	WDH	Medium	28.9	125.7	4.1	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	9
blackgum	Nyssa sylvatica	WDL	Medium	44.4	99.8	2.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	10
pecan	Carya illinoinensis	NSH	Low	8.9	79.8	14.3	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	11
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	23.3	76.3	3.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	12
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	23.3	65.1	3.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	13
American elm	Ulmus americana	WDH	Medium	45.6	63.3	2.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	14
white ash	Fraxinus americana	WDL	Medium	27.8	61.0	2.4	No change	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	0	15
American holly	Ilex opaca	NSL	Medium	25.6	56.9	2.5	No change	No change	Medium	Common	Fair	Fair			1	16
willow oak	Quercus phellos	NSL	Low	22.2	54.3	3.6	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	17
laurel oak	Quercus laurifolia	NDH	Medium	13.3	51.7	3.7	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	18
green ash	Fraxinus pennsylvanica	WSH	Low	31.1	46.2	2.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	19
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	25.6	43.5	1.6	Sm. inc.	No change	High	Rare	Good	Fair	Infill ++	Infill +	1	20
red maple	Acer rubrum	WDH	High	21.1	40.1	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	21
sycamore	Platanus occidentalis	NSL	Low	4.4	25.6	5.4	No change	No change	Medium	Rare	Poor	Poor			0	22
black willow	Salix nigra	NSH	Low	11.1	25.3	7.3	Sm. inc.	Lg. inc.	Low	Rare	Poor	Fair	Infill +	Infill +	2	23
redbay	Persea borbonia	NSL	Low	13.3	22.8	2.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	24
slippery elm	Ulmus rubra	WSL	Low	12.2	20.4	2.9	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	25
black cherry	Prunus serotina	WDL	Medium	17.8	19.8	1.1	Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0	26
river birch	Betula nigra	NSL	Low	2.2	19.7	8.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
black hickory	Carya texana	NDL	High	16.7	19.0	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	28
sweetbay	Magnolia virginiana	NSL	Medium	2.2	17.4	7.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	29
southern magnolia	Magnolia grandiflora	NSL	Low	8.9	16.0	1.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	30
swamp chestnut oak	Quercus michauxii	NSL	Low	5.6	15.9	2.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	31
eastern redcedar	Juniperus virginiana	WDH	Medium	17.8	14.8	2.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	32
Osage-orange	Maclura pomifera	NDH	Medium	10	14.4	2.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	1	33
mockernut hickory	Carya alba	WDL	Medium	15.6	13.7	1.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	34
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	3.3	12.6	3.6	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	35
pignut hickory	Carya glabra	WDL	Medium	2.2	10.9	4.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	36
sassafras	Sassafras albidum	WSL	Low	12.2	10.9	0.8	No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	1	37
honeylocust	Gleditsia triacanthos	NSH	Low	2.2	10.6	4.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	38
cedar elm	Ulmus crassifolia	NDH	Medium	3.3	9.2	2.6	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	39
red mulberry	Morus rubra	NSL	Low	6.7	7.3	1.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	40
water elm	Planera aquatica	NSL	Low	2.2	7.3	3.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	41
slash pine	Pinus elliottii	NDH	High	4.4	5.5	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	42
boxelder	Acer negundo	WSH	Low	7.8	5.1	1.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	43
bitternut hickory	Carya cordiformis	WSL	Low	3.3	5.1	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	44
Nuttall oak	Quercus texana	NSH	Medium	2.2	4.4	1.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	45
eastern redbud	Cercis canadensis	NSL	Low	5.6	3.9	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	46
black walnut	Juglans nigra	WDH	Low	3.3	3.9	1.1	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	47

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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
flowering dogwood	Cornus florida	WDL	Medium	6.7	3.5	0.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	48
water hickory	Carya aquatica	NSL	Medium	1.1	3.4	2.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	49
bald cypress	Taxodium distichum	NSH	Medium	1.1	3.0	2.5	No change	No change	Medium	Rare	Poor	Poor			0	50
American basswood	Tilia americana	WSL	Medium	3.3	2.9	0.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51
Shumard oak	Quercus shumardii	NSL	Low	2.2	2.8	1.2	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	52
eastern cottonwood	Populus deltoides	NSH	Low	4.4	2.6	8.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	53
common persimmon	Diospyros virginiana	NSL	Low	4.4	2.3	0.5	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	54
black oak	Quercus velutina	WDH	High	1.1	1.8	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	55
shagbark hickory	Carya ovata	WSL	Medium	6.7	1.4	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	56
longleaf pine	Pinus palustris	NSH	Medium	1.1	1.3	1.1	Very Lg. dec.	No change	Medium	Rare	Lost	Poor			0	57
pawpaw	Asimina triloba	NSL	Low	1.1	0.6	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	58
live oak	Quercus virginiana	NDH	High	4.4	0.4	1.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	59
florida maple	Acer barbatum	NSL	Low	1.1	0.2	0.2	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	60
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	61
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	62
American beech	Fagus grandifolia	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	63
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	64
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	65
swamp tupelo	Nyssa biflora	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	66
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	67
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	68
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	69
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	70
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71
northern red oak	Quercus rubra	WDH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	72
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73