S36 E85

USDA Forest Service
Northern Research Station
Landscape Change Research Group
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	sq. km	sq. mi	FIA Plots
Area of Region	9,941.4	3,838.4	262

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					Model			Potential Change in Habitat Suitability			Capability to Cope or Persist			Migration Potential		
Ash	3									Scenario	Scenario			Scenario	Scenario		SHIFT	SHIFT
Hickory	6		Abundance			Reliability	Adaptability			RCP45	RCP85			RCP45	RCP85		RCP45	RCP85
Maple	5	Abundant	6	High	21	25	Increase	27	32	Very Good	13	16	Likely	0	1
Oak	12	Common	33	Medium	29	51	No Change	11	7	Good	17	19	Infill	7	8
Pine	5	Rare	36	Low	38	14	Decrease	32	31	Fair	10	7	Migrate	4	8
Other	44	Absent	17	FIA	5		New	12	13	Poor	12	12		**11**	**17**
	75		**92**		**93**	**90**	Unknown	11	10	Very Poor	16	13			
								93	**93**	FIA Only	3	3			
										Unknown	6	5			
											77	**75**			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	57.1	59.0	61.4	61.5	
Average	CCSM85	57.1	59.4	62.1	65.1	
	GFDL45	57.1	59.9	62.2	63.0	
	GFDL85	57.1	59.9	63.3	66.9	
	HAD45	57.1	59.6	62.9	64.1	
	HAD85	57.1	60.0	64.6	68.5	
Growing	CCSM45	71.9	73.7	75.8	76.3	
Season	CCSM85	71.9	74.1	77.0	80.9	
May—Sep	GFDL45	71.9	75.1	77.9	79.2	
	GFDL85	71.9	75.2	79.4	83.5	
	HAD45	71.9	75.2	78.4	79.9	
	HAD85	71.9	75.5	82.0	85.7	
Coldest	CCSM45	34.3	36.2	37.5	37.8	
Month	CCSM85	34.3	37.4	38.3	39.8	
Average	GFDL45	34.3	38.1	38.0	38.4	
	GFDL85	34.3	36.0	37.1	37.6	
	HAD45	34.3	34.5	36.7	37.0	
	HAD85	34.3	36.0	37.7	39.3	
Warmest	CCSM45	77.0	78.8	80.0	80.2	
Month	CCSM85	77.0	79.2	81.0	82.7	
Average	GFDL45	77.0	80.1	81.9	82.6	
	GFDL85	77.0	80.6	83.1	85.4	
	HAD45	77.0	81.3	83.9	84.6	
	HAD85	77.0	82.6	87.3	88.9	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual	CCSM45	52.5	54.7	59.7	57.7	
Total	CCSM85	52.5	59.3	59.6	64.0	
	GFDL45	52.5	59.2	61.7	65.5	
	GFDL85	52.5	59.1	62.7	65.9	
	HAD45	52.5	50.7	54.5	55.1	
	HAD85	52.5	52.9	49.3	53.6	
Growing	CCSM45	22.0	22.0	23.6	22.8	
Season	CCSM85	22.0	23.9	21.7	23.5	
May—Sep	GFDL45	22.0	25.3	25.2	26.1	
	GFDL85	22.0	24.7	25.5	26.2	
	HAD45	22.0	21.3	20.3	20.8	
	HAD85	22.0	21.9	17.0	18.6	

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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S36 E85

One x One Degree
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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
sugar maple	Acer saccharum	WDH	High	85.1	1394.0	11.3	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	1
yellow-poplar	Liriodendron tulipifera	WDH	High	76.6	872.1	8.2	Lg. dec.	Lg. dec.	High	Abundant	Good	Good			1	2
eastern redcedar	Juniperus virginiana	WDH	Medium	58.7	845.5	10.3	No change	Sm. inc.	Medium	Abundant	Good	Very Good			1	3
white oak	Quercus alba	WDH	Medium	70.4	667.2	6.6	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	4
red maple	Acer rubrum	WDH	High	72	659.1	6.8	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	5
American beech	Fagus grandifolia	WDH	High	57.7	562.4	6.5	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair			0	6
pignut hickory	Carya glabra	WDL	Medium	70.7	437.5	4.7	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	7
chestnut oak	Quercus prinus	NDH	High	43	356.3	6.3	No change	No change	High	Common	Good	Good			1	8
northern red oak	Quercus rubra	WDH	Medium	52.9	277.2	4.0	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	9
white ash	Fraxinus americana	WDL	Medium	59.9	263.7	3.8	No change	No change	Low	Common	Poor	Poor			0	10
shagbark hickory	Carya ovata	WSL	Medium	58.4	260.7	3.0	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	11
blackgum	Nyssa sylvatica	WDL	Medium	62.4	246.3	2.9	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good			1	12
sassafras	Sassafras albidum	WSL	Low	55.7	242.3	3.2	Lg. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	13
Virginia pine	Pinus virginiana	NDH	High	23.1	227.5	5.7	No change	Sm. dec.	Medium	Common	Fair	Poor			1	14
scarlet oak	Quercus coccinea	WDL	Medium	34.6	227.3	4.3	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	15
chinkapin oak	Quercus muehlenbergii	NSL	Medium	46.6	213.0	3.1	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	16
bitternut hickory	Carya cordiformis	WSL	Low	38.6	209.5	3.6	Sm. dec.	No change	High	Common	Fair	Good			1	17
mockernut hickory	Carya alba	WDL	Medium	52.6	207.2	3.0	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
ailanthus	Ailanthus altissima	NSL	FIA	40.1	192.4	3.8	Unknown	Unknown	NA	Common	NNIS	NNIS			0	19
black cherry	Prunus serotina	WDL	Medium	48.3	189.2	2.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	20
sourwood	Oxydendrum arboreum	NDL	High	48.5	186.2	2.7	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	21
green ash	Fraxinus pennsylvanica	WSH	Low	46.8	185.1	2.8	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	22
black oak	Quercus velutina	WDH	High	36.6	158.9	3.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	23
American elm	Ulmus americana	WDH	Medium	39	157.7	2.9	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	24
flowering dogwood	Cornus florida	WDL	Medium	50.4	138.4	1.8	No change	No change	Medium	Common	Fair	Fair			1	25
yellow buckeye	Aesculus flava	NSL	Low	35.2	134.6	2.5	Lg. dec.	Lg. dec.	Low	Common	Very Poor	Very Poor			0	26
winged elm	Ulmus alata	WDL	Medium	44	134.0	2.3	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	27
black walnut	Juglans nigra	WDH	Low	39.2	130.2	2.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	28
hackberry	Celtis occidentalis	WDH	Medium	31.1	127.0	2.7	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	29
slippery elm	Ulmus rubra	WSL	Low	38.8	115.7	1.8	No change	Sm. inc.	Medium	Common	Fair	Good			1	30
eastern redbud	Cercis canadensis	NSL	Low	47.9	115.5	1.7	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	31
southern red oak	Quercus falcata	WDL	Medium	13.3	111.2	4.5	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	32
sweetgum	Liquidambar styraciflua	WDH	High	19.3	105.0	3.8	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	33
black locust	Robinia pseudoacacia	NDH	Low	21.2	101.8	3.2	No change	No change	Medium	Common	Fair	Fair			1	34
loblolly pine	Pinus taeda	WDH	High	6.5	76.9	10.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	35
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	31.6	63.9	1.6	Sm. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	36
boxelder	Acer negundo	WSH	Low	19.6	63.9	2.4	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	37
sycamore	Platanus occidentalis	NSL	Low	16.2	59.6	2.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	38
American basswood	Tilia americana	WSL	Medium	18.2	57.3	2.7	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	39
shortleaf pine	Pinus echinata	WDH	High	6.1	49.1	3.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	40
post oak	Quercus stellata	WDH	High	13.1	46.5	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	41
sugarberry	Celtis laevigata	NDH	Medium	6.4	44.3	6.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	1	42
honeylocust	Gleditsia triacanthos	NSH	Low	11.9	38.7	2.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	43
silver maple	Acer saccharinum	NSH	Low	0.5	38.0	6.5	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	44
shellbark hickory	Carya laciniosa	NSL	Low	10.9	36.5	2.2	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	45
blue ash	Fraxinus quadrangulata	NSL	Low	6.5	32.7	3.8	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	46
Shumard oak	Quercus shumardii	NSL	Low	4.2	31.4	5.2	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	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
American hornbeam; musclewood	Carpinus caroliniana	WSL	Low	17.7	29.4	1.3	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	48
Osage-orange	Maclura pomifera	NDH	Medium	10.2	27.7	2.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	1	49
eastern hemlock	Tsuga canadensis	NSH	High	6.4	23.3	1.7	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			2	50
cucumbertree	Magnolia acuminata	NSL	Low	8.3	22.7	2.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	51
eastern white pine	Pinus strobus	WDH	High	1.8	22.3	2.0	Sm. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			2	52
common persimmon	Diospyros virginiana	NSL	Low	9.6	17.8	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	53
red mulberry	Morus rubra	NSL	Low	13.1	16.6	1.1	No change	Lg. inc.	Medium	Rare	Poor	Good			1	54
paulownia	Paulownia tomentosa	NSL	FIA	6.2	15.1	1.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	55
American holly	Ilex opaca	NSL	Medium	6.7	13.4	0.9	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	56
eastern cottonwood	Populus deltoides	NSH	Low	3.1	12.7	1.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	57
willow oak	Quercus phellos	NSL	Low	1.2	11.4	4.0	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	58
pawpaw	Asimina triloba	NSL	Low	8.9	11.0	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	59
butternut	Juglans cinerea	NSLX	FIA	6	9.3	1.5	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	60
black willow	Salix nigra	NSH	Low	1	9.1	9.0	No change	Lg. inc.	Low	Rare	Very Poor	Fair		Infill +	2	61
swamp tupelo	Nyssa biflora	NDH	Medium	0.5	6.9	3.3	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	62
bigleaf magnolia	Magnolia macrophylla	NSL	Low	4.9	4.6	0.6	Lg. dec.	Very Lg. dec.	Medium	Rare	Very Poor	Lost			0	63
serviceberry	Amelanchier spp.	NSL	Low	4.2	4.1	0.5	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	64
sand hickory	Carya pallida	NSL	FIA	1.3	3.8	0.8	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	65
wild plum	Prunus americana	NSLX	FIA	0.4	3.7	1.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	66
cherrybark oak; swamp red oak	Quercus pagoda	NSL	Medium	2	3.1	1.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	67
blackjack oak	Quercus marilandica	NSL	Medium	1.5	2.4	0.7	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	68
black maple	Acer nigrum	NSH	Low	0.5	2.4	1.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	69
Ohio buckeye	Aesculus glabra	NSL	Low	2.3	2.1	0.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	70
southern magnolia	Magnolia grandiflora	NSL	Low	1	1.4	1.4	Sm. dec.	Lg. inc.	Medium	Rare	Very Poor	Good			0	71
pin cherry	Prunus pensylvanica	NSL	Low	1	1.3	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	72
pitch pine	Pinus rigida	NSH	High	1	1.1	1.1	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	73
sweet birch	Betula lenta	NDH	High	1	0.6	0.6	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	74
river birch	Betula nigra	NSL	Low	1	0.6	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	75
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	76
slash pine	Pinus elliottii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	77
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	78
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	79
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Likely +	3	80
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	81
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	82
pecan	Carya illinoinensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	83
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	84
black ash	Fraxinus nigra	WSH	Medium	0	0	0	New Habitat	Unknown	Low	Absent	New Habitat	Unknown			3	85
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	86
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	87
bigtooth aspen	Populus grandidentata	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	88
laurel oak	Quercus laurifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	89
water oak	Quercus nigra	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	90
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	91
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	92
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	93

Sep 2022