S37 E85

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

	sq. km	sq. mi	FIA Plots
Area of Region	9,813.8	3,789.1	195

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	5		Abundance		Reliability	Adaptability		RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Maple	6	Abundant	3	High	18	26	Increase	25	28	Very Good	9	11	Likely	2	3
Oak	13	Common	37	Medium	29	50	No Change	10	9	Good	19	20	Infill	4	5
Pine	4	Rare	33	Low	37	12	Decrease	32	30	Fair	10	10	Migrate	3	5
Other	42	Absent	17	FIA	6		New	11	13	Poor	13	12		**9**	**13**
73		**90**		**90**	**88**	Unknown	12	10	Very Poor	13	10			
							90	**90**	FIA Only	4	4			
									Unknown	6	4			
										74	**71**			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	56.5	58.3	60.7	61.0	
Average	CCSM85	56.5	58.8	61.6	64.7	
	GFDL45	56.5	59.7	61.8	62.6	
	GFDL85	56.5	59.4	62.8	66.5	
	HAD45	56.5	59.1	62.5	63.8	
	HAD85	56.5	59.6	64.2	68.3	
Growing	CCSM45	71.9	73.7	75.8	76.4	
Season	CCSM85	71.9	74.1	77.1	81.2	
May—Sep	GFDL45	71.9	75.6	78.1	79.4	
	GFDL85	71.9	75.4	79.6	83.8	
	HAD45	71.9	75.2	78.5	80.2	
	HAD85	71.9	75.6	82.1	86.0	
Coldest	CCSM45	32.5	34.0	35.6	36.1	
Month	CCSM85	32.5	35.4	36.4	38.1	
Average	GFDL45	32.5	36.6	36.6	37.0	
	GFDL85	32.5	34.5	35.5	36.2	
	HAD45	32.5	33.2	35.5	35.8	
	HAD85	32.5	34.5	36.4	38.1	
Warmest	CCSM45	77.1	78.8	80.1	80.5	
Month	CCSM85	77.1	79.4	81.2	83.0	
Average	GFDL45	77.1	80.4	82.2	83.1	
	GFDL85	77.1	80.9	83.5	85.9	
	HAD45	77.1	81.3	84.0	84.9	
	HAD85	77.1	83.0	87.7	89.5	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	48.8	50.4	55.5	54.0	
Total	CCSM85	48.8	54.7	55.3	59.3	
	GFDL45	48.8	55.0	57.9	61.2	
	GFDL85	48.8	54.3	58.8	62.4	
	HAD45	48.8	48.4	51.7	51.2	
	HAD85	48.8	49.1	46.8	50.8	
Growing	CCSM45	21.0	20.7	22.7	21.9	
Season	CCSM85	21.0	22.5	20.8	22.2	
May—Sep	GFDL45	21.0	23.9	23.4	24.2	
	GFDL85	21.0	23.0	23.6	24.2	
	HAD45	21.0	20.5	19.1	19.2	
	HAD85	21.0	20.3	16.2	16.8	

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
eastern redcedar	Juniperus virginiana	WDH	Medium	70	924.0	12.1	No change	No change	Medium	Abundant	Good	Good			1	1
sugar maple	Acer saccharum	WDH	High	73.8	803.7	8.6	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
yellow-poplar	Liriodendron tulipifera	WDH	High	68.7	713.0	9.8	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	3
white oak	Quercus alba	WDH	Medium	58.2	489.6	7.3	No change	No change	High	Common	Good	Good			1	4
red maple	Acer rubrum	WDH	High	55.7	437.1	7.2	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	5
pignut hickory	Carya glabra	WDL	Medium	47.7	341.2	5.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	6
sassafras	Sassafras albidum	WSL	Low	56.3	320.3	5.9	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	7
American beech	Fagus grandifolia	WDH	High	45.1	313.7	5.9	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	8
northern red oak	Quercus rubra	WDH	Medium	46	298.2	4.7	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	9
chinkapin oak	Quercus muehlenbergii	NSL	Medium	34.4	278.1	6.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	10
green ash	Fraxinus pennsylvanica	WSH	Low	45.5	275.4	4.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	11
black oak	Quercus velutina	WDH	High	46.4	272.2	5.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	12
chestnut oak	Quercus prinus	NDH	High	24	271.7	9.6	Lg. dec.	Sm. dec.	High	Common	Fair	Fair			1	13
hackberry	Celtis occidentalis	WDH	Medium	38.6	243.2	5.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	14
sycamore	Platanus occidentalis	NSL	Low	30.1	227.2	6.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	15
flowering dogwood	Cornus florida	WDL	Medium	56	207.2	3.4	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	16
black locust	Robinia pseudoacacia	NDH	Low	24	197.0	8.6	No change	Sm. dec.	Medium	Common	Fair	Poor			1	17
American elm	Ulmus americana	WDH	Medium	29.7	180.2	5.3	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	18
black cherry	Prunus serotina	WDL	Medium	48.3	176.8	3.7	No change	No change	Low	Common	Poor	Poor			0	19
white ash	Fraxinus americana	WDL	Medium	32.9	169.2	4.4	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	20
blackgum	Nyssa sylvatica	WDL	Medium	43.3	154.9	3.4	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	21
Virginia pine	Pinus virginiana	NDH	High	22.6	151.7	5.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	22
black walnut	Juglans nigra	WDH	Low	39.7	151.2	3.0	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	23
bitternut hickory	Carya cordiformis	WSL	Low	32.9	143.9	4.1	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	24
slippery elm	Ulmus rubra	WSL	Low	47	124.5	2.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	25
mockernut hickory	Carya alba	WDL	Medium	42	119.4	3.0	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	26
boxelder	Acer negundo	WSH	Low	17.9	118.6	5.3	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	27
shagbark hickory	Carya ovata	WSL	Medium	42.6	113.7	2.3	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	28
eastern redbud	Cercis canadensis	NSL	Low	32.5	101.8	2.3	Sm. dec.	No change	Medium	Common	Poor	Fair			1	29
scarlet oak	Quercus coccinea	WDL	Medium	26.3	96.9	3.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	30
sweetgum	Liquidambar styraciflua	WDH	High	15.6	85.3	4.6	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	31
southern red oak	Quercus falcata	WDL	Medium	16.2	84.2	3.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	32
shellbark hickory	Carya laciniosa	NSL	Low	23.5	84.0	4.2	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	33
sourwood	Oxydendrum arboreum	NDL	High	18.5	79.2	2.6	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	34
Shumard oak	Quercus shumardii	NSL	Low	22.6	73.4	2.7	No change	Sm. inc.	High	Common	Good	Very Good			1	35
Osage-orange	Maclura pomifera	NDH	Medium	5.3	57.6	8.1	No change	No change	High	Common	Good	Good	Infill ++	Infill ++	1	36
post oak	Quercus stellata	WDH	High	12.8	56.6	4.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	37
red mulberry	Morus rubra	NSL	Low	20.2	54.9	2.6	Sm. dec.	No change	Medium	Common	Poor	Fair			1	38
yellow buckeye	Aesculus flava	NSL	Low	9.4	51.7	3.1	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	39
winged elm	Ulmus alata	WDL	Medium	21.5	51.6	2.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	40
honeylocust	Gleditsia triacanthos	NSH	Low	10.2	44.9	3.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	41
blue ash	Fraxinus quadrangulata	NSL	Low	7.4	34.4	4.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	42
ailanthus	Ailanthus altissima	NSL	FIA	3.6	31.6	3.0	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	43
shortleaf pine	Pinus echinata	WDH	High	0.1	27.8	2.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	44
common persimmon	Diospyros virginiana	NSL	Low	14.6	27.0	1.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	45
silver maple	Acer saccharinum	NSH	Low	0.7	25.4	5.9	No change	No change	High	Rare	Fair	Fair		Infill +	2	46
pitch pine	Pinus rigida	NSH	High	5.1	22.2	11.2	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47

Sep 2022

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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
pin oak	Quercus palustris	NSH	Low	3	20.6	6.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	48
sugarberry	Celtis laevigata	NDH	Medium	4.5	17.3	3.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	49
shingle oak	Quercus imbricaria	NDH	Medium	7.1	17.0	5.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	50
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	11	16.9	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	51
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	8.3	13.4	1.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	52
Ohio buckeye	Aesculus glabra	NSL	Low	5.2	11.9	2.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	53
black willow	Salix nigra	NSH	Low	2.9	10.4	3.3	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	54
eastern cottonwood	Populus deltoides	NSH	Low	1.6	9.3	3.2	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			0	55
swamp tupelo	Nyssa biflora	NDH	Medium	0.5	7.0	3.7	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	56
butternut	Juglans cinerea	NSLX	FIA	2	4.6	2.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	57
serviceberry	Amelanchier spp.	NSL	Low	3.8	4.0	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	58
river birch	Betula nigra	NSL	Low	1	4.0	3.9	No change	Lg. inc.	Medium	Rare	Poor	Good			2	59
willow oak	Quercus phellos	NSL	Low	0.5	4.0	1.8	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +		2	60
paulownia	Paulownia tomentosa	NSL	FIA	2	3.9	1.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	61
pawpaw	Asimina triloba	NSL	Low	0.8	2.2	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	62
American basswood	Tilia americana	WSL	Medium	0.7	2.2	1.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	63
loblolly pine	Pinus taeda	WDH	High	1	1.8	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	64
American holly	Ilex opaca	NSL	Medium	0.5	1.4	0.6	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	65
northern catalpa	Catalpa speciosa	NSHX	FIA	1	1.2	1.2	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	66
cucumbertree	Magnolia acuminata	NSL	Low	0.7	1.1	0.7	Sm. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	67
mountain maple	Acer spicatum	NSL	Low	0.6	0.9	0.6	No change	No change	High	Rare	Fair	Fair			0	68
bigtooth aspen	Populus grandidentata	NSL	Medium	1	0.9	0.9	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	69
rock elm	Ulmus thomasii	NSLX	FIA	0.1	0.6	0.1	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	70
swamp white oak	Quercus bicolor	NSL	Low	1	0.3	0.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	71
American chestnut	Castanea dentata	NSLX	FIA	0.2	0.3	0.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	72
black maple	Acer nigrum	NSH	Low	1	0.3	0.3	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	73
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	74
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	75
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Likely +	3	76
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	77
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	78
pecan	Carya illinoinensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	79
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	80
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	81
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	82
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	83
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	84
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	85
blackjack oak	Quercus marilandica	NSL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Likely +	Likely +	3	86
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	87
nuttall oak	Quercus texana	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	88
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	89
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	90