

HUC 120402 Galveston Bay-Sabine Lake

HUC 6 Watershed 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	11,130	4,297.4	33

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	3			High	10	16	Increase	13	16	Very Good	0	0	Likely	2	3
Hickory	3			Medium	25	33	No Change	19	16	Good	7	10	Infill	22	23
Maple	2	Abundant	0	Low	22	8	Decrease	11	11	Fair	19	17	Migrate	1	0
Oak	12	Common	6	FIA	1		New	4	5	Poor	10	10		25	26
Pine	3	Rare	38				Unknown	11	10	Very Poor	7	5			
Other	21	Absent	13							FIA Only	1	1			
	44		57		58	57		58	58	Unknown	10	9			
											54	52			

Potential Changes in Climate Variables

Temperature (°F)

	Scenario	2009	2039	2069	2099	
Annual Average	CCSM45	48.4	49.0	49.7	49.8	
	CCSM85	48.4	49.2	50.1	51.0	
	GFDL45	48.4	50.5	50.2	50.7	
	GFDL85	48.4	49.4	50.7	52.1	
	HAD45	48.4	49.3	50.3	50.8	
	HAD85	48.4	49.4	50.7	52.1	
Growing Season (May—Sep)	CCSM45	53.4	54.0	54.4	54.5	
	CCSM85	53.4	54.1	55.0	55.9	
	GFDL45	53.4	55.9	55.3	56.1	
	GFDL85	53.4	54.7	56.0	57.7	
	HAD45	53.4	54.3	55.2	55.5	
	HAD85	53.4	54.5	55.9	57.0	
Coldest Month (Average)	CCSM45	40.5	41.5	41.9	41.9	
	CCSM85	40.5	41.6	42.1	42.7	
	GFDL45	40.5	42.0	42.0	42.1	
	GFDL85	40.5	41.0	41.6	41.8	
	HAD45	40.5	40.9	41.6	41.9	
	HAD85	40.5	41.7	42.3	43.0	
Warmest Month (Average)	CCSM45	54.9	55.3	55.5	55.6	
	CCSM85	54.9	55.5	55.8	56.3	
	GFDL45	54.9	56.3	56.5	57.0	
	GFDL85	54.9	56.3	57.0	58.0	
	HAD45	54.9	55.9	56.2	56.4	
	HAD85	54.9	56.0	56.8	57.2	

Precipitation (in)

	Scenario	2009	2039	2069	2099	
Annual Total	CCSM45	24.2	25.5	27.8	26.5	
	CCSM85	24.2	25.4	26.4	25.9	
	GFDL45	24.2	25.6	29.5	24.5	
	GFDL85	24.2	24.7	25.7	24.9	
	HAD45	24.2	24.4	23.6	25.8	
	HAD85	24.2	25.9	23.3	24.4	
Growing Season (May—Sep)	CCSM45	11.6	12.9	13.5	12.4	
	CCSM85	11.6	12.1	12.2	11.3	
	GFDL45	11.6	12.9	16.0	12.4	
	GFDL85	11.6	12.5	13.2	13.2	
	HAD45	11.6	11.3	11.1	12.5	
	HAD85	11.6	11.9	10.8	11.0	

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
loblolly pine	Pinus taeda	WDH	High	32.6	424.7	10.0	No change	Sm. dec.	Medium	Common	Fair	Poor	Infill +	Infill +	2	1
water oak	Quercus nigra	WDH	High	43.4	126.7	4.8	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	1	2
sweetgum	Liquidambar styraciflua	WDH	High	23.5	83.9	4.4	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	3
live oak	Quercus virginiana	NDH	High	18.5	79.9	17.1	No change	Sm. inc.	Medium	Common	Fair	Good	Infill +	Infill ++	2	4
willow oak	Quercus phellos	NSL	Low	17	77.8	4.2	No change	No change	Medium	Common	Fair	Fair	Infill +	Infill +	2	5
sugarberry	Celtis laevigata	NDH	Medium	42.5	72.9	11.5	Sm. inc.	Sm. inc.	Medium	Common	Good	Good	Infill ++	Infill ++	1	6
American elm	Ulmus americana	WDH	Medium	26.5	22.3	2.9	Sm. inc.	Lg. inc.	Medium	Rare	Fair	Good	Infill +	Infill ++	2	7
blackgum	Nyssa sylvatica	WDL	Medium	11.1	16.2	2.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	8
cedar elm	Ulmus crassifolia	NDH	Medium	28.1	15.8	4.7	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	9
green ash	Fraxinus pennsylvanica	WSH	Low	26.4	15.2	3.5	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	1	10
laurel oak	Quercus laurifolia	NDH	Medium	17.7	15.0	4.0	Sm. inc.	Sm. inc.	Medium	Rare	Fair	Fair	Infill +	Infill +	2	11
post oak	Quercus stellata	WDH	High	3.2	11.1	0.9	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	12
cherrybark oak; swamp red o.	Quercus pagoda	NSL	Medium	16.8	9.3	3.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good	Infill ++	Infill ++	2	13
black willow	Salix nigra	NSH	Low	13.6	9.1	3.2	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	14
southern red oak	Quercus falcata	WDL	Medium	8.7	8.4	0.7	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	15
red maple	Acer rubrum	WDH	High	9.4	7.2	1.5	No change	No change	High	Rare	Fair	Fair	Infill +	Infill +	2	16
pecan	Carya illinoensis	NSH	Low	5.3	6.5	3.0	No change	Sm. inc.	Low	Rare	Very Poor	Poor		Infill +	2	17
hackberry	Celtis occidentalis	WDH	Medium	4.9	5.1	5.6	Sm. dec.	No change	High	Rare	Poor	Fair	Infill +	Infill +	2	18
winged elm	Ulmus alata	WDL	Medium	1.5	4.4	2.7	Sm. dec.	No change	Medium	Rare	Very Poor	Poor		Infill +	2	19
Shumard oak	Quercus shumardii	NSL	Low	0.1	3.8	0.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	20
mockernut hickory	Carya alba	WDL	Medium	4.2	3.7	1.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	21
bald cypress	Taxodium distichum	NSH	Medium	4.7	2.5	11.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	22
slippery elm	Ulmus rubra	WSL	Low	12.1	2.4	0.6	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	23
Carolina ash	Fraxinus caroliniana	NSL	FIA	4.7	2.1	9.5	Unknown	Unknown	NA	Rare	FIA Only	FIA Only			0	24
cittamwood/gum bumelia	Sideroxylon lanuginosum ssp.	NSL	Low	4.9	2.0	0.5	No change	Lg. inc.	High	Rare	Fair	Good	Infill +		2	25
black cherry	Prunus serotina	WDL	Medium	8.2	1.8	1.5	No change	Sm. dec.	Low	Rare	Very Poor	Very Poor			2	26
American holly	Ilex opaca	NSL	Medium	0.8	1.7	0.1	No change	No change	Medium	Rare	Poor	Poor	Infill +	Infill +	2	27
honeylocust	Gleditsia triacanthos	NSH	Low	5.8	1.6	1.0	No change	No change	High	Rare	Fair	Fair		Infill +	2	28
shortleaf pine	Pinus echinata	WDH	High	0.1	1.4	0.1	No change	No change	Medium	Rare	Poor	Poor			0	29
sweetbay	Magnolia virginiana	NSL	Medium	0.7	1.1	0.2	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			2	30
white oak	Quercus alba	WDH	Medium	0.1	1.1	0.1	No change	No change	High	Rare	Fair	Fair			0	31
eastern redcedar	Juniperus virginiana	WDH	Medium	7	1.1	1.5	Sm. dec.	Sm. dec.	Medium	Rare	Very Poor	Very Poor			0	32
boxelder	Acer negundo	WSH	Low	8.2	1.0	1.1	No change	No change	High	Rare	Fair	Fair		Infill +	2	33
Osage-orange	Maclura pomifera	NDH	Medium	9.3	1.0	1.1	Sm. dec.	No change	High	Rare	Poor	Fair			0	34
overcup oak	Quercus lyrata	NSL	Medium	0.2	0.8	0.1	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +	Infill +	2	35
common persimmon	Diospyros virginiana	NSL	Low	3.2	0.7	0.4	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	36
slash pine	Pinus elliotii	NDH	High	0.1	0.5	0.1	No change	Very Lg. dec.	Medium	Rare	Poor	Lost	Infill +		2	37
redbay	Persea borbonia	NSL	Low	3.6	0.5	1.8	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	38
bitternut hickory	Carya cordiformis	WSL	Low	0.3	0.5	0.1	Sm. dec.	Sm. dec.	High	Rare	Poor	Poor			0	39
American hornbeam; musclev	Carpinus caroliniana	WSL	Low	0.1	0.3	0.0	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	40
white ash	Fraxinus americana	WDL	Medium	4.4	0.2	1.0	No change	No change	Low	Rare	Very Poor	Very Poor			2	41
black oak	Quercus velutina	WDH	High	4.7	0.2	1.0	Lg. dec.	Lg. dec.	Medium	Rare	Very Poor	Very Poor			0	42
water tupelo	Nyssa aquatica	NSH	Medium	2.9	0.1	0.4	Lg. inc.	Lg. inc.	Low	Rare	Fair	Fair	Infill +		2	43
swamp chestnut oak	Quercus michauxii	NSL	Low	2.9	0.1	0.4	Lg. inc.	Lg. inc.	Medium	Rare	Good	Good			2	44
longleaf pine	Pinus palustris	NSH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Migrate ++		3	45
florida maple	Acer barbatum	NSL	Low	0	0	0	Unknown	Unknown	High	Absent	Unknown	Unknown			0	46
serviceberry	Amelanchier spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	47



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pawpaw	Asimina triloba	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	48
water hickory	Carya aquatica	NSL	Medium	0	0	0	Unknown	New Habitat	Medium	Absent	Unknown	New Habitat	Likely +		3	49
American beech	Fagus grandifolia	WDH	High	0	0	0	Unknown	Unknown	Medium	Modeled	Unknown	Unknown			0	50
black ash	Fraxinus nigra	WSH	Medium	0	0	0	Unknown	Unknown	Low	Absent	Unknown	Unknown			0	51
silverbell	Halesia spp.	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	52
bigleaf magnolia	Magnolia macrophylla	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	53
water elm	Planera aquatica	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	54
sycamore	Platanus occidentalis	NSL	Low	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat	Likely +	Likely +	3	55
pin cherry	Prunus pensylvanica	NSL	Low	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	56
cabbage palmetto	Sabal palmetto	NDH	Medium	0	0	0	New Habitat	New Habitat	Medium	Absent	New Habitat	New Habitat			0	57
American basswood	Tilia americana	WSL	Medium	0	0	0	Unknown	Unknown	Medium	Absent	Unknown	Unknown			0	58