

Fredericksburg and Spotsylvania County Battlefields Memorial National Park

Climate Change Atlas Tree Species

Landscape Change Research Group
Iverson, Peters, Prasad, Matthews
USFS Northern Research Station
Delaware, OH

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
yellow-poplar	Liriodendron tulipifera	WDH	High	85.9	1357.42	14.78	Lg. dec.	Lg. dec.	High	Abundant	Good	Good	Infill ++	Infill ++	2	1
loblolly pine	Pinus taeda	WDH	High	48	1289.25	25.77	Sm. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good	Infill ++	Infill ++	2	2
white oak	Quercus alba	WDH	Medium	79.4	1063.75	12.65	Sm. dec.	Sm. dec.	High	Abundant	Good	Good	Infill ++	Infill ++	2	3
Virginia pine	Pinus virginiana	NDH	High	78.3	929.32	11.39	Lg. dec.	Lg. dec.	Medium	Abundant	Fair	Fair	Infill +	Infill +	2	4
red maple	Acer rubrum	WDH	High	82.8	717.68	8.14	No change	No change	High	Abundant	Very Good	Very Good	Infill ++	Infill ++	2	5
sweetgum	Liquidambar styraciflua	WDH	High	62.4	647.71	9.46	Lg. inc.	Lg. inc.	Medium	Abundant	Very Good	Very Good	Infill ++	Infill ++	2	6
southern red oak	Quercus falcata	WDL	Medium	64.6	446.4	6.35	No change	Sm. inc.	High	Common	Good	Very Good	Infill ++	Infill ++	2	7
American beech	Fagus grandifolia	WDH	High	57.4	421.13	6.64	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	8
blackgum	Nyssa sylvatica	WDL	Medium	77.2	273.42	3.04	No change	Sm. inc.	High	Common	Good	Very Good	Infill ++	Infill ++	2	9
eastern redcedar	Juniperus virginiana	WDH	Medium	57.6	270.08	4.56	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	10
pignut hickory	Carya glabra	WDL	Medium	66.7	268.86	3.93	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	11
black oak	Quercus velutina	WDH	High	56.1	263.64	4.32	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	12
chestnut oak	Quercus prinus	NDH	High	21.6	217.79	8.81	Lg. dec.	Lg. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	13
American holly	Ilex opaca	NSL	Medium	49.6	210.86	3.58	Sm. dec.	No change	Medium	Common	Poor	Fair	Infill +	Infill +	2	14
scarlet oak	Quercus coccinea	WDL	Medium	51.3	202.16	3.81	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor	Infill +	Infill +	2	15
mockernut hickory	Carya alba	WDL	Medium	57.1	175.68	2.95	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	2	16
northern red oak	Quercus rubra	WDH	Medium	43.4	158.33	3.49	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	2	17
black cherry	Prunus serotina	WDL	Medium	43	111.45	2.57	Lg. inc.	Lg. inc.	Low	Common	Good	Good	Infill ++	Infill ++	2	18
willow oak	Quercus phellos	NSL	Low	31.9	101.1	2.85	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2	19
green ash	Fraxinus pennsylvanica	WSH	Low	18.7	96.35	5.17	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2	20
post oak	Quercus stellata	WDH	High	23.8	93.81	3.63	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			2	21
black locust	Robinia pseudoacacia	NDH	Low	16.8	82.62	4.49	Lg. dec.	Lg. dec.	Medium	Common	Poor	Poor			0	22
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	30	80.61	2.65	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	2	23
white ash	Fraxinus americana	WDL	Medium	21.8	68.65	3.03	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair	Infill +	Infill +	2	24
flowering dogwood	Cornus florida	WDL	Medium	44	53.31	1.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	2	25
river birch	Betula nigra	NSL	Low	19.8	49.07	2.48	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good		Infill ++	2	26
black walnut	Juglans nigra	WDH	Low	10.5	47.77	4.55	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	27
ailanthus	Ailanthus altissima	NSL	FIA	7	46.99	6.72	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	28
eastern redbud	Cercis canadensis	NSL	Low	4.7	43.24	9.27	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	29
hackberry	Celtis occidentalis	WDH	Medium	10.3	41.92	3.98	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor	Infill +	Infill +	2	30
pin oak	Quercus palustris	NSH	Low	7	41.09	5.88	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	31
eastern white pine	Pinus strobus	WDH	High	3.5	37.77	10.8	Lg. dec.	Very Lg. dec.	Low	Rare	Very Poor	Lost			0	32
boxelder	Acer negundo	WSH	Low	5.8	36.17	6.21	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	33
bigtooth aspen	Populus grandidentata	NSL	Medium	17.5	36.02	2.06	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	34
American elm	Ulmus americana	WDH	Medium	15.2	30.5	2.01	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	35
sycamore	Platanus occidentalis	NSL	Low	10.5	30.17	2.88	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	36
bitternut hickory	Carya cordiformis	WSL	Low	7	26.28	3.76	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	37
sweet birch	Betula lenta	NDH	High	5.8	21.58	3.7	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	38
shortleaf pine	Pinus echinata	WDH	High	15.2	20.38	1.34	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	39
common persimmon	Diospyros virginiana	NSL	Low	16	18.31	1.11	Sm. dec.	Lg. inc.	High	Rare	Poor	Good	Infill +	Infill ++	2	40
sassafras	Sassafras albidum	WSL	Low	15.4	12.32	0.63	Very Lg. dec.	Sm. dec.	Medium	Rare	Lost	Very Poor			0	41
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	2.8	12.21	2.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	42
eastern hemlock	Tsuga canadensis	NSH	High	1.2	11.31	9.7	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	43
slippery elm	Ulmus rubra	WSL	Low	7	10.73	1.53	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	44
pawpaw	Asimina triloba	NSL	Low	5.5	8.88	1.32	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	45
pin cherry	Prunus pensylvanica	NSL	Low	1.2	8.63	7.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	46
sourwood	Oxydendrum arboreum	NDL	High	2.3	7.95	3.41	Sm. inc.	No change	High	Rare	Good	Fair			2	47
shagbark hickory	Carya ovata	WSL	Medium	4.7	6.1	1.31	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	48
paulownia	Paulownia tomentosa	NSL	FIA	4.3	5.77	1.07	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	49
swamp tupelo	Nyssa biflora	NDH	Medium	2.3	5.7	2.45	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	50
swamp chestnut oak	Quercus michauxii	NSL	Low	3.5	5.26	1.5	No change	Sm. inc.	Medium	Rare	Poor	Fair			0	51
water oak	Quercus nigra	WDH	High	3.5	5.16	1.48	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	52
serviceberry	Amelanchier spp.	NSL	Low	3.5	3.61	1.03	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	53



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
winged elm	Ulmus alata	WDL	Medium	4.7	3.02	0.65	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	54
red mulberry	Morus rubra	NSL	Low	1.2	2.97	2.55	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	55
sweetbay	Magnolia virginiana	NSL	Medium	2.3	2.91	1.25	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	56
honeylocust	Gleditsia triacanthos	NSH	Low	2.3	2.72	1.16	Lg. dec.	Sm. inc.	High	Rare	Poor	Good			2	57
blackjack oak	Quercus marilandica	NSL	Medium	2.3	2.59	1.11	Sm. inc.	Lg. inc.	High	Rare	Good	Good			2	58
Osage-orange	Maclura pomifera	NDH	Medium	1.2	1.52	1.3	Very Lg. dec.	No change	High	Rare	Lost	Fair			0	59
cucumbertree	Magnolia acuminata	NSL	Low	1.2	1.49	1.28	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	60
sugar maple	Acer saccharum	WDH	High	1.2	1.4	1.2	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	61
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	1.2	1.26	1.08	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	62
pond pine	Pinus serotina	NSH	Medium	1.2	1.19	1.02	Very Lg. dec.	Very Lg. dec.	Low	Rare	Lost	Lost			0	63
quaking aspen	Populus tremuloides	WDH	High	1.1	1.11	0.93	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	64
pitch pine	Pinus rigida	NSH	High	1.2	0.66	0.57	Very Lg. dec.	Very Lg. dec.	Medium	Rare	Lost	Lost			0	65
laurel oak	Quercus laurifolia	NDH	Medium	1.2	0.65	0.56	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	66
slash pine	Pinus elliotii	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	67
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	68
bald cypress	Taxodium distichum	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	69
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	70
yellow buckeye	Aesculus flava	NSL	Low	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	71
yellow birch	Betula alleghaniensis	NDL	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	72
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			0	73
water hickory	Carya aquatica	NSL	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	74
pecan	Carya illinoensis	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	75
shellbark hickory	Carya laciniosa	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	76
black hickory	Carya texana	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	77
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	78
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			3	79
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	80
water tupelo	Nyssa aquatica	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			3	81
redbay	Persea borbonia	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat			3	82
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	83
overcup oak	Quercus lyrata	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	84
live oak	Quercus virginiana	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	85
bluejack oak	Quercus incana	NSL	Low	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat			3	86
black willow	Salix nigra	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	87
cedar elm	Ulmus crassifolia	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	88