U.S. Census Bureau Urban Areas

Climate Change Atlas Tree Species

Current and Potential Future Habitat, Capability, and Migration

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

sq. km sq. mi FIA Plots Area of Region 8,271.9 3,193.8 275

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								in Habitat Suitability	Capability	to Cope o	Migration Potential			
Ash	3				Model			Scenario	Scenario		Scenario	Scenario		SHIFT	SHIFT
Hickory	4	Abu	ndance		Reliability	Adaptability		RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Maple	1	Abundant	5	High	15	17	Increase	21	22	Very Good	12	11	Likely	1	1
Oak	11	Common	14	Medium	32	50	No Change	11	14	Good	7	9	Infill	25	28
Pine	7	Rare	35	Low	28	9	Decrease	19	15	Fair	6	8	Migrate	0	2
Other	28	Absent	19	FIA	3		New	7	9	Poor	13	11	•	26	31
-	54	_	73	•	78	76	Unknown	20	18	Very Poor	11	10			
							-	78	78	FIA Only	3	3			
Unkno											17	15			
Potentia	Potential Changes in Climate Variables											67			

Potential Changes in Climate variables

Temperatu	ıre (°F)				
	Scenario	2009	2039	2069	2099
Annual	CCSM45	66.9	68.4	70.1	70.1
Average	CCSM85	66.9	68.5	70.8	73.0
	GFDL45	66.9	69.6	71.3	72.0
	GFDL85	66.9	69.3	72.3	75.7
	HAD45	66.9	68.8	71.2	72.5
	HAD85	66.9	69.1	72.2	75.7
Growing	CCSM45	78.7	79.9	81.2	81.5
Season	CCSM85	78.7	79.9 79.9	82.2	84.7
		78.7 78.7	79.9 81.4	82.9	— •
May—Sep					84.2
	GFDL85	78.7	81.1	84.1	87.9
	HAD45	78.7	81.3	83.2	84.5
	HAD85	78.7	81.2	85.3	88.2
Coldest	CCSM45	49.0	51.2	51.9	51.7
Month	CCSM85	49.0	51.0	52.2	53.3
Average	GFDL45	49.0	52.1	52.4	52.7
	GFDL85	49.0	50.8	52.0	52.6
	HAD45	49.0	49.0	50.5	51.3
	HAD85	49.0	50.3	51.4	53.0
Warmest	CCSM45	81.9	83.0	83.5	83.8
Month	CCSM85	81.9	82.8	84.0	85.4
Average	GFDL45	81.9	84.3	85.0	85.7
	GFDL85	81.9	83.8	85.1	87.2
	HAD45	81.9	84.7	85.8	86.4
	HAD85	81.9	84.9	87.2	88.6

Precipitation (in)													
	Scenario	2009	2039	2069	2099								
Annual	CCSM45	65.3	68.2	69.9	71.9								
Total	CCSM85	65.3	69.1	71.5	75.0								
	GFDL45	65.3	72.9	76.8	77.4								
	GFDL85	65.3	72.4	76.8	75.0								
	HAD45	65.3	61.9	67.8	71.3								
	HAD85	65.3	69.5	62.0	66.0								
Growing	CCSM45	30.8	33.4	33.4	34.4								
Season	CCSM85	30.8	31.9	33.6	34.4 ◆◆◆◆								
May—Sep	GFDL45	30.8	37.2	39.2	37.7								
	GFDL85	30.8	37.5	41.1	40.7								
	HAD45	30.8	29.6	31.0	32.2 ◆ ◆ ◆ ◆								
	HAD85	30.8	31.6	25.3	26.9								

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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Stath prime Pinus plints No. High 69.4 260.18	Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO N
Sand game Pimus clauxa MpH M	slash pine	Pinus elliottii	NDH	High	69.4	2602.8	28.0 No change	No change	Medium	Abundant	Good	Good	Infill ++	Infill ++	2 1
Bobbly pine Pinus taede Worth Highe 3.7 9.55, 24, 9.5m. i.m. Seminor Medium Abundant Wery Good	longleaf pine	Pinus palustris	NSH	Medium	74.8	1679.3	19.4 Sm. inc.	No change	Medium	Abundant	Very Good	Good			0 2
Series S	sand pine	Pinus clausa	NDH	High	38.3	1054.5	20.3 No change	No change	Low	Abundant	Fair	Fair	Infill +	Infill +	2 3
Sweetbay Magnola vrginiana NSL Medium 447 495,7 9,7 Sm. inc. Medium Common Good Good Infill + Infill + 2 5 5 5 5 5 5 5 5 5	loblolly pine	Pinus taeda	WDH	High	35.7	955.6	24.9 Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good	Infill ++	Infill ++	2 4
Starkey on Suercus lawers Shi Medium 48.1 48.10 8.7 No.change	laurel oak	Quercus laurifolia	NDH	Medium	62.2	769.2	11.4 Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good	Infill ++	Infill ++	2 5
swamp tupple Nysa biflora NDH Medium 43.3 48.2 8.1 Sm.inc. Sm.inc. Low Common Fair Fair Infill 2 2 2 3.1 Sm.inc. Modelum Common Fair Infill 1.8 1.1 2 2 3.1 Sm.inc. Modelum Common Very Good Very Good Infill 1.2 2.8 2.1 1.3 1.8 Medium 2.1 <td>sweetbay</td> <td>Magnolia virginiana</td> <td>NSL</td> <td>Medium</td> <td>44.7</td> <td>495.7</td> <td>9.7 Sm. inc.</td> <td>Sm. inc.</td> <td>Medium</td> <td>Common</td> <td>Good</td> <td>Good</td> <td>Infill ++</td> <td>Infill ++</td> <td>2 6</td>	sweetbay	Magnolia virginiana	NSL	Medium	44.7	495.7	9.7 Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2 6
Water oak Quercus nigrian Work High 13, 2 25, 3 15, 2 15, 16 15, 2 15, 16 16 16 16 16 16 16 16	turkey oak	Quercus laevis	NSH	Medium	48.1	481.0	8.7 No change	No change	High	Common	Good	Good	Infill ++	Infill ++	2 7
	swamp tupelo	Nyssa biflora	NDH	Medium	45.3	436.2	8.1 Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	2 8
Second Paradium ascendens NSH Medium 1.12 1.28 1.68 8.8 1.59 1.12 1.28 1.08 1.28 1.08 1.28 1.08 1.29 1.28 1.08 1.28 1.28 1.08 1.28	water oak	Quercus nigra	WDH	High	52.5	305.0	5.3 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2 9
Mathor white-cedar Chamaecypars thyoldes NSH Medium 13,2 14,5 14,5 14,5 15,	live oak	Quercus virginiana	NDH	High	41.3	275.8	5.8 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			2 10
Mater Marting Nyssa aquatitica Nyss Medium 13,2 13,7 10,0 Sm. dec. Sm. dec. Low Common Poor Poor Medium Common Common Medium Common Medi	pond cypress	Taxodium ascendens	NSH	Medium	11.2	168.6	8.8 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			2 11
Sweetgum	Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	14.5	147.5	9.8 Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	2 12
yellow-poplar	water tupelo	Nyssa aquatica	NSH	Medium	13.2	137.2	10.0 Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0 13
red maple Acer rubrum WPH High 32.5 68.8 2.0 kg line. Lg line. High Common Very Good Very Good Infill + 1nfill + 2 16 blackgum Nyssa sylvatica WDL Medium 23.2 58.8 2.3 kg line. Lg line. High Common Very Good Very Good Infill + 1nfill + 2 17 bald cypres Taxodium distribum NSH Medium 10.9 52.9 47.1 kg. line. Lg line. High Common Very Good Very Good Infill + 1nfill + 2 18 southern magnolia Magnolia grandiflora NSL Low 18.5 52.6 2.5 kg. line. Lg line. High Rare Good Good Infill + Infill + 2 19 southern rado Quercus falcata WDL Medium MIH No 15.1 46.8 2.2 Sm. line. Medium Rare Good Good Infill + Infill + 2 12 southern rado Quercus stellata WDL High No 10.9 45.9 40.8 No change No change	sweetgum	Liquidambar styraciflua	WDH	High	21.8	100.6	4.5 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2 14
blackgum Nyssa sylvatica WDL Medium 23.2 5.8 in. 1.8 in. 1.5	yellow-poplar	Liriodendron tulipifera	WDH	High	20.5	73.1	3.4 Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2 15
Sab Oppress Taxodium distichum NSH Medium 1.9 5.29 4.7 Lg. inc. Lg. inc. Medium Common Very Good Very Good Mery Good Mer	red maple	Acer rubrum	WDH	High	32.5	68.8	2.0 Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2 16
southern magnolia Magnolia grandiffora NSL Low 18.5 25.6 2.5 Leg. Inc. Lg. Inc. Medium Common Common Very Good Very Good Infill + 1.6 Infill + 2.1 Southern red oak overday Persea borbonola NSL Low 15.1 46.8 2.2 Sm. Inc. High Rare Good Good Infill + 1.6 Infill + 2.2 In	blackgum	Nyssa sylvatica	WDL	Medium	23.2	58.8	2.3 Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2 17
southern magnolia Magnolia grandiffora NSL Low 18.5 25.6 2.5 Leg. Inc. Lg. Inc. Medium Common Common Very Good Very Good Infill + 1.6 Infill + 2.1 Southern red oak overday Persea borbonola NSL Low 15.1 46.8 2.2 Sm. Inc. High Rare Good Good Infill + 1.6 Infill + 2.2 In	bald cypress	Taxodium distichum	NSH	Medium	10.9	52.9	4.7 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			2 18
Persea borbonia NSL Low 15.1 46.8 2.2 Sm. inc. Migh Rare Good Good Infill + Infill + 2 21	southern magnolia	Magnolia grandiflora	NSL	Low	18.5	52.6	2.5 Lg. inc.		Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2 19
Preain Praxinus pennsylvanica WSH Low 10.9 44.5 4.0 Sm. inc. Sm. inc. Medium Rare Fair Fair Good Infill + 2 2 2 3 2 3 2 3 2 3 3 3 0 2 4 3 3 4 5 4 8 0 2 4 3 3 4 8 0 2 4 3 3 4 8 0 2 4 3 3 4 8 0 2 4 3 3 4 8 0 2 4 3 3 4 8 0 2 4 3 3 4 8 0 2 4 3 3 4 8 0 2 4 8 0 2 4 3 4 8 0 2 4 3 4 8 0 2 4 3 4 8 0 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2 4 2	southern red oak	Quercus falcata	WDL	Medium	11.1	49.2	3.8 Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2 20
Designate Designation Designate Designation Designatio	redbay	Persea borbonia	NSL	Low	15.1	46.8	2.2 Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2 21
bluejack oak Quercus incana NSL Low 21.6 39.6 1.7 No change No change Medium Rare Poor Poor Infill + Infill + 2 2 2 2 2 2 2 2 2	green ash	Fraxinus pennsylvanica	WSH	Low	10.9	44.5	4.0 Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair		Infill +	2 22
American holly Ilex opaca NSL Medium 24.1 33.5 1.3 No change No change Medium Rare Poor Poor Infill + Infill + 2 2 5 1 1 1 1 1 1 1 1 1	post oak	Quercus stellata	WDH	High	7.6	42.9	4.8 No change	Sm. inc.	High	Rare	Fair	Good	Infill +		2 23
black walnut Juglans nigra WDH Low 1.2 31.3 25.0 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor Sm. inc. Medium Rare Very Poor Poor Fair Infill Infill 2.7 2.7	bluejack oak	Quercus incana	NSL	Low	21.6	39.6	1.7 No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 24
American elm Ulmus americana WDH Medium 4.8 21.9 4.4 No change Sm. inc. Medium Rare Poor Fair Infill Infill Infill Infill 2 2 7 spruce pine Pinus glabra NSL Low 6 20.5 3.2 Lg. dec. Lg. dec. Medium Rare Very Poor Very Poor 0 2 8 pond pine Pinus serotina NSL Low 12.5 15.7 1.1 Lg. dec. Lg. dec. High Rare Poor Poor Infill Infill 2 3 0 1 1 Lg. dec. Lg. dec. High Rare Poor Poor Infill Infill 2 3 0 1 1 Lg. dec. Lg. dec. High Rare Poor Poor Infill Infill 2 3 1 1 Lg. dec. Lg. dec. High Rare Poor Poor Infill Infill 2 3 1 1 Lg. dec. Lg. dec. High Rare Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. High Rare Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. High Rare Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. High Rare Poor Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. High Rare Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. High Rare Poor Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. High Rare Poor Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. High Rare Poor Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. Medium Rare Poor Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. Medium Rare Poor Poor Poor Infill Infill 2 3 1 Lg. dec. Lg. dec. Medium Rare Poor Poor Very Poor Ver	American holly	Ilex opaca	NSL	Medium	24.1	33.5	1.3 No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 25
spruce pine Pinus glabra NSL Low 6 20.5 3.2 Lg. dec. Lg. dec. Medium Rare Very Poor Very Poor Very Poor 2 29 29 29 20 29 29 29 29 29 29 29 29 29 29 29 29 29	black walnut	Juglans nigra	WDH	Low	1.2	31.3	25.0 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 26
Pinus serotina NSH Medium 2.4 19.9 8.0 No change No change Low Rare Very Poor Very Poor 2 29	American elm	Ulmus americana	WDH	Medium	4.8	21.9	4.4 No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2 27
common persimmon Diospyros virginiana NSL Low 12.5 15.7 1.1 Lg. dec. Lg. dec. High Rare Poor Poor Infill+ Infill+ 2 30 American hornbeam; musclev Carpinus caroliniana WSL Low 8.4 15.3 1.7 No change No change Medium Rare Poor Poor Infill+ Infill+ 2 31 Carolina ash Fraxinus caroliniana NSL FIA 3.5 14.6 3.9 Unknown Unknown NA Rare FIA Only FIA Only 0 32 black cherry Prunus serotina WDL Medium 9.7 14.2 1.4 Lg. inc. Lg. inc. Lg. inc. Low Rare Fiar Fair Infill+ Infill+ 2 33 flowering dogwood Cornus florida WDL Medium 10.8 11.8 1.0 No change No change Medium Rare Very Poor Very Poor Poor Infill+ Infill+ 2 35 pignut hickory Carya glabra WDL Medium 6 8.7 1.4 No change No change Medium Rare Poor Poor Infill+ Infill+ 2 36 sourwood Oxydendrum arboreum NDL High 4.8 7.6 1.5 Sm. dec. Sm. dec. High Rare Poor Poor Poor Infill+ Infill+ 2 36 sourwood Oxydendrum arboreum NDL High 4.8 7.6 1.5 Sm. dec. No change Medium Rare Poor Poor Infill+ Infill+ 2 38 mockernut hickory Carya alba WDH Medium 4.8 5.8 1.2 Lg. dec. Sm. dec. High Rare Poor Poor Fair Infill+ Infill+ 2 39 mockernut hickory Carya alba WDL Medium 2.4 4.1 1.6 Sm. dec. No change High Rare Poor Poor Infill+ Infill+ 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change High Rare Poor Fair Infill+ Infill+ 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor Very Poor 0 41 shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good 1 2 42 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor Poor 0 4 40 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Very Poor Very Poor 0 4 40 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Very Poor Very Poor 0 4 40 loblolly-bay Gordonia lasianthus NSL Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Very Poor Very Poor Very Poor 0 4 40 loblolly-bay Gordonia lasianthus NSL Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare	spruce pine	Pinus glabra	NSL	Low	6	20.5	3.2 Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 28
American hornbeam; muscle Carpinus caroliniana WSL Low 8.4 15.3 1.7 No change No change Medium Rare Poor Poor Infill + 2 31 Low Base Praxinus caroliniana NSL FIA 3.5 14.6 3.9 Unknown Unknown NA Rare FIA Only FIA Only Diagnosis of the Carolina ash Fraxinus caroliniana NSL FIA 3.5 14.6 3.9 Unknown Unknown NA Rare FIA Only FIA Only FIA Only Diagnosis of the Carolina ash Praxinus caroliniana NSL FIA 3.5 14.6 3.9 Unknown Unknown NA Rare FIA Only FIA Only FIA Only Diagnosis of the Carolina ash Praxinus caroliniana NSL Medium 9.7 14.2 1.4 Lg. inc. Lg. inc. Low Rare Fiar Fair Infill + Infill + 2 35 14.6 14.5 Infill + Infill + 2 35 14.6 14.5 Infill + Infill + 2 35 14.6 Infill + Infill + 2 35 Infill + Infill + Infill + 2 35 Infill + Infill + 2 35 Infill + Infill + 2 35 Infill + Infill + Infill + 2 35 Infill + Infill + 2 35 Infill + Infill + Infill + 2 35 Infill + Infill	pond pine	Pinus serotina	NSH	Medium	2.4	19.9	8.0 No change	No change	Low	Rare	Very Poor	Very Poor			2 29
Carolina ash Fraxinus caroliniana NSL FIA 3.5 14.6 3.9 Unknown Unknown NA Rare FIA Only FIA Only 0 32 black cherry Prunus serotina WDL Medium 9.7 14.2 1.4 Lg. inc. Lg. inc. Low Rare Fair Fair Infill + Infill + 2 33 eastern redcedar Juniperus virginiana WDH Medium 4.8 12.7 2.5 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor Very Poor 1 2 34 flowering dogwood Cornus florida WDL Medium 10.8 11.8 1.0 No change No change Medium Rare Poor Poor Infill + Infill + 2 35 pignut hickory Carya glabra WDL Medium 6 7.0 1.5 Sm. dec. Sm. dec. High Rare Poor Poor Poor Infill + Infill + 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	common persimmon	Diospyros virginiana	NSL	Low	12.5	15.7	1.1 Lg. dec.	Lg. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2 30
black cherry Prunus serotina WDL Medium 9.7 14.2 1.4 Lg. inc. Lg. inc. Lg. inc. Low Rare Fair Fair Infill + Infill + 2 33 eastern redcedar Juniperus virginiana WDH Medium 4.8 12.7 2.5 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 2 34 flowering dogwood Cornus florida WDL Medium 10.8 11.8 1.0 No change No change Medium Rare Poor Poor Infill + Infill + 2 35 pignut hickory Carya glabra WDL Medium 6 8.7 1.4 No change No change Medium Rare Poor Poor Infill + Infill + 2 36 sourwood Oxydendrum arboreum NDL High 4.8 7.6 1.5 Sm. dec. Mo change High Rare Poor Poor Poor Infill + Infill + 2 38 white oak Quercus marilandica NSL Medium 4.8 6.3 1.3 Sm. dec. No change High Rare Poor Poor Infill + Infill + 2 39 mockernut hickory Carya alba WDL Medium 2.4 4.1 1.6 Sm. dec. No change High Rare Poor Poor Infill + Infill + 2 39 mockernut hickory Carya alba WDL Medium 2.4 4.1 1.6 Sm. dec. No change High Rare Poor Poor Infill + Infill + 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor Infill + 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor 0 41 shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good Good 2 4 20 eastern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. High Rare Poor Poor Very Poor Very Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good Good 5 2 45 sassafras Sassafra	American hornbeam; muscle	\ Carpinus caroliniana	WSL	Low	8.4	15.3	1.7 No change	No change	Medium	Rare	Poor	Poor		Infill +	2 31
eastern redcedar Juniperus virginiana WDH Medium 4.8 12.7 2.5 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 2 34 flowering dogwood Cornus florida WDL Medium 10.8 11.8 1.0 No change No change Medium Rare Poor Poor Infill Infill 1 2 35 pignut hickory Carya glabra WDL Medium 6 8.7 1.4 No change No change Medium Rare Poor Poor Infill Infill 1 2 36 sourwood Oxydendrum arboreum NDL High 4.8 7.6 1.5 Sm. dec. Sm. dec. High Rare Poor Poor Infill Infill 1 2 38 white oak Quercus marilandica NSL Medium 4.8 6.3 1.3 Sm. dec. No change High Rare Poor Poor Infill Infill 1 2 39 mockernut hickory Carya alba WDL Medium 4.8 5.8 1.2 Lg. dec. Sm. dec. High Rare Poor Poor Infill 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Carolina ash	Fraxinus caroliniana	NSL	FIA	3.5	14.6	3.9 Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0 32
flowering dogwood Cornus florida WDL Medium 10.8 11.8 1.0 No change No change Medium Rare Poor Poor Infill + Infill + 2 35 pignut hickory Carya glabra WDL Medium 6 8.7 1.4 No change No change Medium Rare Poor Poor Infill + Infill + 2 36 sourwood Oxydendrum arboreum NDL High 4.8 7.6 1.5 Sm. dec. Sm. dec. High Rare Poor Poor Poor Infill + Infill + 2 38 white oak Quercus marilandica NSL Medium 4.8 6.3 1.3 Sm. dec. No change High Rare Poor Poor Infill + Infill + 2 38 white oak Quercus alba WDH Medium 4.8 5.8 1.2 Lg. dec. Sm. dec. High Rare Poor Poor Infill + Infill + 2 39 mockernut hickory Carya alba WDL Medium 2.4 4.1 1.6 Sm. dec. No change High Rare Poor Poor Poor Infill + Infill + 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor Very Poor 0 41 shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good Good 2 42 eastern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. High Rare Poor Poor Very Poor Very Poor 0 43 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor Very Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good Good 2 45 sassafras Sassafras Sassafras Sassafras Albidum WSL Low 1.2 1.7 1.3 Lg. dec. Sm. dec. Medium Rare Very Poor Very Poor Very Poor 2 4 66	black cherry	Prunus serotina	WDL	Medium	9.7	14.2	1.4 Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2 33
pignut hickory Carya glabra WDL Medium 6 8.7 1.4 No change No change Medium Rare Poor Poor Infill + Infill + 2 36 sourwood Oxydendrum arboreum NDL High 4.8 7.6 1.5 Sm. dec. Sm. dec. High Rare Poor Poor Poor O 37 blackjack oak Quercus marilandica NSL Medium 4.8 6.3 1.3 Sm. dec. No change High Rare Poor Poor Fair Infill + Infill + 2 38 white oak Quercus alba WDH Medium 4.8 5.8 1.2 Lg. dec. Sm. dec. High Rare Poor Poor Infill + Infill + 2 39 mockernut hickory Carya alba WDL Medium 2.4 4.1 1.6 Sm. dec. No change High Rare Poor Poor Infill + 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor Very Poor O 41 shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good Good Castern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. High Rare Poor Poor Very Poor Very Poor O 43 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor Very Poor O 44 loblolly-bay Gordonia lasianthus NSH Medium Castern NSH Medium NSH Medium Castern NSH	eastern redcedar	Juniperus virginiana	WDH	Medium	4.8	12.7	2.5 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2 34
sourwood Oxydendrum arboreum NDL High 4.8 7.6 1.5 Sm. dec. Sm. dec. High Rare Poor Poor 0 37 blackjack oak Quercus marilandica NSL Medium 4.8 6.3 1.3 Sm. dec. No change High Rare Poor Fair Infill + Infill + 2 38 white oak Quercus alba WDH Medium 4.8 5.8 1.2 Lg. dec. Sm. dec. High Rare Poor Poor Infill + 2 39 mockernut hickory Carya alba WDL Medium 2.4 4.1 1.6 Sm. dec. No change High Rare Poor Poor Infill + 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor 0 41 shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good 2 42 eastern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 43 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good 2 45 sassafras VERY Poor Very Poor Very Poor 2 46	flowering dogwood	Cornus florida	WDL	Medium	10.8	11.8	1.0 No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 35
blackjack oak Quercus marilandica NSL Medium 4.8 6.3 1.3 Sm. dec. No change High Rare Poor Fair Infill + Infill + 2 38 white oak Quercus alba WDH Medium 4.8 5.8 1.2 Lg. dec. Sm. dec. High Rare Poor Poor Infill + 2 39 mockernut hickory Carya alba WDL Medium 2.4 4.1 1.6 Sm. dec. No change High Rare Poor Fair Infill + 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor 0 41 shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good Good 2 42 eastern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 43 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good Good 2 45 sassafras VERY Poor Very Poor Very Poor 2 46	pignut hickory	Carya glabra	WDL	Medium	6	8.7	1.4 No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 36
white oak Quercus alba WDH Medium 4.8 5.8 1.2 Lg. dec. Sm. dec. High Rare Poor Poor Infill + 2 39 mockernut hickory Carya alba WDL Medium 2.4 4.1 1.6 Sm. dec. No change High Rare Poor Fair Infill + 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor 0 41 shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good 2 42 eastern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 43 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good 2 45 sassafras Very Poor Very Poor 2 46	sourwood	Oxydendrum arboreum	NDL	High	4.8	7.6	1.5 Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0 37
mockernut hickory Carya alba WDL Medium 2.4 4.1 1.6 Sm. dec. No change High Rare Poor Fair Infill + 2 40 overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor 0 41 shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good 2 42 eastern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 43 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good 2 45 sassafras VDL Low 1.2 1.7 1.3 Lg. dec. Sm. dec. Medium Rare Very Poor Very Poor 2 46	blackjack oak	Quercus marilandica	NSL	Medium	4.8	6.3	1.3 Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2 38
overcup oak Quercus lyrata NSL Medium 2.4 3.5 1.4 Sm. dec. No change Low Rare Very Poor Very Poor 0 41 shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good 2 42 eastern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 43 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good 2 45 sassafras Sassafras albidum WSL Low 1.2 1.7 1.3 Lg. dec. Sm. dec. Medium Rare Very Poor Very Poor 2 46	white oak	Quercus alba	WDH	Medium	4.8	5.8	1.2 Lg. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2 39
shortleaf pine Pinus echinata WDH High 1.2 3.0 2.4 Lg. inc. Lg. inc. Medium Rare Good Good 2 42 eastern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 43 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good 2 45 sassafras Sassafras albidum WSL Low 1.2 1.7 1.3 Lg. dec. Sm. dec. Medium Rare Very Poor Very Poor 2 46	mockernut hickory	Carya alba	WDL	Medium	2.4	4.1	1.6 Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2 40
eastern redbud Cercis canadensis NSL Low 1.2 2.7 2.2 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 43 eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good 2 45 sassafras Sassafras albidum WSL Low 1.2 1.7 1.3 Lg. dec. Sm. dec. Medium Rare Very Poor Very Poor 2 46	overcup oak	Quercus lyrata	NSL	Medium	2.4	3.5	1.4 Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0 41
eastern hophornbeam; ironw Ostrya virginiana WSL Low 2.4 2.5 1.0 Sm. dec. Sm. dec. High Rare Poor Poor 0 44 loblolly-bay Gordonia lasianthus NSH Medium 2.4 2.3 0.9 Lg. inc. Lg. inc. Medium Rare Good Good 2 45 sassafras Sassafras albidum WSL Low 1.2 1.7 1.3 Lg. dec. Sm. dec. Medium Rare Very Poor Very Poor 2 46	shortleaf pine	Pinus echinata	WDH	High	1.2	3.0	2.4 Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2 42
loblolly-bayGordonia lasianthusNSHMedium MSL2.42.30.9Lg. inc.Lg. inc.Medium MediumRareGoodGood245sassafrasSassafras albidumWSLLow1.21.71.3Lg. dec.Sm. dec.Medium MediumRareVery PoorVery Poor246	eastern redbud	Cercis canadensis	NSL	Low	1.2	2.7	2.2 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 43
sassafras Sassafras albidum WSL Low 1.2 1.7 1.3 Lg. dec. Sm. dec. Medium Rare Very Poor Very Poor 2 46	eastern hophornbeam; ironv	v Ostrya virginiana	WSL	Low	2.4	2.5	1.0 Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0 44
	loblolly-bay	Gordonia lasianthus	NSH	Medium	2.4	2.3	0.9 Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2 45
pecan Carya illinoinensis NSH Low 1.2 1.6 1.2 Very Lg. dec. Very Lg. dec. Low Rare Lost Lost 0 47	sassafras	Sassafras albidum	WSL	Low	1.2	1.7	1.3 Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2 46
, , , , , , , , , , , , , , , , , , , ,	pecan	Carya illinoinensis	NSH	Low	1.2	1.6	1.2 Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0 47



U.S. Census Bureau Urban Areas

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
sand hickory	Carya pallida	NSL	FIA	2.6	1.3	0.5	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0 48
sycamore	Platanus occidentalis	NSL	Low	1.2	1.2	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0 49
water elm	Planera aquatica	NSL	Low	1.2	0.6	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 50
white ash	Fraxinus americana	WDL	Medium	1.2	0.6	0.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0 51
serviceberry	Amelanchier spp.	NSL	Low	1.2	0.5	0.4	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0 52
swamp chestnut oak	Quercus michauxii	NSL	Low	1.2	0.2	0.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0 53
waterlocust	Gleditsia aquatica	NSLX	FIA	1.2	0.2	0.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0 54
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3 55
Virginia pine	Pinus virginiana	NDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 56
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 57
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3 58
river birch	Betula nigra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3 59
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp	. NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3 60
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0 61
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 62
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3 63
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3 64
American beech	Fagus grandifolia	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 65
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3 66
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 67
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 68
quaking aspen	Populus tremuloides	WDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 69
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 70
cherrybark oak; swamp red	o Quercus pagoda	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 71
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 72
black oak	Quercus velutina	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 73
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 74
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0 75
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 76
winged elm	Ulmus alata	WDL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate ++	3 77
slippery elm	Ulmus rubra	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 78

