S29 E94

One x One Degree
Climate Change Atlas Tree Species
Current and Potential Future Habitat, Capability, and Migration

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Iverson, Peters, Prasad, Matthews

	sq. km	sq. mi	FIA Plots
Area of Region	4,416.3	1,705.2	29

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
Ash	2
Hickory	3
Maple	1
Oak	10
Pine	1
Other	19
	36

Abundance	
Abundant	0
Common	10
Rare	26
Absent	13
	49

	Model Reliability	Adaptability
High	7	12
Medium	22	31
Low	20	7
FIA	2	
	51	**50**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	13	15
No Change	16	15
Decrease	5	4
New	6	6
Unknown	11	11
	51	**51**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	0	0
Good	12	13
Fair	9	9
Poor	8	8
Very Poor	5	4
FIA Only	2	2
Unknown	9	9
	45	**45**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	1	1
Infill	23	23
Migrate	4	2
	28	**26**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	68.9	70.4	71.9	72.0
	CCSM85	68.9	70.7	73.0	75.0
	GFDL45	68.9	73.7	72.9	74.0
	GFDL85	68.9	71.3	74.3	77.4
	HAD45	68.9	70.9	73.3	74.3
	HAD85	68.9	71.2	74.2	77.4
Growing Season May—Sep	CCSM45	80.4	81.7	82.7	82.9
	CCSM85	80.4	81.9	84.0	86.2
	GFDL45	80.4	86.1	84.7	86.5
	GFDL85	80.4	83.2	86.3	90.1
	HAD45	80.4	82.6	84.6	85.2
	HAD85	80.4	82.8	86.1	88.7
Coldest Month Average	CCSM45	51.1	53.4	54.3	54.3
	CCSM85	51.1	53.7	54.8	56.1
	GFDL45	51.1	54.3	54.4	54.5
	GFDL85	51.1	52.2	53.4	53.9
	HAD45	51.1	51.9	53.6	54.3
	HAD85	51.1	53.7	55.0	56.7
Warmest Month Average	CCSM45	83.8	84.8	85.2	85.3
	CCSM85	83.8	85.2	85.9	87.0
	GFDL45	83.8	87.0	87.3	88.6
	GFDL85	83.8	87.1	88.5	90.8
	HAD45	83.8	86.1	86.9	87.2
	HAD85	83.8	86.4	88.1	89.0

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	56.1	59.0	64.2	61.5
	CCSM85	56.1	58.7	61.1	60.1
	GFDL45	56.1	59.4	68.5	57.4
	GFDL85	56.1	57.5	59.8	58.0
	HAD45	56.1	55.7	54.6	59.8
	HAD85	56.1	59.6	53.8	56.1
Growing Season May—Sep	CCSM45	27.1	29.9	31.5	29.1
	CCSM85	27.1	28.1	28.4	26.6
	GFDL45	27.1	30.2	37.1	29.2
	GFDL85	27.1	29.3	30.9	31.1
	HAD45	27.1	26.3	26.0	29.1
	HAD85	27.1	27.4	25.0	25.3

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	42.3	420.1	15.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	1
sugarberry	Celtis laevigata	NDH	Medium	40.5	158.6	6.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	2
live oak	Quercus virginiana	NDH	High	2.3	154.0	68.0	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	3
water oak	Quercus nigra	WDH	High	34.6	153.5	3.6	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	4
sweetgum	Liquidambar styraciflua	WDH	High	46.2	137.9	5.8	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	5
pecan	Carya illinoinensis	NSH	Low	2.3	113.2	50.0	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	2	6
black willow	Salix nigra	NSH	Low	24.1	78.6	6.9	No change	Sm. inc.	Low	Common	Poor	Fair	Infill +	Infill +	2	7
willow oak	Quercus phellos	NSL	Low	32.1	75.0	8.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	8
laurel oak	Quercus laurifolia	NDH	Medium	30.7	72.7	7.3	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	9
American elm	Ulmus americana	WDH	Medium	16.4	59.6	2.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	10
cedar elm	Ulmus crassifolia	NDH	Medium	28.5	49.6	4.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	11
blackgum	Nyssa sylvatica	WDL	Medium	26.8	43.5	3.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	12
bald cypress	Taxodium distichum	NSH	Medium	12.8	33.2	7.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	13
sycamore	Platanus occidentalis	NSL	Low	3.3	32.5	5.4	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	14
green ash	Fraxinus pennsylvanica	WSH	Low	21.4	26.2	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	15
water elm	Planera aquatica	NSL	Low	1.3	22.1	5.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	16
overcup oak	Quercus lyrata	NSL	Medium	3.6	20.3	2.8	No change	No change	Low	Rare	Very Poor	Very Poor			2	17
waterlocust	Gleditsia aquatica	NSLX	FIA	1.3	19.7	5.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	18
red maple	Acer rubrum	WDH	High	18.5	18.6	2.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	19
post oak	Quercus stellata	WDH	High	8.9	17.6	1.4	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	20
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	16.2	13.0	2.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	21
eastern cottonwood	Populus deltoides	NSH	Low	2.3	10.4	4.6	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	22
water hickory	Carya aquatica	NSL	Medium	1.3	10.3	2.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	23
Carolina ash	Fraxinus caroliniana	NSL	FIA	9.2	5.4	9.5	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	24
black cherry	Prunus serotina	WDL	Medium	17.2	5.0	2.1	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	25
water tupelo	Nyssa aquatica	NSH	Medium	7.1	3.3	0.6	No change	No change	Low	Rare	Very Poor	Very Poor			2	26
eastern redcedar	Juniperus virginiana	WDH	Medium	15.4	2.8	1.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	27
nuttall oak	Quercus texana	NSH	Medium	2.3	2.2	1.0	No change	Sm. inc.	High	Rare	Fair	Good			0	28
slippery elm	Ulmus rubra	WSL	Low	18	1.7	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	29
American holly	Ilex opaca	NSL	Medium	2.3	1.5	0.7	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	30
redbay	Persea borbonia	NSL	Low	4.4	1.3	1.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	31
honeylocust	Gleditsia triacanthos	NSH	Low	6	1.3	1.4	Sm. inc.	Sm. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	32
southern red oak	Quercus falcata	WDL	Medium	8.8	1.0	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	33
mockernut hickory	Carya alba	WDL	Medium	3.1	0.9	0.6	No change	No change	High	Rare	Fair	Fair			0	34
common persimmon	Diospyros virginiana	NSL	Low	5.8	0.6	0.6	Sm. dec.	Lg. dec.	High	Rare	Poor	Poor			0	35
swamp chestnut oak	Quercus michauxii	NSL	Low	5.8	0.3	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	36
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++		3	37
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +		3	38
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	39
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	40
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	41
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	42
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	43
hackberry	Celtis occidentalis	WDH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	44
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	45
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	46
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	47

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bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	48
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	49
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	50
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	51