National Park

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 8,244.0 3,183.0 236

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						Potentia	al Change	in Habitat Suitability	Capability	Migration Potential				
Ash	4				Model			Scenario	Scenario		Scenario	Scenario		SHIFT	SHIFT
Hickory	2	Abu	ndance		Reliability	Adaptability		RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Maple	1	Abundant	2	High	12	17	Increase	22	24	Very Good	6	9	Likely	0	0
Oak	13	Common	17	Medium	32	41	No Change	6	6	Good	14	12	Infill	19	25
Pine	4	Rare	35	Low	26	13	Decrease	23	21	Fair	5	5	Migrate	0	2
Other	30	Absent	16	FIA	3		New	6	6	Poor	9	11	·	19	27
•	54		70	•	73	71	Unknown	16	16	Very Poor	8	6			
							_	73	73	FIA Only	3	3			
										Unknown	13	13			
Potentia	Potential Changes in Climate Variables											EO			

Potential Changes in Climate variables

Temperatu	ıre (°F)				
	Scenario	2009	2039	2069	2099
Annual	CCSM45	67.0	68.4	70.2	70.1
Average	CCSM85	67.0	68.6	70.8	73.1
	GFDL45	67.0	70.0	71.4	72.2
	GFDL85	67.0	69.5	72.4	75.8
	HAD45	67.0	68.8	71.2	72.5
	HAD85	67.0	69.3	72.1	75.7
Growing	CCSM45	78.1	79.2	80.6	80.8
Season	CCSM85	78.1	79.3	81.5	84.1
May—Sep	GFDL45	78.1	81.0	82.2	83.3
	GFDL85	78.1	80.6	83.4	87.2
	HAD45	78.1	80.6	82.6	84.0
	HAD85	78.1	80.8	84.6	87.8
Coldest	CCSM45	50.0	52.2	53.1	52.8
Month	CCSM85	50.0	51.8	52.9	54.2
Average	GFDL45	50.0	52.6	53.0	53.6
	GFDL85	50.0	52.2	53.3	54.1
	HAD45	50.0	49.8	51.0	51.8
	HAD85	50.0	50.6	51.5	53.1
Warmest	CCSM45	81.4	82.7	83.6	83.7
Month	CCSM85	81.4	82.8	84.1	85.6
Average	GFDL45	81.4	83.4	84.2	84.9
	GFDL85	81.4	83.6	85.0	87.1
	HAD45	81.4	84.3	85.3	85.9
	HAD85	81.4	84.5	86.7	88.1

Precipitati	on (in)				
	Scenario	2009	2039	2069	2099
Annual	CCSM45	49.3	52.3	53.8	54.9
Total	CCSM85	49.3	51.6	53.8	54.6
	GFDL45	49.3	57.2	58.0	60.2
	GFDL85	49.3	54.3	61.1	59.6
	HAD45	49.3	46.7	45.2	49.2
	HAD85	49.3	47.0	45.1	44.6
Growing	CCSM45	26.7	28.7	28.7	29.1 • • • •
Season	CCSM85	26.7	27.6	29.7	29.4 ◆◆◆◆
May—Sep	GFDL45	26.7	32.9	33.1	34.2
	GFDL85	26.7	31.5	36.4	36.0
	HAD45	26.7	25.4	23.9	24.1 •••
	HAD85	26.7	24.7	21.6	20.6

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.

Cite as: Iverson, L.R.; Prasad, A.M.; Peters, M.P.; Matthews, S.N. 2019. Facilitating Adaptive Forest Management under Climate Change: A Spatially Specific Synthesis of 125 Species for Habitat Changes and Assisted Migration over the Eastern United States. Forests. 10(11): 989. https://doi.org/10.3390/f10110989.



Cumberland Island

National Park

Climate Change Atlas Tree Species

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

Current and Potential Future Habitat, Capability, and Migration

Slash pine Pinus sellotti NDH High 78.6 2794.7 39.2 No change Sm. doc. 1 Modelum Abundant Good Fair Infill + Infill + 1 1 2 Swamp tupelo Pinus sellotti NDH Medium 74.2 41.0 0.2 5m. inc. Sm. inc. Low Common Fair Fair Infill + Infill + 1 1 3 Modelum Abundant Sood Fair Infill + Infill + 1 1 3 Modelum Abundant Modelum Abundant Sood Fair Infill + Infill + 1 1 3 Modelum Abundant Modelum Abundant Modelum Abundant Modelum Abundant	Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	/ ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO N
Swamp tupelo Nyssa biflora NDH Medium Sp. 1 425, 4 74. 8m. inc. Low Common Fair Fair Infill Infill 1 1 3 1 4 4 4 4 4 4 4 4 5 2 5 5 5 5 5 5 5 5	slash pine	Pinus elliottii	NDH	High	78.6	2794.7	7 39.	2 No change	Sm. dec.	Medium	Abundant	Good	Fair	Infill ++	Infill +	1 1
Ped maple Acer rubrum WPH High 72.2 41.40 6.2 Sm. inc. Migh Common Nery Good Very Good Might Infill + 1.1 1.5 Nater oak Quercus nigra WPH High 60.3 308.2 5.8 Sm. inc. Lg. inc. Medium Common Good Good Infill + Infill + 1.6 Sweetgum Liquidambar syvardflua WPH High 61.8 308.2 5.8 Sm. inc. Lg. inc. Medium Common Good Good Infill + Infill + 1.6 Sweetgum Liquidambar syvardflua WPH High 45.8 S.5 Sm. inc. Medium Common Good Good Infill + Infill + 1.7 Sm. inc. Lg. inc. Medium Common Good Good Infill + Infill + 1.7 Sm. inc. Lg. inc. Medium Common Good Good Infill + Infill + 1.7 Sm. inc. Lg. inc. Medium Common Good Good Infill + Infill + 1.7 Sm. inc. Lg. inc. Medium Common Good Good Infill + Infill + 1.7 Sm. inc. Medium Common Good Good Infill + Infill + 1.7 Sm. inc. Medium Common Good Good Medium Common Med	loblolly pine	Pinus taeda	WDH	High	68.5	1618.2	2 25.	6 No change	No change	Medium	Abundant	Good	Good	Infill ++	Infill ++	1 2
Suere Dak Quercus injara QUPH High 603 802 5 8 m.m. c. g.inc. Medium Common Good Good infill + infill + 1 5 6 Sweetgum Liquidambar styradflua WDH High 603 20 82 5 8 m.m. c. g.inc. Medium Common Good Good Infill + infill + 1 6 6 Sweetgum Liquidambar styradflua WDH High 602 296.8 5 5 5 m.m. c. g.inc. Medium Common Good Good Infill + infill + 1 8 8 Inf	swamp tupelo	Nyssa biflora	NDH	Medium	59.1	425.4	1 7.	4 Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	1 3
Sweetgum Liquidambar styraciffus WDH High 60.2 26.8 5.5 m. inc. Lig. inc. Medium Common Good Very Good Infill + Infill + 1 1 7	red maple	Acer rubrum	WDH	High	72.2	414.0	6.	2 Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1 4
	laurel oak	Quercus laurifolia	NDH	Medium	74.3	402.9	6.	4 Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1 5
	water oak	Quercus nigra	WDH	High	60.3	308.2	2 5.	8 Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1 6
Designation Pinus palustris NSH Medium 26 240.4 1.0 5m. inc. Lg. inc. Medium Common Good Good Infill + Infill + 1 9 10 10 10 10 10 10	sweetgum	Liquidambar styraciflua	WDH	High	60.2	296.8	3 5.	5 Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1 7
Deblow-Pay Gordonia lasianthus NSH Medium 31.8 31.7 5.8 Sm. inc. Sm. inc. Medium Common Good Good Infill ++ Infill ++ 1.10	live oak	Quercus virginiana	NDH	High	45.8	261.9	7.	3 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1 8
Pond cypress Taxodium ascendens NSH Medium 31.3 31.2 32.6 4.2 Lg.inc. Lg.inc. Medium Common Very Good Very Good Infill + Infill + 2 11 green ash Fraxinus pennsylvanica NSL Low 53.1 119.8 2.7 Sm. inc. Sm. inc. High Common Good Good Infill + Infill + 1 13 11 13 11 13 12 14 13 14 14 14 14 14 14	longleaf pine	Pinus palustris	NSH	Medium	26	240.4	1 11.	0 Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1 9
Fraxinus pennsylvanica WSH Low 20.6 122.3 5.9 Sm. inc. Sm. inc. Medium Common Good Good Infill ++ Infill ++ 1 1 1 2 2 2 2 2 3 3 3 3 3	loblolly-bay	Gordonia lasianthus	NSH	Medium	37.8	191.7	7 5.	8 Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1 10
Persea borbonia NSL Low S3.1 119.8 2.7 Sm. inc. Sm. inc. High Common Very Good Very Good Infill ++ 1.1 3 3 3 3 3 3 3 3 3	pond cypress	Taxodium ascendens	NSH	Medium	31.3	132.6	5 4.	2 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2 11
Sweetbay Magnolia virginiana NSL Medium 40.4 111.8 3.0 Sm. inc. Lg. inc. Medium Common Good Very Good Infill + Infill + 1 14 14 14 14 14 14 15 14 14	green ash	Fraxinus pennsylvanica	WSH	Low	20.6	122.3	3 5.	9 Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1 12
Dailed cypress Taxodium districhum NSH Medium 14.2 96.2 5.3 Lg. inc. Lg. inc. Medium Common Very Good Very Good Infill + Infill + 2 15	redbay	Persea borbonia	NSL	Low	53.1	119.8	3 2.	7 Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1 13
Pumpkin ash	sweetbay	Magnolia virginiana	NSL	Medium	40.4	111.8	3.	O Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1 14
Cabbage palmetto Sabal palmetto NDH Medium 15.9 55.8 3.2 lg. inc. lg. inc. Medium Common Very Good Very Good 0 17	bald cypress	Taxodium distichum	NSH	Medium	18.2	96.2	2 5.	3 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2 15
water tupelo Nyssa aquatica NSH Medium 8.5 55.1 6.5 Sm. dec. Sm. dec. Low Common Poor Poor Poor Infill + Infill + 2 19	pumpkin ash	Fraxinus profunda	NSH	FIA	4.3	64.6	5 7.	7 Unknown	Unknown	NA	Common	FIA Only	FIA Only			0 16
Poor	cabbage palmetto	Sabal palmetto	NDH	Medium	15.9	55.8	3.	2 Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			0 17
black willow Salix nigra NSH Low 11.4 49.5 4.6 Sm. dec. No change Low Rare Very Poor Very Poor 0 20 20 pond pine Pinus serotina NSH Medium 15.1 40.6 3.6 Lg. inc. Lg. inc. Low Rare Fair Fair Infill+ Infill+ 2 21 turkey oak Quercus laevis NSH Medium 12.2 23.5 5.4 Sm. dec. High Rare Poor Poor 0 22 21 21 21 22 22 22 23.5 1.8 Lg. inc. Lg. inc. High Rare Good Good Infill+ Infill+ 2 2 23 23 24 22 23.5 1.8 Lg. inc. Lg. inc. High Rare Good Good Infill+ Infill+ 2 2 23 25 25 24 Sm. dec. Medium Rare Very Poor Very Poor Very Poor 0 2 24 2 24 25 25 25 25 25 25 25 25 25 25 25 25 25	water tupelo	Nyssa aquatica	NSH	Medium	8.5	55.1	L 6.	5 Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0 18
Pinus serotina NSH Medium 15.1 40.6 3.6 Lg. inc. Lg. inc. Low Rare Fair Fair Infill + Infill + 2 21	eastern redcedar	Juniperus virginiana	WDH	Medium	8.8	52.6	5 7.	5 Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2 19
turkey oak Quercus laevis NSH Medium 6 32.5 5.4 Sm. dec. Sm. dec. High Rare Poor Poor 0 22 blackgum Nyssa sylvatica WDL Medium 12.2 23.5 1.8 Lg. inc. Lg. inc. High Rare Good Good Infill + Infill ++ 2 23 pigut hickory Carya glabra WDL Medium 2.3 19.0 7.4 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 24 Southern red oak Quercus falcata WDL Medium 4.9 12.9 2.7 No change Sm. inc. High Rare Fair Good Infill + Infill ++ 2 25 yellow-poplar Liriodendron tulipifera WDH High 3.6 12.4 3.4 Sm. dec. Sm. dec. High Rare Poor Poor Poor 0 26 Shumard oak Quercus shumardii NSL Low 2.3 11.1 4.5 Sm. dec. Sm. dec. High Rare Poor Poor Poor 0 26 Shumard oak Quercus shumardii NSL Low 2.3 11.1 4.5 Sm. dec. Sm. dec. High Rare Poor Poor Poor 1 1nfill + 2 28 river birch Betula nigra NSL Low 2.4 10.0 4.1 Sm. dec. No change Sm. inc. Medium Rare Very Poor Poor Infill + 2 28 American elm Ulmus americana WDH Medium 4.3 9.9 1.5 Lg. inc. Lg. inc. Medium Rare Good Good Good 2 30 southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Poor Poor Infill + 2 31 American holly Ilex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Poor Poor Infill + 2 31 American holly Ilex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Good Good 3 2 30 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Lg. inc. High Rare Good Good Good 2 3 30 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Low Rare Fiar Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare Fiar Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown NA Rare FIA Only FIA Only 0 36 North Only Medium 2.4 6.9 9.9 Sm. dec. Sm. dec. High Rare Good Good 9 1 2 38 overcup oak Quercus laba NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. High Rare Good Good 9 2 38 overcup oak Quercus laba NDH Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor	black willow	Salix nigra	NSH	Low	11.4	49.5	5 4.	6 Sm. dec.	No change	Low	Rare	Very Poor	Very Poor			0 20
blackgum Nyssa sylvatica WDL Medium 12.2 23.5 1.8 Lg. inc. Lg. inc. High Rare Good Good Infill + Infill ++ 2 23 pignut hickory Carya glabra WDL Medium 2.3 19.0 7.4 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 24 southern red oak Quercus falcata WDL Medium 4.9 12.9 2.7 No change Sm. inc. High Rare Fair Good Infill + Infill ++ 2 25 yellow-poplar Liriodendron tulipifera WDH High 3.6 12.4 3.4 Sm. dec. Sm. dec. High Rare Poor Poor 0 27 winged elm Ulmus alata WDL Medium 4.8 10.7 2.2 No change Sm. inc. Medium Rare Poor Poor Poor 1 1nfill + 2 28 river birch Betula nigra NSL Low 2.4 10.0 4.1 Sm. dec. No change Medium Rare Poor Poor 1 1nfill + 2 29 American elm Ulmus americana WDH Medium 4.3 9.9 1.5 Lg. inc. Lg. inc. Medium Rare Good Good Good 2 30 southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Poor Poor Infill + 2 31 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. Lg. inc. High Rare Good Good 2 3 33 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 0 35 Sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Medium Rare Poor Poor Infill + 2 37 sugarberry Celtis laevigata NDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Poor Poor Very P	pond pine	Pinus serotina	NSH	Medium	15.1	40.6	5 3.	6 Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2 21
pignut hickory Carya glabra WDL Medium 2.3 19.0 7.4 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 24 southern red oak Quercus falcata WDL Medium 4.9 12.9 2.7 No change Sm. inc. High Rare Fair Good Infill + Infill ++ 2 25 yellow-poplar Liriodendron tulipifera WDH High 3.6 12.4 3.4 Sm. dec. Sm. dec. High Rare Poor Poor 0 26 Shumard oak Quercus shumardii NSL Low 2.3 11.1 4.5 Sm. dec. Sm. dec. High Rare Poor Poor 0 27 winged elm Ulmus alata WDL Medium 4.8 10.7 2.2 No change Sm. inc. Medium Rare Poor Fair Infill + 2 28 river birch Betula nigra NSL Low 2.4 10.0 4.1 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 29 American elm Ulmus americana WDH Medium 4.3 9.9 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 30 southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Poor Poor Infill + 2 31 American holly Ilex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Poor Poor Infill + 2 31 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. Lg. inc. High Rare Good Good 2 33 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 0 36 white oak Quercus alba WDH Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor Very Poor 2 39 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor Very Poor 2 39 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor Very Poor 2 39 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor Very Poor 2 39 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor Very Poor 2 39 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor Very Poor Very Poor Ver	turkey oak	Quercus laevis	NSH	Medium	6	32.5	5.	4 Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0 22
Southern red oak Quercus falcata WDL Medium 4.9 12.9 2.7 No change Sm. inc. High Rare Fair Good Infill + Infill ++ 2 25 yellow-poplar Liriodendron tulipifera WDH High 3.6 12.4 3.4 Sm. dec. Sm. dec. High Rare Poor Poor 0 26 Shumard oak Quercus shumardii NSL Low 2.3 11.1 4.5 Sm. dec. Sm. dec. High Rare Poor Poor 0 27 winged elm Ulmus alata WDL Medium 4.8 10.7 2.2 No change Sm. inc. Medium Rare Poor Fair Infill + 2 28 river birch Betula nigra NSL Low 2.4 10.0 4.1 Sm. dec. No change Medium Rare Poor Foor Infill + 2 29 Southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Good Good Southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Poor Poor Infill + 2 31 American holly Ilex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Good Good Sood 2 33 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA On	blackgum	Nyssa sylvatica	WDL	Medium	12.2	23.5	5 1.	8 Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2 23
yellow-poplar Liriodendron tulipifera WDH High 3.6 12.4 3.4 Sm. dec. Sm. dec. High Rare Poor Poor 0 26 Shumard oak Quercus shumardii NSL Low 2.3 11.1 4.5 Sm. dec. Sm. dec. High Rare Poor Poor 0 27 winged elm Ulmus alata WDL Medium 4.8 10.7 2.2 No change Sm. inc. Medium Rare Poor Fair Infill + 2 28 river birch Betula nigra NSL Low 2.4 10.0 4.1 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 29 American elm Ulmus americana WDH Medium 4.3 9.9 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 30 southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Poor Poor Infill + 2 31 American holly llex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Good Good 2 33 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Good Good 2 37 sugarberry Celtis laevigata NDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor Very Poor 2 39	pignut hickory	Carya glabra	WDL	Medium	2.3	19.0	7.	4 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 24
Shumard oak Quercus shumardii NSL Low 2.3 11.1 4.5 Sm. dec. Sm. dec. High Rare Poor Poor 0 27 winged elm Ulmus alata WDL Medium 4.8 10.7 2.2 No change Sm. inc. Medium Rare Poor Fair Infill + 2 28 river birch Betula nigra NSL Low 2.4 10.0 4.1 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 29 American elm Ulmus americana WDH Medium 4.3 9.9 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 30 southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Poor Poor Infill + 2 31 American holly Ilex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. Lg. inc. High Rare Good Good 2 30 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Lw. Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FiA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 10 36 white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	southern red oak	Quercus falcata	WDL	Medium	4.9	12.9	2.	7 No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2 25
winged elm Ulmus alata WDL Medium 4.8 10.7 2.2 No change Sm. inc. Medium Rare Poor Fair Infill + 2 28 Infill + 2 29 Infill + 2 20 Infill + 2	yellow-poplar	Liriodendron tulipifera	WDH	High	3.6	12.4	1 3.	4 Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0 26
river birch Betula nigra NSL Low 2.4 10.0 4.1 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 29 American elm Ulmus americana WDH Medium 4.3 9.9 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 30 southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Poor Poor Infill + 2 31 American holly Ilex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Good Good 2 33 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 0 36 white oak Quercus alba WDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor Very Poor 2 39	Shumard oak	Quercus shumardii	NSL	Low	2.3	11.1	L 4.	5 Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0 27
American elm Ulmus americana WDH Medium 4.3 9.9 1.5 lg. inc. Lg. inc. Medium Rare Good Good 2 30 southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Poor Poor Infill + 2 31 American holly Ilex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Good Good 2 33 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only FIA Only 0 36 white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Poor Poor Infill + 2 37 sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 lg. inc. Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	winged elm	Ulmus alata	WDL	Medium	4.8	10.7	7 2.	2 No change	Sm. inc.	Medium	Rare	Poor	Fair		Infill +	2 28
southern magnolia Magnolia grandiflora NSL Low 9.2 9.8 1.1 No change No change Medium Rare Poor Poor Infill + 2 31 American holly llex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Good Good 2 33 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 0 36 white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Poor Poor Infill + 2 37 sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	river birch	Betula nigra	NSL	Low	2.4	10.0) 4.	1 Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2 29
American holly llex opaca NSL Medium 13.5 9.6 0.9 Sm. dec. No change Medium Rare Very Poor Poor Infill + 2 32 post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Good Good 2 33 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 0 36 white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Poor Poor Infill + 2 37 sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	American elm	Ulmus americana	WDH	Medium	4.3	9.9	1.	5 Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2 30
post oak Quercus stellata WDH High 6 9.0 1.5 Sm. inc. Lg. inc. High Rare Good Good 2 33 black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 0 36 white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Poor Poor Infill + 2 37 sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	southern magnolia	Magnolia grandiflora	NSL	Low	9.2	9.8	3 1.	1 No change	No change	Medium	Rare	Poor	Poor		Infill +	2 31
black cherry Prunus serotina WDL Medium 10.2 8.8 2.0 Lg. inc. Lg. inc. Low Rare Fair Fair Infill + 2 34 ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 0 36 white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Poor Poor Infill + 2 37 sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	American holly	llex opaca	NSL	Medium	13.5	9.6	5 0.	9 Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2 32
ogeechee tupelo Nyssa ogeche NSLX FIA 3.6 7.9 2.2 Unknown Unknown Low Rare FIA Only FIA Only 0 35 Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 0 36 white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Poor Poor Infill + 2 37 sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	post oak	Quercus stellata	WDH	High	6	9.0) 1.	5 Sm. inc.	Lg. inc.	High	Rare	Good	Good			2 33
Carolina ash Fraxinus caroliniana NSL FIA 2.4 7.3 3.0 Unknown Unknown NA Rare FIA Only FIA Only 0 36 white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Poor Poor Infill + 2 37 sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	black cherry	Prunus serotina	WDL	Medium	10.2	8.8	3 2.	0 Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair		Infill +	2 34
white oak Quercus alba WDH Medium 2.4 6.9 2.9 Sm. dec. Sm. dec. High Rare Poor Poor Infill + 2 37 sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	ogeechee tupelo	Nyssa ogeche	NSLX	FIA	3.6	7.9	2.	2 Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0 35
sugarberry Celtis laevigata NDH Medium 3.6 5.5 1.5 Lg. inc. Lg. inc. Lg. inc. Medium Rare Good Good 2 38 overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	Carolina ash	Fraxinus caroliniana	NSL	FIA	2.4	7.3	3.	0 Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0 36
overcup oak Quercus lyrata NSL Medium 2.4 4.2 1.7 No change No change Low Rare Very Poor Very Poor 2 39	white oak	Quercus alba	WDH	Medium	2.4	6.9	2.	9 Sm. dec.	Sm. dec.	High	Rare	Poor	Poor		Infill +	2 37
	sugarberry	Celtis laevigata	NDH	Medium	3.6	5.5	5 1.	5 Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2 38
common persimmon Diospyros virginiana NSL Low 6.1 4.0 0.7 Lg. dec. Lg. dec. High Rare Poor Poor 0 40	overcup oak	Quercus lyrata	NSL	Medium	2.4	4.2	2 1.	7 No change	No change	Low	Rare	Very Poor	Very Poor			2 39
	common persimmon	Diospyros virginiana	NSL	Low	6.1	4.0	0.	7 Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0 40
red mulberry Morus rubra NSL Low 2.4 3.9 1.6 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 41	red mulberry	Morus rubra	NSL	Low	2.4	3.9	1.	6 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 41
swamp chestnut oak Quercus michauxii NSL Low 3.6 3.5 1.0 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 42	swamp chestnut oak	Quercus michauxii	NSL	Low	3.6	3.5	5 1.	0 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 42
American hornbeam; muscle\ Carpinus caroliniana WSL Low 3.6 3.4 0.9 Lg. inc. Lg. inc. Medium Rare Good Good 2 43	American hornbeam; muscle	e Carpinus caroliniana	WSL	Low	3.6	3.4	1 0.	9 Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2 43
bluejack oak Quercus incana NSL Low 3.6 3.1 0.9 Very Lg. dec. Very Lg. dec. Medium Rare Lost Lost 0 44	bluejack oak	Quercus incana	NSL	Low	3.6	3.1	L 0.	9 Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0 44
willow oak Quercus phellos NSL Low 1.2 2.6 2.2 Sm. inc. Lg. inc. Medium Rare Fair Good 2 45	willow oak	Quercus phellos	NSL	Low	1.2	2.6	2.	2 Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2 45
flowering dogwood Cornus florida WDL Medium 2.3 1.5 0.6 Very Lg. dec. Very Lg. dec. Medium Rare Lost Lost 0 46	flowering dogwood	Cornus florida	WDL	Medium	2.3	1.5	5 0.	6 Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0 46
chinkapin oak Quercus muehlenbergii NSL Medium 1.2 1.4 1.2 Sm. dec. Sm. dec. Medium Rare Very Poor Very Poor 0 47	chinkapin oak	Quercus muehlenbergii	NSL	Medium	1.2	1.4	1 1.	2 Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 47



Cumberland Island

National Park

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

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45 SHIFT85	SSO N
honeylocust	Gleditsia triacanthos	NSH	Low	1.2	1.3	1.0	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost		0 48
eastern redbud	Cercis canadensis	NSL	Low	1.1	1.2	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost		0 49
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.4	1.2	0.5	Very Lg. dec.	Lg. dec.	High	Rare	Lost	Poor		0 50
sycamore	Platanus occidentalis	NSL	Low	1.1	1.1	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost		0 51
white ash	Fraxinus americana	WDL	Medium	2.4	0.8	0.3	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost		0 52
mockernut hickory	Carya alba	WDL	Medium	1.2	0.7	0.6	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost		0 53
slippery elm	Ulmus rubra	WSL	Low	1.2	0.6	0.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost		0 54
sand pine	Pinus clausa	NDH	High	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		3 55
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	3 56
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown		0 57
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp	. NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		0 58
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown		0 59
pecan	Carya illinoinensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		3 60
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown		0 61
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown		0 62
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown		0 63
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown		0 64
sourwood	Oxydendrum arboreum	NDL	High	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown		0 65
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown		0 66
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	3 67
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown		0 68
black oak	Quercus velutina	WDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown		0 69
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown		0 70
sassafras	Sassafras albidum	WSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown		0 71
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown		0 72
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		0 73

