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# 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 6,503.7 2,511.1 7

#### **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								Potential Change in Habitat Suitability			Capability to Cope or Persist			
Ash	0			Ņ	Model			Scenario	Scenario		Scenario	Scenario		SHIFT	SHIFT
Hickory	0	Abur	ndance	F	Reliability	Adaptability		RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Maple	0	Abundant	0	High	2	1	Increase	0	0	Very Good	0	0	Likely	0	0
Oak	1	Common	1	Medium	3	8	No Change	3	3	Good	0	0	Infill	2	2
Pine	0	Rare	2	Low	5	1	Decrease	0	0	Fair	1	1	Migrate	0	0
Other	2	Absent	7	FIA	0		New	3	3	Poor	1	1	·	2	2
-	3	_	10	_	10	10	Unknown	4	4	Very Poor	1	1			
							_	10	10	FIA Only	0	0			
										Unknown	4	4			
Potentia	Potential Changes in Climate Variables											7			

# Potential Changes in Climate Variables

Temperature (°F)											
	Scenario	2009	2039	2069	2099						
Annual	CCSM45	73.6	74.9	76.4	76.8						
Average	CCSM85	73.6	75.3	77.4	79.6						
	GFDL45	73.6	78.8	77.9	79.1						
	GFDL85	73.6	76.1	79.2	82.4	and the same					
	HAD45	73.6	75.5	77.6	78.8						
	HAD85	73.6	75.9	78.4	81.6						
Growing	CCSM45	83.0	84.1	85.3	85.7						
Season		83.0	84.5	86.4							
May—Sep		83.0	88.9			-					
iviay sep	GFDL85	83.0	85.8	89.2							
	HAD45	83.0	84.6	86.4							
	HAD85	83.0	85.0	87.5		-					
Coldest	CCSM45	57.8	59.5	60.5	60.8	***					
Month	CCSM85	57.8	59.8	60.8	62.2	***					
Average	GFDL45	57.8	60.7	61.2	61.2	•					
	GFDL85	57.8	59.5	60.7	61.6	***					
	HAD45	57.8	59.1	60.5	61.4	***					
	HAD85	57.8	61.1	62.3	64.0						
Warmest	CCSM45	85.5	86.6	87.1	87.3						
Month	CCSM85	85.5	87.1	87.8							
Average	GFDL45	85.5	88.6	89.6							
<i>y</i> 0-	GFDL85	85.5	88.6	90.1	92.2						
	HAD45	85.5	87.3	88.0							
	HAD85	85.5	87.7	88.9		-					

Precipitation (in)												
	Scenario	2009	2039	2069	2099							
Annual	CCSM45	25.9	27.7	27.4	26.0							
Total	CCSM85	25.9	26.9	27.2	23.9							
	GFDL45	25.9	26.2	28.5	22.9							
	GFDL85	25.9	25.6	25.4	23.9							
	HAD45	25.9	26.1	25.2	26.2							
	HAD85	25.9	27.0	27.2	26.0							
Growing	CCSM45	14.9	15.6	15.2	14.4							
Season	CCSM85	14.9	16.2	15.5	13.1							
May—Sep	GFDL45	14.9	15.6	17.9	13.6							
	GFDL85	14.9	15.4	14.7	14.3 ◆◆◆◆							
	HAD45	14.9	13.8	13.3	14.1							
	HAD85	14.9	16.4	14.8	13.2							

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	1 022
live oak	Quercus virginiana	NDH	High	21.5	155.9	54.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1
sugarberry	Celtis laevigata	NDH	Medium	9.3	6.2	5.6	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2
black willow	Salix nigra	NSH	Low	3.4	4.2	6.1	No change	No change	Low	Rare	Very Poor	Very Poor			2
pond cypress	Taxodium ascendens	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0
bitternut hickory	Carya cordiformis	WSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0
black oak	Quercus velutina	WDH	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0
bluejack oak	Quercus incana	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0

