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National Forests and Grasslands
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	8,500.0	3,281.9	292

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	2
Oak	13
Pine	7
Other	33
	60

Abundance	
Abundant	5
Common	17
Rare	38
Absent	18
	78

	Model Reliability	Adaptability
High	15	18
Medium	33	51
Low	31	11
FIA	1	
	80	**80**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	22	28
No Change	19	15
Decrease	18	16
New	10	12
Unknown	11	9
	80	**80**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	7	8
Good	18	19
Fair	4	7
Poor	15	12
Very Poor	11	10
FIA Only	1	1
Unknown	10	8
	66	**65**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	2	3
Infill	14	17
Migrate	2	4
	18	**24**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	65.8	67.4	69.2	69.2
	CCSM85	65.8	67.5	69.9	72.3
	GFDL45	65.8	68.4	70.3	71.0
	GFDL85	65.8	68.2	71.3	74.7
	HAD45	65.8	67.9	70.4	71.8
	HAD85	65.8	68.1	71.6	75.3
Growing Season May—Sep	CCSM45	78.0	79.2	80.7	81.1
	CCSM85	78.0	79.2	81.7	84.5
	GFDL45	78.0	80.5	82.2	83.5
	GFDL85	78.0	80.3	83.4	87.3
	HAD45	78.0	80.9	82.9	84.4
	HAD85	78.0	80.7	85.5	88.8
Coldest Month Average	CCSM45	47.4	49.6	50.4	50.1
	CCSM85	47.4	49.4	50.7	51.8
	GFDL45	47.4	50.5	50.8	51.0
	GFDL85	47.4	49.2	50.3	50.9
	HAD45	47.4	47.4	49.0	49.7
	HAD85	47.4	48.7	49.8	51.5
Warmest Month Average	CCSM45	81.3	82.6	83.1	83.5
	CCSM85	81.3	82.5	83.8	85.4
	GFDL45	81.3	83.8	84.4	85.2
	GFDL85	81.3	83.2	84.6	86.8
	HAD45	81.3	84.7	86.0	86.7
	HAD85	81.3	84.8	87.7	89.2

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	61.8	64.1	67.0	67.5
	CCSM85	61.8	65.3	67.0	72.3
	GFDL45	61.8	68.5	72.7	73.7
	GFDL85	61.8	68.4	72.2	70.8
	HAD45	61.8	59.6	65.9	67.1
	HAD85	61.8	66.9	59.6	62.6
Growing Season May—Sep	CCSM45	27.4	29.4	30.2	30.4
	CCSM85	27.4	28.0	29.3	30.9
	GFDL45	27.4	32.9	35.4	34.2
	GFDL85	27.4	33.6	36.8	36.6
	HAD45	27.4	26.5	28.3	28.3
	HAD85	27.4	28.8	22.8	24.0

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	78.8	2547.3	32.3	No change	No change	Medium	Abundant	Good	Good			1	1
longleaf pine	Pinus palustris	NSH	Medium	64.7	1627.6	25.2	No change	No change	Medium	Abundant	Good	Good			1	2
slash pine	Pinus elliottii	NDH	High	61.2	1068.6	17.5	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	3
water oak	Quercus nigra	WDH	High	84.7	824.6	9.7	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	4
laurel oak	Quercus laurifolia	NDH	Medium	67.1	588.7	8.8	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1	5
sweetbay	Magnolia virginiana	NSL	Medium	63.5	478.7	7.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	6
sweetgum	Liquidambar styraciflua	WDH	High	62.4	322.3	5.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	7
yellow-poplar	Liriodendron tulipifera	WDH	High	49.4	253.9	5.1	No change	No change	High	Common	Good	Good			1	8
southern red oak	Quercus falcata	WDL	Medium	54.1	239.0	4.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
blackgum	Nyssa sylvatica	WDL	Medium	60	234.9	3.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	10
red maple	Acer rubrum	WDH	High	57.6	186.8	3.2	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	11
swamp tupelo	Nyssa biflora	NDH	Medium	32.9	177.0	5.4	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	12
post oak	Quercus stellata	WDH	High	31.8	138.0	4.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	13
turkey oak	Quercus laevis	NSH	Medium	16.5	119.5	7.3	No change	Sm. dec.	High	Common	Good	Fair			1	14
flowering dogwood	Cornus florida	WDL	Medium	43.5	110.8	2.6	No change	No change	Medium	Common	Fair	Fair			1	15
southern magnolia	Magnolia grandiflora	NSL	Low	27.1	87.0	3.2	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	16
Atlantic white-cedar	Chamaecyparis thyoides	NSH	Low	5.9	75.4	12.8	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	17
American holly	Ilex opaca	NSL	Medium	41.2	73.2	1.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	18
black cherry	Prunus serotina	WDL	Medium	31.8	70.9	2.2	Lg. inc.	Lg. inc.	Low	Common	Good	Good			1	19
water tupelo	Nyssa aquatica	NSH	Medium	2.4	64.0	27.2	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor	Infill +	Infill +	2	20
eastern redcedar	Juniperus virginiana	WDH	Medium	21.2	53.0	2.5	Sm. dec.	No change	Medium	Common	Poor	Fair			1	21
sand pine	Pinus clausa	NDH	High	7.1	52.6	7.5	No change	No change	Low	Common	Poor	Poor	Infill +	Infill +	0	22
mockernut hickory	Carya alba	WDL	Medium	15.3	49.3	3.2	No change	Sm. inc.	High	Rare	Fair	Good			1	23
live oak	Quercus virginiana	NDH	High	14.1	45.7	3.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	24
white oak	Quercus alba	WDH	Medium	17.6	43.1	2.4	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	1	25
redbay	Persea borbonia	NSL	Low	11.8	36.5	3.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	26
bald cypress	Taxodium distichum	NSH	Medium	9.4	35.9	3.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	27
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	14.1	31.3	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	28
black walnut	Juglans nigra	WDH	Low	1.2	29.4	25.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	29
common persimmon	Diospyros virginiana	NSL	Low	18.8	25.5	1.4	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			1	30
willow oak	Quercus phellos	NSL	Low	5.9	24.0	4.1	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	1	31
green ash	Fraxinus pennsylvanica	WSH	Low	8.2	22.7	2.8	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	32
shortleaf pine	Pinus echinata	WDH	High	12.9	22.5	1.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	33
spruce pine	Pinus glabra	NSL	Low	11.8	17.8	1.5	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	34
sycamore	Platanus occidentalis	NSL	Low	4.7	12.7	2.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	35
bluejack oak	Quercus incana	NSL	Low	9.4	12.6	1.3	No change	No change	Medium	Rare	Poor	Poor			1	36
sourwood	Oxydendrum arboreum	NDL	High	7.1	12.3	1.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			1	37
pignut hickory	Carya glabra	WDL	Medium	5.9	10.1	1.7	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	38
swamp chestnut oak	Quercus michauxii	NSL	Low	4.7	8.8	1.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	39
blackjack oak	Quercus marilandica	NSL	Medium	3.5	6.9	2.0	Sm. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	40
American beech	Fagus grandifolia	WDH	High	7.1	6.1	0.9	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	41
sugarberry	Celtis laevigata	NDH	Medium	3.5	5.7	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	42
black oak	Quercus velutina	WDH	High	1.2	5.4	4.6	No change	No change	Medium	Rare	Poor	Poor			0	43
florida maple	Acer barbatum	NSL	Low	5.9	3.6	0.6	Very Lg. dec.	Very Lg. dec.	High	Rare	Lost	Lost			0	44
sassafras	Sassafras albidum	WSL	Low	2.4	3.4	1.4	No change	Lg. inc.	Medium	Rare	Poor	Good	Infill +	Infill ++	2	45
red mulberry	Morus rubra	NSL	Low	3.5	3.1	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
American elm	Ulmus americana	WDH	Medium	2.4	2.6	1.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	47

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winged elm	Ulmus alata	WDL	Medium	3.5	2.4	0.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	48
black willow	Salix nigra	NSH	Low	1.2	2.2	1.8	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	49
overcup oak	Quercus lyrata	NSL	Medium	1.2	1.9	1.6	No change	No change	Low	Rare	Very Poor	Very Poor			2	50
pecan	Carya illinoinensis	NSH	Low	1.2	1.5	1.2	Very Lg. dec.	No change	Low	Rare	Lost	Very Poor			2	51
slippery elm	Ulmus rubra	WSL	Low	1.2	1.1	1.0	No change	No change	Medium	Rare	Poor	Poor		Infill +	2	52
eastern redbud	Cercis canadensis	NSL	Low	1.2	0.9	0.8	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	53
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	2.4	0.9	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	54
pin cherry	Prunus pensylvanica	NSL	Low	1.2	0.8	0.7	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	55
wild plum	Prunus americana	NSLX	FIA	2.4	0.7	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	56
Virginia pine	Pinus virginiana	NDH	High	1.2	0.6	0.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	57
white ash	Fraxinus americana	WDL	Medium	1.2	0.5	0.4	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	58
water elm	Planera aquatica	NSL	Low	1.2	0.5	0.4	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	59
pawpaw	Asimina triloba	NSL	Low	1.2	0.4	0.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
Table Mountain pine	Pinus pungens	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	61
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++	Migrate ++	3	62
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	63
silver maple	Acer saccharinum	NSH	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	64
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	65
river birch	Betula nigra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	66
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	67
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0	68
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	69
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	70
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0	71
silverbell	Halesia spp.	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	72
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	73
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Likely +	3	74
scarlet oak	Quercus coccinea	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	75
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	76
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
northern red oak	Quercus rubra	WDH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	78
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	79
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate ++	3	80