

Potential Native Trees Of Georgia: New Hardiness Zone 9a

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Native trees represent a great ecological bounty and a rich cultural history in Georgia. Native trees live from the mountains to the sea in many diverse habitats and under many environmental constraints. Native trees are wonderfully adapted to a local area's climate, soils, pests and other plants. What happens to tree growth ranges and survival patterns when climate changes?

Success Mapping

One standard means of describing where trees are growing and will grow, and where to plant different tree species, involves measuring the average annual minimum temperature. A map showing areas with similar minimum temperatures is termed a hardiness zone map.

Several organizations have generated these type of maps over many years, but the most cited map is the USDA Plant Hardiness Zone Map. This map is used by nurseries, planting reference manuals, and by tree selection specialists for estimating whether a tree will survive and grow in a particular area. Hardiness zone maps are periodically changed in association with changing climate temperature values.

A Decade of Change

Over the last decade average annual minimum temperatures have changed significantly across the nation and within Georgia. Figure 1. Some hardiness zones have shifted more than five counties northward in Georgia. These climate shifts have impacted, and will impact, planted tree species survival and growth, the pantheon of pests potentially damaging these trees, and existing tree and pest species, as well as exacerbating some abiotic stress problems. Tree health can be affected in significant ways by large hardiness zone shifts.

New Hardiness Zone 9a

The current (January 2012) hardiness zone map added, essentially for the first time, hardiness zone 9a to Georgia. Figure 2. All or part of five coastal counties are now included in hardiness zone 9a. Traditionally, zone 9a was considered the North-central and central Florida zone. This additional zone represents a full 5°F increase in average annual minimum temperatures.

Hardiness zone changes will influence tree selection, new tree survival, and new pest regimes for the Georgia coast. Long term impacts of this change in hardiness zones will also shift native tree population ranges into new areas. Note this list does not include exotic tree invaders and invasives which could naturalize within zone 9a in Georgia.

Always Changing !

Change is an ecological fact of life for our forest and community trees. Climatic change will continue. Over the last 2,000 years, 20,000 years, 200,000 years, and 2 million years there have been large climatic changes impacting trees. Hardiness zone changes represent an opportunity for exploring new tree species plantings, as well as northward expanding ranges for some trees native to hardiness zone 9a.

Map Reference Sources:

Note, maps contained in this publication were generalized, redrawn, and derived from the following two sources:

USDA - Plant Hardiness Zone Map (2012 New Revised Version) 2012
USDA-Agricultural Research Service & Oregon State University.

Cathey, H.M. 2001. USDA Plant Hardiness Zone Map. Misc. Pub. #1475,
USDA-ARS-National Arboretum, Washington D.C.

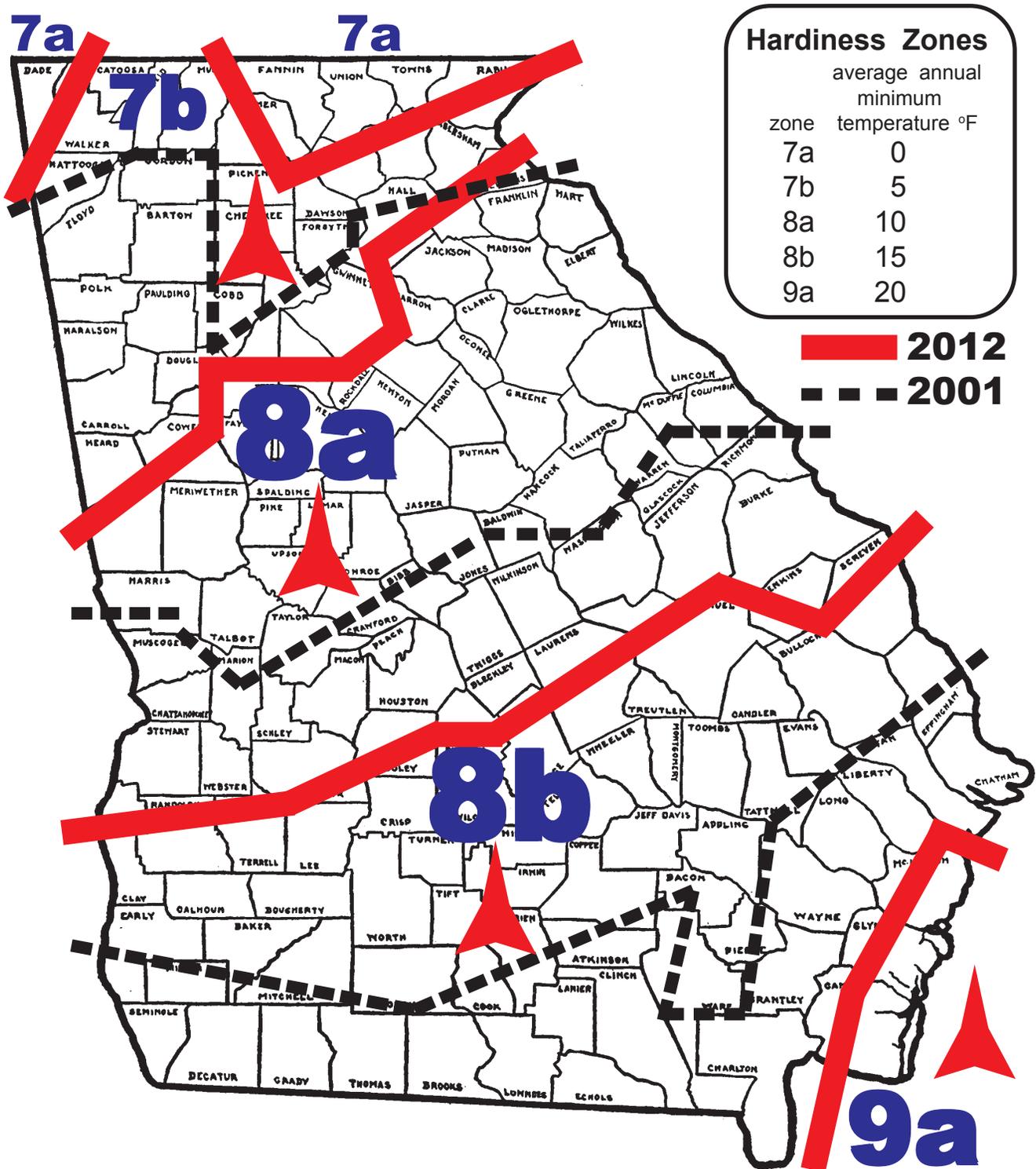


Figure 1: Changes in tree hardiness zones over the last decade in Georgia.

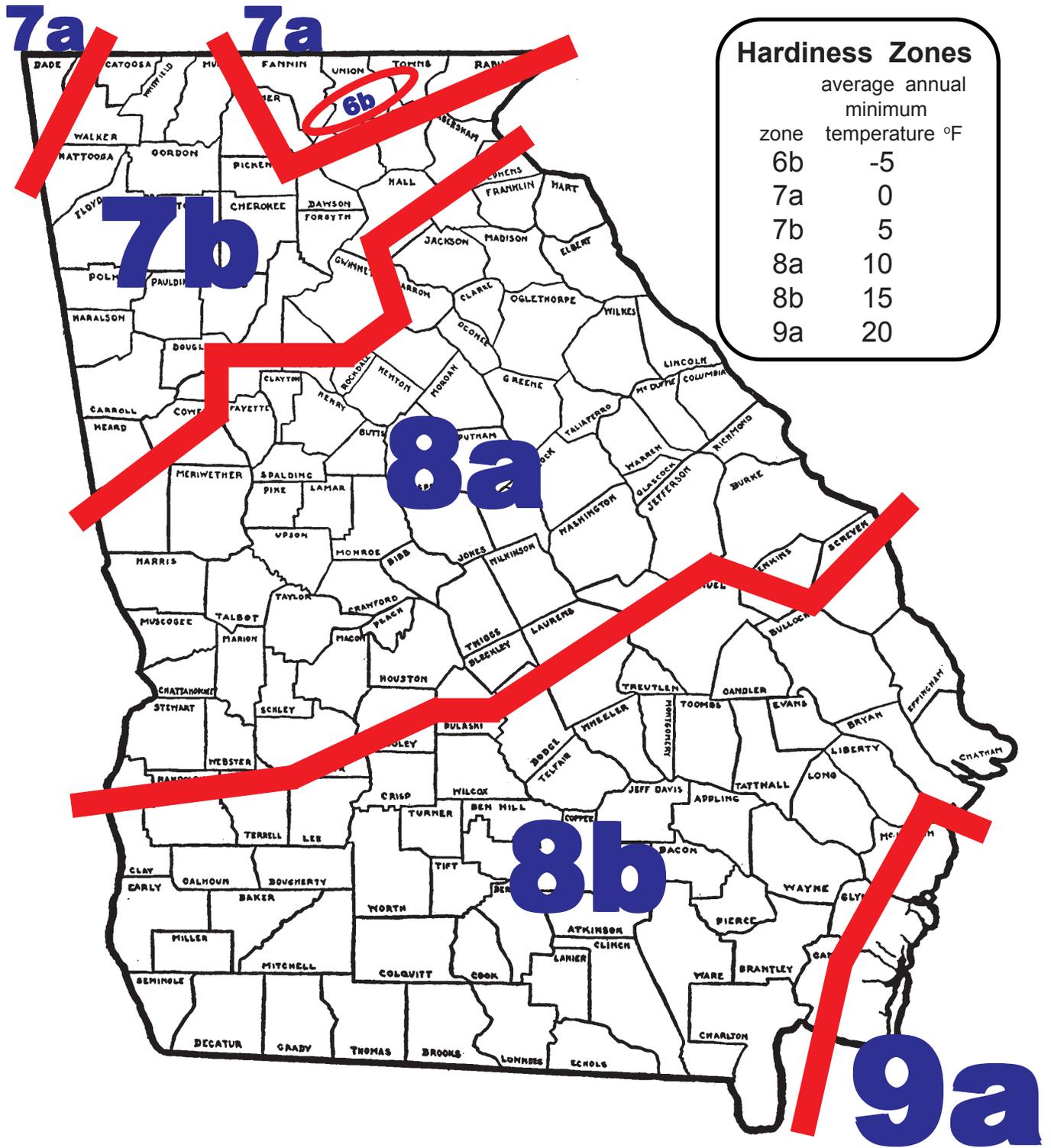


Figure 2: Change of tree hardiness zones in Georgia. Note hardiness zone 9a is new to the State.

Figure 3: Potential native tree range expansion and tree planting list for Georgia Hardiness Zone 9a. (131 species).

scientific name	common name
<u>Acacia farnesiana</u>	sweet acacia
<u>Acer rubrum</u>	red maple
<u>Aesculus pavia</u>	red buckeye
<u>Alnus serrulata</u>	hazel alder
<u>Aralia spinosa</u>	devil's walkingstick
<u>Asimina parviflora</u>	dwarf pawpaw
<u>Avicennia germinans</u>	black mangrove
<u>Baccharis halimifolia</u>	Eastern baccharis
<u>Betula nigra</u>	river birch
<u>Carpinus caroliniana</u>	American hornbeam
<u>Carya aquatica</u>	water hickory
<u>Carya floridana</u>	Florida hickory
<u>Carya glabra</u>	pignut hickory
<u>Carya tomentosa</u>	mockernut hickory
<u>Castanea alnifolia</u>	Florida chinkapin
<u>Castanea pumila</u>	chinquapin
<u>Celtis laevigata</u>	sugarberry
<u>Cephalanthus occidentalis</u>	buttonbush
<u>Chamaecyparis thyoides</u>	Atlantic whitecedar
<u>Chionanthus virginicus</u>	fringetree
<u>Cliftonia monophylla</u>	buckwheat tree
<u>Cornus asperifolia</u>	stiff-cornel dogwood
<u>Cornus florida</u>	flowering dogwood
<u>Cornus foemina</u>	stiff dogwood
<u>Cornus stricta</u>	swamp dogwood
<u>Crataegus aestivalis</u>	mayhaw
<u>Cyrilla parvifolia</u>	littleleaf titi
<u>Cyrilla racemiflora</u>	swamp titi
<u>Diospyros virginiana</u>	persimmon

Figure 3: Potential native tree range expansion and tree planting list for Georgia Hardiness Zone 9a. (continued)

scientific name	common name
<u>Erythrina herbacea</u>	Eastern coralbean
<u>Eugenia axillaris</u>	white stopper
<u>Forestiera acuminata</u>	swamp-privet
<u>Forestiera segregata</u>	Florida-privet
<u>Franklinia alatamaha</u>	Franklin tree
<u>Fraxinus caroliniana</u>	Carolina ash
<u>Fraxinus pennsylvanica</u>	green ash
<u>Fraxinus profunda</u>	pumpkin ash
<u>Gleditsia aquatica</u>	water-locust
<u>Gordonia lasianthus</u>	loblolly bay
<u>Halesia diptera</u>	two-wing silverbell
<u>Hamamelis virginiana</u>	American witch-hazel
<u>Ilex ambigua</u>	Carolina holly
<u>Ilex amelanchier</u>	sarvis holly
<u>Ilex cassine</u>	dahoon
<u>Ilex coriacea</u>	large gallberry
<u>Ilex decidua</u>	possumhaw
<u>Ilex longipes</u>	Georgia holly
<u>Ilex myrtifolia</u>	myrtle dahoon
<u>Ilex opaca</u>	American holly
<u>Ilex vomitoria</u>	yaupon
<u>Illicium parviflorum</u>	yellow anisetree
<u>Juniperus silicicola</u>	Southern redcedar
<u>Juniperus virginiana</u>	Eastern redcedar
<u>Leitneria floridana</u>	corkwood
<u>Liquidambar styraciflua</u>	sweetgum
<u>Liriodendron tulipifera</u>	yellow-poplar
<u>Lyonia ferruginea</u>	staggerbush

Figure 3: Potential native tree range expansion and tree planting list for Georgia Hardiness Zone 9a. (continued)

scientific name	common name
<u>Magnolia grandiflora</u>	Southern magnolia
<u>Magnolia virginiana</u>	sweetbay
<u>Morus rubra</u>	red mulberry
<u>Myrica cerifera</u>	wax-myrtle
<u>Myrica heterophylla</u>	evergreen bayberry
<u>Nyssa aquatica</u>	water tupelo
<u>Nyssa biflora</u>	swamp tupelo
<u>Nyssa ogeche</u>	Ogeeche-lime
<u>Nyssa sylvatica</u>	blackgum
<u>Osmanthus americanus</u>	devilwood
<u>Persea borbonia</u>	red-bay
<u>Persea palustris</u>	swamp-bay
<u>Pinckneya bracteata</u>	fevertree
<u>Pinus clausa</u>	sand pine
<u>Pinus elliottii</u>	slash pine
<u>Pinus glabra</u>	spruce pine
<u>Pinus palustris</u>	longleaf pine
<u>Pinus serotina</u>	pond pine
<u>Pinus taeda</u>	loblolly pine
<u>Planera aquatica</u>	planertree
<u>Platanus occidentalis</u>	American sycamore
<u>Populus heterophylla</u>	swamp cottonwood
<u>Prunus alabamensis</u>	Alabama cherry
<u>Prunus angustifolia</u>	Chickasaw plum
<u>Prunus caroliniana</u>	laurelcherry
<u>Prunus serotina</u>	black cherry
<u>Prunus umbellata</u>	flatwoods plum
<u>Ptelea trifoliata</u>	hoptree

Figure 3: Potential native tree range expansion and tree planting list for Georgia Hardiness Zone 9a. (continued)

scientific name	common name
<u>Quercus alba</u>	white oak
<u>Quercus austrina</u>	bluff oak
<u>Quercus chapmanii</u>	Chapman oak
<u>Quercus falcata</u>	Southern red oak
<u>Quercus geminata</u>	sand live oak
<u>Quercus hemisphaerica</u>	laurel oak
<u>Quercus incana</u>	bluejack oak
<u>Quercus laevis</u>	turkey oak
<u>Quercus laurifolia</u>	swamp laurel oak
<u>Quercus lyrata</u>	overcup oak
<u>Quercus margaretta</u>	sand post oak
<u>Quercus marilandica</u>	blackjack oak
<u>Quercus michauxii</u>	swamp chestnut oak
<u>Quercus minima</u>	dwarf live oak
<u>Quercus myrtifolia</u>	myrtle oak
<u>Quercus nigra</u>	water oak
<u>Quercus pagoda</u>	cherrybark oak
<u>Quercus shumardii</u>	Shumard's oak
<u>Quercus stellata</u>	post oak
<u>Quercus virginiana</u>	live oak
<u>Rhus copallinum</u>	winged sumac
<u>Sabal palmetto</u>	cabbage palmetto
<u>Salix caroliniana</u>	Coastal Plain willow
<u>Salix floridana</u>	Florida willow
<u>Sambucus canadensis</u>	American elder
<u>Sambucus simpsonii</u>	Southern elder
<u>Sapindus marginatus</u>	Florida soapberry
<u>Sapindus saponaria</u>	wingleaf soapberry
<u>Sassafras albidum</u>	sassafras
<u>Serenoa repens</u>	saw-palmetto

Figure 3: Potential native tree range expansion and tree planting list for Georgia Hardiness Zone 9a. (continued)

scientific name	common name
<u>Sideroxylon tenax</u>	tough bumelia
<u>Stewartia malacodendron</u>	silky camellia
<u>Styrax americanus</u>	American snowbell
<u>Symplocos tinctoria</u>	sweetleaf
<u>Taxodium ascendens</u>	pond-cypress
<u>Taxodium distichum</u>	bald-cypress
<u>Tilia caroliniana</u>	Carolina basswood
<u>Tilia heterophylla</u>	white basswood
<u>Ulmus americana</u>	American elm
<u>Vaccinium arboreum</u>	farkleberry
<u>Viburnum obovatum</u>	small-leaf arrowwood
<u>Ximenia americana</u>	tallowwood
<u>Yucca aloifolia</u>	Spanish-bayonet
<u>Yucca gloriosa</u>	moundlilly yucca
<u>Zanthoxylum clava-herculis</u>	Hercules-club
<u>Zanthoxylum fagara</u>	lime prickly-ash



Outreach

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