One x One Degree

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

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

sq. km sq. mi FIA Plots Area of Region 6,204.2 2,395.4 67

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						Potentia	al Change	in Habitat Suitability	Capability	to Cope o	r Persist	Migratio	n Potent	tial
Ash	2				Model			Scenario	Scenario		Scenario	Scenario		SHIFT	SHIFT
Hickory	2	Abu	ndance		Reliability	Adaptability		RCP45	RCP85		RCP45	RCP85		RCP45	RCP85
Maple	1	Abundant	4	High	8	7	Increase	6	7	Very Good	3	3	Likely	2	2
Oak	3	Common	6	Medium	20	28	No Change	8	5	Good	4	4	Infill	4	4
Pine	3	Rare	13	Low	11	5	Decrease	6	8	Fair	3	3	Migrate	4	6
Other	12	Absent	13	FIA	3		New	8	9	Poor	6	5	·	10	12
•	23	_	36	•	42	40	Unknown	14	13	Very Poor	4	4			
							-	42	42	FIA Only	3	3			
Unkn											11	10			
Potentia	Potential Changes in Climate Variables										2/	22			

Potential Changes in Climate variables

Temperatu	ıre (°F)				
	Scenario	2009	2039	2069	2099
Annual	CCSM45	72.8	74.2	75.6	75.6
Average	CCSM85	72.8	74.3	76.4	78.5
	GFDL45	72.8	77.0	76.9	77.8
	GFDL85	72.8	75.1	77.9	81.2
	HAD45	72.8	74.3	76.5	77.5
	HAD85	72.8	74.9	77.2	80.5
Growing	CCSM45	80.8	82.0	83.1	83.2
Season	CCSM85	80.8	82.0	84.1	86.4
May—Sep	GFDL45	80.8	84.9	84.7	85.8
	GFDL85	80.8	83.0	85.8	89.3
	HAD45	80.8	82.8	84.5	85.6
	HAD85	80.8	83.1	85.9	88.9
Coldest	CCSM45	59.8	61.9	62.7	62.5
Month	CCSM85	59.8	61.3	62.2	63.7
Average	GFDL45	59.8	62.5	62.9	63.4
	GFDL85	59.8	62.2	63.3	64.5
	HAD45	59.8	59.8	61.0	61.6
	HAD85	59.8	60.7	61.3	63.2
Warmest	CCSM45	82.5	83.8	84.5	84.5
Month	CCSM85	82.5	83.9	85.1	86.5
Average	GFDL45	82.5	84.8	85.8	86.4
	GFDL85	82.5	84.9	86.5	88.4
	HAD45	82.5	84.6	85.3	85.9
	HAD85	82.5	84.7	86.2	87.6

Precipitati	on (in)				
	Scenario	2009	2039	2069	2099
Annual	CCSM45	51.0	53.9	54.2	57.1
Total	CCSM85	51.0	52.8	53.9	51.2
	GFDL45	51.0	58.9	60.4	62.0
	GFDL85	51.0	55.6	63.9	57.7
	HAD45	51.0	53.8	55.0	56.0
	HAD85	51.0	50.3	52.8	51.9
Growing	CCSM45	33.3	35.6	34.9	36.9
Season	CCSM85	33.3	34.3	35.7	32.3
May—Sep	GFDL45	33.3	37.6	37.8	37.4
	GFDL85	33.3	36.3	39.6	34.8
	HAD45	33.3	34.8	36.3	33.6
	HAD85	33.3	32.8	31.1	30.3

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.

Cite as: Iverson, L.R.; Prasad, A.M.; Peters, M.P.; Matthews, S.N. 2019. Facilitating Adaptive Forest Management under Climate Change: A Spatially Specific Synthesis of 125 Species for Habitat Changes and Assisted Migration over the Eastern United States. Forests. 10(11): 989. https://doi.org/10.3390/f10110989.



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Common Name	Scientific Name	Range	MR	%Cell	FIAsum	FIAiv	ChngCl45	ChngCl85	Adap	Abund	Capabil45	Capabil85	SHIFT45	SHIFT85	SSO N
live oak	Quercus virginiana	NDH	High	75.9	750.6	19.5	No change	No change	Medium	Abundant	Good	Good			1 1
slash pine	Pinus elliottii	NDH	High	52.3	747.0	25.8	Sm. inc.	Sm. inc.	Medium	Abundant	Very Good	Very Good			1 2
cabbage palmetto	Sabal palmetto	NDH	Medium	47.8	611.2	20.5	No change	Sm. inc.	Medium	Abundant	Good	Very Good			0 3
laurel oak	Quercus laurifolia	NDH	Medium	74.4	534.3	13.9	Sm. dec.	Sm. dec.	Medium	Abundant	Fair	Fair			0 4
water oak	Quercus nigra	WDH	High	41.6	224.3	13.6	Sm. dec.	Sm. dec.	Medium	Common	Poor	Poor			0 5
red maple	Acer rubrum	WDH	High	41.7	212.6	9.6	No change	No change	High	Common	Good	Good			1 6
swamp tupelo	Nyssa biflora	NDH	Medium	21.6	62.8	3.8	Sm. inc.	Sm. inc.	Low	Common	Fair	Fair			1 7
sweetbay	Magnolia virginiana	NSL	Medium	32.4	61.8	5.4	No change	Sm. dec.	Medium	Common	Fair	Poor			1 8
pond cypress	Taxodium ascendens	NSH	Medium	4	59.0	11.7	Lg. inc.	Lg. inc.	Medium	Common	Very Good	Very Good	Infill ++	Infill ++	2 9
longleaf pine	Pinus palustris	NSH	Medium	29.2	58.9	17.0	Lg. inc.	Sm. inc.	Medium	Common	Very Good	Good			1 10
bald cypress	Taxodium distichum	NSH	Medium	3.8	44.0	4.8	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 11
American elm	Ulmus americana	WDH	Medium	14.3	31.2	2.6	No change	Sm. inc.	Medium	Rare	Poor	Fair	Infill +	Infill +	1 12
redbay	Persea borbonia	NSL	Low	21.1	24.6	2.5	Sm. inc.	Sm. inc.	High	Rare	Good	Good			1 13
sweetgum	Liquidambar styraciflua	WDH	High	8	18.5	3.2	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2 14
black cherry	Prunus serotina	WDL	Medium	7.5	17.3	4.8	No change	No change	Low	Rare	Very Poor	Very Poor			0 15
American hornbeam; muscl	ev Carpinus caroliniana	WSL	Low	1.6	9.4	5.8	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2 16
pignut hickory	Carya glabra	WDL	Medium	1.6	8.7	5.4	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 17
Carolina ash	Fraxinus caroliniana	NSL	FIA	8.8	6.2	1.0	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0 18
water hickory	Carya aquatica	NSL	Medium	0.5	5.2	1.0	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0 19
sand pine	Pinus clausa	NDH	High	1.6	2.4	1.5	Sm. inc.	Very Lg. dec.	Low	Rare	Poor	Lost			0 20
waterlocust	Gleditsia aquatica	NSLX	FIA	2.5	1.8	1.7	Unknown	Unknown	Medium	Rare	FIA Only	FIA Only			0 21
pumpkin ash	Fraxinus profunda	NSH	FIA	2.5	1.1	1.0	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0 22
common persimmon	Diospyros virginiana	NSL	Low	4.2	0.4	0.6	Lg. dec.	Lg. dec.	High	Rare	Poor	Poor			0 23
shortleaf pine	Pinus echinata	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat		Migrate +	3 24
pond pine	Pinus serotina	NSH	Medium	0	0	0	New Habitat	New Habitat	Low	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3 25
loblolly pine	Pinus taeda	WDH	High	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate ++	3 26
striped maple	Acer pensylvanicum	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 27
sugarberry	Celtis laevigata	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3 28
flowering dogwood	Cornus florida	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 29
green ash	Fraxinus pennsylvanica	WSH	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3 30
loblolly-bay	Gordonia lasianthus	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3 31
American holly	Ilex opaca	NSL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 32
cucumbertree	Magnolia acuminata	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 33
blackgum	Nyssa sylvatica	WDL	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat	Migrate +	Migrate +	3 34
eastern hophornbeam; iron	w Ostrya virginiana	WSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0 35
water elm	Planera aquatica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 36
turkey oak	Quercus laevis	NSH	Medium	0	0	0	New Habitat	New Habitat	High	Absent	New Habitat	New Habitat		Migrate ++	3 37
willow oak	Quercus phellos	NSL	Low	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 38
Shumard oak	Quercus shumardii	NSL	Low	0	0	0	Unknown	Unknown	High	Modeled	Unknown	Unknown			0 39
black locust	Robinia pseudoacacia	NDH	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0 40
American mountain-ash	Sorbus americana	NSL	Low	0	0	0	Unknown	New Habitat	Low	Absent	Unknown	New Habitat			0 41
winged elm	Ulmus alata	WDL	Medium	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0 42

