

Section M221A

EcoMap 2007
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

Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO	N
chestnut oak	Quercus prinus	NDH	High	77.9	1462.1	15.8	No change	Sm. dec.	High	Abundant	Very Good	Good			1	1
red maple	Acer rubrum	WDH	High	82.8	1100.1	10.3	Sm. dec.	Sm. dec.	High	Abundant	Good	Good			1	2
northern red oak	Quercus rubra	WDH	Medium	73.3	638.9	7.2	No change	No change	High	Abundant	Very Good	Very Good			1	3
white oak	Quercus alba	WDH	Medium	65.7	622.1	7.8	Sm. inc.	Sm. inc.	High	Abundant	Very Good	Very Good			1	4
yellow-poplar	Liriodendron tulipifera	WDH	High	42.9	446.2	7.7	Sm. inc.	No change	High	Common	Very Good	Good			1	5
sweet birch	Betula lenta	NDH	High	52.4	394.4	6.5	Sm. dec.	Lg. dec.	Low	Common	Poor	Very Poor			0	6
black cherry	Prunus serotina	WDL	Medium	51.5	369.3	6.0	No change	No change	Low	Common	Poor	Poor			0	7
scarlet oak	Quercus coccinea	WDL	Medium	51.2	358.3	5.6	No change	No change	Medium	Common	Fair	Fair			1	8
black oak	Quercus velutina	WDH	High	62.3	353.5	5.1	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	9
sugar maple	Acer saccharum	WDH	High	36.9	345.5	6.4	Sm. inc.	No change	High	Common	Very Good	Good			1	10
black locust	Robinia pseudoacacia	NDH	Low	49.2	341.5	5.4	No change	No change	Medium	Common	Fair	Fair			1	11
eastern white pine	Pinus strobus	WDH	High	42.7	337.7	6.3	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	12
blackgum	Nyssa sylvatica	WDL	Medium	62.9	308.5	4.1	No change	Sm. inc.	High	Common	Good	Very Good			1	13
Virginia pine	Pinus virginiana	NDH	High	35.5	300.1	7.2	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	14
white ash	Fraxinus americana	WDL	Medium	49	297.7	5.0	No change	No change	Low	Common	Poor	Poor			0	15
pignut hickory	Carya glabra	WDL	Medium	51.4	223.3	3.7	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	16
eastern hemlock	Tsuga canadensis	NSH	High	31.3	213.3	5.2	Sm. dec.	Sm. dec.	Low	Common	Poor	Poor			0	17
eastern redcedar	Juniperus virginiana	WDH	Medium	15	169.2	8.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good			1	18
black walnut	Juglans nigra	WDH	Low	27.5	156.8	5.3	No change	Sm. inc.	Medium	Common	Fair	Good			1	19
mockernut hickory	Carya alba	WDL	Medium	34.9	139.5	2.9	Lg. inc.	Lg. inc.	High	Common	Very Good	Very Good			1	20
pitch pine	Pinus rigida	NSH	High	27.8	139.0	4.2	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0	21
sassafras	Sassafras albidum	WDL	Low	40	136.2	2.8	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	22
American beech	Fagus grandifolia	WDH	High	17.6	95.0	3.1	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	1	23
American basswood	Tilia americana	WSL	Medium	18.6	86.7	3.6	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	24
sourwood	Oxydendrum arboreum	NDL	High	14.2	81.2	3.3	Sm. inc.	Sm. inc.	High	Common	Very Good	Very Good	Infill ++	Infill ++	1	25
shagbark hickory	Carya ovata	WSL	Medium	25.8	79.7	2.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good			1	26
ailanthus	Ailanthus altissima	NSL	FIA	14.7	65.7	4.2	Unknown	Unknown	NA	Common	NNIS	NNIS			0	27
American elm	Ulmus americana	WDH	Medium	16.1	55.6	3.1	Sm. inc.	Lg. inc.	Medium	Common	Good	Very Good	Infill ++	Infill ++	1	28
Table Mountain pine	Pinus pungens	NSL	Low	11.3	54.6	4.5	Sm. dec.	Sm. dec.	High	Common	Fair	Fair	Infill +	Infill +	1	29
sycamore	Platanus occidentalis	NSL	Low	6.7	48.2	5.3	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	30
bitternut hickory	Carya cordiformis	WSL	Low	13.3	44.4	2.9	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	31
hackberry	Celtis occidentalis	WDH	Medium	8.1	43.6	4.0	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	32
serviceberry	Amelanchier spp.	NSL	Low	29.8	43.3	1.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	33
eastern hophornbeam; ironw	Ostrya virginiana	WSL	Low	18.1	38.9	1.6	Sm. inc.	Lg. inc.	High	Rare	Good	Good			1	34
flowering dogwood	Cornus florida	WDL	Medium	21.5	36.2	1.2	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	35
striped maple	Acer pensylvanicum	NSL	Medium	17.8	34.5	1.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	36
bigtooth aspen	Populus grandidentata	NSL	Medium	7.9	33.8	3.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	37
green ash	Fraxinus pennsylvanica	WSH	Low	7.6	32.5	3.4	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1	38
cucumbertree	Magnolia acuminata	NSL	Low	11	31.1	1.7	Sm. dec.	No change	Medium	Rare	Very Poor	Poor			1	39
slippery elm	Ulmus rubra	WSL	Low	11.1	27.1	2.1	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			1	40
boxelder	Acer negundo	WSH	Low	5.5	27.1	4.1	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	1	41
eastern redbud	Cercis canadensis	NSL	Low	10.4	26.9	1.9	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			1	42
yellow birch	Betula alleghaniensis	NDL	High	5.5	25.2	2.7	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	43
loblolly pine	Pinus taeda	WDH	High	2.5	22.0	7.7	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	44
yellow buckeye	Aesculus flava	NSL	Low	4.3	20.9	3.2	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	45
Osage-orange	Maclura pomifera	NDH	Medium	1	18.7	18.4	Lg. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	46
quaking aspen	Populus tremuloides	WDH	High	1.2	17.9	7.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	47



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bear oak; scrub oak	Quercus ilicifolia	NSLX	FIA	4.4	17.2	3.1	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	48
silver maple	Acer saccharinum	NSH	Low	0.7	15.2	13.7	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	49
chinkapin oak	Quercus muehlenbergii	NSL	Medium	3.8	15.0	2.9	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	2	50
common persimmon	Diospyros virginiana	NSL	Low	2.3	13.0	3.1	No change	Lg. inc.	High	Rare	Fair	Good	Infill +	Infill ++	2	51
red spruce	Picea rubens	NDH	High	0.9	12.9	5.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	52
gray birch	Betula populifolia	NSL	Low	2.7	11.0	3.3	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	53
mountain or Fraser magnolia	Magnolia fraseri	NSL	Low	1.9	10.3	2.4	No change	No change	Low	Rare	Very Poor	Very Poor			0	54
pin cherry	Prunus pensylvanica	NSL	Low	4.3	10.0	2.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	55
Scots pine	Pinus sylvestris	NSH	FIA	3.3	9.4	3.6	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	56
red pine	Pinus resinosa	NSH	Medium	2	9.0	7.0	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	57
shortleaf pine	Pinus echinata	WDH	High	2.3	8.9	1.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	58
Norway maple	Acer platanoides	NSL	FIA	3.3	8.4	4.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	59
American hornbeam; muscle	Carpinus caroliniana	WSL	Low	4.6	7.1	1.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	1	60
red mulberry	Morus rubra	NSL	Low	2.5	7.0	2.3	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	61
paper birch	Betula papyrifera	WDH	High	0.9	6.7	4.5	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	62
pin oak	Quercus palustris	NSH	Low	2.4	5.7	5.0	No change	No change	Low	Rare	Very Poor	Very Poor			2	63
southern red oak	Quercus falcata	WDL	Medium	1.4	5.3	1.6	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	64
sweetgum	Liquidambar styraciflua	WDH	High	0.5	4.8	4.8	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	65
butternut	Juglans cinerea	NSLX	FIA	2.4	4.6	1.5	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	66
winged elm	Ulmus alata	WDL	Medium	0.8	4.6	1.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	67
American chestnut	Castanea dentata	NSLX	FIA	7.9	4.5	0.5	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	68
paulownia	Paulownia tomentosa	NSL	FIA	1.6	4.2	2.4	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	69
Norway spruce	Picea abies	NSH	FIA	0.4	4.1	1.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	70
swamp white oak	Quercus bicolor	NSL	Low	0.9	3.4	3.9	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	71
pawpaw	Asimina triloba	NSL	Low	1.6	3.3	1.1	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			2	72
tamarack (native)	Larix laricina	NSH	High	0.9	3.0	3.7	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	73
eastern cottonwood	Populus deltoides	NSH	Low	0.4	3.0	5.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	74
black willow	Salix nigra	NSH	Low	0.3	2.8	5.3	Sm. dec.	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	75
post oak	Quercus stellata	WDH	High	1.4	2.7	1.0	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	76
white spruce	Picea glauca	NSL	Medium	0.3	2.4	8.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	77
honeylocust	Gleditsia triacanthos	NSH	Low	0.9	2.3	2.6	No change	Lg. inc.	High	Rare	Fair	Good			2	78
white mulberry	Morus alba	NSL	FIA	0.7	2.0	1.9	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	79
river birch	Betula nigra	NSL	Low	0.7	1.7	2.3	Sm. dec.	Sm. inc.	Medium	Rare	Very Poor	Fair		Infill +	2	80
swamp chestnut oak	Quercus michauxii	NSL	Low	0.4	1.5	3.5	Sm. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	81
chokecherry	Prunus virginiana	NSLX	FIA	0.5	1.1	1.8	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0	82
Siberian elm	Ulmus pumila	NDH	FIA	0.1	1.0	6.8	Unknown	Unknown	NA	Rare	NNIS	NNIS			0	83
bur oak	Quercus macrocarpa	NDH	Medium	0.3	0.8	1.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	84
blackjack oak	Quercus marilandica	NSL	Medium	0.7	0.8	1.1	Lg. inc.	Lg. inc.	High	Rare	Good	Good			2	85
shingle oak	Quercus imbricaria	NDH	Medium	0.2	0.8	2.1	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	86
black maple	Acer nigrum	NSH	Low	0.4	0.6	1.1	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	87
American holly	Ilex opaca	NSL	Medium	0.2	0.4	0.9	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	88
cherrybark oak; swamp red o	Quercus pagoda	NSL	Medium	0.1	0.4	2.6	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good			2	89
jack pine	Pinus banksiana	NSH	Medium	0.1	0.3	1.7	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	90
shellbark hickory	Carya laciniosa	NSL	Low	0.2	0.2	0.6	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	91
balsam poplar	Populus balsamifera	NSH	Medium	0.1	0.2	1.3	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	92
black ash	Fraxinus nigra	WSH	Medium	0.3	0.2	0.6	Sm. dec.	Sm. dec.	Low	Rare	Very Poor	Very Poor			0	93
blue ash	Fraxinus quadrangulata	NSL	Low	0.1	0.1	0.8	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	94



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northern white-cedar	<i>Thuja occidentalis</i>	WSH	High	0.1	0.1	0.5	No change	No change	Medium	Rare	Poor	Poor			0	95
northern pin oak	<i>Quercus ellipsoidalis</i>	NSH	Medium	0.6	0.1	2.0	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0	96
American mountain-ash	<i>Sorbus americana</i>	NSL	Low	0.1	0.1	0.5	Lg. dec.	Lg. dec.	Low	Rare	Very Poor	Very Poor			0	97
rock elm	<i>Ulmus thomasii</i>	NSLX	FIA	0.1	0.1	0.3	Unknown	Unknown	Low	Rare	FIA Only	FIA Only			0	98
mountain maple	<i>Acer spicatum</i>	NSL	Low	0.1	0.0	0.3	No change	No change	High	Rare	Fair	Fair			0	99
ashe juniper	<i>Juniperus ashei</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	100
slash pine	<i>Pinus elliotii</i>	NDH	High	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	101
florida maple	<i>Acer barbatum</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3	102
cittamwood/gum bumelia	<i>Sideroxylon lanuginosum ssp.</i>	NSL	Low	0	0	0	Unknown	New Habitat	High	Absent	Unknown	New Habitat			3	103
pecan	<i>Carya illinoensis</i>	NSH	Low	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	104
black hickory	<i>Carya texana</i>	NDL	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	105
sugarberry	<i>Celtis laevigata</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	106
silverbell	<i>Halesia spp.</i>	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	107
southern magnolia	<i>Magnolia grandiflora</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	108
bigleaf magnolia	<i>Magnolia macrophylla</i>	NSL	Low	0	0	0	New Habitat	Unknown	Medium	Absent	New Habitat	Unknown	Likely +		3	109
redbay	<i>Persea borbonia</i>	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	110
laurel oak	<i>Quercus laurifolia</i>	NDH	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat		Migrate +	3	111
overcup oak	<i>Quercus lyrata</i>	NSL	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat		Migrate +	3	112
water oak	<i>Quercus nigra</i>	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3	113
willow oak	<i>Quercus phellos</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	114
Shumard oak	<i>Quercus shumardii</i>	NSL	Low	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate +	3	115
live oak	<i>Quercus virginiana</i>	NDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			3	116
bluejack oak	<i>Quercus incana</i>	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3	117
cedar elm	<i>Ulmus crassifolia</i>	NDH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat			0	118

