Section 315C

EcoMap 2007
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	32,475	12,539	114

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	0
Hickory	1
Maple	0
Oak	6
Pine	0
Other	13
	20

Abundance	
Abundant	0
Common	5
Rare	15
Absent	6
	26

	Model Reliability	Adaptability
High	4	7
Medium	10	16
Low	11	4
FIA	2	
	27	**27**

Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85
Increase	3	2
No Change	2	3
Decrease	13	13
New	0	0
Unknown	9	9
	27	**27**

Capability to Cope or Persist	Scenario RCP45	Scenario RCP85
Very Good	1	1
Good	3	3
Fair	0	0
Poor	6	5
Very Poor	7	8
FIA Only	2	2
Unknown	7	7
	26	**26**

Migration Potential	SHIFT RCP45	SHIFT RCP85
Likely	0	0
Infill	5	4
Migrate	0	0
	5	**4**

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099
Annual Average	CCSM45	63.8	65.2	66.8	67.6
	CCSM85	63.8	65.9	67.7	70.5
	GFDL45	63.8	68.6	68.3	70.1
	GFDL85	63.8	66.9	69.9	74.1
	HAD45	63.8	66.0	68.5	69.4
	HAD85	63.8	66.6	70.4	73.3
Growing Season May—Sep	CCSM45	78.8	80.0	81.8	82.6
	CCSM85	78.8	81.0	82.8	86.1
	GFDL45	78.8	85.0	84.4	87.2
	GFDL85	78.8	83.2	86.7	92.1
	HAD45	78.8	80.8	82.8	83.4
	HAD85	78.8	81.5	85.5	88.0
Coldest Month Average	CCSM45	41.7	44.0	44.6	45.4
	CCSM85	41.7	43.8	44.6	46.1
	GFDL45	41.7	44.8	44.9	45.0
	GFDL85	41.7	42.6	43.8	44.1
	HAD45	41.7	42.3	44.4	44.6
	HAD85	41.7	45.1	46.8	48.3
Warmest Month Average	CCSM45	84.5	85.9	87.2	87.3
	CCSM85	84.5	86.7	87.4	89.3
	GFDL45	84.5	90.0	90.3	92.4
	GFDL85	84.5	90.4	92.2	96.6
	HAD45	84.5	86.4	87.5	87.8
	HAD85	84.5	87.5	89.5	90.6

Precipitation (in)

	Scenario	2009	2039	2069	2099
Annual Total	CCSM45	26.4	28.0	26.5	25.9
	CCSM85	26.4	26.0	28.3	27.1
	GFDL45	26.4	26.5	30.9	25.1
	GFDL85	26.4	26.1	28.0	25.6
	HAD45	26.4	28.2	26.9	28.3
	HAD85	26.4	26.8	24.3	27.5
Growing Season May—Sep	CCSM45	14.0	15.1	13.3	13.4
	CCSM85	14.0	14.4	14.3	13.2
	GFDL45	14.0	14.2	16.6	13.3
	GFDL85	14.0	14.5	14.9	13.3
	HAD45	14.0	14.7	14.6	15.3
	HAD85	14.0	13.6	11.9	14.1

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
ashe juniper	Juniperus ashei	NDH	High	12.3	281.6	29.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			0	1
live oak	Quercus virginiana	NDH	High	6.2	144.5	19.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	2
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	24.2	129.1	13.1	No change	No change	High	Common	Good	Good			1	3
post oak	Quercus stellata	WDH	High	2.1	108.9	13.8	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	4
American elm	Ulmus americana	WDH	Medium	10.1	88.1	20.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	5
sugarberry	Celtis laevigata	NDH	Medium	11.5	49.7	11.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	6
hackberry	Celtis occidentalis	WDH	Medium	8.2	48.9	13.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	7
cedar elm	Ulmus crassifolia	NDH	Medium	3.6	41.4	20.0	Sm. inc.	No change	Low	Rare	Poor	Very Poor	Infill +		2	8
black willow	Salix nigra	NSH	Low	2.1	22.1	15.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	9
blackjack oak	Quercus marilandica	NSL	Medium	1.5	10.9	32.9	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	1	10
eastern redcedar	Juniperus virginiana	WDH	Medium	1.6	7.9	30.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	11
pecan	Carya illinoinensis	NSH	Low	0.8	7.9	13.1	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	12
black oak	Quercus velutina	WDH	High	0.1	6.8	9.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	13
black walnut	Juglans nigra	WDH	Low	0.2	5.5	8.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	14
durand oak	Quercus sinuata var. sinuata	NSL	FIA	0.4	3.5	3.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	15
southern red oak	Quercus falcata	WDL	Medium	0.2	2.7	6.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	16
eastern redbud	Cercis canadensis	NSL	Low	0.3	2.3	7.3	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	17
honeylocust	Gleditsia triacanthos	NSH	Low	0.7	0.6	4.3	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	18
wild plum	Prunus americana	NSLX	FIA	0.9	0.3	2.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	19
slippery elm	Ulmus rubra	WSL	Low	1.3	0.2	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	20
jack pine	Pinus banksiana	NSH	Medium	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	21
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	22
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	23
pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	24
shagbark hickory	Carya ovata	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	25
swamp chestnut oak	Quercus michauxii	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	26
pin oak	Quercus palustris	NSH	Low	0	0	0	Unknown	Unknown	Low	Modeled	Unknown	Unknown			0	27