

Obed Wild and Scenic River

National Park Climate Change Atlas Tree Species

USDA Forest Service
Northern Research Station
Landscape Change Research Group
Iverson, Peters, Prasad, Matthews

Current and Potential Future Habitat, Capability, and Migration

	sq. km	sq. mi	FIA Plots
Area of Region	8,100.0	3,127.4	278

Species Information

The columns below provide brief 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		Potential Change in Habitat Suitability		Capability to Cope or Persist		Migration Potential					
				Reliability	Adaptability	Scenario RCP45	Scenario RCP85	Scenario RCP45	Scenario RCP85	SHIFT RCP45	SHIFT RCP85				
Ash	2			High	23	25	Increase	23	26	Very Good	9	11	Likely	4	5
Hickory	5			Medium	28	52	No Change	10	9	Good	15	14	Infill	5	7
Maple	5	Abundant	5	Low	38	14	Decrease	29	27	Fair	11	12	Migrate	4	12
Oak	11	Common	25	FIA	5		New	17	20	Poor	11	10			
Pine	4	Rare	37				Unknown	15	12	Very Poor	15	13			
Other	40	Absent	25							FIA Only	3	3			
	67		92		94	91		94	94	Unknown	10	7			
											74	70			

Potential Changes in Climate Variables

Temperature (°F)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	55.7	57.6	59.9	60.1	
Average	CCSM85	55.7	58.0	60.6	63.5	
	GFDL45	55.7	58.4	60.9	61.6	
	GFDL85	55.7	58.6	61.9	65.5	
	HAD45	55.7	58.0	61.2	62.5	
	HAD85	55.7	58.4	62.9	66.8	
Growing Season	CCSM45	70.1	71.9	74.0	74.5	
	CCSM85	70.1	72.3	75.0	78.8	
May—Sep	GFDL45	70.1	73.1	76.1	77.4	
	GFDL85	70.1	73.5	77.6	81.6	
	HAD45	70.1	73.3	76.3	77.9	
	HAD85	70.1	73.5	79.9	83.5	
Coldest Month	CCSM45	33.8	35.8	36.9	37.2	
	CCSM85	33.8	36.7	37.6	39.0	
Average	GFDL45	33.8	37.3	37.3	37.6	
	GFDL85	33.8	35.6	36.6	37.2	
	HAD45	33.8	33.5	35.7	36.1	
	HAD85	33.8	35.0	36.6	38.3	
Warmest Month	CCSM45	75.0	77.0	78.1	78.3	
	CCSM85	75.0	77.2	78.9	80.7	
Average	GFDL45	75.0	78.3	80.0	80.8	
	GFDL85	75.0	78.7	81.3	83.4	
	HAD45	75.0	79.2	81.6	82.3	
	HAD85	75.0	80.2	84.8	86.5	

Precipitation (in)

Scenario	2009	2039	2069	2099		
Annual	CCSM45	56.4	59.2	63.7	61.8	
Total	CCSM85	56.4	62.7	63.8	68.3	
	GFDL45	56.4	63.2	65.1	69.6	
	GFDL85	56.4	62.9	66.5	69.1	
	HAD45	56.4	54.8	59.0	60.1	
	HAD85	56.4	58.1	53.5	57.7	
Growing Season	CCSM45	23.5	24.0	25.5	24.8	
	CCSM85	23.5	25.4	23.9	25.8	
May—Sep	GFDL45	23.5	27.1	27.0	28.2	
	GFDL85	23.5	26.3	27.6	28.2	
	HAD45	23.5	23.0	22.4	23.0	
	HAD85	23.5	24.3	18.8	21.0	

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
white oak	Quercus alba	WDH	Medium	95.1	1251.1	13.2	No change	No change	High	Abundant	Very Good	Very Good			1	1
red maple	Acer rubrum	WDH	High	98.8	1192.8	12.1	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	2
yellow-poplar	Liriodendron tulipifera	WDH	High	90.1	890.1	9.9	Sm. dec.	Lg. dec.	High	Abundant	Good	Good			1	3
Virginia pine	Pinus virginiana	NDH	High	74.1	668.3	9.0	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0	4
chestnut oak	Quercus prinus	NDH	High	82.7	667.3	8.1	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	5
sourwood	Oxydendrum arboreum	NDL	High	95.1	415.0	4.4	Sm. dec.	Lg. dec.	High	Common	Fair	Fair			1	6
sugar maple	Acer saccharum	WDH	High	51.9	388.8	7.5	Lg. dec.	Lg. dec.	High	Common	Fair	Fair			1	7
loblolly pine	Pinus taeda	WDH	High	18.5	358.5	19.4	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	8
scarlet oak	Quercus coccinea	WDL	Medium	65.4	339.0	5.2	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	9
black oak	Quercus velutina	WDH	High	72.8	318.5	4.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	10
blackgum	Nyssa sylvatica	WDL	Medium	90.1	310.4	3.4	No change	Sm. inc.	High	Common	Good	Very Good			1	11
pignut hickory	Carya glabra	WDL	Medium	71.6	271.7	3.8	No change	Sm. dec.	Medium	Common	Fair	Poor			1	12
shortleaf pine	Pinus echinata	WDH	High	50.6	253.0	5.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	13
eastern white pine	Pinus strobus	WDH	High	44.4	229.2	5.2	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	14
black cherry	Prunus serotina	WDL	Medium	59.3	211.3	3.6	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1	15
sweetgum	Liquidambar styraciflua	WDL	High	33.3	200.7	6.0	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	16
northern red oak	Quercus rubra	WDH	Medium	54.3	178.9	3.3	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	17
mockernut hickory	Carya alba	WDL	Medium	69.1	178.3	2.6	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	18
eastern hemlock	Tsuga canadensis	NSH	High	35.8	161.4	4.5	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	19
southern red oak	Quercus falcata	WDL	Medium	35.8	134.6	3.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
sassafras	Sassafras albidum	WSL	Low	54.3	127.8	2.4	Sm. dec.	No change	Medium	Common	Poor	Fair			1	21
post oak	Quercus stellata	WDH	High	44.4	126.4	2.8	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	22
American beech	Fagus grandifolia	WDH	High	32.1	100.1	3.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	23
flowering dogwood	Cornus florida	WDL	Medium	64.2	91.3	1.4	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	24
black locust	Robinia pseudoacacia	NDH	Low	21	88.0	4.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	25
bitternut hickory	Carya cordiformis	WSL	Low	22.2	78.5	3.5	Sm. dec.	Sm. dec.	High	Common	Fair	Fair			1	26
eastern redcedar	Juniperus virginiana	WDH	Medium	18.5	59.3	3.2	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	27
green ash	Fraxinus pennsylvanica	WSH	Low	23.5	59.0	2.5	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good			1	28
shagbark hickory	Carya ovata	WSL	Medium	35.8	57.0	1.6	Sm. inc.	No change	Medium	Common	Good	Fair			1	29
chinkapin oak	Quercus muehlenbergii	NSL	Medium	14.8	54.8	3.7	Sm. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	30
American basswood	Tilia americana	WSL	Medium	14.8	43.1	2.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	31
white ash	Fraxinus americana	WDL	Medium	17.3	41.9	2.4	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair			1	32
eastern redbud	Cercis canadensis	NSL	Low	22.2	37.0	1.7	No change	No change	Medium	Rare	Poor	Poor			1	33
American elm	Ulmus americana	WDH	Medium	9.9	32.4	3.3	No change	Sm. inc.	Medium	Rare	Poor	Fair			1	34
black walnut	Juglans nigra	WDH	Low	13.6	31.3	2.3	No change	No change	Medium	Rare	Poor	Poor			1	35
silver maple	Acer saccharinum	NSH	Low	1.2	30.9	25.0	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	36
American holly	Ilex opaca	NSL	Medium	19.8	25.2	1.3	Lg. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	37
yellow buckeye	Aesculus flava	NSL	Low	11.1	24.2	2.2	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	38
serviceberry	Amelanchier spp.	NSL	Low	23.5	23.5	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	39
winged elm	Ulmus alata	WDL	Medium	14.8	23.0	1.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	40
sycamore	Platanus occidentalis	NSL	Low	6.2	20.5	3.3	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	1	41
American hornbeam; muscley	Carpinus caroliniana	WSL	Low	13.6	18.5	1.4	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	42
hackberry	Celtis occidentalis	WDH	Medium	6.2	18.3	3.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	43
sweet birch	Betula lenta	NDH	High	9.9	18.0	1.8	No change	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	44
ailanthus	Ailanthus altissima	NSL	FIA	9.9	17.8	1.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	45
sand hickory	Carya pallida	NSL	FIA	11.1	17.0	1.5	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	46
cucumbertree	Magnolia acuminata	NSL	Low	12.3	14.1	1.1	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	47



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common persimmon	Diospyros virginiana	NSL	Low	7.4	11.8	1.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	48
yellow birch	Betula alleghaniensis	NDL	High	4.9	10.2	2.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	49
slippery elm	Ulmus rubra	WSL	Low	9.9	9.5	1.0	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	50
bigleaf magnolia	Magnolia macrophylla	NSL	Low	9.9	8.2	0.8	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	51
blackjack oak	Quercus marilandica	NSL	Medium	6.2	8.2	1.3	Lg. inc.	Lg. inc.	High	Rare	Good	Good	Infill ++	Infill ++	2	52
black willow	Salix nigra	NSH	Low	1.2	8.0	6.5	Sm. dec.	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	53
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	9.9	7.9	0.8	Lg. inc.	Lg. inc.	High	Rare	Good	Good			1	54
boxelder	Acer negundo	WSH	Low	3.7	6.9	1.9	No change	Sm. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	55
striped maple	Acer pensylvanicum	NSL	Medium	7.4	5.7	0.8	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	56
Shumard oak	Quercus shumardii	NSL	Low	1.2	4.1	3.3	Sm. dec.	No change	High	Rare	Poor	Fair		Infill +	2	57
pawpaw	Asimina triloba	NSL	Low	6.2	3.7	0.6	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	58
red mulberry	Morus rubra	NSL	Low	1.2	3.6	2.9	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	59
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	3.7	3.3	0.9	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	60
wild plum	Prunus americana	NSLX	FIA	2.5	2.8	1.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	61
pin oak	Quercus palustris	NSH	Low	1.2	1.5	1.2	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	62
Ohio buckeye	Aesculus glabra	NSL	Low	1.2	1.1	0.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	63
paulownia	Paulownia tomentosa	NSL	FIA	1.2	0.9	0.7	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	64
red spruce	Picea rubens	NDH	High	1.2	0.6	0.5	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	65
honeylocust	Gleditsia triacanthos	NSH	Low	1.2	0.5	0.4	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	66
American chestnut	Castanea dentata	NSLX	FIA	1.2	0.3	0.3	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	67
ashe juniper	Juniperus ashei	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	68
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	69
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	70
pitch pine	Pinus rigida	NSH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	71
florida maple	Acer barbatum	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	72
black maple	Acer nigrum	NSH	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	73
mountain maple	Acer spicatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	74
river birch	Betula nigra	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	75
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3	76
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Likely +	Likely +	3	77
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	78
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	79
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	80
blue ash	Fraxinus quadrangulata	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	81
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	82
Osage-orange	Maclura pomifera	NDH	Medium	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat		Likely +	3	83
southern magnolia	Magnolia grandiflora	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	84
sweetbay	Magnolia virginiana	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	85
bigtooth aspen	Populus grandidentata	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	86
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	87
swamp white oak	Quercus bicolor	NSL	Low	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		Migrate +	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
willow oak	Quercus phellos	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	91
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate ++	3	92
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	93
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	94

