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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	8,000.0	3,088.8	229

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			Model		Potential Change in Habitat Suitability			Capability to Cope or Persist			Migration Potential		
							Scenario	Scenario		Scenario	Scenario		SHIFT	SHIFT
Ash	2						RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Hickory	6	Abundance		Reliability	Adaptability									
Maple	4	Abundant	3	High	17	23	Increase	25	27	Very Good	12	13	Likely	2	2
Oak	16	Common	26	Medium	30	47	No Change	11	10	Good	15	15	Infill	5	9
Pine	6	Rare	38	Low	32	10	Decrease	28	27	Fair	5	4	Migrate	1	2
Other	33	Absent	15	FIA	3		New	9	10	Poor	17	18		8	13
67		**82**		**82**	**80**	Unknown	9	8	Very Poor	14	13			
							82	**82**	FIA Only	2	2			
									Unknown	6	5			
									71	**70**				

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	64.4	66.1	68.1	68.2	
Average	CCSM85	64.4	66.3	68.8	71.4	
	GFDL45	64.4	67.3	69.2	69.9	
	GFDL85	64.4	67.2	70.3	73.9	
	HAD45	64.4	66.7	69.3	70.9	
	HAD85	64.4	66.9	70.8	74.7	
Growing	CCSM45	77.4	78.9	80.6	81.0	
Season	CCSM85	77.4	79.0	81.4	84.8	
May—Sep	GFDL45	77.4	80.5	82.3	83.4	
	GFDL85	77.4	80.4	83.7	87.8	
	HAD45	77.4	80.6	82.9	84.8	
	HAD85	77.4	80.4	86.2	89.9	
Coldest	CCSM45	45.1	47.5	48.3	48.1	
Month	CCSM85	45.1	47.2	48.4	49.5	
Average	GFDL45	45.1	48.1	48.4	48.8	
	GFDL85	45.1	47.0	48.1	48.5	
	HAD45	45.1	45.3	46.8	47.5	
	HAD85	45.1	46.3	47.2	48.9	
Warmest	CCSM45	81.6	83.2	84.0	84.3	
Month	CCSM85	81.6	83.3	84.6	86.5	
Average	GFDL45	81.6	84.5	85.2	85.9	
	GFDL85	81.6	84.7	86.2	88.5	
	HAD45	81.6	85.6	87.1	87.9	
	HAD85	81.6	85.7	89.2	91.0	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	45.7	48.4	50.4	52.1	
Total	CCSM85	45.7	48.4	52.1	57.3	
	GFDL45	45.7	50.2	52.8	56.3	
	GFDL85	45.7	50.2	54.1	52.6	
	HAD45	45.7	43.5	47.0	48.2	
	HAD85	45.7	47.8	44.0	46.8	
Growing	CCSM45	19.2	21.8	22.9	24.2	
Season	CCSM85	19.2	20.8	23.0	24.9	
May—Sep	GFDL45	19.2	23.4	25.3	26.1	
	GFDL85	19.2	23.0	26.3	26.0	
	HAD45	19.2	18.8	19.3	19.1	
	HAD85	19.2	20.0	16.5	16.9	

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	87.5	3287.9	38.5	No change	No change	Medium	Abundant	Good	Good			1	1
sweetgum	Liquidambar styraciflua	WDH	High	90	954.7	10.9	No change	No change	Medium	Abundant	Good	Good			1	2
water oak	Quercus nigra	WDH	High	88.8	931.7	10.8	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
red maple	Acer rubrum	WDH	High	58.8	407.0	6.8	No change	Sm. inc.	High	Common	Good	Very Good			1	4
slash pine	Pinus elliottii	NDH	High	25	403.8	18.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	5
laurel oak	Quercus laurifolia	NDH	Medium	35	289.7	8.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
swamp tupelo	Nyssa biflora	NDH	Medium	40	286.6	7.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	7
mockernut hickory	Carya alba	WDL	Medium	40	195.9	5.4	No change	No change	High	Common	Good	Good			1	8
yellow-poplar	Liriodendron tulipifera	WDH	High	32.5	176.9	5.3	Sm. dec.	Lg. dec.	High	Common	Fair	Fair			1	9
southern red oak	Quercus falcata	WDL	Medium	47.5	169.4	4.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	10
white oak	Quercus alba	WDH	Medium	40	145.0	3.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	11
winged elm	Ulmus alata	WDL	Medium	42.5	136.9	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	12
green ash	Fraxinus pennsylvanica	WSH	Low	33.8	124.4	3.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	13
black willow	Salix nigra	NSH	Low	10	123.9	12.1	No change	No change	Low	Common	Poor	Poor			0	14
black cherry	Prunus serotina	WDL	Medium	57.5	107.5	2.2	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	15
shortleaf pine	Pinus echinata	WDH	High	41.3	103.2	2.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	16
longleaf pine	Pinus palustris	NSH	Medium	16.2	102.9	8.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	17
post oak	Quercus stellata	WDH	High	26.3	87.4	3.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
American elm	Ulmus americana	WDH	Medium	35	83.1	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	19
pignut hickory	Carya glabra	WDL	Medium	31.3	80.7	2.5	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	20
willow oak	Quercus phellos	NSL	Low	21.3	74.9	3.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	21
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	26.3	72.7	2.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	22
blackgum	Nyssa sylvatica	WDL	Medium	37.5	72.5	2.1	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	23
common persimmon	Diospyros virginiana	NSL	Low	37.5	70.3	2.1	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	24
bald cypress	Taxodium distichum	NSH	Medium	3.8	68.9	17.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor		Infill +	2	25
flowering dogwood	Cornus florida	WDL	Medium	32.5	67.4	2.0	No change	Sm. inc.	Medium	Common	Fair	Good			1	26
sugarberry	Celtis laevigata	NDH	Low	15	60.3	3.9	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	27
American holly	Ilex opaca	NSL	Medium	22.5	58.8	2.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	28
pecan	Carya illinoinensis	NSH	Low	6.3	55.6	8.7	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor		Infill +	0	29
sand pine	Pinus clausa	NDH	High	1.2	40.4	31.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	30
turkey oak	Quercus laevis	NSH	Medium	5	39.3	7.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	1	31
sweetbay	Magnolia virginiana	NSL	Medium	13.7	38.7	2.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	32
swamp chestnut oak	Quercus michauxii	NSL	Low	13.8	34.0	2.4	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	33
sycamore	Platanus occidentalis	NSL	Low	7.5	32.6	4.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
overcup oak	Quercus lyrata	NSL	Medium	7.5	29.9	3.9	No change	No change	Low	Rare	Very Poor	Very Poor			0	35
water tupelo	Nyssa aquatica	NSH	Medium	6.3	29.8	4.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	36
slippery elm	Ulmus rubra	WSL	Low	10	25.5	2.5	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	37
florida maple	Acer barbatum	NSL	Low	17.5	25.1	1.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	38
red mulberry	Morus rubra	NSL	Low	15	24.3	1.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	39
American beech	Fagus grandifolia	WDH	High	7.5	22.8	3.0	No change	No change	Medium	Rare	Poor	Poor	Infill +		2	40
blackjack oak	Quercus marilandica	NSL	Medium	5	17.2	3.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	41
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	11.2	16.4	1.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	42
sassafras	Sassafras albidum	WSL	Low	10	16.2	1.6	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair			1	43
silver maple	Acer saccharinum	NSH	Low	1.2	15.9	12.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	44
black oak	Quercus velutina	WDH	High	7.5	14.7	1.9	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	2.5	14.1	5.5	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	46
river birch	Betula nigra	NSL	Low	6.2	13.2	2.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	47

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U.S. Census Bureau Urban Areas
Climate Change Atlas Tree Species
Current and Potential Future Habitat, Capability, and Migration

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
eastern redcedar	Juniperus virginiana	WDH	Medium	11.2	9.5	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	48
southern magnolia	Magnolia grandiflora	NSL	Low	8.8	9.4	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	49
hackberry	Celtis occidentalis	WDH	Medium	5	8.3	1.6	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	50
redbay	Persea borbonia	NSL	Low	3.8	7.9	2.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	51
eastern redbud	Cercis canadensis	NSL	Low	7.5	7.5	1.0	No change	No change	Medium	Rare	Poor	Poor			1	52
sourwood	Oxydendrum arboreum	NDL	High	5	7.0	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	53
northern red oak	Quercus rubra	WDH	Medium	5	6.8	1.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	54
scarlet oak	Quercus coccinea	WDL	Medium	3.8	6.3	1.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	55
shagbark hickory	Carya ovata	WSL	Medium	3.8	6.0	1.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	56
wild plum	Prunus americana	NSLX	FIA	3.7	5.5	1.4	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	57
boxelder	Acer negundo	WSH	Low	3.7	5.5	1.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2	58
ailanthus	Ailanthus altissima	NSL	FIA	1.2	4.9	3.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	59
black locust	Robinia pseudoacacia	NDH	Low	1.3	4.8	3.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
spruce pine	Pinus glabra	NSL	Low	1.2	3.3	2.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	61
bitternut hickory	Carya cordiformis	WSL	Low	1.3	2.7	2.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	62
white ash	Fraxinus americana	WDL	Medium	1.3	1.7	1.3	No change	No change	Low	Rare	Very Poor	Very Poor			2	63
sand hickory	Carya pallida	NSL	FIA	1.3	1.4	1.1	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	64
Shumard oak	Quercus shumardii	NSL	Low	1.3	1.2	0.9	Lg. dec.	Sm. dec.	High	Rare	Poor	Poor			0	65
chestnut oak	Quercus prinus	NDH	High	1.3	0.7	0.5	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	66
pawpaw	Asimina triloba	NSL	Low	1.2	0.6	0.5	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	67
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	68
Virginia pine	Pinus virginiana	NDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	70
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	71
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	72
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	73
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	75
honeylocust	Gleditsia triacanthos	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	76
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	78
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	79
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	80
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	81
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	82

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