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	sq. km	sq. mi	FIA Plots
Area of Region	9,137.0	3,527.8	117

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		Abundance			Model Reliability	Adaptability	Potential Change in Habitat Suitability	Scenario RCP45	Scenario RCP85		Capability to Cope or Persist	Scenario RCP45	Scenario RCP85	Migration Potential	SHIFT RCP45	SHIFT RCP85
Ash	3																
Hickory	4		Abundance			Reliability	Adaptability		RCP45	RCP85			RCP45	RCP85		RCP45	RCP85
Maple	4	Abundant	1		High	14	19	Increase	18	19	Very Good	4	4	Likely	0	0
Oak	6	Common	20		Medium	23	36	No Change	6	4	Good	15	15	Infill	0	0
Pine	3	Rare	30		Low	27	10	Decrease	23	24	Fair	8	5	Migrate	0	0
Other	31	Absent	16		FIA	4		New	14	14	Poor	5	9		0	0
	51		67			68	65	Unknown	7	7	Very Poor	14	11			
									68	68	FIA Only	1	1			
											Unknown	3	3			
												50	48			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	50.0	51.7	54.4	54.4	
Average	CCSM85	50.0	52.3	54.9	58.1	
	GFDL45	50.0	55.0	55.8	56.8	
	GFDL85	50.0	53.3	56.9	61.1	
	HAD45	50.0	53.0	56.5	58.2	
	HAD85	50.0	53.3	57.8	62.8	
Growing	CCSM45	66.6	68.4	70.7	71.1	
Season	CCSM85	66.6	68.9	71.4	75.4	
May—Sep	GFDL45	66.6	72.8	73.7	75.2	
	GFDL85	66.6	70.7	75.0	79.9	
	HAD45	66.6	70.2	73.2	75.5	
	HAD85	66.6	70.0	75.6	81.1	
Coldest	CCSM45	24.1	25.9	27.8	27.9	
Month	CCSM85	24.1	26.9	28.0	30.0	
Average	GFDL45	24.1	27.2	28.2	28.9	
	GFDL85	24.1	27.6	28.7	30.3	
	HAD45	24.1	25.3	28.4	28.5	
	HAD85	24.1	26.6	29.1	31.8	
Warmest	CCSM45	72.4	74.3	75.7	76.2	
Month	CCSM85	72.4	75.2	76.7	79.0	
Average	GFDL45	72.4	75.5	77.6	78.6	
	GFDL85	72.4	76.6	78.8	81.6	
	HAD45	72.4	76.3	78.5	80.1	
	HAD85	72.4	77.2	81.1	84.9	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	38.6	39.9	39.7	41.4	
Total	CCSM85	38.6	40.2	41.0	42.3	
	GFDL45	38.6	42.6	45.3	46.3	
	GFDL85	38.6	40.6	45.9	48.2	
	HAD45	38.6	39.4	40.2	40.0	
	HAD85	38.6	40.6	37.5	41.0	
Growing	CCSM45	18.8	19.2	18.9	19.4	
Season	CCSM85	18.8	18.5	19.0	18.4	
May—Sep	GFDL45	18.8	20.7	21.3	21.8	
	GFDL85	18.8	19.5	21.1	21.4	
	HAD45	18.8	19.3	17.4	18.2	
	HAD85	18.8	18.9	15.4	16.2	

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.

U.S. Census Bureau Urban Areas
Climate Change Atlas Tree Species
Current and Potential Future Habitat, Capability, and Migration

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
red maple	Acer rubrum	WDH	High	85.8	807.5	18.7	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			0	1
black cherry	Prunus serotina	WDL	Medium	79.2	403.7	14.1	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	2
American elm	Ulmus americana	WDH	Medium	77	358.9	10.0	No change	No change	Medium	Common	Fair	Fair			0	3
yellow-poplar	Liriodendron tulipifera	WDH	High	31.7	263.0	14.2	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			0	4
sugar maple	Acer saccharum	WDH	High	47.1	229.0	9.5	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			0	5
white ash	Fraxinus americana	WDL	Medium	62.8	227.2	8.9	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			0	6
American beech	Fagus grandifolia	WDH	High	40.5	194.6	8.7	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	7
pin oak	Quercus palustris	NSH	Low	34.3	172.8	10.2	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	8
northern red oak	Quercus rubra	WDH	Medium	57.3	163.3	6.4	No change	No change	High	Common	Good	Good			0	9
green ash	Fraxinus pennsylvanica	WSH	Low	51.4	158.6	8.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			0	10
shagbark hickory	Carya ovata	WSL	Medium	38.3	144.7	8.9	No change	Sm. dec.	Medium	Common	Fair	Poor			0	11
white oak	Quercus alba	WDH	Medium	30.6	105.9	7.5	Lg. inc.	Sm. inc.	High	Common	Very Good	Very Good			0	12
silver maple	Acer saccharinum	NSH	Low	32.1	89.2	9.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			0	13
sassafras	Sassafras albidum	WSL	Low	23	77.4	8.9	No change	Sm. dec.	Medium	Common	Fair	Poor			0	14
sycamore	Platanus occidentalis	NSL	Low	16.4	71.1	11.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			0	15
bitternut hickory	Carya cordiformis	WSL	Low	33.9	70.8	5.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			0	16
bigtooth aspen	Populus grandidentata	NSL	Medium	24.5	64.5	6.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	17
eastern white pine	Pinus strobus	WDH	High	13.1	58.9	8.8	Lg. dec.	Very Lg. dec.	Low	Common	Very Poor	Lost			0	18
blackgum	Nyssa sylvatica	WDL	Medium	30	56.4	3.8	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			0	19
American basswood	Tilia americana	WSL	Medium	40.9	53.2	5.0	No change	Sm. dec.	Medium	Common	Fair	Poor			0	20
swamp white oak	Quercus bicolor	NSL	Low	12	51.4	6.0	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	21
eastern cottonwood	Populus deltoides	NSH	Low	18.6	48.9	8.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	22
ailanthus	Ailanthus altissima	NSL	FIA	6.6	43.8	12.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	23
black locust	Robinia pseudoacacia	NDH	Low	15.7	32.2	7.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	24
Osage-orange	Maclura pomifera	NDH	Medium	2.2	30.3	12.8	No change	No change	High	Rare	Fair	Fair			0	25
slippery elm	Ulmus rubra	WSL	Low	14.2	27.4	3.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	26
black oak	Quercus velutina	WDH	High	14.2	23.8	7.1	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	27
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	29.6	23.2	2.3	Sm. inc.	Sm. inc.	High	Rare	Good	Good			0	28
black willow	Salix nigra	NSH	Low	14.2	17.5	8.5	Lg. dec.	Sm. inc.	Low	Rare	Very Poor	Poor			0	29
Scots pine	Pinus sylvestris	NSH	FIA	8.8	14.7	24.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	30
chokecherry	Prunus virginiana	NSLX	FIA	6.6	11.8	5.6	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	31
boxelder	Acer negundo	WSH	Low	12	11.7	3.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good			0	32
cucumbertree	Magnolia acuminata	NSL	Low	8.8	10.9	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	6.6	10.8	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	34
mockernut hickory	Carya alba	WDL	Medium	5.5	10.8	8.6	Sm. inc.	Sm. inc.	High	Rare	Good	Good			0	35
quaking aspen	Populus tremuloides	WDH	High	7.7	10.3	3.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
pignut hickory	Carya glabra	WDL	Medium	10.9	9.5	2.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	37
yellow birch	Betula alleghaniensis	NDL	High	1.1	5.4	4.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	38
Norway spruce	Picea abies	NSH	FIA	9.2	5.3	1.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	39
serviceberry	Amelanchier spp.	NSL	Low	1.1	3.8	3.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	40
flowering dogwood	Cornus florida	WDL	Medium	10.9	3.5	1.2	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	41
black walnut	Juglans nigra	WDH	Low	21.9	3.3	2.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	42
eastern hemlock	Tsuga canadensis	NSH	High	4.4	1.1	3.7	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	43
Ohio buckeye	Aesculus glabra	NSL	Low	4.4	1.0	3.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	44
sweetgum	Liquidambar styraciflua	WDH	High	4.8	0.9	0.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			0	45
black ash	Fraxinus nigra	WSH	Medium	5.5	0.6	0.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	46
sweet birch	Betula lenta	NDH	High	8.8	0.5	0.9	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	47

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
scarlet oak	Quercus coccinea	WDL	Medium	8.8	0.4	0.7	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	48
honeylocust	Gleditsia triacanthos	NSH	Low	4.4	0.3	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			0	49
hackberry	Celtis occidentalis	WDH	Medium	8.8	0.3	0.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			0	50
Virginia pine	Pinus virginiana	NDH	High	4.4	0.2	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	51
eastern redcedar	Juniperus virginiana	WDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	52
pecan	Carya illinoinensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	53
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	54
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	55
eastern redbud	Cercis canadensis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	56
common persimmon	Diospyros virginiana	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	57
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	58
red mulberry	Morus rubra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	59
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	60
southern red oak	Quercus falcata	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	61
shingle oak	Quercus imbricaria	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	62
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	63
chinkapin oak	Quercus muehlenbergii	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	64
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	65
post oak	Quercus stellata	WDH	High	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	66
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	67
winged elm	Ulmus alata	WDL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	68