



2025 GEORGIA FOREST ACTION PLAN



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Produced by:

Georgia Forestry Commission
5645 Riggins Mill Road
Dry Branch, Georgia 31020
478.751.3500

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ACRONYMS

ACP	Atlantic Coastal Plain Priority Area
APHIS	Animal and Plant Health Inspection Service
ATV	All Terrain Vehicle
BMP	Best Management Practice
BR	Blue Ridge Priority Area
CARS	Community Accomplishment Reporting System
CCX	Chicago Climate Exchange
CLEAR	Center for Land Use Education and Research
CUVA	Conservation Use Valuation Act
CWCS	Comprehensive Wildlife Conservation Strategy
CWPP	Community Wildfire Protection Plan
DNR	Georgia Department of Natural Resources
EGCP	East Gulf Coastal Plain Priority Area
EPA	United States Environmental Protection Agency
EPD	Georgia Department of Natural Resources Environmental Protection Division
FIA	Forest Inventory and Analysis
FL	Fall Line Priority Area
FLA	Forest Legacy Area
FLP	Forest Legacy Program
FSA	Farm Service Agency
FSP	Forest Stewardship Program
FLPA	Forest Land Protection Act
GAP	Gap Analysis Program
GCSR	Georgia Carbon Sequestration Registry
GFC	Georgia Forestry Commission
GHG	Greenhouse Gas
GIS	Geographic Information System
GLCP	Georgia Land Conservation Partnership
GLUT	Georgia Land Use Trends
GOAL	Greater Okefenokee Association of Landowners
GTC	Georgia Tree Council
GUFC	Georgia Urban Forest Council
HUC	Hydrologic Unit Code
HWA	Hemlock Woolly Adelgid
LFT	Land Fragmentation Tool
LOC	Level of Concern
LRB	Large River Bottomlands Priority Area
NARSAL	Natural Resources Spatial Analysis Laboratory
NASF	National Association of State Foresters
NBCI	National Bobwhite Conservation Initiative
NRCS	Natural Resources Conservation Service
NWOS	National Woodland Owner Survey
RC&D	Resource Conservation and Development
REIT	Real Estate Investment Trust
RV	Ridge and Valley Priority Area
SGSF	Southern Group of State Foresters
SPB	Southern Pine Beetle
SWAP	State Wildlife Action Plan
SWRA	Southern Wildfire Risk Assessment
TIMO	Timber Investment Management Organization
TMDL	Total Maximum Daily Load
UCF	Urban & Community Forestry
UGA	The University of Georgia
USDA	United States Department of Agriculture
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
WFSI	Wildfire Susceptibility Index
WRD	Georgia Department of Natural Resources Wildlife Resources Division
WUI	Wildland Urban Interface

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GEORGIA FORESTRY COMMISSION

VISION & MISSION STATEMENT

MISSION STATEMENT

The Georgia Forestry Commission provides leadership, service and education in the protection and conservation of Georgia's forest resources.

VISION

The Georgia Forestry Commission works to ensure healthy and abundant forests that support a robust industry while providing social, environmental and financial benefits to all of Georgia.



FROM THE STATE FORESTER AND DIRECTOR OF THE GEORGIA FORESTRY COMMISSION



Johnny Sabo

Director, Georgia Forestry Commission

The last five years ushered in big changes for forestry in Georgia. While dealing with the aftermath of Hurricane Helene, one of the most destructive natural disasters in our state's history, we saw entire landscapes shift. Nearly nine million acres of forestlands were touched by the storm, putting timber losses at \$1.28 billion. As state and federal agencies worked to help our landowners begin to recover and replant, a significant portion of our pulp and paper market disappeared. Nearly 7,000 jobs (direct and indirect) and output valued at well over \$2.9 billion are expected to be lost as a result of recent mill closures. The ripple effects will undoubtedly echo throughout the supply chain for decades to come.

But just as doors close and landscapes shift, new opportunities are on the horizon. The Georgia Forestry Commission is at the forefront of exploring emerging markets, optimizing existing industry and, most importantly, ensuring that our 24 million acres of forest lands are healthy and sustainable for whatever comes our way. This assurance comes through careful and strategic planning, and that plan begins and ends with this document: *Georgia's Forest Action Plan*. Thanks to intensive employee and stakeholder input, we are confident that this plan aligns resource allocations with our strategic priorities while supporting our agency's mission and vision.

EXECUTIVE SUMMARY

Georgia's 24 million acres of forestland are a rich and renewable resource that provide a myriad of benefits to citizens across the state. Yet challenges to the land and the professionals who manage it abound. In this Forest Action Plan (FAP), the Georgia Forestry Commission, partners and other stakeholders address the conditions and issues at hand today, and prioritize concerns for the near and distant future.

Georgia's current forest conditions link the land to a vivid history of species diversity, resource exploitation and appreciation. Today, forests with stands of varying ages account for 64% of the state's total land area. Forests thrive in six physiographic ecoregions and grow over 50% more wood than is being harvested, producing 141% more cubic feet of wood than 70 years ago. The majority of Georgia's forests are privately owned by individuals and corporations, with public lands accounting for just 11%. According to the *Sustainability Report for Georgia's Forests: January 2024*, prepared for the Georgia General Assembly, and on which some of the findings of this Assessment are based, these forestlands are being sustainably managed to meet the numerous needs of our state today.

Georgia Benefits from its Forests

A variety of benefits are provided to Georgia from its healthy, sustainable forests. Of primary importance is the \$59.4 billion economic impact the forest industry has on the state. The industry is the state's second largest employer, providing more than 57,000 direct forest sector jobs. It generates an estimated \$880 million per year in revenues for the state budget.

Forest-based recreation contributes to the state's economic growth and tourism industry. Fishing, hunting and wildlife-associated recreation have a large economic impact on Georgia, generating \$5.5 billion while supporting 40,000 jobs. Georgia has about 830,000 resident anglers and 400,000 resident hunters.

Importantly, Georgia's forests impact the state's ability to provide its citizens with vital nature services. Georgia's abundant water resources within 14 major river basins and multiple groundwater aquifer systems are enhanced by the healthy forest systems around and above them. Many of Georgia's 44,056 miles of perennial streams, 23,906 miles of intermittent streams and 603 miles of ditches and canals begin or flow through forestlands. Forests afford value through filtration and stormwater management services, reducing costs to water authorities. Georgia's forests also improve air quality. Our forests offset approximately 23% of the state's carbon dioxide emissions and can sequester one to four tons of carbon per acre, per year. Trees help moderate the heat island effect caused by pavement and buildings, create energy savings through shading and sequester atmospheric carbon, which benefits human health and may benefit Georgia landowners through emerging reimbursement systems.

Residues from timber harvesting exceeded 4,263,000 dry tons in 2023, and a forest biomass assessment performed based on 2015-2025 forest inventory data showed that on average 19,528,347 tons (oven dry weight) of additional biomass are available annually in Georgia. This opportunity for new markets from underutilized and low cost forest biomass should add to the economic impacts of Georgia's forest industry.

Additional benefits to Georgia from its healthy forests include enhanced wildlife habitats and plentiful aesthetic and education opportunities.

EXECUTIVE SUMMARY

Leading Threats and Pressing Issues

Forest issues ranked most critical by the public and identified in the *2008 Sustainable Forest Management in Georgia* report include a number of threats which present significant challenges to forest managers, landowners and civic leaders. They are interrelated and often complex. Conservation was a highly ranked public concern that affects and is interwoven with every issue; it is not individually analyzed in this report.

Water quality is the public's primary issue of concern. Urbanization and nonpoint sources of pollution are the greatest threats to Georgia's water quality. Urbanization removes acreage from forest cover, resulting in increased storm runoff and intensified streamflow that causes stream bank erosion, sedimentation and flooding. Because an estimated 7,000 to 10,000 forestry operations are conducted on some 800,000+ acres per year statewide, it is important for forest landowners to follow Best Management Practices (BMPs) to protect our water resources. Specific regional water priority issues are detailed in this report.

The urbanization of Georgia is a serious threat that could undermine forest sustainability in decades to come. According to a 2025 study by the Georgia Institute of Technology, the state of Georgia lost 6.6% of overall forest canopy from 1985 to 2023, equating to 2.5 million acres of forest canopy lost. This was a statewide average, with some metropolitan areas losing as much as 14% of forest canopy in that same time frame, and some rural counties actually gaining canopy due to cyclical planting and timber harvest. Population increases and the loss of tree cover to impervious surfaces impact every forest benefit. Proactive management tools and technical support systems are needed to adequately protect Georgia's forest resources.

Forest fragmentation and parcelization are additional challenges caused by urbanization. These phenomena are created when forests are converted to other land uses and when the number of forest landowners increase, but the land parcels shrink in size. Contributing factors include urban sprawl, inheritance issues, tax implications, timber land divestitures, investment concerns or other financial pressures. Taxation issues also play a part as land values rise but income from forest uses does not. The global recession and economic pressures of global competition have compounded these issues. Likewise, these situations can lead to a decreased value for forest management, and an increased occurrence of water quality degradation, wildlife disruption and forest pest incidence.

Urbanization and resulting forestland losses place extraordinary stresses on wildlife and biodiversity. While some species have adapted to changes brought on by growth, others are in need of more careful management to prevent further declines in habitat loss. A system of public and private conservation strategies, including expansion of the *Georgia Land Conservation Program* and the *State Wildlife Action Plan*, support this goal.

Air quality and carbon sequestration are additional opportunities. Urbanization affects Georgia's tree canopy, diminishing forestry's ability to provide clean air nature services. *Georgia's Carbon Sequestration Registry* was amended in 2021, giving GFC authorization to issue carbon credits to developers of commercial real estate in Georgia that utilize sustainable structural building materials such as lumber and mass timber in place of less sustainable materials.

EXECUTIVE SUMMARY

Urbanization puts more lives and property at risk from wildfire and reduces options for proper fire management, including prescribed burning. Tactics and strategies for fire management and suppression are compromised in the wildland urban interface, where access challenges, liability and logistics can complicate response. According to the *Southern Wildfire Risk Assessment*, 34% of Georgia's landscape, nearly 13 million acres, is categorized as Wildland Urban Interface (WUI), and it is estimated that 84% of Georgians, more than 9 million, live in a community at-risk of being impacted by wildfire. Approximately 79% of Georgia's WUI is rated as having a high, very high, or extreme risk of being impacted by wildfire. In addition, air quality regulations, resident fears and misunderstandings about prescribed burning and smoke effects can hinder the effective use of this forest management tool.

Economics and changing markets must be considered in order to increase the value of forests and forest products for continued industry growth. Four major Georgia mills closed in 2025. The announced mill closures are expected to significantly affect Georgia's economy. Georgia Tech estimates the state economy will suffer a \$2.9 billion loss due to the closures. The direct economic impact is \$1.7 billion. Direct job losses will reduce business spending, while household income declines will reduce consumer spending, leading to further losses in employment, income, and overall business activity. The loss of 1,655 direct jobs is projected to result in an additional 5,277 indirect and induced job losses, totaling 6,932 jobs affected. The estimated direct labor income loss is \$197.1 million, with an additional \$367.2 million in indirect and induced income losses.

Significant forest pests threaten Georgia, including the southern pine beetle, hemlock woolly adelgid, redbay ambrosia beetle, annosum root disease, spongy moth, emerald ash borer and Asian longhorned beetle. The highest priority invasive plant in Georgia is cogongrass, listed as the seventh most noxious weed in the world. Chinese privet, kudzu, Japanese climbing fern and Chinese tallowtree continue to threaten native plants. Trees that are weakened by pests and disease are at added risk of wildfire. Legislative support and regulation are needed to prevent the spread of these destructive threats.

Natural disasters also threaten Georgia's forests. Thousands of trees are lost annually to wind, ice, flooding, drought and lightning, with damages exceeding millions of dollars every year, not including future liability problems. These occurrences can affect the incidence of wildfire in Georgia's forests and are predicted to intensify challenges for wildland fire managers.

Georgia's diverse landscape and population centers contribute to the definition of priority resource areas from the Blue Ridge Mountains to the East Gulf Coastal Plain. The priority areas were determined by combining 15 thematic layers: forestland, development threat, threatened and endangered species, drinking water, forested wetlands, proximity to public lands, site index, riparian areas, priority watersheds, forest patches, forest health, slope, wildfire burn potential, proximity to mills, and Hurricane Helene damage areas.

Georgia's Forest Action Plan is a comprehensive and thorough analysis of one of the nation's most abundant and productive expanses of natural splendor. The prudent use of the plan can ensure that this valuable resource is sustained for every future generation.

INTRODUCTION

The Cooperative Forestry Assistance Act (CFAA) of 1978, as amended through subsequent Farm Bills, provides the authority for the United States Department of Agriculture (USDA) Forest Service (USFS) to administer a broad range of State and Private Forestry (S&PF) programs. In 2007, the USFS and the National Association of State Foresters (NASF) worked together to develop a new framework for delivering these programs, with the goal of guiding the use and stewardship of forestlands to optimize the benefits they provide for current and future generations.

Three national themes were established to direct S&PF program delivery:

- Conserve working forest landscapes
- Protect forests from harm
- Enhance public benefits from trees and forests

The 2008 Farm Bill formally codified this approach and required each state to develop a Forest Action Plan. These plans include two core components:

1. An assessment of forest conditions, trends, threats, and opportunities across all ownerships, and
2. A strategy for addressing priority issues and guiding investments to the areas of greatest need.

Georgia completed its first Forest Action Plan in 2010, followed by updates in accordance with federal guidance. For the 2025 update, the assessment and strategy are presented together in a single, comprehensive document.

The statewide assessment of forest resources ensures that S&PF investments are focused on high-priority landscapes where strategic action can yield the most meaningful outcomes. Working in collaboration with federal, state, local, academic, nonprofit, and private-sector partners, states conduct a thorough analysis that:

- Describes forest conditions on all ownerships
- Identifies forest-related benefits and ecosystem services
- Examines threats to forest health, productivity, and resilience
- Highlights emerging issues, trends, and opportunities for action
- Delineates high-priority rural and urban forest landscapes
- Uses the best available science and geospatial data

The accompanying forest resource strategy is built from this assessment, identifying landscapes, actions, and projects where federal competitive grant funding—such as State and Private Forestry’s Landscape Scale Restoration Program—can be applied most effectively. Funded projects must align with national priorities, follow annual USFS direction, and directly support one or more of the three national themes.

INTRODUCTION

Within the Southern Region, the Southern Group of State Foresters (SGSF) and the USFS Southern Region have identified a set of shared regional priority issues that were considered as this Forest Action Plan was developed:

- Significant forest ecosystems and landscapes
- Urbanization, fragmentation, and loss of forestland
- Fire and the restoration of fire-adapted ecosystems
- Forest health and emerging pests and diseases
- Water quality protection and watershed management
- Wildlife habitat and species conservation
- Forest resource markets and economic opportunities

The 2025 Georgia Forest Action Plan builds on these regional priorities while identifying the state-specific challenges and opportunities shaping the future of Georgia's forests. Together, the assessment and strategy provide a roadmap for collaborative, long-term stewardship that keeps Georgia's forests healthy, resilient, productive, and protected for generations to come.



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF FORESTS

Since the beginning of recorded history, Georgia has been distinguished by its forestland bounty. William Bartram, one of the first naturalist botanists, explored this region in the mid-1770s. He found forests of different ages interspersed with expansive savannas, swamps and river bottomlands filled with a rich diversity of broad-leaved species.

It was not until the 1880s that large-scale commercial logging practices began to alter the appearance of Georgia's landscape. By the late 1920s, most of the virgin stands in Georgia had been cut over. By 1930, heavy removals forced increased taxes on the remaining timber, which in turn caused its rapid liquidation.

Georgia's forestland acreage has remained relatively stable since that time and timber volumes on that acreage are still making new highs year after year. The number of forestland acres in Georgia has stabilized at approximately 24 million acres, or 64% of our total land area, as demonstrated by the Forest Inventory and Analysis reports compiled since 1936 and updated annually since 1997 (Figure 1).

However, it is the current trend toward shrinking parcel size per landowner (Figure 2) that can be expected to impact the quality, quantity and availability of our forest resources into the future.

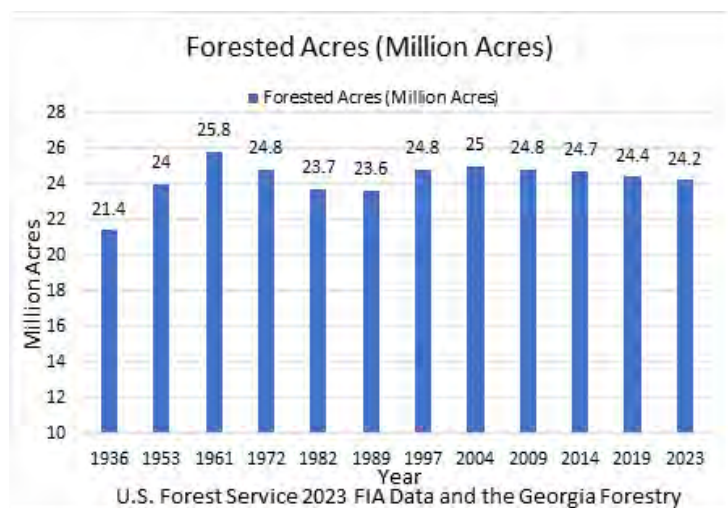


Figure 1

Source: U.S. Forest Service, 2023 FIA Data and the Georgia Forestry Commission

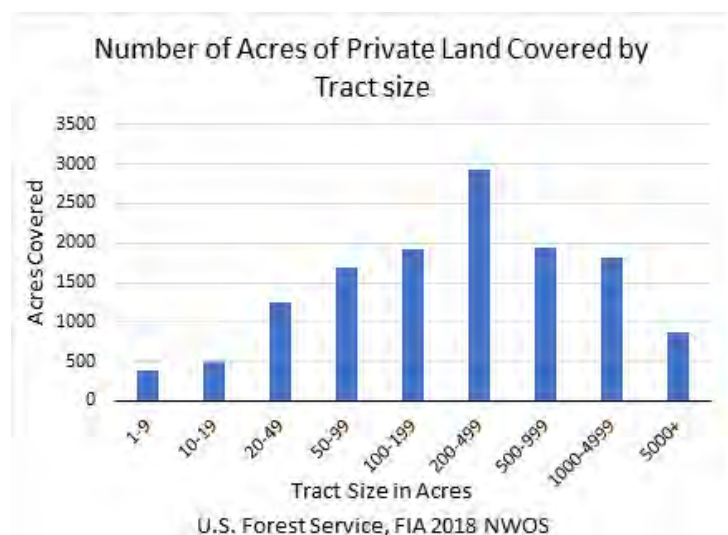


Figure 2

Source: U.S. Forest Service National Woodland Owner Survey, 2018



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF FORESTS

HISTORICAL GROWTH, HARVESTING AND REFORESTATION

Georgia's softwood forests are growing 22% more wood than is being harvested on an annual basis and hardwood forests are growing 130% more wood than is being harvested on an annual basis. Timber volumes have been increasing since 1953, which means that today we have 141% more cubic feet of wood growing in Georgia than we did 70 years ago (*Figure 3*).

Tree planting after harvest has been a major contributor to increasing timber volumes, and federal tree planting cost-share programs have positively influenced replanting.

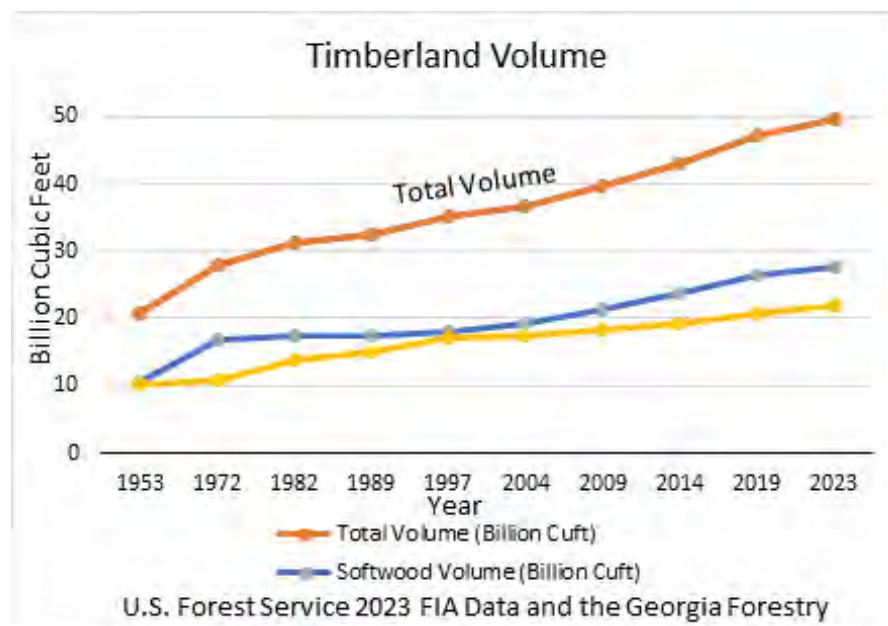


Figure 3

Source: U.S. Forest Service 2023 FIA Data and the Georgia Forestry Commission



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF URBAN FORESTS

The urban and community forest includes all trees, vegetation, watersheds, and wildlife in urban areas, developed areas or communities. State and local government highway rights-of-way, open greenspaces, undeveloped forests, interface areas where urban and rural conditions meet, parks and private and commercial lands are all part of the community forest.

“Urban” land comprises roughly 13% of the land area of Georgia (*U.S. Census, 2019*). Another 10% is classified as Wildland Urban Interface (WUI) area. More than 80% of all Georgia residents live in either urban or WUI areas.

Between 2000 and 2025, urban area increased by roughly 1 million acres. Urban area in Georgia is projected to increase to over 14% by 2030 (an additional 500,000 acres), based on the average urban growth pattern of the early 2000’s (*U.S. Census, Governor’s Office of Planning and Budget*). Statewide as of 2019, urban or community land in Georgia had an estimated 293.1 million trees (*Nowak and Greenfield 2009*).

Forest canopy change distribution varies across the state depending on land usage (*Figure 4*). Overall, Georgia has 56% canopy coverage, losing 11% of canopy since 1985. While some rural counties gained or maintained canopy levels during that time, virtually all urbanized or developing counties and metropolitan areas lost canopy percentages of up to 15% since 1985. (*Georgia’s Changing Forests*).

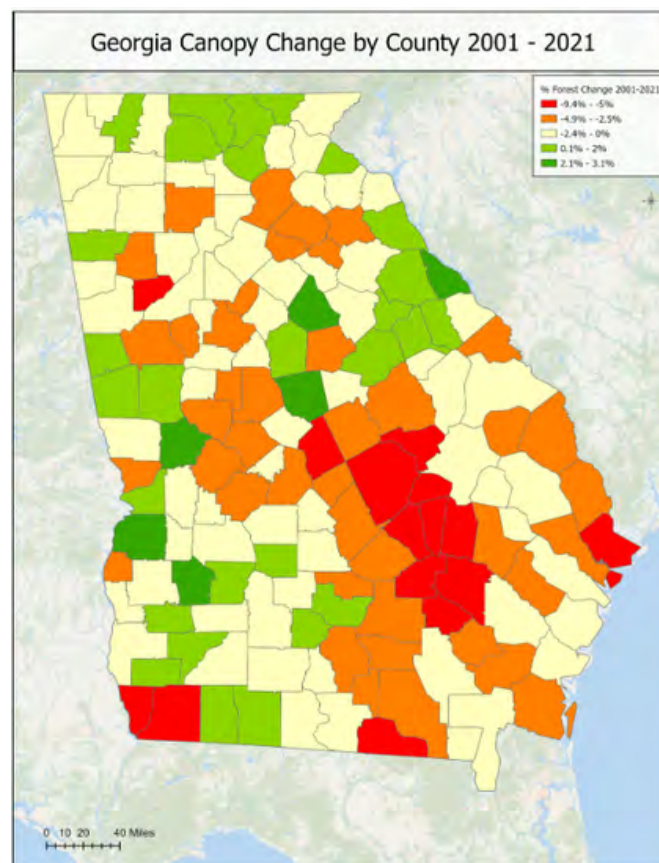
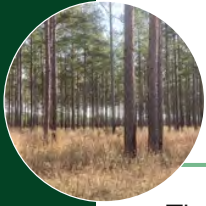


Figure 4

Sources: Georgia Institute of Technology and Georgia Forestry Commission, 2025
Georgia’s Changing Forests



FOREST RESOURCE CONDITIONS

ECOLOGICAL REGIONS

The six physiographic ecoregions of Georgia are the Southern Coastal Plain, Southeastern Coastal Plains, Piedmont, Blue Ridge, Ridge and Valley and Cumberland Plateau (*Figure 5*).

The Southern Coastal Plain and Southeastern Plains, collectively referred to in this report as the Coastal Plain, are comprised mostly of loblolly, slash and longleaf pine and lowland hardwoods. The Piedmont is comprised mostly of loblolly pine, loblolly pine-hardwood mix, with small percentages of shortleaf pine, upland hardwoods and lowland hardwoods. The Blue Ridge has a majority of upland hardwood types with small percentages of white pine and hemlock types. The Ridge and Valley region varies between upland hardwoods on the ridges to mostly loblolly pine and Virginia pine in the valleys and lower slopes. The Cumberland Plateau, which only includes Dade County in extreme northwest Georgia, is comprised mostly of upland hardwoods, with some loblolly pine and Virginia pine.

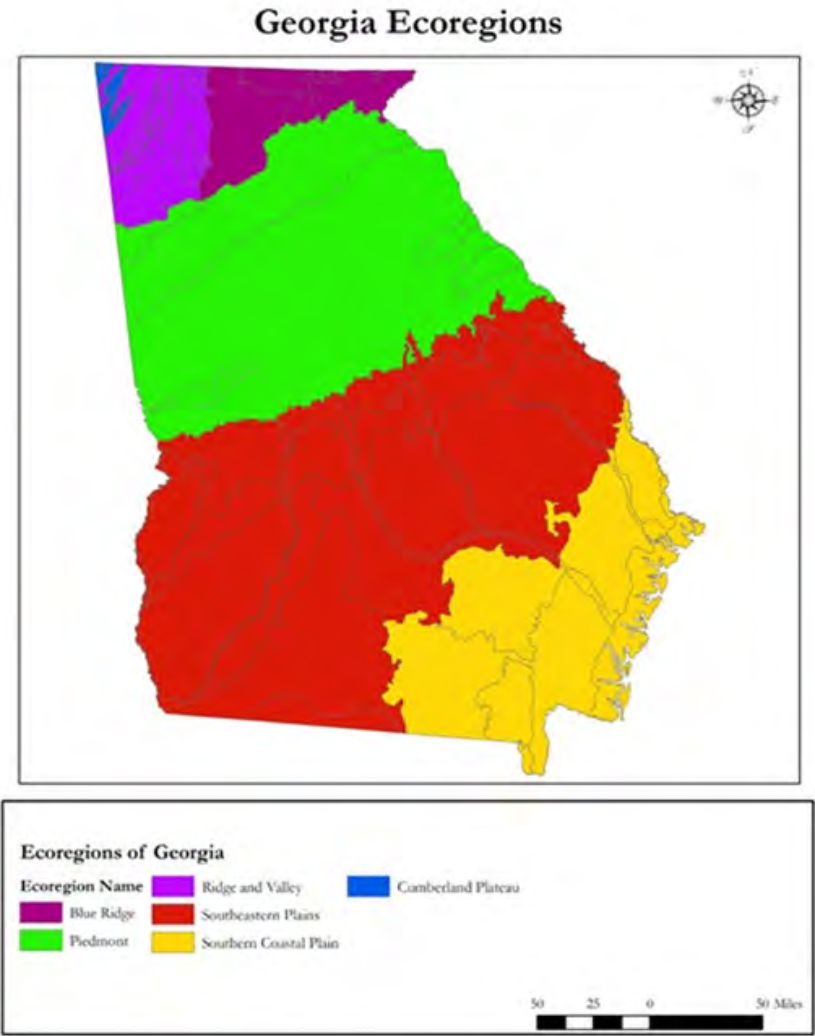
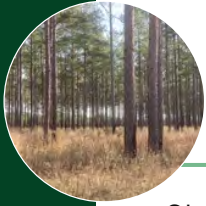


Figure 5

Source: Griffith, G.E., J.M. Omernik, J.A. Comstock, S. Lawrence, G. Martin, A.Goddard, V.J. Hulcher, and T. Foster. 2001. *Ecoregions of Alabama and Georgia* (color poster with map, descriptive text, summary tables, and photographs). Reston, Virginia: U.S. Geological Survey (map scale 1:1,700,000)



FOREST RESOURCE CONDITIONS

ECOLOGICAL REGIONS

Stand ages vary across the state (Figure 6), with most of the oldest stands located in the northeastern mountainous terrain (owned primarily by the USFS) and the floodplains and lowlands across the state. Pine stands across the state tend to average lower in age than hardwood stands, mostly due to the increased probability of active forest management, including harvesting. The older hardwood stands often occur on steep slopes, land that is difficult to access due to lack of roads, and floodplains/swamps where logging is difficult, except perhaps in the driest conditions. Also, publicly owned lands, on which harvesting is very limited, tend to have older stands.

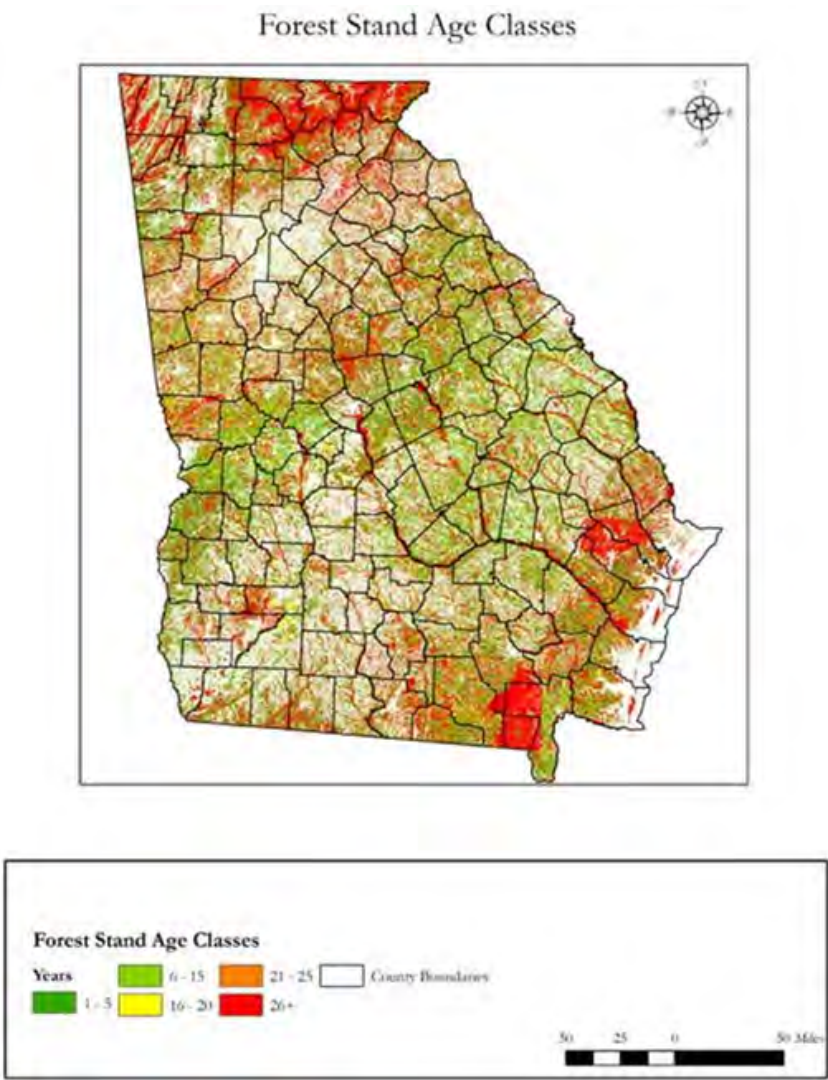


Figure 6

Source: Natural Resources Spatial Analysis Laboratory (NARSAL). 2010. University of Georgia. Athens, GA. (Unpublished data)



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF FORESTS IN RELATION TO SOIL PRODUCTIVITY

Soil productivity across Georgia varies significantly between lowlands and uplands and between the northern and southern halves of the state (*Figure 7*). Average productivity for loblolly pine in the northern half of the state ranges from 91-120 cubic feet of wood produced per acre per year, with some drier mountain ridges averaging 50-91 cubic feet per year. In the southern half of the state, averages are 120-137 cubic feet, with areas along waterways ranging from 137 to 172 cubic feet.

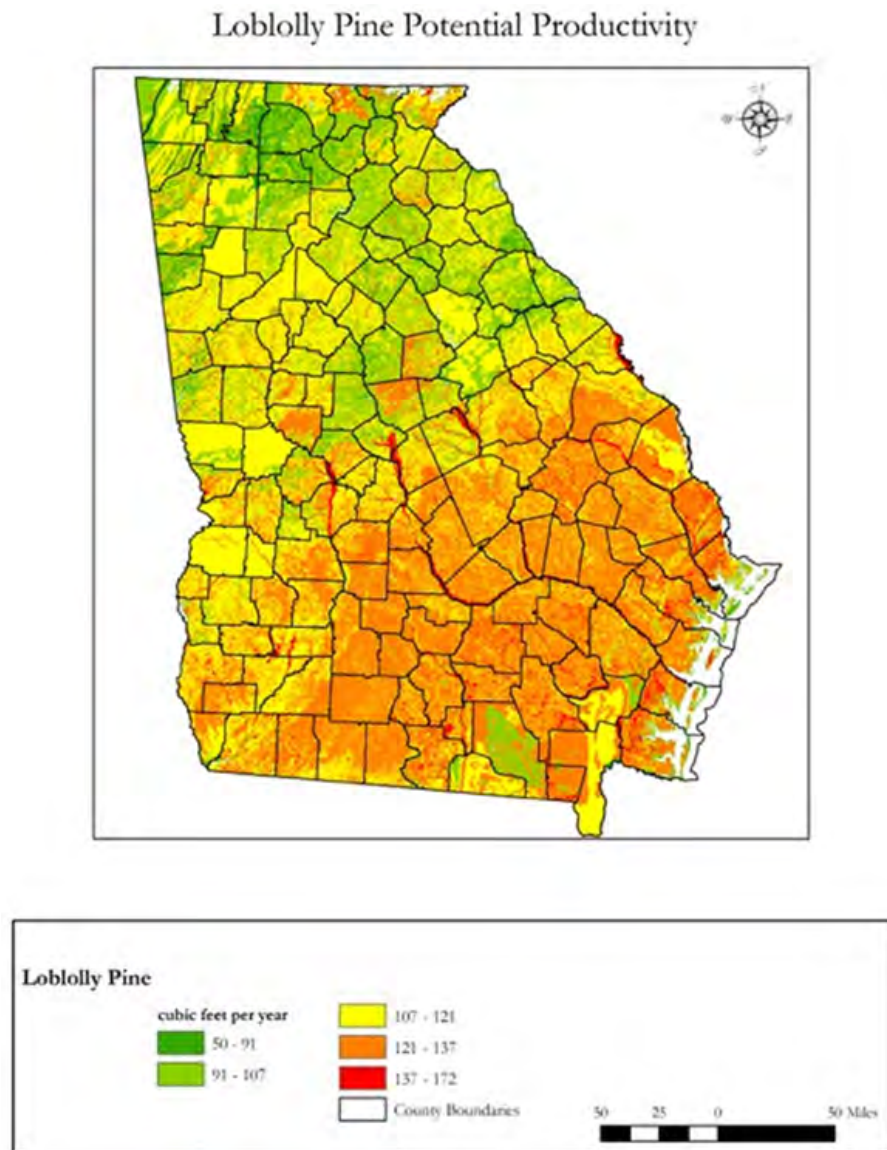


Figure 7

Sources: Soil Survey Staff. 2010. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/>



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF FORESTS IN RELATION TO SOIL PRODUCTIVITY

Slash pine is mostly limited to the Coastal Plain and mimics the productivity of loblolly pine in the southern part of the state (*Figure 8*).

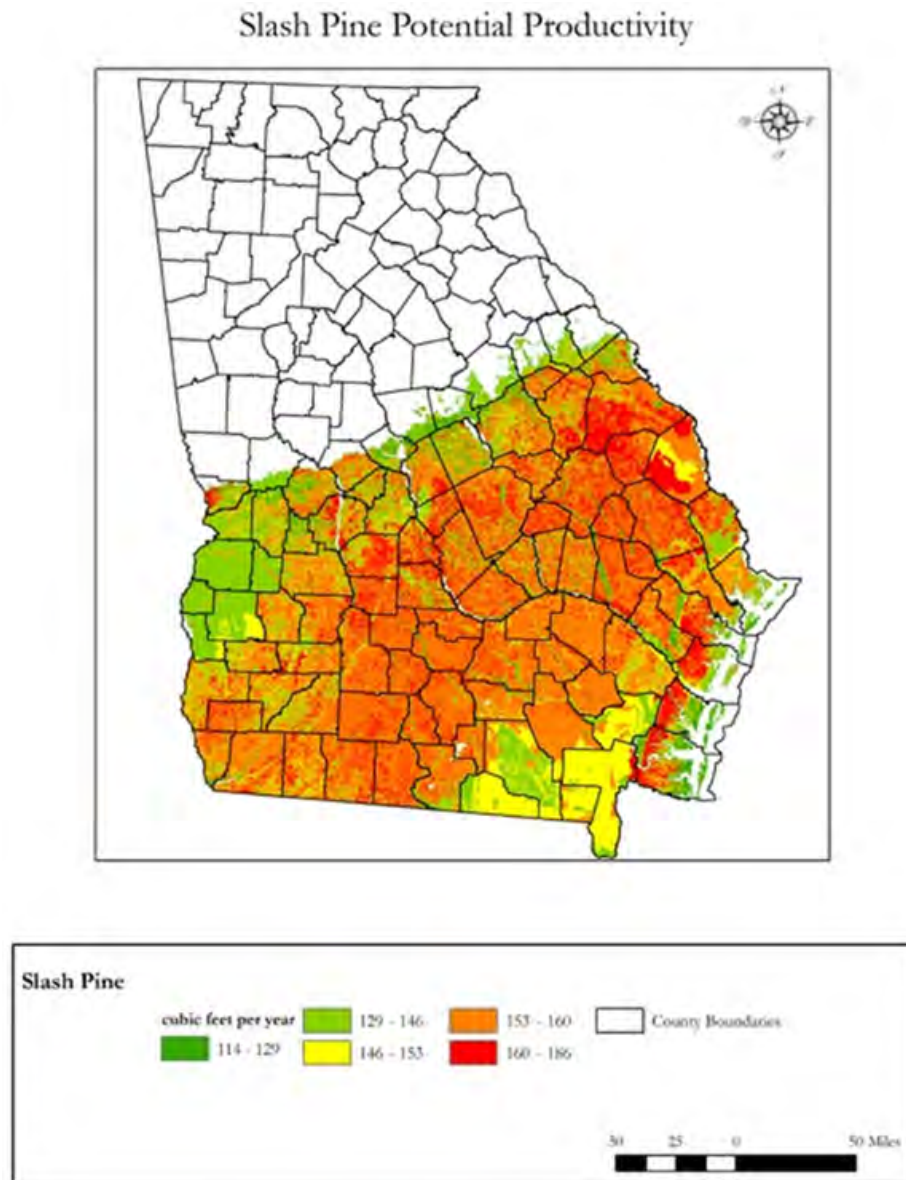


Figure 8

Sources: Soil Survey Staff. 2010. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/>



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF FORESTS IN RELATION TO SOIL PRODUCTIVITY

Shortleaf pine is found mostly in the northern part of the state, with most of the higher productivity sites located in northwest Georgia (*Figure 9*). The average productivity for shortleaf ranges from 92–110 cubic feet of wood produced per acre per year, with best productivities ranging from 110–143 cubic feet.

Shortleaf Pine Potential Productivity

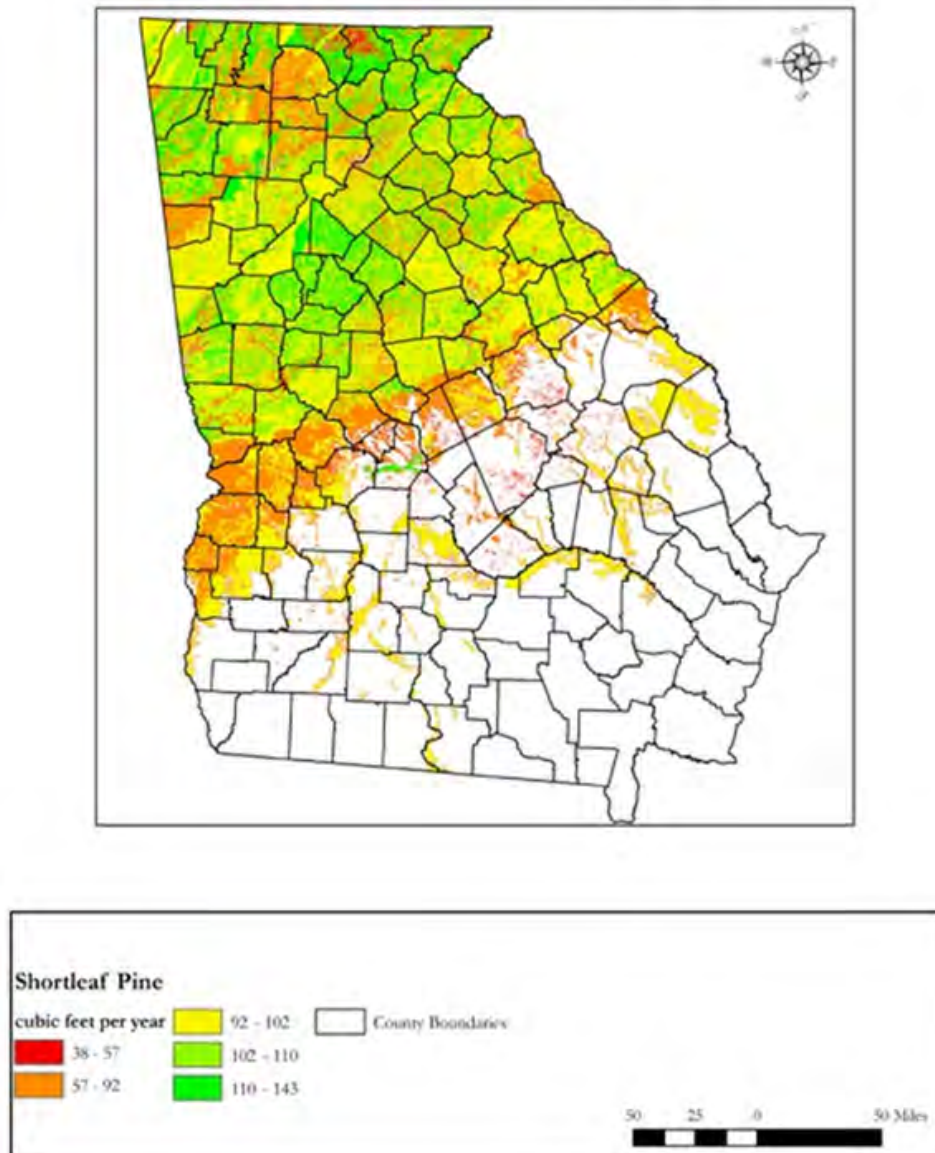


Figure 9

Sources: Soil Survey Staff. 2010. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/>



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF FORESTS IN RELATION TO SOIL PRODUCTIVITY

The better soil productivities for longleaf pine occur in the southern half of the state (Figure 10). The average productivity for longleaf in south Georgia ranges from 82–94 cubic feet of wood produced per acre per year, with better longleaf sites ranging from 94–114 cubic feet. Although longleaf occurs naturally in northwest Georgia, data was unavailable for the productivity map.

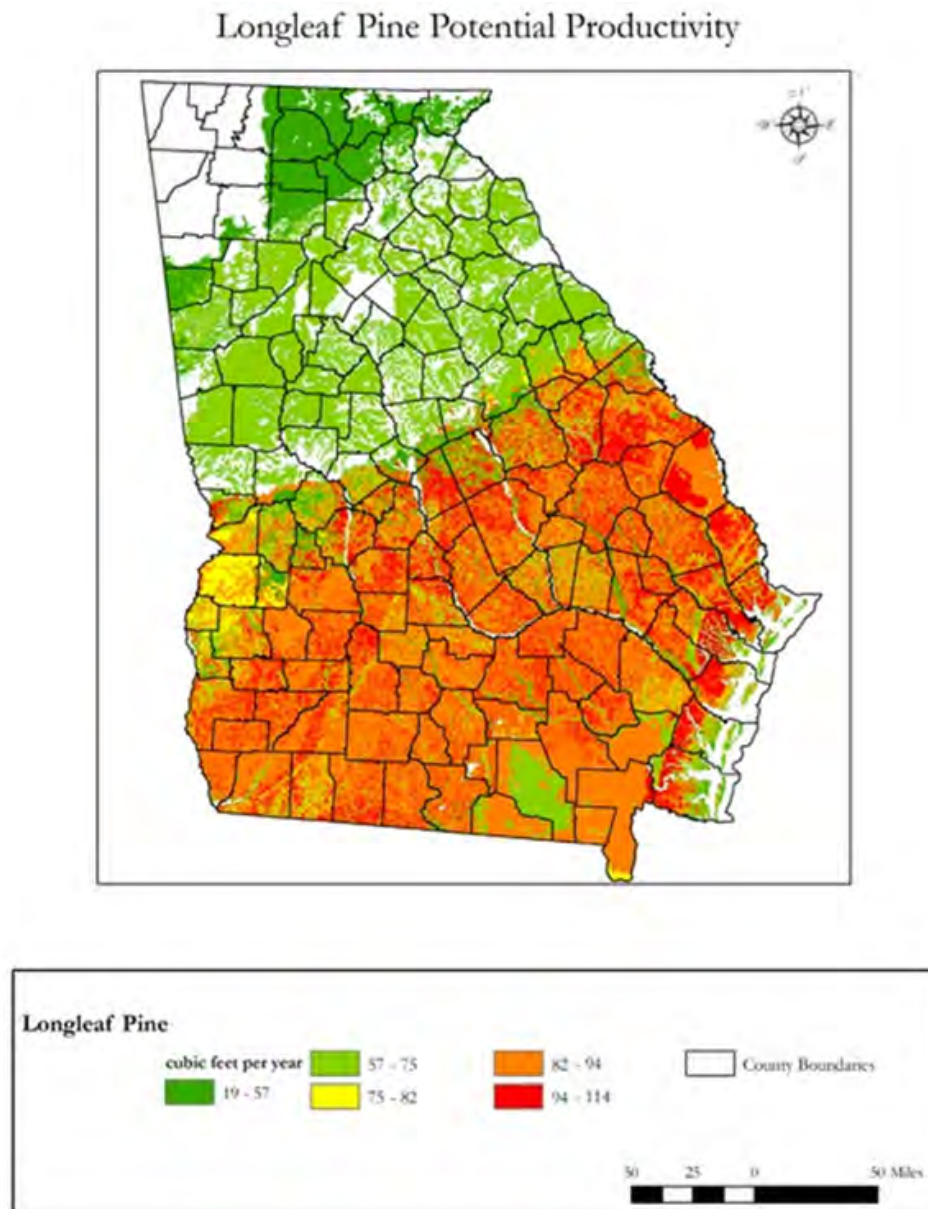


Figure 10

Sources: Soil Survey Staff. 2010. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey.
<http://websoilsurvey.nrcs.usda.gov/>



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF FORESTS IN RELATION TO SOIL PRODUCTIVITY

The better soil productivities for white oak occur in the northern half of the state (*Figure 11*). The best sites for white oak are found in the Ridge and Valley region in northwest Georgia. The productivity for white oak in north Georgia ranges from 43–114 cubic feet of wood produced per acre per year.

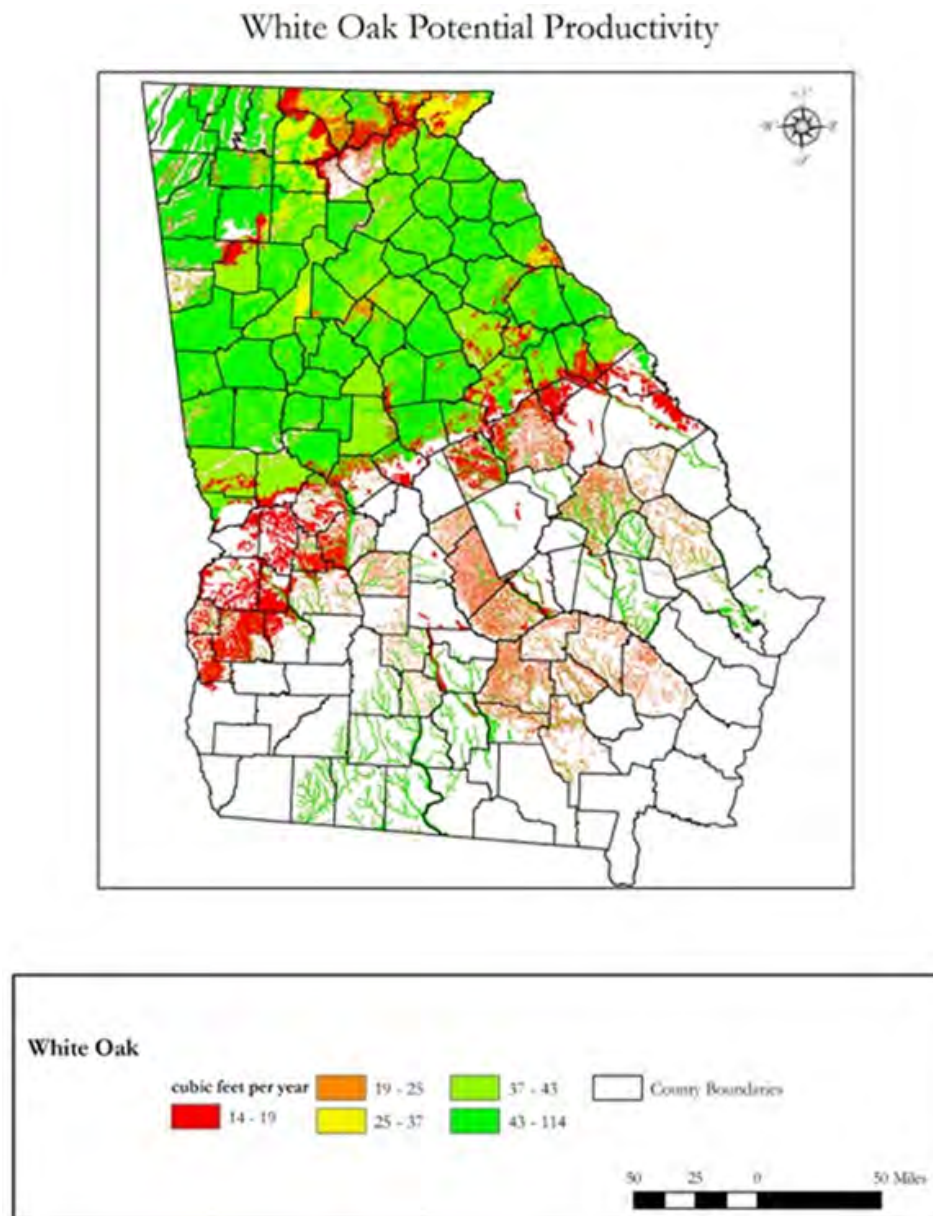


Figure 11

Sources: Soil Survey Staff. 2010. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/>



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF FORESTS IN RELATION TO SOIL PRODUCTIVITY

Northern red oak productivities are much like the white oaks', with the northern half of the state being best for productivity (*Figure 12*). The average productivity for northern red oak in north Georgia ranges from 35–49 cubic feet of wood produced per acre per year, with better northern red oak sites ranging from 50–72 cubic feet of wood produced.

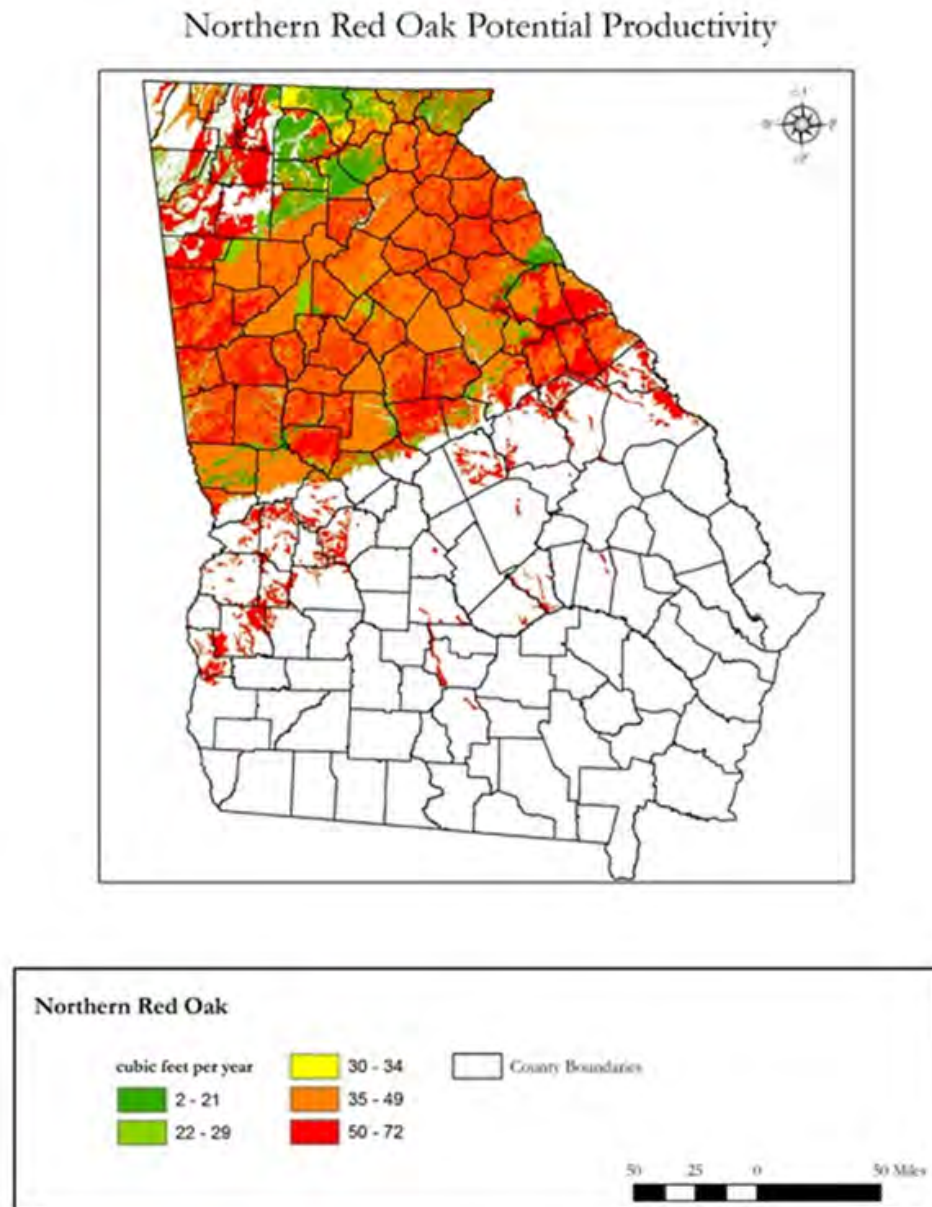


Figure 12

Sources: Soil Survey Staff. 2010. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/>



FOREST RESOURCE CONDITIONS

DISTRIBUTION AND ABUNDANCE OF FORESTS IN RELATION TO SOIL PRODUCTIVITY

Southern red oak also grows best in the northern part of the state, but the preeminent locations are found on drier mountain sites (*Figure 13*). Concentrations of good sites are located in the Blue Ridge and Ridge and Valley regions. The average productivity for southern red oak in north Georgia ranges from 40–72 cubic feet of wood produced per acre per year.

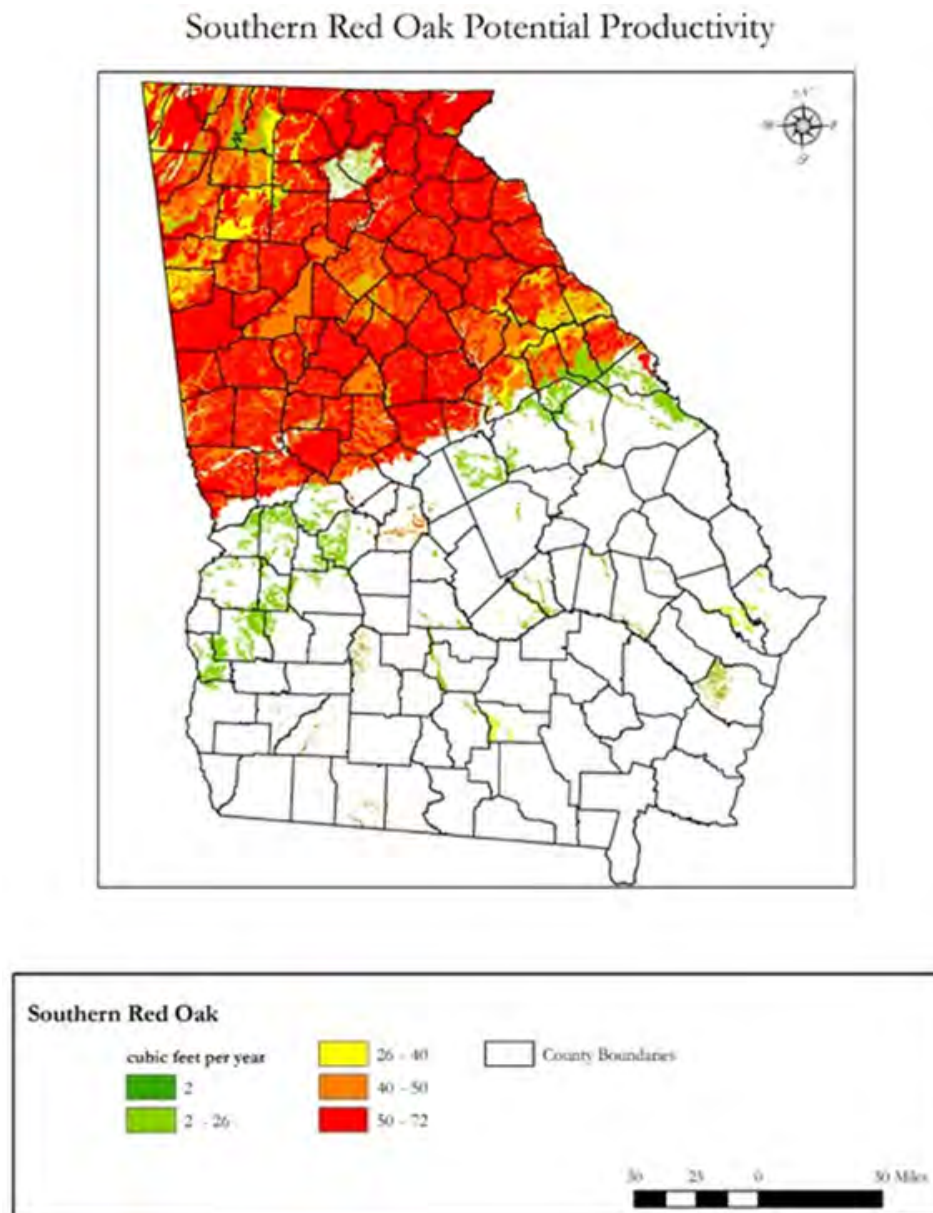


Figure 13

Sources: Soil Survey Staff. 2010. Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. <http://websoilsurvey.nrcs.usda.gov/>



FOREST RESOURCE CONDITIONS

FOREST TYPES

Hardwood forest types comprise 41% of Georgia's 24.2 million acres of forestland. Softwood (mostly pine) occupies 45%, and mixed oak/pine accounts for 11%. Three percent of the forested area in Georgia is in other forest types (*Figure 14*).

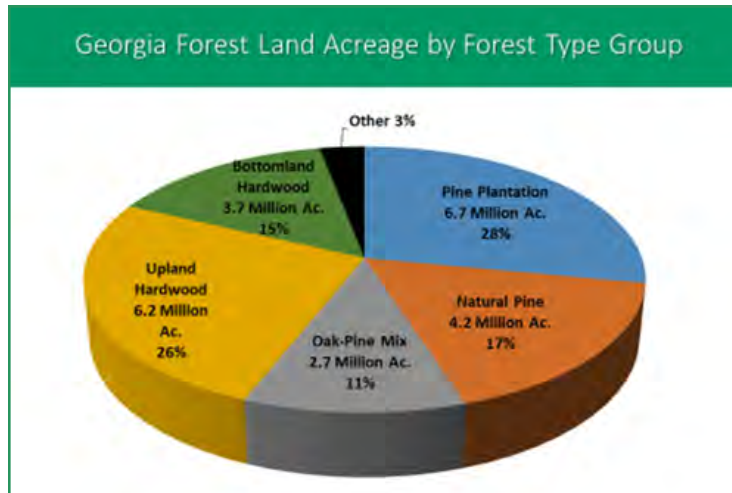


Figure 14
Source: U.S. Forest Service, FIA 2023 Data and the Georgia Forestry Commission

Forest Cover Trends

Comparing the 2008 forest cover map to the 1974 map (*Figure 15*) shows significant increases in areas affected by high intensity urban land uses. Major areas of change are Atlanta, Augusta, Savannah and areas of the Chattanooga suburbs in north Georgia.

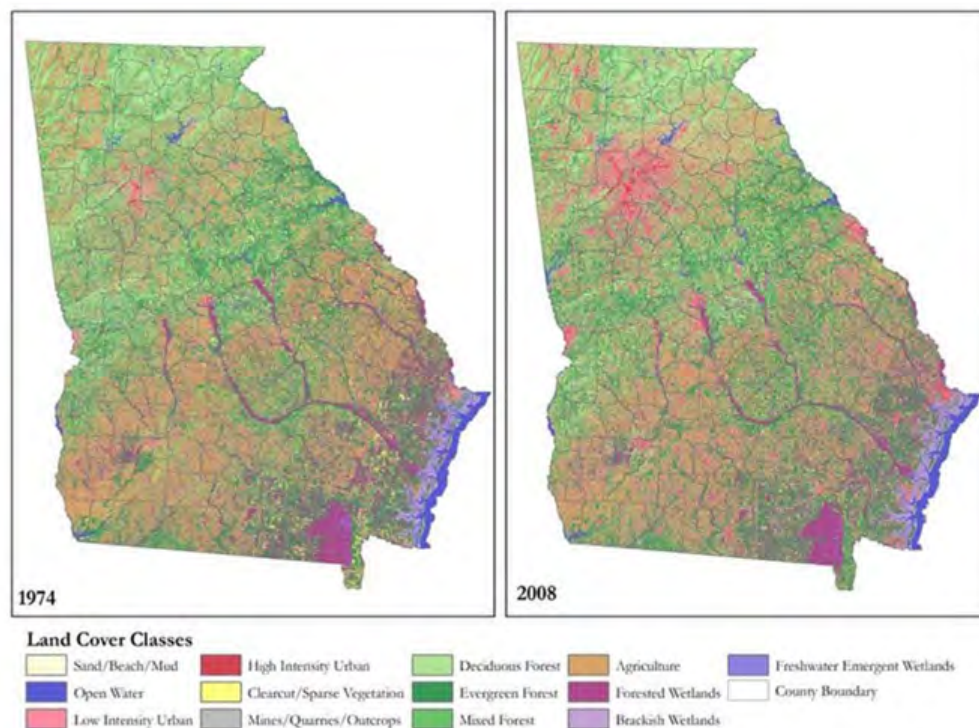


Figure 15



FOREST RESOURCE CONDITIONS

URBAN FOREST CLASSIFICATION AND TRENDS

Trees and forests come in a variety of forms, from forest stands to park groves, to urban trees. Every tree has the natural ability to affect air currents, cool the air and shade the ground. However, older, larger trees maximize these benefits. A mature, continuous canopy is more beneficial than separate ornamental trees. More trees and forest area, large canopy trees, soil design and urban forest management are necessary to maximize the environmental, social, economic, energy and health benefits of trees.

In the urban forest, a single tree may be as important as a patch of forest remnant. Since trees are responsible for keeping much of our ecological system working to provide the goods and services that benefit society, enough trees must be planted and maintained, even in highly urbanized areas, to create a forest. The sum of the effects of a continuous tree canopy provides the real benefit, and is the desired outcome (*Urban 2000*).

An increasing share of southern forests are now held in smaller parcels, measured at 50 acres or fewer (*Wear and Greis 2002*). This forest fragmentation is an issue of concern throughout the state of Georgia.



FOREST RESOURCE CONDITIONS

FOREST OWNERSHIP

Georgia leads the nation in forestland acreage that is privately owned. Fewer than 10% are public lands, including state and national forests, military reservations, parks, and other federal, state, and local government lands (Figure 16).

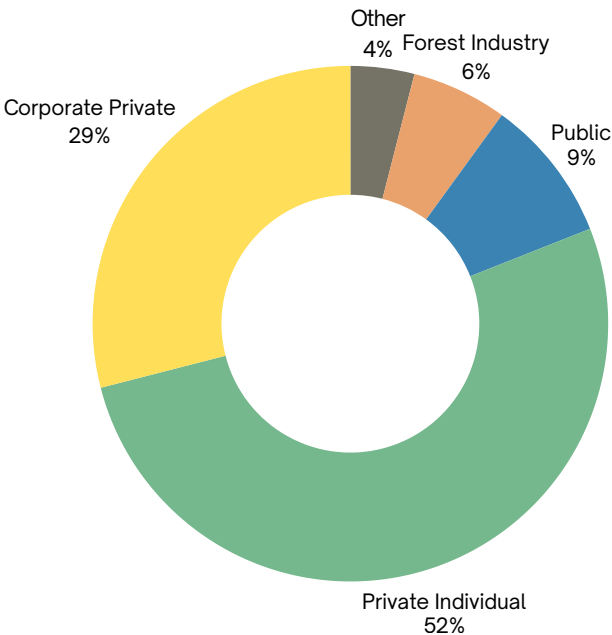


Figure 16
Source: U.S. Forest Service 2023 FIA Data and the Georgia Forestry Commission

The graph below (Figure 17) shows the changes in acreage of forestland owned in each ownership class from 1953–2023. The majority of Georgia’s forestland is owned by private individuals and corporate owners. Forest industry purchased private forests in the 1950-70s, and this trend reversed in the 1990’s through today as industry sold lands to private individual and corporate entities (such as Real Estate Investment Trusts or REIT’s, and Timber Investment Management Organizations or TIMO’s).

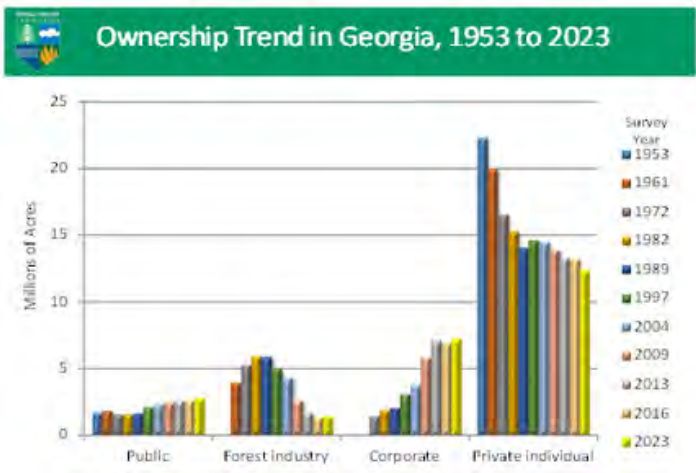


Figure 17
Source: U.S. Forest Service 2023 FIA Data and the Georgia Forestry Commission



FOREST RESOURCE CONDITIONS

FOREST OWNERSHIP

GENERAL MANAGEMENT OBJECTIVES OF FAMILY FOREST LANDOWNERS IN GEORGIA

Georgia landowners have many reasons to own forestland, but when surveyed by the U.S. Forest Service through the National Woodland Owner Survey (NWOS) regarding their reasons for owning forestland, the landowners’ answers correlated closely with the size of their owned forest tracts.

As shown in *Table 1*, owners of the smaller acreages (<500 acres) of forestland gave reasons of being part of a home, passing on to heirs, enjoying the beauty of the forest, and land investment as their primary reasons for ownership. Those who owned 500 or more acres listed timber production as their number one reason for ownership, and enjoying the beauty of the forest and passing the land on to heirs (and vice versa for 1000+ acres) as their second and third reasons.

The results of the NWOS support the belief that private landowners are more likely to actively manage their forestland if they own larger tracts. In the interest of preserving the wise management of forestland in Georgia, an important factor is discouraging, rather than encouraging, the subdivision of large tracts. Selling and/or subdividing often occurs as a result of large tax costs passed on to heirs when a forest landowner passes away. The inheritance tax, therefore, acts as a strong barrier to sustainable forest management. Large forestland tracts are critical to maintaining the forest product supply chain and for sustaining product.

The continued sustainability of Georgia’s forests falls largely on individuals and corporations. These landowner groups are facing new challenges that will determine the future of Georgia’s forests. State and local tax structures and cyclical forest product markets will have a major impact on these landowner decision makers.

	Acreage Owned				
Reasons for Owning Land	Rank	10-99 Acres	100-499 Acres	500-999 Acres	1000+ Acres
	1st	Beauty or Scenery	Wildlife Habitat	Wildlife Habitat	Timber Products
	2nd	Wildlife Habitat	Beauty or Scenery	Family Legacy	Wildlife Habitat
	3rd	Nature Protection	Nature Protection	Timber Products	Land Investment

Table 1
Source: USFS FIA NWOS 2023



FOREST RESOURCE CONDITIONS

URBAN FOREST OWNERSHIP

Urban forest ownership includes municipalities, counties, residents, rights-of-way, industry, recreational areas, commercial entities, and institutional land, to name a few. The urban forest is a patchwork of land uses, extending from the urban core, through suburbs, to the wildland urban interface. The forest canopy within those areas is a widely varying mix that ranges from heavily forested backyards and riparian buffers to sparsely canopied parking lots and newly built subdivisions. Much of the forest is fractured into disconnected patches fewer than 10 acres in size. This small size results in greatly decreased levels of forest benefits that are realized from an integrated, connected forest landscape. This canopy is further overlaid with a complex set of ownerships, values, goals, and attitudes towards tree planting, management, and conservation. Urban forest growing conditions are very different from natural forest processes, but actions can be taken to mimic those natural growing environments (ordinances, education, stand management, etc.).





PUBLIC BENEFITS FROM RESOURCE CONDITIONS JOBS AND ECONOMIC ACTIVITY

Georgia's 24.1 million acres of forestland, containing vast supplies of renewable raw materials, sustains an important economic engine for the state. A 2024 report provides the following economic impact data for Georgia's forest industry.

Total economic activity supported by the forest industry in Georgia is more than \$59.4 billion. This includes the multiplier effect of recirculated dollars brought into the economy by the forest industry sectors. An estimated 177,389 people are employed by the industry with compensation that exceeds \$12.2 billion.

- From 2023 to 2024, output, jobs, and compensation increased 8.3%, 6.1% and 8.6%, respectively. Trends in these economic indicators for 2015-2024 are reflected in *Figure 18* below.

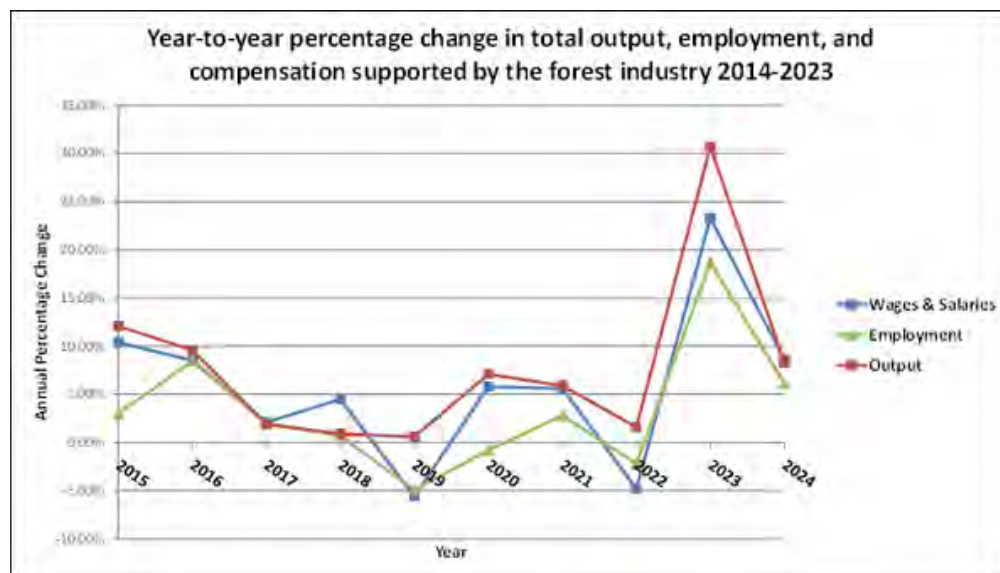


Figure 18

Georgia's forest industry directly employed 57,453 in all industry sectors combined, paid an annual compensation of more than \$4.9 billion, and had estimated total revenue of almost \$31.8 billion.

- The pulp and paper sector continued to dominate the forest industry by representing 54% of the direct industry output, providing 38% of direct industry jobs and 49% of direct industry compensation.

As of 2024, the forest industry is the second largest industrial sector in Georgia based upon wages and salaries, and third largest based upon employment (behind food processing and transportation equipment).

The forest industry generates an estimated \$880 million per year in revenues for the state. When the costs of providing state services to Georgia's households and companies associated with that activity are deducted from these revenues, net annual state revenues are almost \$306 million.



PUBLIC BENEFITS FROM FOREST RESOURCES JOBS AND ECONOMIC ACTIVITY

In addition to the economic benefits outlined above, Georgia's 24 million acres of forests provide non-timber ecosystem services to society (clean air, clean water, wildlife habitat, and carbon sequestration) valued at over \$37.6 billion annually.

ECONOMIC IMPACT BY REGION

Local economies are impacted by the forest industry by supporting employment, bringing in additional dollars, and recirculating the dollars across local businesses. In regions where forestry is a large proportion of the local basic industry, all economic support is generally dependent on it in some manner. *Figure 19* shows Georgia's 12 regional commissions.

- **Employment by Region:** The Atlanta Regional, Southern Regional, and Heart of Georgia Altamaha Regional Commissions are the top three commissions in terms of employment, accounting for 46% of the forest-related jobs in Georgia. However, Southern Georgia, Heart of Georgia Altamaha, and Southwest Georgia have the highest regional dependence on the forest industry at 9.1%, 8.0%, and 7.9%, respectively.
- **Compensation by Region:** The three regions with the greatest dependency on forest-based compensation compared to all industries are Heart of Georgia Altamaha, Southern Georgia, and Southwest Georgia with 9.1%, 6.5%, and 6.1%, respectively. The Atlanta Regional Commission provided the most forest-based compensation at \$1.5 billion; however, that accounted for only 0.8% of the region's total compensation (compared to all other industries).



Figure 19

Source: "Quantifying the Value of Non-Timber Ecosystem Services from Georgia's Private Forests"; Moore, Rebecca, Dr., et al; University of Georgia Warnell School of Forestry and Natural Resources; January 2011.



PUBLIC BENEFITS FROM FOREST RESOURCES

JOBS AND ECONOMIC ACTIVITY

In 2024, as reported on the 2025 tax digest, timber was harvested on 1,651,936 acres with an assessed value of \$675,062,824. *Table 2* shows the timber revenue generated from these timber sales.

2024 Timber Revenue Reported on 2025 Tax Digest					
County	Acres	Assessed Value	County Revenue	School Revenue	Total Revenue
Totals	1,651,936	\$675,062,824	\$7,789,528	\$9,862,767	\$17,652,295

Table 2

Tax digest values: <https://dor.georgia.gov/document/document/2025-property-tax-administration-annual-report/download>



PUBLIC BENEFITS FROM FOREST RESOURCES JOBS AND ECONOMIC ACTIVITY - RECREATION

Forest-based recreation provides excellent opportunities for economic growth and tourism in Georgia.

Investment in public outdoor recreation, public/private partnerships and promotion of private recreational opportunities will continue to provide strong economic benefits to Georgia in the future.



According to a 2025 Georgia Department of Natural Resources report, hunting and fishing generates \$1.6 billion and \$3.6 billion in sales, respectively. Furthermore, spending on wildlife viewing was \$5.2 billion. https://georgiawildlife.com/sites/default/files/wrd/pdf/WRDFactSheet_FY2025_Final_100825.pdf.

The Go Fish Georgia program is a \$30 million initiative that is intended to boost economic development in many small towns and establish

Georgia as a national fishing destination. According to their statistics, anglers spend more than \$1.1 billion annually on Georgia fishing, providing a total economic impact over \$1.9 billion. This creates approximately 10,600 jobs. <https://gofisheducationcenter.com/about-gfec>



PUBLIC BENEFITS FROM FOREST RESOURCES

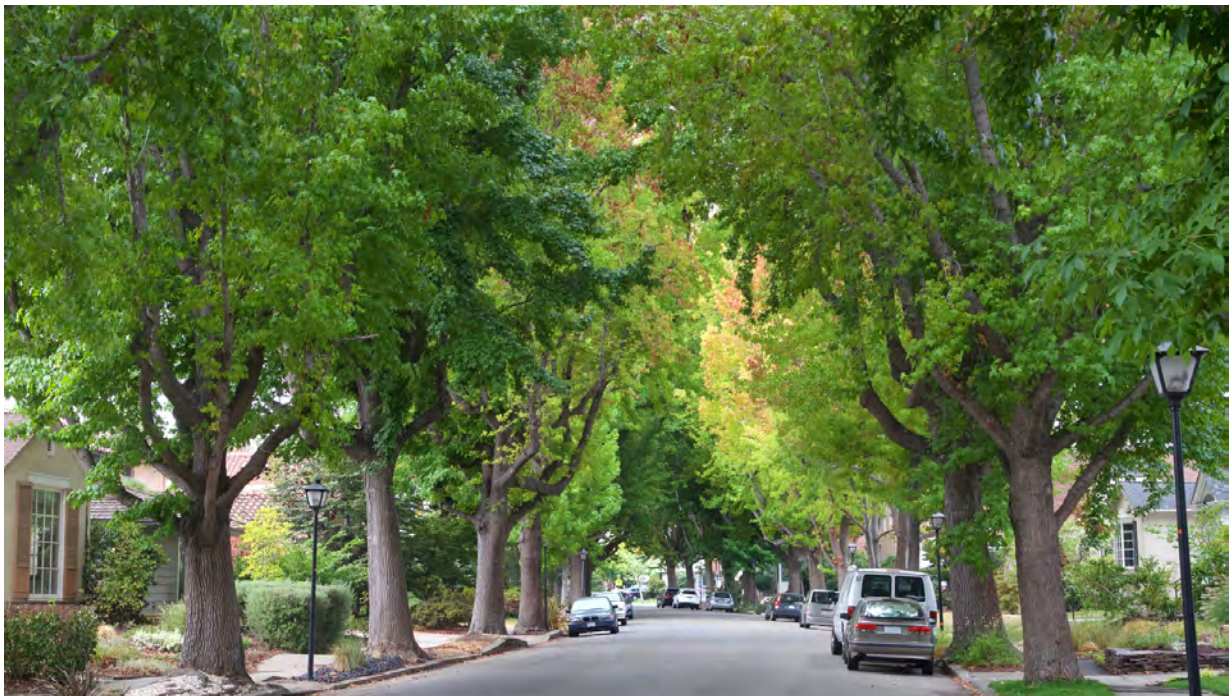
JOBS AND ECONOMIC ACTIVITY - URBAN FORESTS

Trees generate income by creating jobs, boosting property values and attracting educated workers. According to the *2024 Economic Benefits of the Forest Industry in Georgia*, urban and community forests provided direct impacts of \$4.6 billion in revenue, 35,727 jobs, and \$2.0 billion in compensation. This has a total impact of \$8.1 billion in revenue, 53,613 jobs, and \$3.1 billion in compensation.

A single, large 40-year-old tree pays back taxpayers and homeowners nearly \$200 per year just in its cleansing and cooling effect on the air, water and land. A large front-yard tree adds almost one percent to the sales price of a single-family home, and property values of homes adjacent to parks and open spaces are typically about eight percent to 20% higher than comparable properties elsewhere (*McPherson 2006*).

Tourism and urban forests share a vital link. In Savannah, magnificent live oaks and many other trees line the streets and city squares. Research shows that trees are a significant amenity in cities, and are often part of the reason visitors choose to spend time in a specific location. Trees provide many important benefits to visitors. For example, shady streets in business districts encourage people to linger and shop longer, and studies show people spend up to 10% more money when shopping on tree-lined streets. In addition, trees create inviting, beautiful places to enjoy, and give people lasting memories to take home.

Trees benefit employers, too. Workers without a view of nature from their desks reported 23% more instances of illnesses. They also reported higher levels of frustration and irritability. Those who have views of nature reported better overall health, greater enthusiasm for their jobs, less frustration and feelings of higher life satisfaction (*Kaplan and Kaplan 1989*).





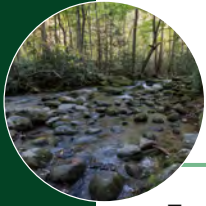
PUBLIC BENEFITS FROM FOREST RESOURCES

JOBS AND ECONOMIC ACTIVITY - URBAN FORESTS

Of the 462 Georgia cities and counties measured in the U.S. Forest Service's Community Accomplishment Reporting System (CARS) in 2014, a total of 115 communities in Georgia have made investments in their urban forest by hiring a consulting urban forester or certified arborist to assist in planning for and managing community trees, creating a wealth of green jobs in the state at tree nurseries and in arboriculture.

In recent years, Georgia has experienced some of the fastest growing cities and counties in the U.S. According to the *U.S. Census Bureau*, Georgia had two of the top 10 counties in the U.S. in terms of annual percent increase from 2022-23: Jackson County (5.5%) and Dawson County (5.1%). Furthermore, among micropolitan areas (cities with more than 10,000 but less than 50,000), Jefferson and Cornelia, Georgia were in the top 10 for annual percent change, adding 5.5% and 2.7%, respectively. Hinesville, Georgia was also in the top 10 for metro areas, adding 2.9%.





PUBLIC BENEFITS FROM FOREST RESOURCES CLEAN WATER

Forests are the natural land cover for most of the southeast United States, including most of Georgia, and much of the world. Forests provide many environmental and economic benefits while providing timber products that people around the world use every day, improving their lives and making them more efficient and productive. Products such as lumber, boxes, paper, and bath tissue, in turn, create jobs, incomes, and tax revenues for rural communities while improving wildlife habitat, recreational opportunities, soil conservation, carbon storage, clean air, and more.

However, no benefit or product is more important than water. Water is what makes Earth a “living planet,” and all living things must have it to live and prosper. We need good, healthy water supplies to support communities across the state. Well-managed forests clean water, providing improved water quality throughout the landscape. They also help store and meter out water, maintaining healthy water quantity and mitigating extremes of both drought and flooding. Forestlands absorb rainfall, refill groundwater aquifers, slow and filter stormwater runoff, reduce flooding, and maintain watershed stability and resilience. In Georgia and most of the Southeastern states, forestland generally provides these many benefits better and cheaper than any other land cover type. Forested streamside management zones protect biological diversity by stabilizing stream temperatures and providing food and habitat to aquatic ecosystems. Additionally, forests stabilize the soil, protecting water quality by reducing the amount of sediment, nutrients, and other pollutants that enter streams and lakes. Studies have shown that riparian forests and wetlands can trap more than 80% of sediment and nutrients, as well as reduce peak flood periods by 50% (*Cooper et al. 1987*). This is an important benefit to the 134 water supply reservoirs that provides many Georgians with a clean source of water. From an economic standpoint, communities that utilize this important function of trees and canopy-cover may spend less money developing additional stormwater management infrastructure. In Atlanta, for instance, the stormwater retention capacity of the urban forest has been calculated at about \$85.9 million per year (*American Forests, 2001*).

- Infiltration rates for forested areas are 10 to 15 times greater than for equivalent areas of turf and grass.
- During a heavy rain, a healthy forest can absorb as much as 20,000 gallons of water in an hour.

Georgia’s future will depend on clean, fresh water that comes from abundant and well managed forestlands in the state.

Georgia is blessed with forests and water resources. However, land conversion due to urban sprawl is a significant and constant threat to forestland and water resources. Active forest management and retention for both forests and water go hand-in-hand for human health and security, the environment, economic security and prosperity. When comparing the three major land-use categories of forestry, agriculture, and development, forestry is by far the best land-use to protect water resources. True forestry (or silviculture) by definition means managing land for trees and timber in an ongoing sustained manner. Harvesting and converting forestland to another land-use such as a residential development, commercial/industrial development, solar facilities, mining, cropland, pasture, etc., is not ongoing forestry and is unsustainable. Land conversion to uses other than forest generally reduces or eliminates many of the benefits and products we get from forests, while greatly increasing the risks to water resources. Well-managed, abundant forests equal healthy water supplies, while providing economic and environmental benefits and products.

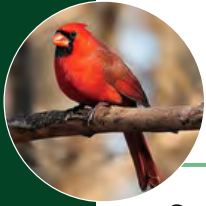


PUBLIC BENEFITS FROM FOREST RESOURCES CLEAN WATER

Across Georgia there are a multitude of water resources (creeks, streams, lakes, ponds, etc.) within 14 major river basins and multiple groundwater aquifer systems. Many of the state's 44,056 miles of perennial streams, 23,906 miles of intermittent streams, and 603 miles of ditches and canals begin or flow through forestlands. Forests are a renewable resource, and when managed properly, will keep providing us timber, clean air and water and so much more in a sustainable manner. The practice and business of forestry provides a \$42 billion economic impact to Georgia. A key strategy for sustainability is good forest management resulting in clean water. Almost two-thirds of the state of Georgia is currently forestland. With almost two out of every three raindrops that fall in Georgia falling on forestland, it is critical to ensure that forestland and streamside management zones are managed properly to protect and minimize disturbances to water resources.

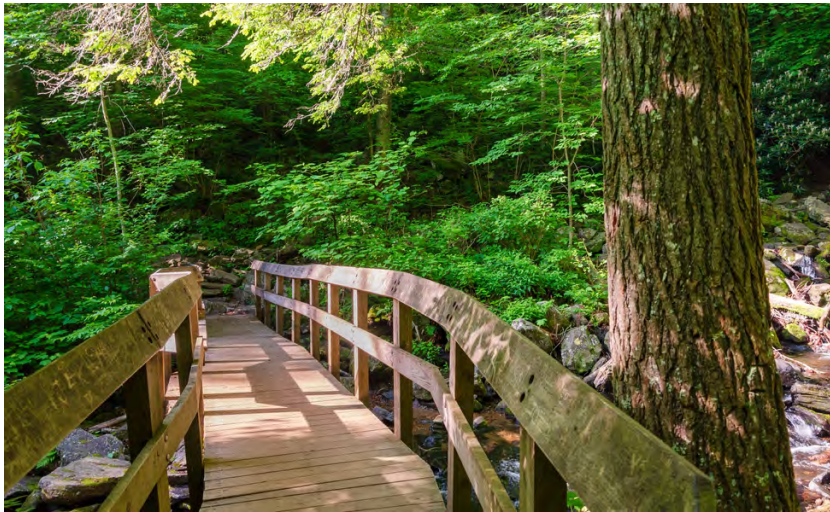
Forestry in Georgia has a set of guidelines going back over 40 years, known as Best Management Practices (BMPs). BMPs are common-sense, science-based, practical guidelines designed to protect water and other natural resources during true forestry operations. Georgia's Forestry BMPs have been updated by stakeholder consensus through the years, and after 40+ years, the forestry community knows what works and what does not work. The Georgia Forestry Commission's Water Quality Program and our many partners in the forestry community help maintain these BMP standards for water in forestry operations, which benefits the land, the water, and the public for future generations to enjoy.





PUBLIC BENEFITS FROM FOREST RESOURCES WILDLIFE HABITAT AND NATURAL HERITAGE

Georgia boasts a tremendously diverse natural heritage - ranking sixth among all states in overall biological diversity. The state's rich forest resource directly shaped the lives and cultures of earlier residents, and provides essential wildlife habitat and recreation opportunities of immense value to our state's residents and visitors.



Forest management creates habitat diversity that generates wildlife diversity. Many of Georgia's distinct habitat types are forests and are well-managed, improving forest health and wildlife diversity throughout the state. Forest cover is essential for improving the health of many aquatic habitats by providing shade, structure, and clean water. Habitat suitability for individual wildlife species varies. Factors such as

forest structure, tree/shrub/grass composition, and other forest management criteria are critical to the survival of these individual species. Georgia's landscape contains a variety of hardwood and coniferous forest types, diversifying the landscape and displaying the various forest management objectives landowners have throughout the state. Active forest management such as prescribed burning, invasive plant control, and timber harvesting creates diverse native ground cover, providing the most value to the greatest variety of wildlife species. Additionally, wildlife is important for conservation efforts in Georgia, impacting hunting, fishing, nature photography, birding, hiking, and other activities that depend upon healthy populations of wild plants and animals. Outdoor recreation is a strong economic force in Georgia's economy with 238,000 directly related jobs, \$27.3 billion in consumer spending, and \$12.4 billion in value added greenspaces, according to the *2019 reports of the Bureau of Economic Analysis* and the *Outdoor Industry Association*.

A 2011 University of Georgia research project found that Georgia's forestlands provide essential ecosystem services to the state worth an estimated \$37 billion annually. This is in addition to the value of timber, forest products, and recreation. The research focused on six types of ecosystem services forests provide: gas and climate regulation; water quantity and quality; soil formation and stability; pollination; wildlife habitats; and aesthetic, cultural, and passive use. Georgia's forests are diverse, and with continued active forest management, biodiversity in the forests will continue to increase and thrive, having positive impacts on the land, wildlife, and people.



PUBLIC BENEFITS FROM FOREST RESOURCES

TIMBER PRODUCTS

Georgia has 207 primary wood-using industries with eight pulp & paper mills, 17 chip mills, 99 sawmills, three veneer, six engineered wood and panel product mills, 17 pole-post mills, seven log export yards, and 50 mills that produce other value-added products from logs. Around 28% of the primary mills export products to world markets. Of Georgia’s 159 counties, 97 (61%) have at least one primary mill ranging from huge pulp & paper mills to small one- and two-person custom sawmills. The top six counties in terms of the number of primary mills are: Ben Hill - six mills; Chatham, Effingham, Jeff Davis, Lowndes and Screven - five mills each. This is followed by four counties that have four mills; 17 counties with three mills; 27 counties with two mills; and 43 counties have one mill. In addition to the primary mills, over 1,000 secondary manufacturers provide further processing to Georgia’s wood products.

Following is a summary of the most recent mill production data available for Georgia’s primary wood-using industries:

- In 2023, industrial timber product output from round wood decreased by 3% from 2022 to 45.5 million green tons. Industrial timber product output for 2023 compared to five years ago (2018), shows a decrease of 5%.
 - In 2023, softwood roundwood product output decreased by 2% to 40.4 million green tons from 2022 and decreased 4% compared to 2018.
 - Hardwood roundwood product output in 2023 decreased by 6% to 5.2 million green tons compared to 2022, and decreased 19% vs. 2018.
 - In 2023, pulpwood and saw logs were the principal roundwood products. Combined output of these two products totaled 34.8 million green tons and accounted for 76% of the state’s total industrial roundwood output (*Figure 20*).
 - Across all products, 91% of roundwood harvested statewide was retained for processing at Georgia mills.
 - Roundwood timber product output by Georgia’s top 10 counties, product, and species group is shown in *Table 3* and the top three counties in roundwood pulpwood output. *Table 4* (*Bentley et al. 2023*).

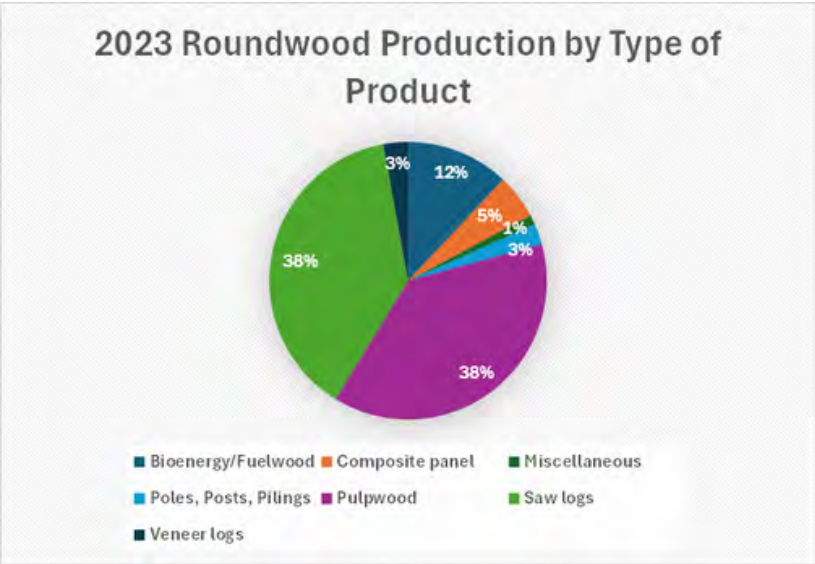


Figure 20



PUBLIC BENEFITS FROM FOREST RESOURCES

TIMBER PRODUCTS

Table 3. Roundwood Timber Product Output by Top Ten Counties, Product and Species Group, Georgia 2023									
All Products					Pulpwood				
	SW		HW			SW		HW	
1	Clinch	1	Camden	1	Charlton	1	Camden		
2	Ware	2	Laurens	2	Wayne	2	Echols		
3	Laurens	3	Jeff Davis	3	Clinch	3	Emanuel		
4	Wayne	4	Coffee	4	Emanuel	4	Washington		
5	Emanuel	5	Telfair	5	Camden	5	Telfair		
6	Washington	6	Emanuel	6	Washington	6	Tattnall		
7	Appling	7	Echols	7	Brantley	7	Wayne		
8	Charlton	8	Washington	8	Glynn	8	Atkinson		
9	Hancock	9	Appling	9	McIntosh	9	Jefferson		
10	Camden	10	Burke	10	Appling	10	Decatur		
Sawlogs					Veneer Logs				
Green Tons					Green Tons				
	SW		HW			SW		HW	
1	Laurens	1	Jeff Davis	1	Decatur	1	Grady		
2	Appling	2	Laurens	2	Hancock	2	Hall		
3	Ware	3	Coffee	3	Greene	3	Worth		
4	Clinch	4	Ware	4	Grady	4	Colquitt		
5	Washington	5	Wilcox	5	Oglethorpe	5	Thomas		
6	Dodge	6	Appling	6	Wilkes	6	Tattnall		
7	Berrien	7	Telfair	7	Early	7	Toombs		
8	Wayne	8	Jasper	8	Mitchell	8	Miller		
9	Hancock	9	Marion	9	Morgan	9	Early		
10	Wilkes	10	Jones	10	Washington	10	Seminole		
Composite Panel ¹		Pole-Posts-Marine Pilings		Bioenergy-Fuelwood					
Green Tons		Green Tons		Green Tons					
	SW		SW		SW		HW		
1	Worth	1	Ware	1	Ware	1	Wilkes		
2	Oglethorpe	2	Taliaferro	2	Laurens	2	Elbert		
3	Dodge	3	Oglethorpe	3	Emanuel	3	Lowndes		
4	Wilcox	4	Lincoln	4	Clinch	4	Oglethorpe		
5	Clinch	5	Johnson	5	Coffee	5	Banks		
6	Wilkes	6	Jefferson	6	Floyd	6	Hancock		
7	Thomas	7	McIntosh	7	Washington	7	Dougherty		
8	Meriwether	8	Appling	8	Houston	8	Terrell		
9	Dooley	9	Emanuel	9	Pierce	9	Lee		
10	Tift	10	Meriwether	10	Telfair	10	Worth		

Composite panel Source: US Forest Service - Southern Research Station (SRS); includes softwood only. Timber Product Output, Georgia, 2022. Public Tableau Reporting Tool: as the volume of <https://public.tableau.com/views/TPOREPORTINGTOOL/> hardwood is negligible. MakeSelection?:showVizHome=no

Table 3

Table 4. Top 3 Roundwood Pulpwood Producing Counties in Georgia, 2023					
County	All Species	County	Softwood	County	Hardwood
Green Tons - top 3 rank					
Charlton	629,617	Charlton	629,617	Camden	177,382
Wayne	575,532	Wayne	518,194	Echols	100,757
Clinch	554,613	Clinch	509,391	Emanuel	78,929
Total - Top 3	1,759,762		1,657,202		357,068
% of State					
Total	10%		11%		16%
State Total	17,305,402		15,088,453		2,216,949

Table 4



PUBLIC BENEFITS FROM FOREST RESOURCES TIMBER PRODUCTS

In 2023, Georgia continued to be a leader in total pulpwood production, roundwood pulpwood production, number of pulp mills, sawlog, poles-post-marine pilings, and veneer production in the 13 states that make up the Southern region (*Winn, et al 2023*):

- In 2023 there were 11 pulp mills in Georgia out of 70 total in the Southern region. Three pulp mills shut down in 2025 in Georgia leaving eight.
- Georgia had 22,491,294 green tons (16%) of total (roundwood + mill residue) production, which was second among the Southern states. This is a 12% decrease since 2018. (*Winn et al. 2023 & Gray et al. 2018*)
- Georgia ranked second in roundwood pulpwood production for all species combined, but first in softwood production.
 - The species mix used in Georgia's roundwood pulpwood production was 87% softwood and 13% hardwood. (*Winn et al. 2023*)
 - Charlton County is the most productive Georgia county with 629,617 green tons of roundwood pulpwood production; the top-leading three counties produced 10% of the state's total as shown in *Table 4*.
- Georgia ranked first in the Southern region pole-posts-marine pilings production and second in sawlog production for all species combined.
- In overall production of commercial roundwood timber, Georgia ranked first in the Southern region with 45.5 million green tons. (*Bentley et al. 2023*)

Georgia forest products continue to be an important export commodity to world markets.

Georgia's forest industry is well-positioned to capture increased market share in emerging countries for traditional products such as lumber and panel products, as well as bioenergy products such as wood pellets. This is largely due to the proximity of the Port of Savannah, one of the fastest growing ports in the U.S. and the fourth largest port in the U.S.

Georgia Wood Product Exports, 2024

- At \$672.0 million (US Dollars), Georgia ranked one of the top states nationally and first in the Southern region for wood products exports.
- Georgia's top five forest product export destinations were: the United Kingdom, \$169.0 million; Denmark, \$72.3 million; The Netherlands, \$53.1 million; Finland, \$32.0 million and Sweden, \$31.1 million.
- Georgia ranks third in U.S. exports of wood pellets to the world, valued at \$362.0 million, 19% of the U.S. total.
- The top five export destinations for Georgia wood pellets were: the UK, Denmark, The Netherlands, French West Indies and France. (*Source: 2024 US Foreign Agriculture Service, USDA*)



PUBLIC BENEFITS FROM FOREST RESOURCES TIMBER PRODUCTS

Georgia's leadership in the production of forest products in the U.S. South, nation, and world is possible because of the state's highly productive forests. For this reason and others, several forest industry leaders call Georgia home:

- Enviva Waycross – one of the largest wood pellet plants in the world, Waycross.
- Kraton Inc. – largest crude tall oil biorefinery in the world, Savannah.
- West Rock – largest recycled paper mill in North America, Dublin.
- Fort Benning, Georgia is the first DoD base to undertake a forest carbon sequestration project, 148,539 acres (*Fort Moore; formerly Fort Benning*).
- Georgia leads the U.S. South and nation in the production of poles, post, and marine pilings (*Source: USDA Forest Service*).
- Georgia leads the U.S. South and nation in the number of plantation acres at 7,492,270 (*Source: 2023 USDA Forest Service Forest Inventory Analysis*).





PUBLIC BENEFITS FROM FOREST RESOURCES QUALITY OF LIFE

Having forests in the places where people live, work and play improves quality of life. Studies show contact with nature can lower blood pressure, speed recovery from surgery and lower self-reported stress. For children, inner-city children in particular, trees and parks provide a safe, inviting environment in which to play and explore.



That opportunity is vital, considering children who have contact with nature score higher on tests of concentration and self-discipline. Children who play regularly in natural environments show more advanced motor skills, including coordination, balance and agility. When children play in natural environments, their play is more diverse with imaginative and creative play that fosters language and collaborative skills.

Nature buffers the impact of life's stresses on children and the community at large, and helps them deal with adversity (*Georgia Tree Council 2022*).

This is in addition to all the ecosystem services that community forests provide, such as heat island mitigation, stormwater management, enhanced wildlife habitat and increased community walkability.

Trees soothe our psyche, instill us with peace and restore our spirits. Scientific studies have shown links between contact with trees and nature and psychological and societal well-being. People with green views from their windows are more likely to know their neighbors and report a stronger sense of community (*Georgia Tree Council 2022*).



PUBLIC BENEFITS FROM FOREST RESOURCES CLEAN AIR & CARBON SEQUESTRATION

According to the most recent Forest Inventory & Analysis data provided by the U.S. Forest Service, approximately 1.7 billion metric tons of carbon was sequestered in Georgia timberland across 23.6 million acres as of 2023. The total includes federal, state/local, and private property, and it accounts for carbon in above and below ground live and dead biomass, above and below ground understory vegetation, coarse woody debris, soil, and leaf litter.

Of the total, approximately 1.5 billion metric tons, or approximately 89%, is sequestered on private timberland. This includes 21.4 million privately owned acres with an average of 68.9 metric tons per acre. Considering the substantial supply private land provides to Georgia's forest products industry, the following data focuses only on private timberland.

Broken down by stand origin, planted and natural stands represent 26% and 74% of total carbon sequestration, respectively. The following table shows the per-acre average by 20-year age classes.

Table 5 and Figure 21 show that from 0-60 years old, there is a marginal difference between average carbon sequestered per acre on natural stands versus planted stands. After age 60, natural stands start sequestering more per acre compared to planted stands, as many planted stands have already reached maturity and received timber thinnings. Natural stands show a continued increase in carbon sequestration through 100 years of age, primarily due to the longer rotations required for hardwoods. However, according to a publication by the U.S. Forest Service, despite the increased rotation length of natural stands, shorter rotations result in a greater amount of total carbon converted to wood products over a 100-year period and should be considered an important avenue of sequestration (Johnsen et al 2001). Under the age of 40 and 60, total carbon sequestered is 54% and 70%, respectively (Figure 22).

Private	Average	0-20 years	21-40 years	41-60 years	61-80 years	81-100 years	100+ years
Natural	74.27	47.86	70.98	79.34	88.03	97.15	106.27
Planted	58.3	49.39	69.07	73.78	71.86	0	74.69

Table 5 - Metric tons per acre of carbon sequestered on private land in GA.

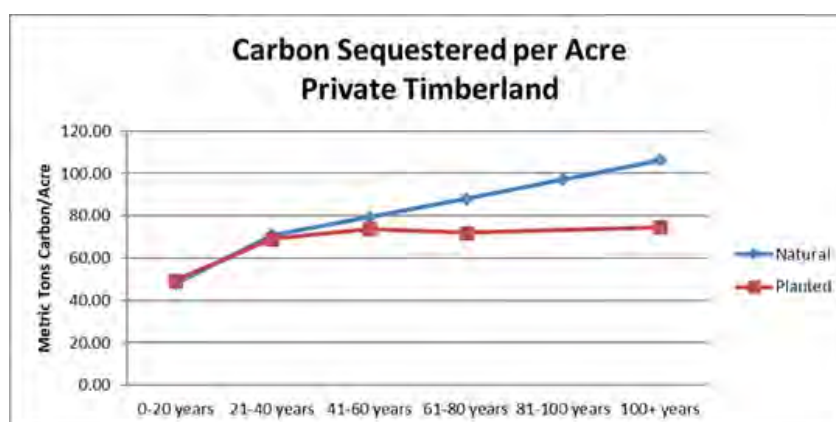


Figure 21 - Per acre carbon sequestered by age class on private land



PUBLIC BENEFITS FROM FOREST RESOURCES

CLEAN AIR & CARBON SEQUESTRATION

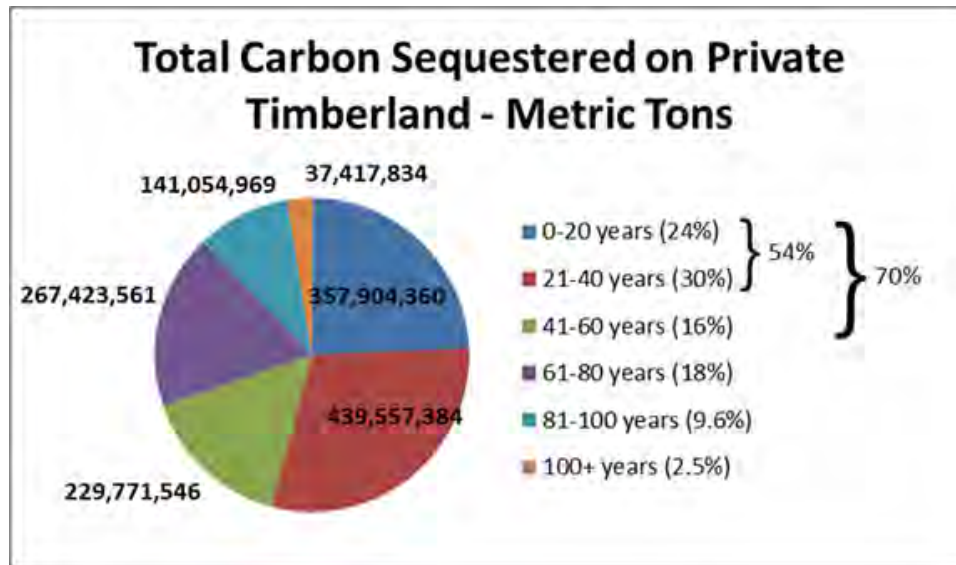


Figure 22 - Total carbon sequestered on private Georgia timberland

While some timber is harvested in the younger age classes, particularly planted pine stands, these thinnings provide the space needed for residual trees to grow into larger diameter products. Many forest products such as oriental strand board (OSB), medium density fiberboard (MDF), plywood, lumber, mass timber products, and other engineered products continue to sequester carbon long-term. Maintaining strong markets for all wood products plays an important role in maximizing sequestration potential, as it encourages landowners to keep their land in timber (natural or planted), while removed timber continues to sequester carbon in finished products.

Trees and forests store carbon in roots, trunks, limbs, and soil. This helps to remove atmospheric carbon, a byproduct of burning fossil fuels, and thus reduces pollution. Carbon accounts for about half the dry weight of most trees. The carbon-related function of trees is measured in two ways: the total amount stored, which becomes greater as the tree ages, and the rate at which carbon is stored (called sequestration), which is faster in young trees and then slows as the tree matures. This stored carbon has the potential to be saved for a long period of time in both living trees, soil, and solid wood products.



PUBLIC BENEFITS FROM FOREST RESOURCES

CLEAN AIR & CARBON SEQUESTRATION

TOTAL – NATURAL AND PLANTED TIMBERLAND

Total Carbon Tons Sequestered on Georgia Timberland - 2023

	Stand age 20 yr classes (0 to 100+)						
Ownership group	Total	0-20 years	21-40 years	41-60 years	61-80 years	81-100 years	100+ years
Total	1,662,342,035	371,237,377	467,115,325	261,010,202	322,126,700	189,402,766	51,449,661
National Forest	72,051,102	1,061,955	7,721,474	8,292,048	18,793,863	27,474,445	8,707,318
Other federal	44,614,632	4,371,896	3,911,764	7,701,036	16,849,941	10,095,686	1,684,306
State and local	72,546,649	7,899,167	15,924,705	15,245,573	19,059,333	10,777,668	3,640,203
Private	1,473,129,652	357,904,360	439,557,384	229,771,546	267,423,561	141,054,969	37,417,834

Total Timberland Acres in Georgia - 2023

	Stand age 20 yr classes (0 to 100+)						
Ownership group	Total	0-20 years	21-40 years	41-60 years	61-80 years	81-100 years	100+ years
Total	23,596,942	7,625,790	6,614,636	3,312,919	3,638,770	1,921,789	483,038
National Forest	704,582	23,318	88,231	89,147	183,102	247,211	73,574
Other federal	598,953	92,353	57,113	116,446	197,297	118,002	17,742
State and local	909,473	160,848	200,668	188,887	215,276	104,616	39,178
Private	21,383,934	7,349,272	6,268,624	2,918,438	3,043,094	1,451,961	352,545



PUBLIC BENEFITS FROM FOREST RESOURCES

CLEAN AIR & CARBON SEQUESTRATION

NATURAL TIMBERLAND

Natural Stand Carbon Tons Sequestered on Georgia Timberland - 2023

	Stand age 20 yr classes (0 to 100+)						
Ownership group	Total	0-20 years	21-40 years	41-60 years	61-80 years	81-100 years	100+ years
Total	1,222,501,540	167,145,646	261,057,558	234,013,150	319,546,744	189,402,766	51,335,673
National Forest	68,506,713	613,160	5,209,332	7,708,594	18,793,863	27,474,445	8,707,318
Other federal	40,968,689	2,165,611	2,760,940	7,701,036	16,561,108	10,095,686	1,684,306
State and local	59,837,519	5,119,184	9,179,213	12,327,131	18,794,119	10,777,668	3,640,203
Private	1,053,188,621	159,247,694	243,908,073	206,276,387	265,397,653	141,054,969	37,303,845

Natural Timberland Acres in Georgia - 2023

	Stand age 20 yr classes (0 to 100+)						
Ownership group	Total	0-20 years	21-40 years	41-60 years	61-80 years	81-100 years	100+ years
Total	16,104,673	3,496,696	3,654,084	2,950,145	3,600,446	1,921,789	481,512
National Forest	662,172	11,170	63,744	83,371	183,102	247,211	73,574
Other federal	536,222	51,159	40,007	116,446	192,866	118,002	17,742
State and local	725,080	107,129	114,248	150,333	209,576	104,616	39,178
Private	14,181,199	3,327,238	3,436,084	2,599,995	3,014,902	1,451,961	351,019



PUBLIC BENEFITS FROM FOREST RESOURCES

CLEAN AIR & CARBON SEQUESTRATION

PLANTED TIMBERLAND

Planted Stand Carbon Sequestration on Georgia Timberland - 2023

	Stand age 20 yr classes (0 to 100+)					
Ownership group	Total	0-20 years	21-40 years	41-60 years	61-80 years	100+ years
Total	439,840,494	204,091,730	206,057,767	26,997,054	2,579,954	113,988
National Forest	3,544,389	448,794	2,512,142	583,454	0	0
Other federal	3,645,943	2,206,287	1,150,824	0	288,834	0
State and local	12,709,131	2,779,982	6,745,491	2,918,442	265,213	0
Private	419,941,033	198,656,668	195,649,311	23,495,158	2,025,907	113,988

Planted Timberland Acres in Georgia - 2023

	Stand age 20 yr classes (0 to 100+)					
Ownership group	Total	0-20 years	21-40 years	41-60 years	61-80 years	100+ years
Total	7,492,270	4,129,094	2,960,552	362,773	38,324	1,526
National Forest	42,410	12,148	24,487	5,776	0	0
Other federal	62,731	41,194	17,106	0	4,431	0
State and local	184,393	53,720	86,419	38,554	5,700	0
Private	7,202,735	4,022,034	2,832,540	318,443	28,193	1,526



PUBLIC BENEFITS FROM FOREST RESOURCES ENERGY CONSERVATION

Georgia's forests provide essential ecosystem services such as timber products, water filtration, carbon storage, wildlife habitat, recreational opportunities and scenic beauty. The United Nations led a four-year assessment of the status and trends of the world's ecosystems. This Millennium Assessment groups ecosystems services into four broad categories:

- Provisioning Services: The production of food, fiber, clean water, and other goods.
- Regulating Services: Regulation of temperature, the spread of disease, and the control rate, quality, and output of water.
- Supporting Services: Including new soil formation, carbon sequestration, pollination, nutrient and waste recycling.
- Cultural Services: The educational, aesthetic, and cultural heritage values of ecosystems, including tourism and recreation.

Traditionally, most ecosystem services are considered free benefits to society. These public goods provide the basis for sustainable economies, communities, and livelihoods, but have no recognized economic value in the marketplace. The vital contributions of ecosystem services often go unrecognized in individual, corporate, and public decision making. When forests and other ecosystems are undervalued, they are more susceptible to development pressures and conversion to non-forest uses. Over the past decade, many efforts have been made to place value on ecosystem services and to establish market-based incentives that reward landowners for maintaining and enhancing the ecosystem services their forests provide to everyone.

Georgia's 22 million acres of private forestland provide society with non-timber benefits and services worth more than \$37.6 billion every year, according to a 2011 study led by Dr. Rebecca Moore at the University of Georgia's Warnell School of Forestry and Natural Resources. "Quantifying the Value of Non-Timber Ecosystem Services from Georgia's Private Forests" reveals that private forests have value for everyone, not just forest landowners. The value of ecosystem services ranges from \$264 to \$13,442 per acre, depending upon forest characteristics.

Environmental benefits lead to a better quality of life for Georgians. Trees trap lung-damaging dust, ash, pollen, and smoke from the air. Shade from trees reduces temperatures and helps keep air pollutants from becoming even more volatile. Most importantly, trees produce oxygen and absorb carbon dioxide. Studies show one acre of trees produces enough oxygen for 18 people every day. According to American Forests, the forests in Atlanta remove about 19 million pounds of air pollutants each year, worth about \$47 million annually. Trees absorb and store an annual average of 13 pounds of carbon each year. Community trees across the United States store 6.5 million tons of carbon per year.

In local communities, trees enhance economic stability by attracting businesses and tourists while increasing property values. Trees are capital assets that help decrease infrastructure costs in cities. The presence of trees in a community affects the cost of municipal services such as stormwater control, transportation and air quality. In neighborhoods, home prices rise when within one quarter mile of trees, and green space effects can be worth thousands of dollars on the average home price. Wooded apartment complexes provide preferred aesthetics that can increase occupancy rates. Energy savings provided by trees can be significant. Nationwide, it is estimated that planting trees and using more light-colored surfaces (roofs and pavement) could annually save up to 40 billion kilowatts of electricity



PUBLIC BENEFITS FROM FOREST RESOURCES ENERGY CONSERVATION

(Galveston-Houston Association for Smog Prevention 1999). Strategically placed trees around a home can reduce summer cooling costs by as much as 30%. The presence of larger trees in yards and street trees can add three to 15% to home values throughout neighborhoods. Shoppers claim they will spend nine to 12% more on goods and services in central business districts having high quality tree canopy.

Research demonstrates that urban heat islands change weather patterns. This can alter the amount and duration of local and downwind rainfall patterns. Urban trees lessen the impact of the urban heat island effect and reduce changes in weather patterns. Trees act as natural water filters and help significantly slow the movement of stormwater. This lowers total runoff volume, soil erosion and flooding. Infiltration rates for forested areas are 10-15 times greater than for equivalent areas of turf and grass. During a heavy rain, a healthy forest can absorb as much as 20,000 gallons of water in an hour. This important function of trees and canopy cover allows communities to spend less money developing additional stormwater management infrastructure. Many municipalities are now charging businesses and homeowners a stormwater utility fee based on the amount of impervious surface at their location.

Studies have identified a direct correlation between the amount of trees and grass in community common spaces and the use of those common spaces by residents. This leads to more opportunities for informal social interaction and greater relationships between neighbors. Research suggests trees provide a place for neighbors to meet and get to know each other, and this leads to fewer incidences of crime. Trees help build a sense of community character and place. Older adults who have more exposure to green common spaces report a stronger sense of unity among residents within their local neighborhood and experience a stronger sense of belonging to the neighborhood. Among minor crimes, there is less graffiti, vandalism, and littering in outdoor spaces with natural landscapes than in comparable plant-less spaces. Individuals and groups within communities with strong social cohesion and social capital experience many positive benefits.



In forested areas, you will find people walking, running, biking, hiking and horseback riding. Forests are also ideal for camping, hunting, fishing, boating, bird watching, and just plain relaxing. Physical inactivity and obesity are on the rise. The majority of Americans are not active enough and do not meet suggested daily standards of moderate activity to reduce risk factors for chronic illnesses such as heart disease, stroke, cancer, and diabetes, creating significant costs to national health services. Being active in the forest provides physical, mental, healing, and financial benefits. Doctors are prescribing a dose of

nature to improve wellness in adults and children. Nature is also an antidote to stress and trees are one way to encourage outdoor physical activity. Urban forests, parks, and green spaces have become increasingly popular as places to walk, run, bike, and hike. Green spaces provide necessary places and opportunities for physical activity. Exercise improves cognitive function, learning, and memory. Contact with nature helps children to develop cognitive, emotional, and behavioral connections to their nearby social and biophysical environments. Nature experiences are important for encouraging imagination and creativity, cognitive and intellectual development, and social relationships. The character of a neighborhood has a significant effect on residents' physical activity. People in communities with abundant green space generally enjoy better health.



PUBLIC BENEFITS FROM FOREST RESOURCES BIOENERGY

Companies are seeking opportunities in the commercialization of bioenergy, or the conversion of forest biomass into energy, which will benefit both forest landowners and forest industries.

Georgia's abundance of forest resources offers a great potential for new biomass uses.

With new ways to process woody biomass, landowners may now realize financial benefits for what was previously unmarketable wood waste. This is made possible through several current products, as well as new products that are being developed. As the value of biomass for energy applications becomes more defined, the market for small diameter trees can be expected to improve and landowners will have an additional incentive to plant trees.

Equipment manufacturers have begun designing and manufacturing specialized tools for harvesting and gathering forest biomass and loggers are testing methods to efficiently harvest biomass. The forest management practices of landowners and investment by loggers will be influenced by local bioenergy markets, just as they have been by other forest products manufacturing facilities.



Georgia's sustainable forests produce an abundance of surplus forest biomass that can be converted to energy. Much potential exists to capture a portion of biomass resources that are currently underutilized.

In 2009, a harvest and utilization study was conducted which found that 12% of total softwood volume and 22% of total hardwood volume were left in the woods after harvest (*Bentley and Harper 2011*). In 2015, the study was repeated and found that 13% of total softwood volume and 23% of total hardwood volume were left in the woods after harvest.

Residues from timber harvesting exceeded 8.6 million green tons in 2023 (*USDA Forest Service, TPO Reporting Tool Core Table 3. (Table 3.1) Volume (green tons) of roundwood by timber product, major species group, and source, Georgia, 2023*)

Various federal agencies have policies, programs, and tax incentives to encourage the use of renewable energy products, including biomass. In 2022 the Inflation Reduction Act (IRA) was signed into law. This act includes several provisions related to biomass, including the Renewable Electricity Production Tax Credit (PTC) and the Clean Fuel Production Credit (CFPC). The PTC provides a corporate tax credit for electricity generated from biomass, wind, or geothermal resources. The Clean Fuel Production Credit (CFPC) is a tax credit for the production and sale of low emission transportation fuels, including sustainable aviation fuel (SAF), beginning January 1, 2025. The tax credit is available to clean fuel producers, registered producers in the United States, and for tribal entities.



PUBLIC BENEFITS FROM FOREST RESOURCES BIOENERGY

There have been some policy challenges for the bioenergy sector, particularly when using biomass to produce electricity. In 2005, Congress created the Renewable Fuel Standard (RFS) program to reduce greenhouse gas emissions and expand the nation's renewable fuels sector while reducing reliance on imported oil. This program is administered by the Environmental Protection Agency (EPA). The RFS is a federal program that requires transportation fuel sold in the United States to contain a minimum amount of renewable fuels. The RFS program includes the following technologies: Biomass-based diesel, Cellulosic biofuel, Ethanol, and Renewable diesel. The RFS requires renewable fuel to be blended into transportation fuel in increasing amounts each year, reaching 36 billion gallons by 2022. The EPA created the Renewable Identification Number (RIN) system to track RFS compliance of obligated parties. A RIN is a 38-character number assigned to each physical gallon of renewable fuel produced or imported.

In 2022, the EPA published its proposed “set” rule for the RFS Program. This included the proposal to create a new program to govern the RINs for renewable electricity, which are known as eRIN’s. An eRIN is a proposed credit system that would allow generators of renewable electricity from biomass to profit from credits sold to petroleum-based fuel manufacturers. The eRIN would be created by electric vehicle manufacturers quantifying renewable electricity used by their new and existing vehicles, and electricity generators purchasing an equivalent amount of electricity derived from renewable sources. The eRIN would allow obligated parties to meet their renewable volume obligations and comply with the RFS program. However, the EPA elected not to finalize provisions of the proposed rule related to eRINs, thus preventing biomass electric producers from taking advantage of the RFS program.

Georgia has five biomass electricity plants that sell power to the grid. Combined, they produce more than 280 megawatts of electricity output and utilize 2.5 million tons of biomass fuel per year. In 2024 the Georgia Public Service Commission approved three biomass projects to add another 80 MW that are scheduled to be coming online by 2029.

Recent announcements of new bioenergy products coming to market as well as established commodities, such as wood pellets, are evidence of a growing opportunity for new markets for previously unutilized and low value forest biomass. The development of a forest resource-based bioenergy industry adds to the economic impact of Georgia’s forest industry. These new industries along with the existing businesses, create jobs and investment for rural Georgia communities, while providing critical tax revenue for the state. The development of a forest bioenergy industry allows Georgia’s energy dollars to stay in the local economy.

The growth of the forest bioenergy is gaining in Georgia. In 2007, there were no wood pellet plants in Georgia. Currently there are 10 wood pellet facilities. Eight of the facilities produce wood pellets for the export market and three facilities produce wood pellets for domestic use. One of the largest wood pellet facilities in the world is Enviva, located in Waycross, Georgia. This mill produces approximately 800,000 metric tons of wood pellets annually while utilizing over 1.8 million tons of wood biomass per year. The growing interest in decarbonizing is driving innovation for the development of new products using biomass. The aviation industry has great interest in the use of woody biomass for Sustainable Aviation Fuel (SAF). Georgia is home to the world’s busiest airport and a major airline, and the state is poised to capitalize on the abundance of woody biomass to manufacture SAF. Rayonier Advanced Materials Inc. (RYAM) has signed a memorandum of understanding with GranBio LLC to explore developing a



PUBLIC BENEFITS FROM FOREST RESOURCES BIOENERGY

small-scale sustainable aviation fuel facility at RYAM's Jesup, Georgia site. With the expanding electric vehicle market in Georgia, there is interest in using lignin to replace graphite in rechargeable batteries. Another product is nanocellulose, which is a component of biomass, used in many products to make them lighter and stronger. Some of the products that use nanocellulose are car components, cement, and food packaging. A final product is Biochar, which is made by heating biomass in the absence of oxygen, into a charcoal like substance that can be used to enhance soil properties as well as serve as a substitute for products derived from coal and graphite in many applications.

Biomass is a renewable source of energy that can provide liquid transportation fuels, electricity, and a variety of other products. The *2022 Georgia Energy Report*, from the *Georgia Environmental Finance Authority*, sums it up by stating, "Due to Georgia's geography, biomass has become a viable renewable energy supply in the state."



THREATS TO FOREST RESOURCES

URBANIZATION AND CHANGING LAND USES

There are many challenges at hand for Georgia's forest resources, the economic engine they power, and the people who manage them.

Major threats to Georgia's forests include decreasing/lack of markets, urbanization, ownership changes, forest pests, invasive plants, wildfire, and limitations on the use of prescribed fire.

Unprecedented population growth and the urbanization of our state lead the list of forces that could undermine forest sustainability in decades to come. Georgia experienced rapid population growth in the late 1990s, becoming the fastest growing state in the South. Georgia has two of the top 20 fastest-growing counties in the United States. Over the next two decades, between 2024 and 2044, the state's population is projected to grow by an additional two million people. According to the current projection, Georgia's population will increase 15%, from 11.1 to 13.1 million people by the year 2044 (*Governor's Office of Planning and Budget 2025*). Effects of this growth include declining air and water quality and increased need for stormwater management resources. Studies from Dr. Rebecca Moore of UGA's Warnell School of Forest Resources showed that Georgia's forests provide over \$20.3 billion of stormwater quantity and quality benefits. Partly as a result of the loss of tree cover, some communities are currently not able to meet clean air and water standards. Increasing development threatens to accelerate this trend.

CANOPY LOSS – IMPERVIOUS SURFACE GAIN

GFC-funded studies determined that approximately 54 acres of canopy cover were lost in the Atlanta region each day from 1991-2001, while adding 28 acres of impervious surfaces (e.g. roads, buildings, etc.) daily. By 2005 a slight decrease in canopy loss was evident, but impervious surface additions increased to approximately 55 acres daily. Georgia's canopy cover declined by a total of 398,330 acres, or 273 acres per day. Accordingly, impervious surfaces increased by a total of 154,134 acres, or 106 acres per day.





THREATS TO FOREST RESOURCES

URBANIZATION AND CHANGING LAND USES

One half of the state's increase in impervious surface occurred in metro Atlanta. The data shows for every one acre of tree canopy lost, there was an increase of one acre of impervious surface in the 16-county Atlanta metro region between 1991 and 2005. The Savannah area also experienced tremendous growth pressures. Tree canopy decreased by 28% in Bryan, Chatham, and Effingham Counties between 1991 and 2005, while impervious surfaces increased by 272%. The trends are similar in Columbus, which lost eight percent of tree cover and increased in impervious surfaces by 71%. The Macon area lost 10% of tree cover and increased in impervious surfaces by 41%. Whitfield County gained four percent in tree cover and also increased in impervious surfaces by 78%. Glynn County lost eight percent of tree cover and increased in impervious surfaces by 66% and Camden County lost 5% of tree cover and increased 71% in impervious surfaces. Satellite studies of canopy change for the past 10 years are currently underway.

An assessment of the tree canopy in six coastal counties using aerial photos showed an overall 1.6% canopy loss from 2010 to 2019, according to Georgia Tech researcher Tony Giarrusso of the Center for Spatial Planning Analytics and Visualization. Giarrusso studied detailed aerial photographs of coastal counties taken by the U.S. Department of Agriculture in 2010 and again in 2019, and calculated canopy cover.

The impact of urbanization extends beyond Georgia's major metropolitan areas. The Upper Oconee and Etowah watersheds are two of the top 15 watersheds in the country projected to experience housing density increases on more than 200,000 acres of their surface area (*Stein et al. 2005*).

URBANIZATION AND WATER

Conversion of forestland to urban use is the greatest threat to the sustainability of Georgia's water quantity and quality. Urbanization effectively and permanently removes acreage from forest cover, resulting in increased storm runoff and increased streamflow that causes streambank erosion, sedimentation and flooding.

Additional effects of forest cover loss include higher levels of pollutants and increased water temperatures that degrade fish and wildlife habitat. Development in the wildland-urban interface often occurs in the headwaters of streams and rivers that are home to many of Georgia's endemic species which are vulnerable to environmental changes and pollutants.

There are inconsistent standards for managing riparian management zones among land users. For example, state law requires developers to maintain only a 25-foot undisturbed management zone along most streams, regardless of the pitch of slopes that are perpendicular to the stream. Forestry operators, however, recognize a 40-foot minimum management zone, which can increase to 100 feet, depending on the slope or whether the stream is identified by DNR as a mountain trout stream.

In addition to urban pressures, the Georgia Comprehensive Statewide Water Management Plan (*Georgia DNR 2008*) states that there are over 6,000 miles of streams that do not meet state water quality standards because of nonpoint sources of pollution. Nonpoint sources include forestry activities. Over the past year, 3,421 forestry operations have been conducted



THREATS TO FOREST RESOURCES

URBANIZATION AND CHANGING LAND USES

on 375,287.2 acres according to GFC's Timber Harvest Notification System. Other nonpoint sources include agriculture, in which past practices of constructing canals and ditches contributed to impaired streams and wetland losses (*Figure 23*).

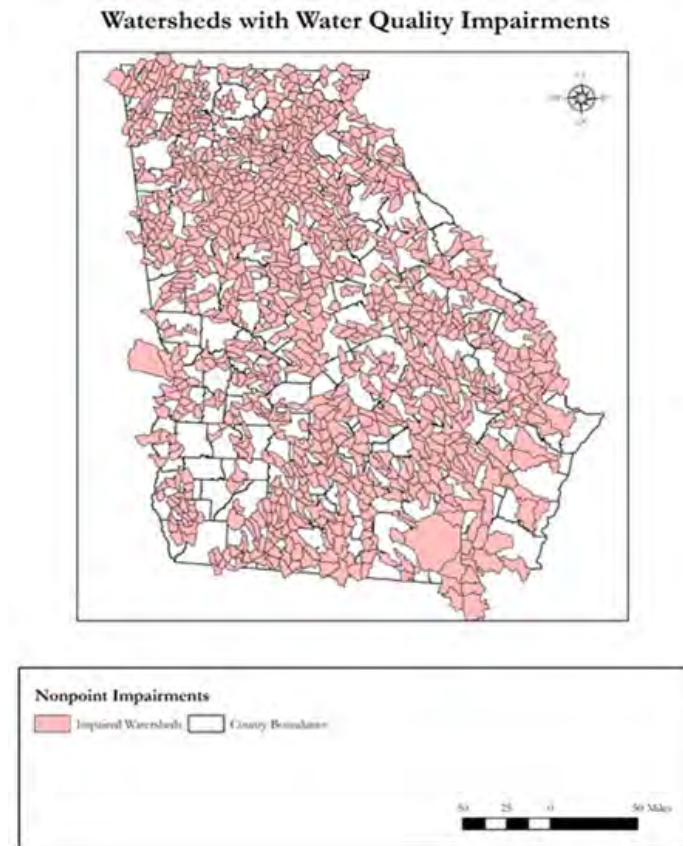


Figure 23

Source: Georgia Department of Natural Resources, Environmental Protection Division 2008.

Poor county maintenance of dirt roads also contributes to stream impairment and sediment issues. Declining budgets have affected state and local regulatory agencies' abilities to effectively address water quality and quantity issues.

CRITICAL WATER PROJECTION DATA NEEDED

Regarding quantities of water available for the state's growing needs, Georgia does not have precise measurements of how much water is available from its streams and aquifers. Calculations are also unavailable for how many waterborne pollutants Georgia streams and rivers can safely assimilate. No reliable forecasts have been made concerning how much water the state will need, or how much wastewater will be discharged, as the state continues to grow. Accurate information is needed on water quantity as well as water quality for effective planning and management. Georgia must determine how much water can be removed from rivers, lakes, and aquifers without causing unacceptable negative impacts to determine how much wastewater and stormwater streams can handle before water quality begins to degrade.



THREATS TO FOREST RESOURCES

URBANIZATION AND CHANGING LAND USES

URBANIZATION AND BIODIVERSITY

Most of Georgia's native plants and animals depend upon healthy forest habitats for survival. High quality forest habitat is being lost to development and conversion to other uses (solar farms, agriculture, etc.) to meet the desires of our growing population and changing society. Contributing factors include urban sprawl, tax laws, and economic factors that encourage parcelization and development, global competition for forest products, lack of markets for timber, and widespread corporate divestiture of timberlands.

Forest habitats in decline include mature bottomland hardwoods and cypress-gum wetlands (U.S. Forest Service 2008). The white oak initiative is also of importance to wildlife and timber production. Many states are working together to ensure the sustainability of white oak for generations to come.

WILDLIFE SPECIES' UPS AND DOWNS

Examples of high priority large-patch or "matrix" habitats that support substantial numbers of wildlife species include upland hardwood and pine-hardwood forests, pine woodlands and savannas, bottomland hardwood forests, river swamps, and depressional wetlands (Georgia Department of Natural Resources 2005; Comer et al. 2005; Van De Genachte and Cammack 2002). Often embedded within large-patch habitats are small-patch natural communities such as bogs, rock outcrops, caves and prairie remnants that represent essential habitat for many localized or rare species. Both "matrix" and small-patch habitats are impacted by habitat fragmentation and disruption of natural ecological processes such as fire and flooding.

Over time, some species have successfully adapted to extensive landscape changes resulting from residential and commercial development, agriculture, stream impoundment, pollution, and additional factors that have accompanied human population growth and a high rate of natural resource consumption.



However, other species are less adaptable and are in need of careful management to prevent further declines in the face of extensive habitat loss. For example, populations of the northern bobwhite, Bachman's sparrow, red cockaded woodpecker, prairie warbler, and many others that once occupied the extensive and highly diverse longleaf pine savannas of the coastal plain, characterized by open forest canopy with herbaceous ground cover maintained through frequent fire, have all decreased as their habitats have dwindled.

Many aquatic organisms have declined as a result of impoundments, siltation, pollution, and competition from exotic species.

Also, the growing wildland-urban interface compounds other problems, including invasive species spread, fragmentation of forest, decreased forest management, and wildfire threats. Impermeable surface creates run-off and increases the threat of flooding, impacting water retention for Georgia's landscape.



THREATS TO FOREST RESOURCES

URBANIZATION AND CHANGING LAND USES

URBANIZATION AND WILDFIRE

Urbanization places more lives and property at risk from wildfire and reduces options for proper fire and forest management. The most important management challenge for forestry professionals is to ensure public safety by providing fire prevention services through prescribed fire as well as wildfire suppression. The sustainability of Georgia's forest is dependent on attention to both of these critical services. Urbanization increases the complexity of wildfire management. Tactics and strategy, roles and responsibilities, coordination of responders, media relations, liability, planning, logistics, finances, and firefighter/public safety become more difficult to manage in the wildland-urban interface (WUI). Preparation of forest rangers and cooperators for WUI wildfires requires additional, intensive training at considerable expense.

PRESCRIBED BURNING CHALLENGES

Increasing urbanization challenges Georgia's ability to maintain or increase the million-acre prescribed fire program. This program is GFC's best fire prevention tool for mitigating wildfire threat. As Georgia's population increases, it takes extra time and effort to consider how every prescribed fire impacts communities. Prescribed fire managers are trained to minimize smoke impacts on the public and to communicate fire projects to neighboring communities. Planning and execution of prescribed fires become increasingly complex, requiring critical decisions and better trained practitioners. However, extra precautions increase costs and reduce the cost/benefit ratio of prescribed burning. Although the threat of wildfire may be reduced for communities through prescribed fire, few communities have been motivated to help alleviate costs for this practice that ensures forest health and reduces wildfire risk.

Apprehension about fire and smoke increases with urbanization. Air quality has become a major concern in Georgia, and prescribed fire has been targeted as one of many sources of harmful emissions. Drift smoke from prescribed fire and wildfires concerns urban dwellers. An important mission is to help Georgians understand the life-sustaining properties of healthy forests, and the natural role that fire plays in ecosystems.

INSECT, DISEASE, AND STORM CHALLENGES

Over the past three years, North Georgia has been dealing with a southern pine beetle outbreak, especially west of Atlanta. Markets are needed to help improve forest management in these areas, especially for smaller landowners who own 30 or fewer acres. In the current economic environment, it is difficult to move wood if you have smaller acreages which open up forests to threats such as southern pine beetle. Outreach and education are also needed in more urban areas to help landowners/homeowners understand the threats that can impact their forest and tools needed to help them mitigate those threats.

Hurricanes and tornadoes are a constant threat, with Hurricane Helene changing the landscape of southeast Georgia for a generation. Markets will keep forestry resilient and help get forests healthy and encourage replanting. Events like Helene shake confidence and change the landscape overnight. Forests that took decades to grow were removed in one fatal blow. After the storms, insects and diseases can move in and impact already decimated stands. Ips beetle spots are recorded throughout the hurricane's path and the forest will take decades to return to the state they were in before the storm. With investment lost, retaining land ownership will be difficult, and legacy land ownership may be at stake. Events like this can impact forest investment and have landowners look for other investments besides forestry to pay their taxes. Storms, insects, disease, and mill closures threaten the forest. Markets, forest management work, and time will help the area recover and improve the health of the landscape.



THREATS TO FOREST RESOURCES

FRAGMENTATION AND PARCELIZATION

Another issue caused by urban development pressures is forest fragmentation and parcelization. Parcelization results when the number of forest landowners increases, large parcels are broken up, and the resulting forestland is held in smaller parcels of usually 50 or fewer acres (*Wear and Greis 2002*). The shrinking size of forestland parcels results in less efficient management units, which contributes to cost increases and resource management difficulties. The outcome is decreased implementation of sound forestry practices. At approximately 45 people per square mile, there is only a 50:50 probability that forestry will be practiced. At 150 people per square mile, forestry practice applications approach zero (*Wear 1999*).

Fragmentation is the division of contiguous forest areas into smaller, isolated pieces or less contiguous tracts due to development, conversion to agriculture, the divestiture of forestland by the forest industry and other human activities.

Though fragmentation and parcelization may not result in forest canopy loss, in many cases the resources on the tract become unavailable to forestry markets. They may also cause adverse changes in water quality and quantity and impede the management of fire and forest pests.

Both fragmentation and parcelization may disrupt wildlife corridors and migration routes of many wildlife species. Those species requiring large, undisturbed expanses may decline.

Georgia forest fragmentation trends over the past 34 years were evaluated by a comparison of four classes of forest areas defined in terms of the type of fragmentation present:

- Core – interior forest pixels that are not degraded from “edge effects.”
- Perforated – forest along the inside edge of a small forest perforation.
- Edge – forest along the outside edge of a forest patch.
- Patch – small fragments of forest that are entirely degraded by “edge effects.”



THREATS TO FOREST RESOURCES FRAGMENTATION AND PARCELIZATION

Results showed forest core areas greater than 500 acres have decreased by more than 20% (Figure 24).

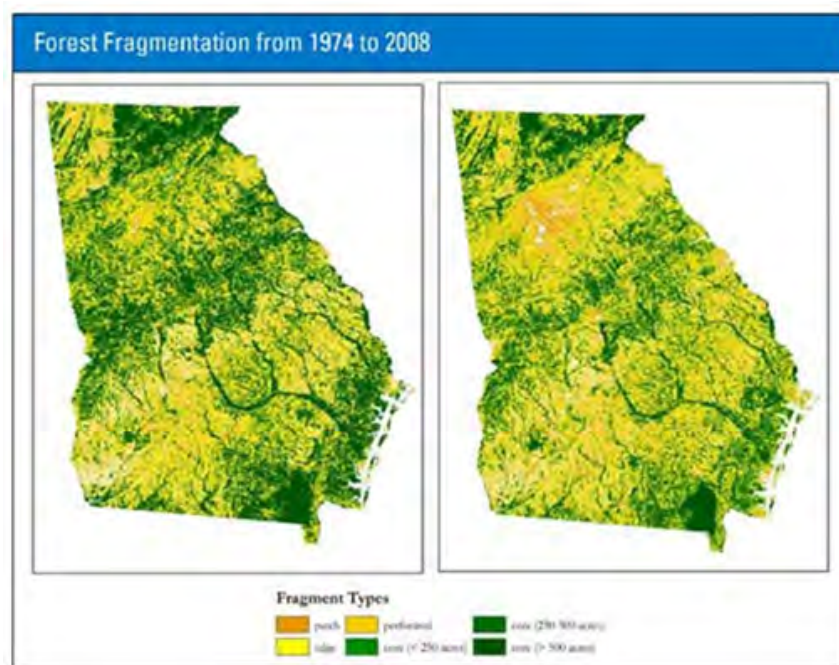


Figure 24
Source: Georgia
Department of Natural
Resources, Environmental
Protection Division 2008.

This core size represents large, contiguous forest area available to provide abundant amounts of key ecosystem services including wood and fiber production, water quality and quantity protection, and biodiversity. Some of this loss is accounted for in the increase in developed areas across the state, but the biggest reduction in large core areas is in fragmentation due to the changes in land ownership and priorities of these landowners over time. Much of the loss of large patches can be accounted for in the increase in areas of smaller core patches and increases in edge, patch, and perforated patches (Table 6).

In addition to urban sprawl, a major contributing factor to fragmentation and parcelization is taxation. Property tax burdens often result in the sale of land to pay taxes. When this occurs, the land is more likely to be subdivided. Highest and best land use valuation tax assessments are causing massive divestitures of forest products company lands to timber investment management organizations and real estate investment trusts. These divestitures are resulting in more rapid turnover in forest ownership and increased potential for fragmentation and parcelization.

Percent total forest for each category of fragment							
Patch Type/Year	1974	1984	1991	1998	2001	2005	2008
Patch	3.1	3.9	5.3	4.6	6	6	4.6
Edge	25.1	25.8	29.3	28.5	33	33.2	30.2
Perforated	10.7	15	18.8	17.1	12.4	12.8	15.6
Core (<250 ac)	5	5.6	9.8	9.4	11.9	12.1	11.2
Core (250 - 500 ac)	1.8	2.1	4.2	4.3	6.1	6	5.8
Core (>500 ac)	54.4	47.7	32.7	36.1	30.6	29.9	32.6

Table 6



THREATS TO FOREST RESOURCES CHANGING MARKETS

Some of the current or potential challenges for the forest industry are global competition, market changes, product substitution, natural disasters, and recession.

GLOBAL COMPETITION

A significant challenge for the forest industry in Georgia is increased market competition on a global scale. While globalization provides an opportunity for local companies to expand through increased exports, it also exposes them to competition from both domestic and international markets.

No new pulp mills have been built in the USA since the late 1980s. Meanwhile, large new state-of-art, efficient mills are being built in South America and Asia that outperform the old US mills. Southern lumber markets have been negatively impacted by subsidized lumber from Canada and other countries. Low-cost finished wood products have flooded U.S. markets because of lower production costs in overseas factories. The result for Georgia has been a loss of some major pulp mills and slow reaction by solid wood manufacturing companies to analyze opportunities in foreign markets.

Another component of globalization is the difference in currency values. These values vary between countries, and over time, result in unpredictable and highly variable market demands for wood pulp and other products.

CHANGING MARKETS

Since the 2008 recession, timber supply has outpaced demand, resulting in decreased stumpage prices paid to landowners. Many landowners chose to hold their sawtimber longer, in place of harvesting and replanting sooner. Due to the relatively fast growth rates of pine, this delay has continued to increase sawtimber supply and hold prices down. As a result, it has created lower financial returns and decreased planting rates.

The consolidation of mill ownership is another change that has impacted markets. This has led to less competition, further impacting stumpage prices for forest landowners. However, mills have also had higher costs as fuel costs have increased, and the logging industry continues to experience an aging workforce and less interest in future logging careers from young workers. This has added to raw material costs for mills and contributed to the higher cost of finished products.

Another market change which could also impact global competitiveness, is the European Union Deforestation and Forest Degradation Regulation (EUDR). Wood is one of seven commodities that will require assurance that it is sourced from locations that are free of deforestation and forest degradation. This regulation was supposed to go into effect at the end of December 2024 but was delayed twice. This regulation is now planned to be implemented at the end of 2026. It applies to any forestland since December 31, 2020. Deforestation-free products are made from commodities that have not experienced deforestation or forest degradation after December 31, 2020. In the case of relevant products that contain or have been made using wood, that the wood has been harvested from the forest without inducing forest degradation after December 31, 2020.



THREATS TO FOREST RESOURCES CHANGING MARKETS

To sell wood products in the EU or export from the EU, tracking the wood from its source will be required to ensure guidelines are met. It will also exclude pine plantations, if those plantations were created from the conversion of natural forests after December 31, 2020.

PRODUCT SUBSTITUTION

The wood products industry has been significantly impacted by the substitution of traditional forest products with new materials and methods. This trend has affected various segments, including paper products and building materials, and has led to a noticeable shift in market dynamics.

One of the key trends in product substitution was the shift from paper bags to plastic bags by many retail companies. This change was driven by cost, convenience, and durability factors. The rise in electronic file storage, online newspapers, and electronic mail has further reduced the demand for paper products. These digital alternatives offer efficiency and environmental benefits, contributing to a decline in the use of traditional paper.

In building materials, aluminum has become a popular substitute for wood studs in construction due to its strength, lightweight properties, and resistance to pests and fire. Lastly, plastic pallets are replacing wooden pallets in many industries because they are durable, reusable, and resistant to contamination, making them ideal for food and pharmaceutical industries. All these factors have led to a decreased demand for traditional products. The wood products industry has been forced to adapt by exploring new products and markets. This includes developing engineered wood products, composites, and other innovative materials that can compete with or complement new substitutes.

There is an increased emphasis on sustainable practices and certification (e.g., FSC, SFI) to appeal to environmentally-conscious consumers and businesses. Investment in research and development is crucial to creating new uses for wood products and improving manufacturing processes to remain competitive. Expanding into new product lines and markets, including bio-based products and renewable energy sources from wood biomass, offers potential growth opportunities, as does investing in research and development to create advanced wood products and improve production efficiency. This includes exploring new technologies and materials that enhance the performance and sustainability of wood products.

In conclusion, while the substitution of traditional forest products poses challenges, the wood products industry can adapt and thrive by embracing innovation, sustainability, and diversification. By leveraging these strategies, industry can continue to play a vital role in the economy and meet evolving market demands.



THREATS TO FOREST RESOURCES CHANGING MARKETS

CURRENT HOUSING ECONOMIC PICTURE

In past years, homebuyers were able to lock in record-low mortgage rates. Today, with high inflation and high mortgage rates, real estate developers and lumber manufacturers have remained reluctant to expand inventory and capacity at the pace leading up to the 2008 recession, when they experienced a collapse in housing demand. As a result, homeowners remain reluctant to trade a home with a low mortgage rate for another with not only a higher rate, but also a much higher cost due to inflation. The combination of high rates, low inventory, and persistent inflation has been a cause for reduced new housing starts and reduced demand for lumber and building panels.

The current tariffs on Canadian lumber have had a notable effect on both housing prices and timber production in the U.S. South. On the housing front, the increased cost of Canadian lumber has driven up construction expenses, making new homes more expensive. Industry estimates suggest that these tariffs have added approximately \$9,200 to the cost of building a typical single-family home.¹ The tariffs have made domestic lumber more competitive, leading to a rise in output from Southern producers. This growth, while beneficial to local industries, also presents challenges, including potential pressure on forest resources and a greater need for investment in infrastructure and production capacity.²

IMPACT OF HURRICANE HELENE



Hurricane Helene, which swept through Georgia in late September 2024, caused catastrophic damage to the state's forest products industry. It is regarded as one of the most devastating natural disasters in the history of Georgia's forestry sector. The Georgia Forestry Commission (GFC) and the University of Georgia's Warnell School of Forestry and Natural Resources estimate the storm impacted roughly 8.9 million acres of forestland, with approximately 1.47 million acres sustaining severe damage and estimated total timber losses at \$1.28 billion. The hurricane destroyed an

estimated 26 million tons of pine timber, valued at \$728 million, along with 30 million tons of hardwood timber worth approximately \$555 million. With 88 percent of the damaged forestland held by private owners, the financial burden of recovery has fallen primarily on individuals.³

The sudden availability of salvageable timber created a temporary glut in the market, which drove down stumpage prices. In the immediate aftermath, landowners received only \$2 to \$3 per ton for salvage wood - just a fraction of the standard price for pine sawtimber.⁴ Adding to the economic strain, about 44 mills within the storm's path were forced to close for four to ten days, due to widespread power outages.⁵ Although the physical damage to mill infrastructure was minimal, these interruptions disrupted production schedules and placed additional pressure on regional supply chains.



THREATS TO FOREST RESOURCES CHANGING MARKETS

Georgia Governor Brian Kemp and the State of Georgia Legislature passed a series of relief measures aimed at supporting both short- and long-term recovery efforts for Georgia landowners impacted by Hurricane Helene. To ease the financial strains and burdens on forest landowners and farmers, Georgia implemented state income tax exemptions on federal disaster relief payments and crop insurance proceeds. Ad valorem tax relief was also enacted to help remove the burden of timber harvest taxes on storm damaged wood. A reforestation tax credit of up to \$550 per acre was implemented to incentivize landowners to replant their damaged stands. The Georgia Forestry Commission was provided \$135 million to oversee a fuel mitigation program, as well as a forest access road and firebreak debris-clearing program. The programs were put in place to help mitigate wildfire fuel loads created by Hurricane Helene and improve public safety in the event of a wildfire. These programs will improve forest health throughout the state and minimize insect and disease outbreaks in the forests. Federal partners at the USDA are providing the Emergency Forest Restoration Program (EFRP) to cost share forest storm debris-clean up and reforestation efforts. Approximately 10,000 applications have been received to date. A \$531.2 million federal block grant is available to Georgia farmers and foresters impacted by Hurricane Helene through the USDA. It is being implemented by the Georgia Department of Agriculture to help offset Hurricane Helene losses to multiple crops, including timber. The level of support for Georgia's forest landowners will not only safeguard the sustainability of Georgia's forests for decades to come, but enhance the ecological services Georgia's forests provide - ensuring the resource's myriad benefits for generations to come.

Hurricane Helene's impact is expected to reverberate through Georgia's forestry economy for years. In the near term, pulpwood prices are likely to remain suppressed as mills continue to process excess salvage timber. Conversely, sawtimber prices in the hardest-hit areas are expected to climb over the coming years due to localized inventory shortages, particularly in regions with low growth-to-drain ratios.⁶

The volume of pine timber lost to Hurricane Helene is equivalent to Georgia's average annual timber harvest, highlighting the magnitude of the storm's disruption.⁶ Recovery will require sustained and collaborative efforts from landowners, industry participants, and public agencies. A successful rebound will depend on effective reforestation, infrastructure rebuilding, and strategic forest inventory management to restore the long-term health and productivity of Georgia's forest products industry.

SUMMARY

Wood is regaining popularity as a construction material, driven by its sustainability and environmentally friendly properties. This trend is likely to continue as governments implement policies to reduce carbon emissions and promote sustainable construction. This trend will encourage industry to conceive new and innovative products that use wood as well as improve the technology to manufacture existing wood products more efficiently. According to the *UGA Extension Timber Situation and 2025 Outlook*, the demand for softwood lumber and structural panels remains subdued due to housing market challenges. Southern Georgia, however, may see rising pine sawtimber prices amid ongoing low pulpwood prices and local inventory shortages following Hurricane Helene.



THREATS TO FOREST RESOURCES CHANGING MARKETS

With all the opportunities in the wood products market, there is some concern. Global markets for wood products will influence Georgia's industry. Trends such as international trade policies, tariffs, and demand from overseas markets can impact pricing and demand for Georgia's wood products. Broader economic trends, including GDP growth, employment rates, and consumer spending, will also play a role. A robust economy typically correlates with increased construction and higher demand for wood products.

1. https://www.nahb.org/blog/2025/04/lumber-reciprocal-tariffs?utm_source
2. <https://www.nuveen.com/global/insights/alternatives/tariffs-on-canadian-lumber-could-boost-us-production?type=us&utm>
3. <https://gfagrow.org/hurricane-helene/>
4. <https://forisk.com/evaluating-the-impacts-of-hurricane-helene-in-georgia-part-i/>
5. <https://forisk.com/evaluating-the-impacts-of-hurricane-helene-in-georgia-part-ii/>
6. <https://extension.uga.edu/publications/detail.html?number=AP130-3-13&title=timber-situation-and-2025-outlook>



THREATS TO FOREST RESOURCES

INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

Forest pests can drastically alter the forest ecosystem, eliminate important resources and inflict great economic losses. Georgia's forests are under threat from numerous native and nonnative insects, diseases and other decimating agents such as invasive plants. Some of these agents are capable of causing widespread mortality while others affect forests by degrading tree value and form, decreasing growth rates or lowering ecosystem diversity. In the past 35 years, there has been a large increase of introduced pests due to the global economy and shipping of goods. Some non-native pests are already in Georgia, while others are in North America and will eventually reach Georgia either through natural spread or human-assisted movement.

International commerce has created the most common pathway for the introduction of non-native pests on North America. These insects are frequently found in cargo that has been crated or packaged with solid wood packing material (SWPM). This material is usually constructed of poor quality wood, often from trees damaged or killed by pests. Bark inclusions increase the likelihood of the presence of insects, and boards with bark attached can be hidden in middle layers of products such as wooden spools, pallets, or wooden pieces attached directly to the cargo. There are phytosanitary rules regarding SWPM to ensure the wood is either heat or chemically treated, but it is virtually impossible to check all material entering the country. Furthermore, once the SWPM is certified and stamped, it can be reused repeatedly and stored outdoors where pests can invade the wood before it is used again.

Pest Rankings

Pests are ranked into two categories based upon the level of monetary or ecological damage they are capable of inflicting on Georgia's forests. This listing was developed by the FAP committee's Forest Health team. Pests regulated by USDA APHIS and/or Georgia Department of Agriculture are included.

Category one pests (*Table 7*) are currently found in Georgia and have the capability to cause severe monetary losses, ecological damage or both.

Common Name	Latin Name
Southern pine beetle	<i>Dendroctonus frontalis</i>
Ips bark beetles	<i>Ips avulsus</i> , <i>Ips grandicollis</i> , <i>Ips calligraphus</i>
Black turpentine bark beetle	<i>Dendroctonus terebrans</i>
Emerald ash borer	<i>Agrilus planipennis</i>
Hemlock woolly adelgid	<i>Adelges tsugae</i>
Littleleaf disease	<i>Phytophthora cinnamomi</i>
Brown Spot Needle Blight	<i>Lecanosticta acicola</i>
Heterobasidion root disease	<i>Heterobasidion irregulare</i>
Pitch canker disease	<i>Fusarium circinatum</i>

Table 7



THREATS TO FOREST RESOURCES

INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

Table 8 shows pests not considered naturalized in Georgia, but of adequate risk level to warrant early detection and appropriate suppression actions.

Common Name	Latin Name
Spongy Moth	<i>Lymantria dispar</i>
Sudden Oak Death	<i>Phytophthora ramorum</i>
Asian Longhorned Beetle	<i>Anoplophora glabripennis</i>

Table 8

Category two pests (Table 9) may pose significant damage to Georgia's forests but not to the monetary or ecological extent of those in category one. None of these species are currently considered naturalized within Georgia.

Common Name	Latin Name
Elm Zigzag Sawfly	<i>Aproceros leucopoda</i>
Spotted Lanternfly	<i>Lymantria mathura</i>
Redbay Ambrosia Beetle	<i>Xyleborus glabratus</i>
Beech Leaf Disease	<i>Litylenchus crenatae mccannii</i>
Sirex Woodwasp	<i>Sirex noctilio</i>
Oak Wilt	<i>Bretziella fagacearum</i>
Thousand Canker Disease	<i>Geosmithia morbida</i>
Walnut Twig Borer	<i>Pityophthorus juglandis</i>

Table 9

SIGNIFICANT FOREST PESTS

Southern Pine Beetle

The southern pine beetle is the most destructive forest pest in Georgia. It attacks and kills all pine species in Georgia. Historical financial losses from this species surpass all other forest pests combined.

The southern pine beetle is a native insect with a history that stretches back to the 1700s, when early settlers to America noted widespread mortality of southern yellow pines. Although a tremendous amount of research has been conducted over the past 50 years, no effective control measures have been developed for trees that have been attacked. Beetle populations tend to be cyclical. Epidemic levels can last for two to three years and can occur every five to 15 years, depending on the region of Georgia, environmental factors and overall health of the area's pine forests. Historical outbreaks are shown in Figure 25.

Stands of overstocked pines that have poor vigor and health suffer much greater levels of damage following pine beetle attacks. Lack of forest management practices that control stand density and promote vigor further endanger Georgia's pine forests. Southern pine beetle threat for Georgia is based upon stand density, site factors, pine species and other information.



THREATS TO FOREST RESOURCES

INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

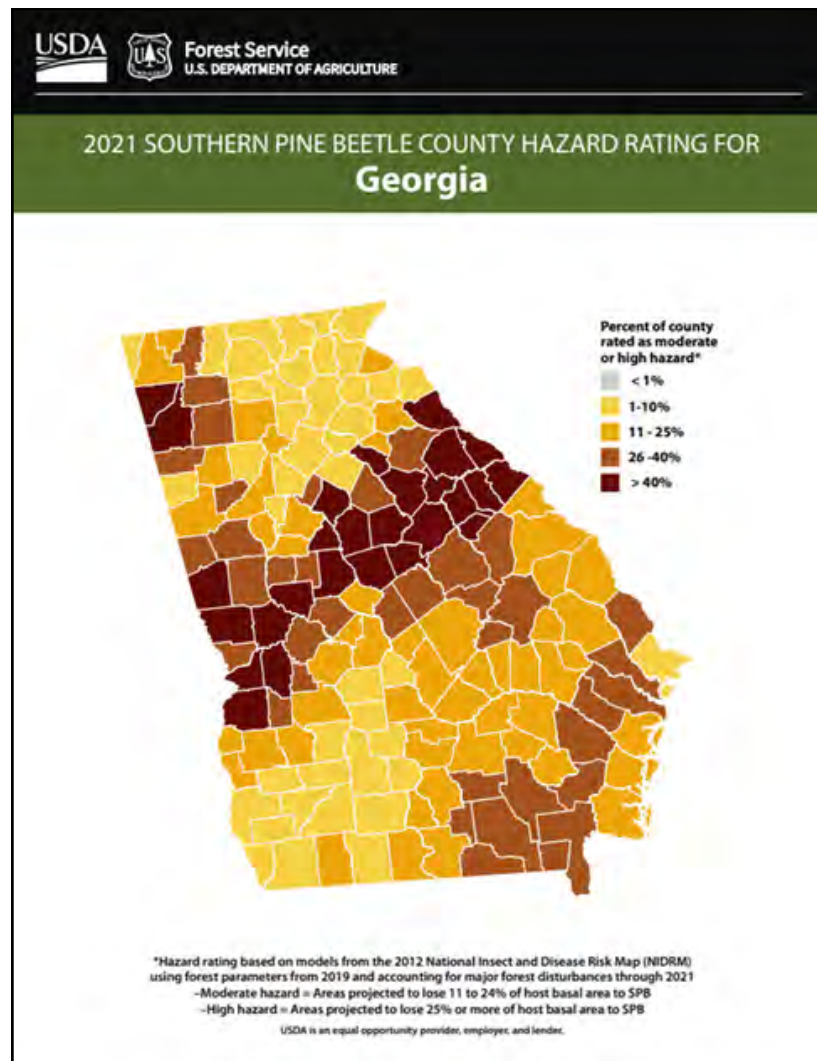


Figure 25
Source: U.S. Forest Service

For more information on SPB:

<https://gatrees.org/southern-pine-beetles/>

http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs140/gtr_srs140.pdf

<http://www.barkbeetles.org/spb/>

<https://www.fs.usda.gov/science-technology/forest-health>



THREATS TO FOREST RESOURCES INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

HEMLOCK WOOLLY ADELGID

The hemlock woolly adelgid (HWA) is a serious pest of eastern and Carolina hemlock trees in Georgia. It is an aphid-like insect that feeds on the sap of hemlock trees. The adelgid is dispersed by wind, birds and human activity and is spreading at an alarming rate.

HWA was accidentally introduced into Virginia in the 1950s. The insect is native to Japan, China and the United States' Pacific Northwest. HWA was first discovered in Georgia in 2003 near the Ellicott Rock area of Rabun County and can now be found in almost all of Georgia's mountain counties where native hemlock occurs (*Figure 26*). All ages and sizes of hemlocks can be attacked. HWA causes damage to the tree by feeding at the base of needles, causing them to desiccate and drop. This inhibits the trees' ability to produce new growth. Trees that have been infested for a couple of years will show signs of decline. Unhealthy hemlocks will appear a dull green to gray color and exhibit branch dieback. Tree death can occur after as few as four years of infestation.

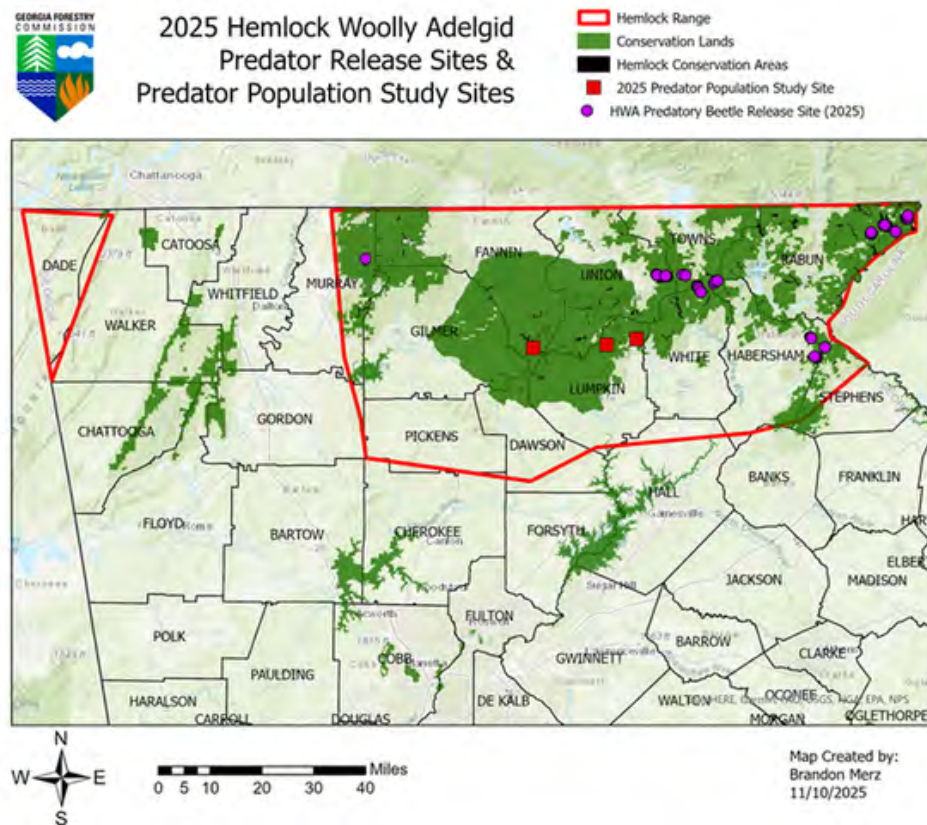


Figure 26

Source: Georgia Forestry Commission and U. S. Forest Service

For more information on HWA:

<http://www.gatrees.org/ForestManagement/HemlockWoollyAdelgid.cfm>

<http://na.fs.fed.us/fhp/hwa/>



THREATS TO FOREST RESOURCES

INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

LAUREL WILT DISEASE (AND REDBAY AMBROSIA BEETLE)

Laurel wilt disease (LWD), caused by the fungus *Raffaelea lauricola* and vectored by the redbay ambrosia beetle (RAB), *Xyleborus glabratus*, was introduced from Asia through the Port of Savannah in solid wood packing material. The first RAB was caught in an early detection rapid response (EDRR) monitoring trap in Garden City, GA in 2002 and dead redbay trees were evident near the coast in GA and SC by 2004. Since then, the disease has spread rapidly throughout the coastal plain forests in Georgia, South Carolina, and Florida, killing all large, previously abundant redbay and swamp bay trees in its path. More recently, LWD has spread into Long Island, New York and has been documented in locations in Texas, Arkansas, Kentucky, and southern Virginia, with the newest introductions being found exclusively in sassafras species.

Laurel wilt is a disease of plant species in the family Lauraceae, and the disease has been identified in plants of the federally endangered pondberry (*Lindera melissifolia*), the threatened pondspice (*Litsea aestivalis*), and avocado (*Persea americana*).

Southern Mexico and Central America have many species within the Lauraceae family, and host-testing on some of them has revealed a susceptibility to the pathogen, prompting concern about potential impacts to the forests there as well. The primary agricultural crop threatened is avocado, and a great deal of research into the situation is ongoing in south Florida.

Georgia now has over eight million acres that are confirmed with laurel wilt (*Figure 27*), and the disease advances in surges and disconnected jumps, with most new county detections being found in sassafras trees in the absence of known redbay populations.

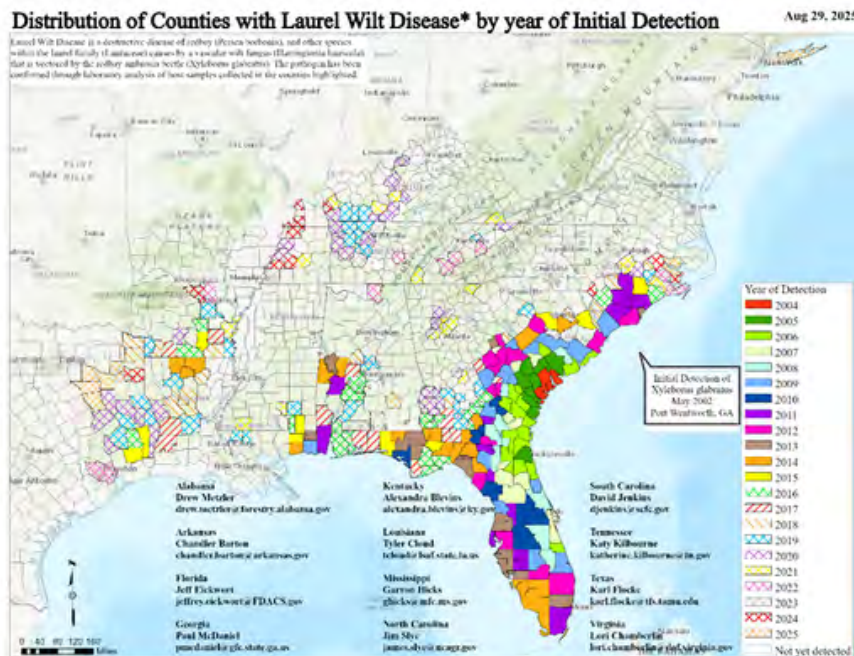


Figure 27
Source: Georgia Forestry Commission and U. S. Forest Service

For more information on Laurel Wilt:

<http://www.gatrees.org/ForestManagement/LaurelWilt.cfm>

<http://www.fs.fed.us/r8/for-esthealth/laurelwilt/index.shtml>



THREATS TO FOREST RESOURCES

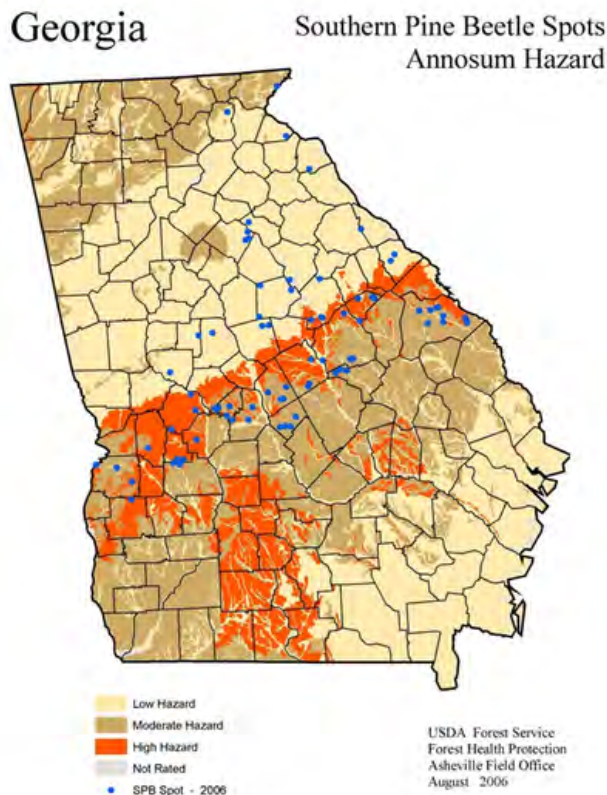
INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

HETEROBASIDIUM ROOT DISEASE (FORMALLY ANNOSUM ROOT DISEASE)

Heterobasidion root disease, caused by *Heterobasidion annosum*, can be a serious problem in pine plantations that have been thinned one or more times. All southern pines are susceptible, but loblolly, slash and white pine are the most vulnerable. *H. irregulare* causes decay in the root system, making the trees subject to butt rot, windthrow, decreased growth and death. Bark beetles can become established in diseased trees and spread to healthy ones, leading to greater losses.

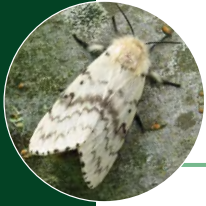
The fungus usually enters a healthy stand by infecting freshly cut stump surfaces. Airborne basidiospores of the fungus land on a stump's surface, germinate and colonize the stump and its root system. The fungus then spreads to adjacent trees by root grafts or contacts, causing root disease and a decline in tree health. When two or more main lateral roots are killed, tree death usually occurs. Damage within a stand can range from single trees to pockets of dead trees scattered throughout the entire stand. If the damage is widespread, Ips and black turpentine bark beetles often cause further mortality by attacking the weakened trees.

Damage has not occurred on a significant scale throughout the state, but is concentrated in areas along the Fall Line and southward, particularly where sandy soils are found (Figure 28). Tree decline and death can occur from soon after the harvest up to seven years hence, with peak mortality occurring from two to five years following harvest. Georgia began to experience significant losses from Heterobasidion root disease, due in part to thinnings that began on CRP plantings throughout the state in the late 1980s. Thinnings of loblolly and slash pine CRP plantings, combined with drought, have created conditions favorable for Heterobasidion root disease.



**For more information on
Heterobasidion Root Disease:**
<https://gatrees.org/wp-content/uploads/2020/02/HRD-Annosum-Root-Brochure.pdf>

Figure 28
Source: U. S. Forest Service



THREATS TO FOREST RESOURCES

INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

PESTS NOT NATURALIZED IN GEORGIA

SPONGY MOTH

The spongy moth (*Figure 29*), a federally-regulated pest, is a serious forest pest capable of causing severe damage to hardwood trees, especially oaks. This damage is inflicted as the spongy moth larvae defoliate entire stands of trees. Defoliation during the spring causes severe stress on trees and can cause mortality in unhealthy individuals, but multiple years of defoliation will cause mortality in healthy stands.



Figure 29 - Female and Male Gypsy Moth

Spongy moths were brought into Massachusetts in the late 1800s, with the intent to farm the moths for silk produced by the larvae. It wasn't long before the moths escaped captivity and moved into the surrounding woodlands. Many northeastern states (Virginia northward and west to Illinois) now have established populations. The natural spread of spongy moths occurs as newly hatched larvae spin long silk threads and ride on the breeze. Active populations in Tennessee and North Carolina threaten Georgia's borders.

Georgia has had several widespread outbreaks that required suppression treatments in the past. It is likely that egg masses attached to incoming cargo brought them from infested areas to Georgia. To date, only European strain moths have been caught in Georgia and they pose a lower threat because the females can't fly. The Asian strain of the same species, however, does have flight-capable females, allowing for much greater spread potential and are of higher priority. All moths caught within a 20 mile radius of a port of entry (Atlanta airport or shipping ports at Savannah and Brunswick) are genetically tested to ensure they are not the Asian strain.

While there are currently no known spongy moth infestations in Georgia, the threat is always present. This is due to the number of visitors and new residents who move to our state from areas of the northeast where the insect is naturalized. Egg masses and live moths can be transported on vehicles, outdoor furniture, firewood or goods such as stone or rock. Through the vigilant use of detection trapping and suppression, spongy moths are part of a pest success story because they haven't spread as predicted, and can be reasonably controlled where they occur.

For more information on gypsy moths:

<https://gatrees.org/spongy-moth-in-georgia/>

<https://www.aphis.usda.gov/plant-pests-diseases/spongy-moth>



THREATS TO FOREST RESOURCES

INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

EMERALD ASH BORER

This insect was first detected in Detroit, Michigan and was thought to have arrived within solid wood-packing material from Asia. It attacks and kills all members of the *Fraxinus* genera of North America and has now spread through most of the upper midwestern states and as far south as Kentucky and Virginia.



Figure 30 - Emerald Ash Borer

The emerald ash borer (Figure 30) is a buprestid and may have an extended lifecycle (two years) in which to develop from egg to adult. This non-native insect appears to have no significant natural enemies in the U.S and is a federally regulated pest. Huge suppression efforts which involved removing infested trees along with some healthy ash trees around the infested ones, have proven unsuccessful. Part of the reason for this is that detecting infested trees is virtually impossible until advanced stages of attack are reached. At this point, some of the insects have developed and

emerged. Furthermore, the trapping methods used to determine the presence of this species have not proven effective. Systemic insecticides have been proven effective when applied to individual, high-value trees, but these are relatively short-lived (two years or less), expensive, and repeat applications are necessary.

Although ash is not a tremendously significant species within the rural landscapes of Georgia (FIA indicates about 60,000 acres where ash occurs), the impacts on urban forests may be more significant because green ash is widely used as a street tree.

For more information on the emerald ash borer:

<https://gatrees.org/emerald-ash-borer-eab/>

<http://www.emeraldashborer.info/>

<https://www.aphis.usda.gov/plant-pests-diseases/eab>

ASIAN LONGHORNED BEETLE

This Asian species (Figure 31) was first detected in New York City in the 1990s and is believed to have come into the country via solid wood packing material at the port of entry. It attacks 13 different species of deciduous trees: Ash, Birch, Elm, Goldenrain tree, Horsechestnut, Katsura, London Planetree, Maple, Mimosa, Mountain ash, Poplar, and Willow. This federally regulated pest is being fought in three states: Massachusetts, New York, and Ohio, and over 80,000 trees have been killed in these urban forests.



Figure 31 - Asian Longhorned Beetle



THREATS TO FOREST RESOURCES

INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

No trapping method has been proven successful in detecting this pest, but vigilant inspections of trees in these areas and prompt tree removals have been successful in minimizing spread and mortality. Several susceptible species are very common throughout Georgia, and improved varieties planted in urban areas would be at high risk for damage if this species were to be introduced. USDA APHIS funds the GFC to conduct annual surveys of warehouses which receive cargo from Asian countries where the insect occurs.

For more information on Asian longhorned beetles:

<https://gatrees.org/asian-longhorned-beetle-found-in-sc/>

<https://www.aphis.usda.gov/plant-pests-diseases/alb/check-trees>



THREATS TO FOREST RESOURCES

INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

INVASIVE PLANTS

Non-native invasive plants have plagued the U.S. since early settlement times and continue at an accelerated pace today. Most of these plants do not readily colonize and invade natural areas, but a small number do spread. Some of these have proven to be very aggressive at invading natural habitats and out-competing Georgia’s native flora. Ecosystem disruption has been known to occur, which affects forest health and diversity.

Forest inventory and analysis measures many non-native species. *Table 10* shows the 12 highest priority species/genera for the forests of Georgia, and the estimated acres each has infested. Over the previous two year FIA cycle, it has been shown that all invasive plants are growing at an alarming rate of 14% per year. These are known as Georgia’s “Dirty Dozen” invasive species.

Ranking	Species	Acres 2024	Percent Increase 2019-2024)
1	Non-native privet	864,660	17%
2	Nepalese browntop	163,610	43%
3	Chinaberry	62,080	11%
4	Chinese tallowtree	51,010	37%
5	Non-native lespedeza	46,660	-3%
6	Kudzu	46,270	29%
7	Japanese climbing fern	35,540	43%
8	Non-native olive	33,670	27%
9	English Ivy	22,640	26%
10	Mimosa (Chinese silk tree)	15,610	35%
11	Wisteria	15,070	7%
12	Callery Pear (Bradford Pear)	12,900	22%
(tie)	Trifoliate (Hardy) orange	12,800	22%

Table 10

As listed, non-native privet is the most widespread priority species, found throughout Georgia. Most of the other species occur at varying levels regionally and tend to more aggressively disrupt native flora populations in certain ecosystems than others.



For more information on invasive plants:

<http://www.gainvasives.org/>

<https://gatrees.org/wp-content/uploads/2020/02/Invasive-Plants-of-Georgia-Forests.pdf>

<http://www.gaepcc.org/>

<https://www.fs.usda.gov/managing-land/invasive-species>



THREATS TO FOREST RESOURCES INSECTS, DISEASES, AND NON-NATIVE INVASIVE PLANTS

COGONGRASS

Cogongrass, *Imperata cylindrica*, is considered the seventh worst weed in the world. It is listed as a federal noxious weed and is the number one priority invasive plant species in Georgia. Cogongrass (Figure 32) was first introduced into the United States near Grand Bay, Alabama in 1911 via seed packing material in shipping containers from Japan. This grass suppresses and eliminates natural vegetation, thereby significantly reducing tree and plant regeneration, wildlife habitat, forage and ecological diversity.

Cogongrass has spread through more than one million acres in Alabama, Mississippi and Florida and is moving into other southeastern states. In Georgia, there were 53 known cogongrass spots in 2006. As of 2025, a total of 2,409 spots had been identified in 79 counties. Of the 2,409 spots; 1,665 spots are eradicated, 138 spots have been negative for two years, 269 for one year, while the remaining 337 spots are active. Overall, approximately 69% of all known spots are now negative for cogongrass.

While cogongrass infestations are being found primarily in South Georgia, the weed is capable of growing throughout the state (Figure 33).



For more information on cogongrass:

<https://gatrees.org/cogongrass-in-georgia/>

<http://www.cogongrass.org/>



Figure 32

Source: Georgia Forestry Commission

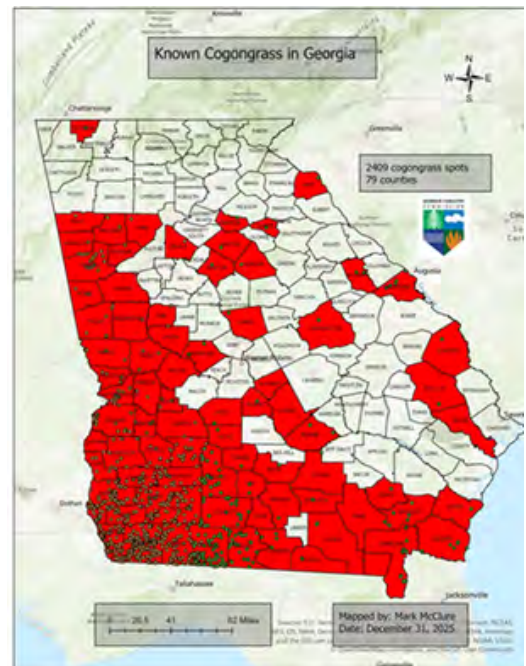


Figure 33

Source: Georgia Forestry Commission



THREATS TO FOREST RESOURCES

WILDFIRE

Wildfire remains one of the most significant threats to Georgia's forests. Over the last 20 years, the state has averaged over 5,700 wildfires per year burning approximately 39,000 acres. These fires can completely destroy forests or weaken trees, leaving them vulnerable to insects and disease, which further reduces forest health and timber value. Landowners face not only economic losses but also environmental and aesthetic impacts when forests are damaged by fire.

Over the past decade, rapid growth and development have expanded the Wildland Urban Interface (WUI) - areas where homes and other development border natural vegetation. This zone represents the greatest risk to public safety and property, as the combination of people, structures, and wildland fuels creates volatile conditions that can quickly become catastrophic. The Southern Wildfire Risk Assessment identifies nearly 12,000 WUI communities in Georgia, with more than 5,000 rated as "high" or "very high" risk. Georgia ranks second in the Southeast in WUI acreage, with approximately nine million acres, or about one-quarter of the state's land area.



Fire is also a natural part of Georgia's ecosystems, and when used properly through prescribed burning, it provides essential benefits for forest health and sustainability. For nearly 80 years, Georgia's fire management strategy has emphasized a balanced approach of suppression, prevention, and mitigation. This integrated system is critical for safeguarding lives, property, and natural resources.

The importance of an effective fire management program is underscored by Georgia's history of large-scale wildfire events. In 2007, more than 9,500 fires burned over 504,000 acres, resulting in timber losses exceeding \$58 million. In 2011, another 9,366 fires consumed 151,329 acres of forestland. These events illustrate how quickly wildfire can overwhelm communities and forest resources when conditions align.

Wildfire risk in Georgia is expected to persist and, in some areas, intensify. Addressing this threat requires a continued focus on proactive suppression, mitigation, and prevention strategies, along with strong partnerships between state, federal, local, and private stakeholders.



THREATS TO FOREST RESOURCES

WEATHER EVENTS

Weather patterns play a critical role in shaping wildfire risk across Georgia. Storms, drought, and prolonged heat contribute to conditions that can ignite or intensify fires. A report on the “*Mega-Fire Phenomenon*,” approved by the *National Fire and Aviation Executive Board*, notes that shifting land conditions and rapid urban growth are combining to create unusually large wildfires. Georgia is not immune to such events - most notably, the 2007 Georgia Bay Complex burned more than 560,000 acres in Georgia and Florida and directly threatened nearby communities. Additional large-scale wildfires occurred in these same areas in 2011 and 2017. The evidence shows that wildfire threats are rising, not diminishing. To meet this challenge, specific strategies must be implemented. These strategies will improve landscape resilience, strengthen community defenses, and ensure fire managers are prepared to address increasingly complex weather-driven fire behavior.





THREATS TO FOREST RESOURCES

CHANGING WEATHER PATTERNS

Impacts from changing weather patterns are a threat to southern forests. Paleontological data demonstrates that southern forest ecosystems have adapted to gradual changes in climate for millions of years (*Iverson and Prasad 2001; Karl et al. 2009*). Historically, these climate shifts occurred slowly, over hundreds or thousands of years, giving forest communities time to successfully adapt to changes in temperature, growing season length, moisture availability and other variables. However, mounting evidence suggests that the current warming trend is occurring more rapidly than previous climate shifts (*Karl et al. 2009*).

As dynamic biological systems, forests will be impacted by global changing weather patterns, although quantitative predictions are problematic due to scientific limitations and the complexity of the processes involved. Furthermore, changing weather patterns impacts to forests are not likely to be uniform across the U.S; some regions/forest types may be more negatively impacted than others.

Despite these obstacles, the current state of knowledge is sufficient to develop a qualitative assessment of the most likely ecological and economic impacts of changing weather patterns on southeastern forests:

ECOLOGICAL IMPACTS

- Increased vulnerability to pests, pathogens, and natural disturbance. Some current models indicate that average temperatures will increase in all seasons. This means a longer growing season, which may increase reproductive success for insect pests and allow for more frequent and intense outbreaks. Fewer days with temperatures below freezing will increase the survival rate of overwintering insects. Higher temperatures may also result in lower moisture availability due to increased evapotranspiration, leading to overall drying conditions. Both of these factors will result in higher mortality of trees and increased wildfire risk.
- Productive, dry sites may become more vulnerable. Pine plantations established on dry sites could become highly vulnerable to the effects of changing weather patterns. Although current models differ on how precipitation will respond to changing weather patterns, much of the Southeast is likely to experience longer and more frequent droughts. Coupled with higher temperatures, increased photosynthesis and lower moisture availability, these dry sites could become more susceptible to mortality from pests, pathogens and fire. Drought is currently one of the primary stress factors which contributes to insect and disease outbreaks in the south, and recent historical (long-term) droughts are directly correlated to certain outbreaks.
- Changes in forest productivity. Higher concentrations of atmospheric carbon dioxide may have a “carbon fertilization” effect on some forest communities, but the end result of this effect on net primary productivity is uncertain (*Körner 1993*). Forests’ capacity to sequester additional carbon may be significantly reduced by other limiting factors and ecosystem interactions.
- Changes in forest species composition. More drought-hardy species may be able to better compete in the pine forests of Georgia. *Quercus* species may become a larger component of today’s pine forests (*Iverson and Prasad 2001*).
- Expansion/contraction of species range. In general, ranges could move northward and up slope for all species, including Georgia’s primary timber-producing species.
- Invasive species. More frequent disturbance, higher mortality and expanding ranges could intensify invasive species spread.

ECONOMIC IMPACTS

Southern forest owners could become vulnerable to changing weather patterns effects. The southeastern U.S. holds the largest share of timber investment capital, and our most productive species are highly susceptible to the potential drying effects of changing weather patterns. Expansion of the range for southern pine species means that states north of Georgia may be able to gain market share and productivity (*Shugart, Sedjo and Sohngen 2003*).

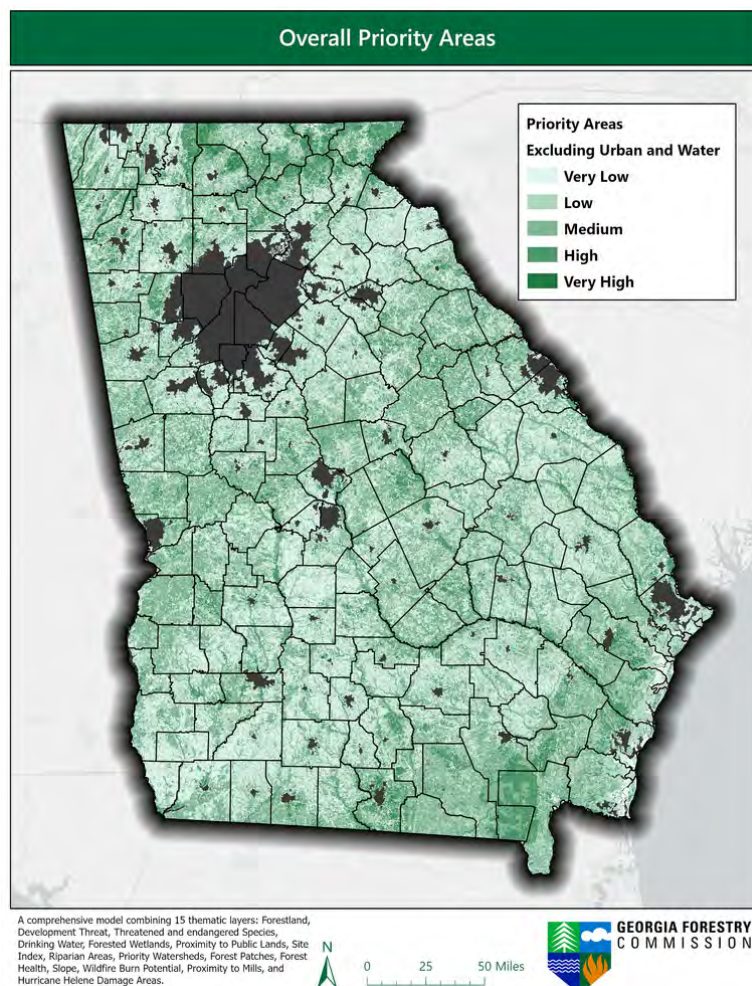


PRIORITY AREAS

To identify areas of Georgia where GFC and partners should look first to protect, conserve and enhance Georgia's forest resources, we combined 15 thematic layers:

- Forestland
- Development threat
- Threatened and Endangered Species
- Drinking water
- Forested wetlands
- Proximity to public lands
- Site index
- Riparian areas
- Priority watersheds
- Forest patches
- Forest health
- Slope
- Wildfire burn potential
- Proximity to mills
- Hurricane Helene damage areas

Land areas were ranked as Very Low, Low, Medium, High or Very High in terms of meeting these 15 criteria.



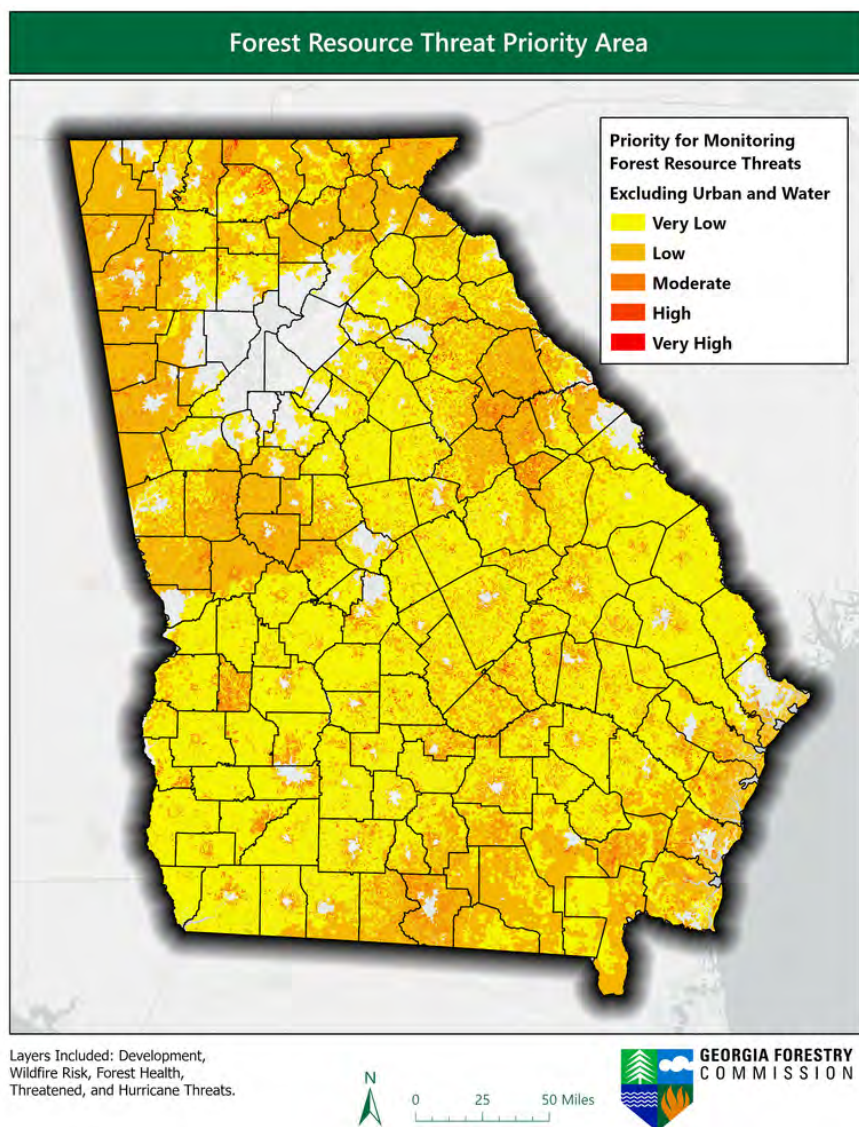


PRIORITY AREAS

To assess areas facing the greatest threats, the following layers were included:

- Development
- Wildfire risk
- Forest health
- Threatened and Endangered Species
- Hurricane threats

Land areas were ranked as Very Low, Low, Moderate, High or Very High in terms of these specific threats.



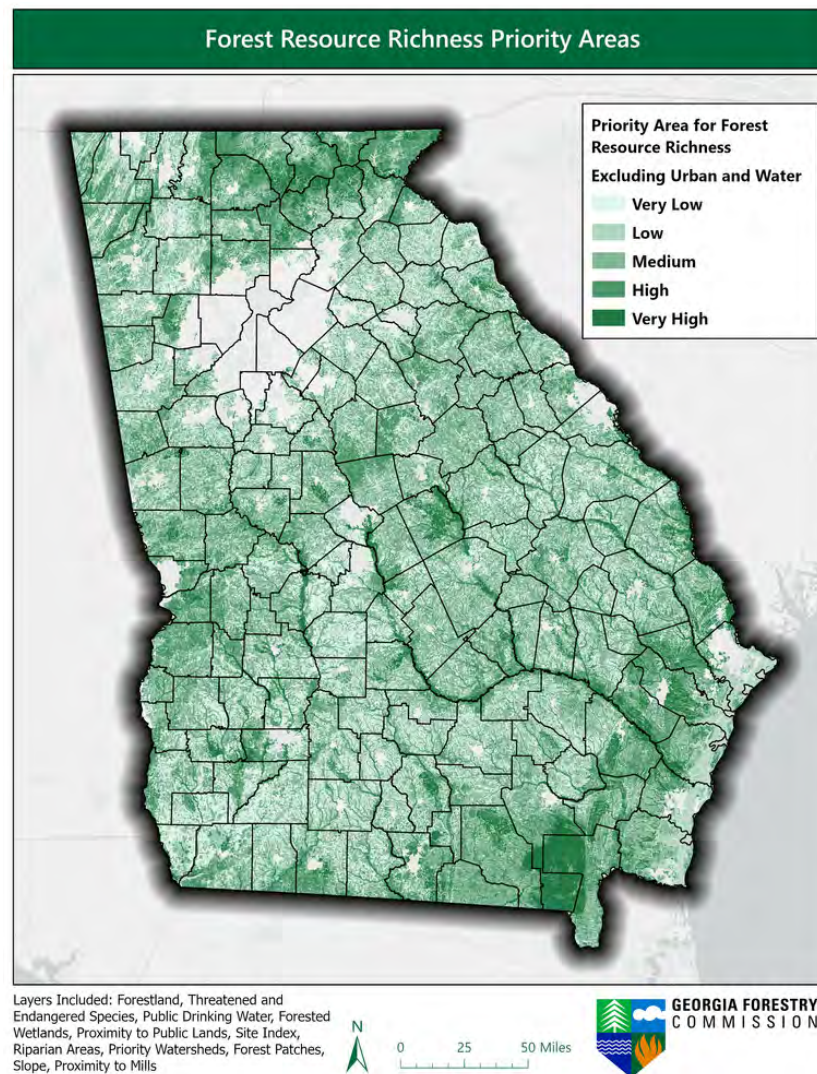


PRIORITY AREAS

In order to assess areas deemed to have the greatest forest resource richness, the following layers were included:

- Forestland
- Threatened and Endangered Species
- Public drinking water
- Forested wetlands
- Proximity to public lands
- Site index
- Riparian areas
- Priority watersheds
- Forest patches
- Slope
- Proximity to mills

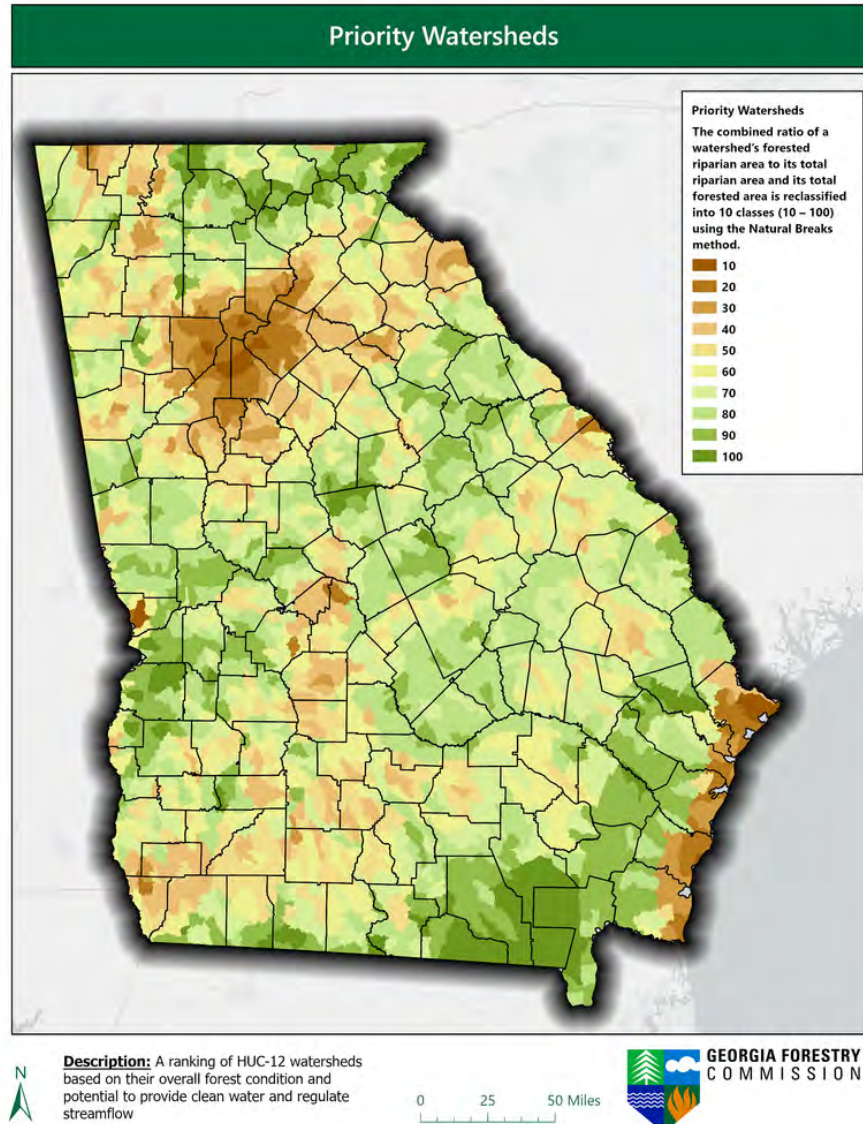
Land areas were ranked as Very Low, Low, Medium, High, or Very High in terms of these characteristics and the overall forest resource richness.





PRIORITY AREAS

And finally, priority watersheds were identified through a ranking of HUC-12 watersheds based on their overall forest condition and potential to provide clean water and regulate streamflow. Areas were ranked based on the combined ratio of a watershed's forested riparian area to its total riparian area and its total forested area was reclassified into 10 classes (10-100) using the National Breaks method.





STRATEGIC ISSUES

The following issues were identified by stakeholders and key partners during the development of the 2008 Sustainable Forest Management in Georgia report. At the beginning of this FAP process, these issues were placed in a survey on the GFC website for public comment and ranking. The issues are presented in order of their importance as determined by the public survey (*Appendix B*), and will be carried forward into the Strategies section. These findings are the basis for Georgia's goals, objectives and strategies.



STRATEGIC ISSUES

WATER QUALITY AND QUANTITY

ISSUE 1: WATER QUALITY AND QUANTITY

ISSUE DESCRIPTION

Protecting, conserving, and enhancing water quality and quantity produced by forests are high priorities for GFC and our many stakeholders and partners. As the population in Georgia grows, the loss of forestland to urbanization is the greatest threat to Georgia's water quality. A significant portion of Georgia's population receives its water from reservoirs and surface waters, especially in the northern half of the state where population growth has spurred increased forest loss from urbanization. Further population growth will fuel a need for additional reservoirs and a general increase in urbanization resulting in loss of more forest cover, which will further stress water resources and place restrictions on land uses upstream. The conversion of forestland to non-forest results in increased storm runoff and increased streamflow, causing erosion, sedimentation, pollution, and flooding that negatively impact water quality. Recent water issues stemming from droughts left many cities and their citizens located above the Fall Line with restrictions on water use. In addition to the restrictions, Georgia was involved in the tri-state water wars with Alabama and Florida regarding the Apalachicola, Chattahoochee, Flint River lawsuit, as well as the Alabama, Coosa, Tallapoosa River lawsuit which brought attention to Georgia's water issues. Forests help store and meter out water to maintain healthy water quantity by mitigating extremes of both drought and flooding. Therefore, the conversion of forestland to non-forest can also lead to problems with water quantity. Retaining forestland and properly managing our forests can greatly protect and enhance water resources.

Many of Georgia's streams, particularly those in rapidly developing areas of the state, have insufficient stream buffers (*Meyer et al. 2005*). Streams with narrow, vegetated buffers are at higher risk of water quality impairment resulting from land-disturbing activities, introduction of toxic chemicals or excess nutrients, and thermal impacts from lack of shading. Intact riparian habitats are needed for all streams, but especially for those that support exceptional diversity or rare aquatic species (*Ambrose, 1999*). Breaches of these stream buffers can be minimized through careful placement of roads, bridges, utility corridors, and livestock crossings. Access to streams by all-terrain vehicles and livestock should be limited to maintain water quality. Finally, while forests and forestry are the best and safest land-cover as well as land-use to protect water resources, proper forestry operations should always include good implementation of state forestry Best Management Practices (BMPs).

The Georgia Comprehensive Statewide Water Management Plan states that more than 8,300 miles of streams do not meet state water quality standards because of nonpoint sources of pollution, to which forestry activities may contribute (*The Water Council 2008*). In Georgia, it is estimated that between 7,000 and 10,000 timber harvesting operations are conducted annually. The U.S. Environmental Protection Agency (EPA) was sued in federal court for not requiring the Georgia Environmental Protection Division (EPD) to set Total Maximum Daily Load (TMDL) limits on these and other impaired streams that would bring them back to their designated uses. TMDL's and their implementation plans have now been developed for the majority of these streams. In addition, the effects of agricultural practices, old canals and ditches, and poor county road maintenance have resulted in legacy sedimentation, impaired streams, and wetland losses. There are many opportunities for GFC and key organizations to enhance the role forests play in improving Georgia's water quality and quantity.



STRATEGIC ISSUES

WATER QUALITY AND QUANTITY

POTENTIAL AGENCY AND ORGANIZATION ROLES

- GFC will continue the state leadership role in BMP development, education, implementation, and monitoring.
- Through EPA Section 319 and USFS competitive grants, GFC will continue to seek assistance in water quality education. BMP education efforts will be expanded and enhanced through partnerships with various groups such as forest landowners, forest industry, Sustainable Forestry Initiative (SFI), University of GA (UGA), Southeastern Wood Producers Association (SWPA), GA Environmental Protection Division (GA-EPD), GA Forestry Association (GFA), GA Department of Natural Resources (GA-DNR), US Army Corp of Engineers (USACE), Tree Farm, Southern Group of State Foresters (SGSF), Southeastern Partnership for Forests and Water, public water suppliers, Trout Unlimited, Riverkeeper, other fisheries and recreation associations, etc. Leveraging more funds with these groups and others could be needed to direct more support to excellent but under-funded state programs.
- GFC will continue further BMP education by working with the Board of Registration for Foresters to support BMP education and implementation among professional foresters and with non-SFI wood mills to educate their producers about BMPs.
- GFC will continue to work with state, federal, and local government agencies to provide input and implement regional strategies identified in the Georgia Comprehensive Statewide Water Management Plan.
- As NRCS develops water-related programs, GFC will help identify forestry and agriculture needs for improvement to the watersheds as applicable and encourage funding for cost-share assistance to landowners.
- GFC will continue to partner with RC&Ds and county road departments to implement Better Back Road BMPs and to identify and rectify stream crossings that are a continuing source of sediment.
- GFC and DNR will provide information on high priority streams to commercial and non-profit mitigation bankers to encourage restoration and enhancement of vegetated buffers and provide financial incentives to private landowners to fence livestock out of streams.
- GFC and DNR will work with local governments, planners, and developers to encourage retainment of forestland critical to water supplies and ensure protection of stream buffers when development plans are considered.

ISSUE SPECIFIC PRIORITY AREAS

As a statewide forestry agency, GFC is involved with forestry and water across the state of Georgia. We will continue our core responsibilities of leading forestry BMP development, education, implementation, and monitoring throughout the state wherever and whenever appropriate.

Additionally, we have begun working in three key watersheds over the past few years to provide outreach and education on the importance of retaining and properly managing forests for healthy, abundant water supplies. We have done this through partnerships with many diverse stakeholders across the state and SE region who are all concerned with water resources and how to best conserve those resources. Our goal is to help retain as much critical forestland as possible in these watersheds and across the state, and help landowners manage those forests well to provide for good water quality and quantity, along with many other benefits. Potential means to this goal include basic forest management advice and outreach, stewardship plans,



STRATEGIC ISSUES

WATER QUALITY AND QUANTITY

cost-share assistance to enhance forestry, working toward markets for ecosystem services, and education on various forms of conservation easements. The three key watersheds we plan to concentrate on will include the: **Upper Oconee, Lower Savannah, and Middle Chattahoochee**. These three watersheds were chosen because while they currently still do have a good level of forestland, they are developing relatively quickly, with population growth and land conversion due to urbanization causing real risks to forestland and water resources. We have worked with many stakeholders and hope to continue and include more partners to spread the word and create solutions. Recently, the Upper Oconee has been the main focus and where the most progress has been made thus far, with outreach helping forest landowners by funding stewardship plans. The intent is that through those stewardship plans, landowners will be better educated and prepared to retain and manage their lands. This should help provide the landowner and the public with multiple benefits as described earlier. These include healthy, abundant water supplies and other environmental benefits, as well as economic benefits.

Upper Oconee Watershed

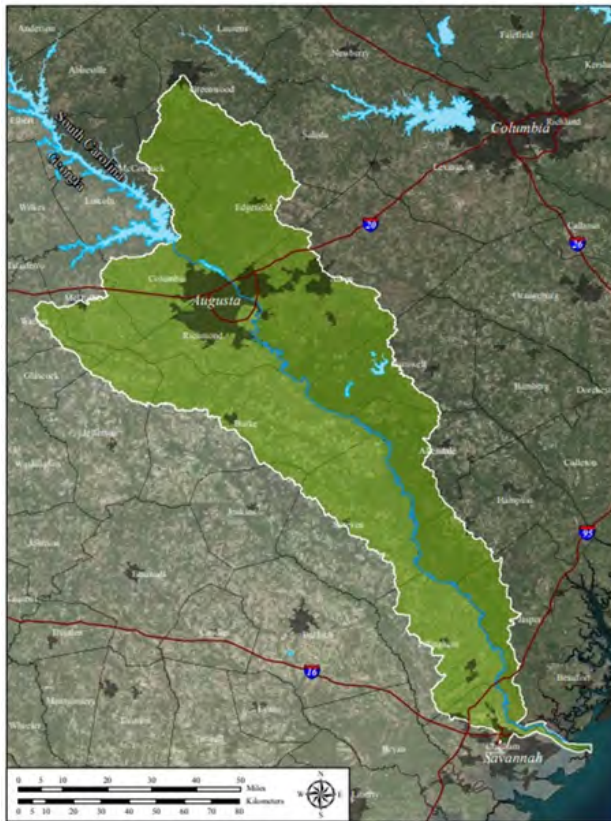




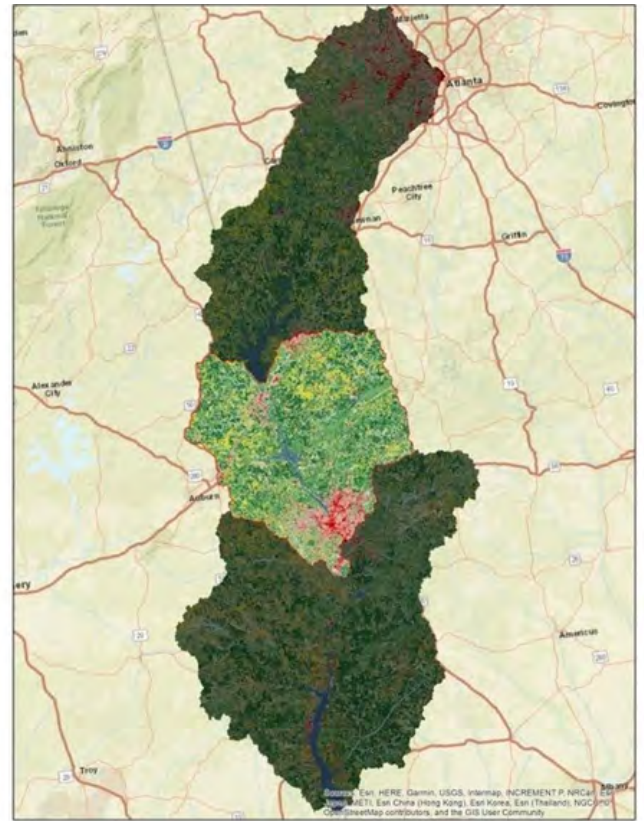
STRATEGIC ISSUES

WATER QUALITY AND QUANTITY

Lower Savannah Watershed



Middle Chattahoochee Watershed





STRATEGIC ISSUES

WATER QUALITY AND QUANTITY

Goals, Objectives and Strategies

Goal 1: Protect water quality during silvicultural operations statewide including water supply watershed and biota and dissolved oxygen impaired watersheds, especially those listed for TMDL reductions.

Objective 1.1: Maintain and/or increase number of landowners/loggers/foresters/contractors trained/advised on BMPs.

Strategy 1.1.1: Deliver educational programs to increase understanding of BMPs.

Strategy 1.1.2: Continue to provide in field advice on water quality and BMPs.

Strategy 1.1.3: Continue to maintain contacts and communication with partners and stakeholders.

Strategy 1.1.4: Work with partners to have field demonstrations/trainings for the purpose of BMP education for various stakeholders.

Objective 1.2: Maintain high BMP implementation scores and/or increase BMP implementation scores.

Strategy 1.2.1: Determine BMP implementation rates by landowner type, practice, and region.

Strategy 1.2.2: Maintain and/or increase monitoring of forestry practices.

Strategy 1.2.3: Identify BMP implementation deficiencies by landowner type, practice, and/or region.

Strategy 1.2.4: Continue BMP complaint resolution process.

Strategy 1.2.5: Review Stewardship and Tree Farm plans in priority areas to ensure adequate BMP recommendations in plans that focus on road infrastructure, stream crossings, and SMZs, and that these recommendations are implemented as a requirement for certification.

Strategy 1.2.6: Continue soliciting/accepting conservation easements requiring adherence to forestry BMPs

Goal 2: Maximize positive environmental impacts of Georgia's forests on water quality and quantity in designated public drinking water supply watersheds.

Objective 2.1: Work with local governments and other stakeholders to implement watershed planning in designated water supply watersheds throughout the state, concentrating on key priority watersheds.

Strategy 2.1.1: Help educate and advise stakeholders on the link between well managed forests and healthy water resources (quality and quantity), as "Smart Growth" plans consistent with Georgia Comprehensive Growth Planning are developed and implemented.

Strategy 2.1.2: Ensure language in Smart Growth plans allows landowners to implement forest management practices.

Goal 3: Maximize water quality and quantity benefits provided by Georgia's forests.

Objective 3.1: Increase opportunities for cost-share and other incentives that are simple to implement and simple to use for private landowners in priority areas.

Strategy 3.1.1: Promote conservation use and conservation easements and the receipt of associated local, state, and federal tax incentives for landowners

Strategy 3.1.2: With partnerships and funding, help create simple incentive programs for streambank restoration, riparian buffer conservation, road and stream crossing improvements, and conservation easements.

Strategy 3.1.3: Work with partners to promote and develop ecosystem services markets for private landowners to conserve their working forests.



STRATEGIC ISSUES

WATER QUALITY AND QUANTITY

Objective 3.2: Increase funding for GFC to implement water quality program objectives in priority areas.

Strategy 3.2.1: Identify state water quality program funding needs to implement BMP education, complaint investigation, field advice, and biennial statewide BMP surveys.

Strategy 3.2.2: When suitable, pursue federal, state, and local sources of funding including local water authorities.

Strategy 3.2.3: When suitable, seek funding from recreationist and fisheries organizations and other nongovernmental organizations.

Goal 4: Protect, conserve, and enhance ecological functions of headwater streams.

Objective 4.1: Improve protection and enhancement of headwater streams in high priority watersheds and on public lands in priority areas.

Strategy 4.1.1: Help identify and delineate headwater streams in high priority watersheds identified by DNR and on lands managed by public agencies.

Strategy 4.1.2: Assist with the development of management plans to conserve and enhance headwater streams on state lands.

Strategy 4.1.3: Work with private landowners to protect, conserve and enhance headwater streams in high priority watersheds identified by DNR.

Goal 5: Protect and enhance vegetated stream buffers.

Objective 5.1: Decrease the linear measure of streams lacking intact, functional, site-appropriate forested stream buffers by 50 percent in priority areas.

Strategy 5.1.1: Inform/advise landowners and other stakeholders on vegetated stream buffer values and practices and incorporate these practices in our advice and stewardship plans.

Strategy 5.1.2: Work with NRCS and other appropriate agencies to implement Farm Bill, USFWS Partners for Wildlife and other programs.

Performance Measures:

BMP Implementation scores found during monitoring.

Number of sites and acres monitored for BMP implementation.

Number of landowners, loggers, etc...trained in BMPs.

Number of water quality/BMP advice cases handled.

Number of partner/stakeholder meetings participated in and attendee numbers.

Number of field demonstrations and training.

Number of streams with management plans.

Number of Smart Growth plans.

Number of incentive programs created.

Number of landowners signed up and acres protected.

Development of an ecosystem services market for private landowners.

Number of linear feet of restored stream buffers.



STRATEGIC ISSUES

WATER QUALITY AND QUANTITY

Resources Needed:

Collaborations: MOUs should be maintained/updated/created with applicable federal, state, and local agencies, and possibly NGOs as needed.

Regulations: State TMDL implementation plans require monitoring of impaired watersheds to verify load reductions have or are being met. State and local policies are needed to address protection and monitoring of drinking water supply intakes/watersheds.

Personnel: We currently have four full-time Forester Water Quality Specialists and one Water Quality Program Coordinator. At least four to six Forester Specialists will be needed to meet potential expectations/goals in the future.

Research: Additional BMP effectiveness studies through academic research partners at UGA could be useful to add to the knowledge base. Also, the development of user-friendly computer models might be helpful to predict erosion and subsequent sedimentation inputs, and/or to show potential economic benefits/cost from forest retention/loss and from various management scenarios.

Funding: A large portion of water quality funding for our core responsibilities to date has come through EPA Section 319 grants. This funding is supposed to cover about 50% of the total cost for our Water Quality Program. While this grant funding is very helpful, the costs to run the program at minimally acceptable levels have meant that the grant funding has for decades only covered about 40% of the total funding. This has historically resulted in an overmatch from state funds. An amount of \$440,000 to \$450,000 total annually will likely be needed to keep the program operating well at acceptable levels. More funding would likely be needed to fully fund all the goals and work listed above.

Other: Educational materials, user friendly mapping tools, technical assistance, and training.



STRATEGIC ISSUES URBANIZATION

ISSUE 2: URBANIZATION

ISSUE DESCRIPTION

Urban sprawl was ranked the second most important forest resource issue by public stakeholders. GFC-funded studies by the University of Georgia's Natural Resources Spatial Analysis Laboratory (NARSAL) determined that approximately 54 acres of canopy cover were lost in the Atlanta region each day from 1991-2001, while approximately 28 acres of impervious surfaces (e.g. roads, buildings, etc.) were added daily. Updating this information to 2005 showed a slight decrease in canopy loss but impervious surface additions increased to approximately 55 acres daily.

In a similar statewide analysis, NARSAL determined that from 2001-2005, Georgia's canopy cover declined by a total of 398,330 acres, or 273 acres per day. Although canopy loss in rural areas often reflects ongoing forestry activities, in urban areas it often indicates development. Accordingly, impervious surfaces increased by about 154,134 acres, or 106 acres per day.

These changes effectively and permanently remove this acreage from forest cover. The loss of forest cover effects on water quality and quantity are huge. Trees act as natural water filters and help significantly slow the movement of stormwater, which lowers total runoff volume, soil erosion and flooding. Infiltration rates for forested areas are 10 to 15 times greater than for equivalent areas of turf and grass. During heavy rain, a healthy forest can absorb as much as 20,000 gallons of water per acre in an hour. Studies from Dr. Rebecca Moore of UGA's Warnell School of Forest Resources showed that Georgia's forests provide over \$20.3 billion of stormwater quantity and quality benefits. Many municipalities are now charging businesses and homeowners a "storm water utility" fee based on the amount of impervious surface at their location. Air quality and local climate are also negatively affected by loss of forest cover.

Air quality and local climate are also negatively affected by loss of forest cover. In exchange for providing oxygen, trees absorb carbon dioxide produced from the combustion of various fuels. Trees remove or trap lung-damaging dust, ash, pollen and smoke from the air, in addition to providing shade for people and conserving energy. In the Atlanta metro area, trees removed 19 million pounds of pollutants, valued at \$47 million in 1996. Tree cover as it existed in 1974 would have removed 30 million pounds of pollutants, valued at \$75.5 million (*American Forests*, 2001).

Loss of forest cover affects the health of communities. Trees enhance community economic stability by attracting businesses and tourists. Studies have found a correlation between community forests and the average amount of physical activity exerted by neighborhood residents. People are more inclined to get outdoors and exercise when their surroundings are greener. Logically, greater physical activity leads to fewer cases of obesity, which in turn may help reduce other health problems such as heart disease and diabetes.

Urbanization increases apprehension about fire. Air quality has become a major concern in Georgia, and prescribed fire has been targeted as one of many sources of harmful emissions. Drift smoke from prescribed fire and wildfires concerns urban dwellers. An important challenge is to help Georgians understand the life sustaining properties of healthy forests, and the natural role that fire plays in ecosystems.

Urban sprawl places lives and property at risk from wildfire and reduces options for proper fire management. More than half of Georgia homes are located in the Wildland Urban Interface. The



STRATEGIC ISSUES URBANIZATION

greatest fire management challenge for forestry professionals is to ensure public safety by providing fire prevention services in the form of prescribed fire as well as wildfire suppression. The sustainability of Georgia's forest is dependent on attention to both prescribed fire and wildfire suppression.

Forest conservation is a special priority north of the Fall Line, along the coast and in counties with the highest growth projections. Key lands for acquisition should be identified and prioritized in these rapidly-growing areas. According to a telephone survey conducted by The Statewide Comprehensive Outdoor Recreation Plan (SCORP), 88% of Georgians support public funding for investment in outdoor recreation.

As Georgia becomes more urbanized, it will become more challenging to sustain a connection between urban populations and our natural resources. Our forestland, parks and nature-based recreation will provide critically important connections to the environment and promote a conservation ethic.

Additionally, our schools should have access to natural areas for education. Schools must provide balanced interpretation, education and outdoor recreation programs to promote healthy lifestyles and knowledge of our natural resources.

POTENTIAL AGENCY AND ORGANIZATION ROLES

- GFC will initiate updated tree canopy loss and impervious surface studies and help build local capacity to manage tree canopy (next canopy analysis coming 2026).
- GFC will identify areas of opportunity within community watersheds to connect forest patches to improve the water and air quality function of forest canopy, identify appropriate mechanisms, and facilitate discussions to link patches with landowners, local governments and conservation-minded non-profit organizations.
- The Georgia Tree Council and GFC will utilize grant and corporate funds to plant trees in communities to assist in job creation, help stimulate the economy and restore ecosystems impacted by growth and urbanization.
- GFC, DNR, USFS and the USFWS will provide information and education opportunities concerning wildfire management challenges and the benefits of prescribed fire. GFC and DNR will promote forest canopy benefits in riparian buffers and demonstrate impacts of canopy loss in interface watersheds.
- GFC will continue to promote the Changing Roles training within GFC and with other state partners.
- The Georgia Forestry Association, GFC and University of Georgia Warnell School of Forestry and Natural Resources will expand the Project Learning Tree program to educate youth on forest conservation.

ISSUE SPECIFIC PRIORITY AREAS

Areas of focus to address the urbanization issue include metropolitan Atlanta, north Georgia and the coast. These areas have the greatest population density as well as population growth. Federal and corporate grant funds will be used to focus on high-profile projects in these areas. Potential projects include the establishment of model stormwater management demonstration sites and ecosystem restoration. Watershed planning work in north Georgia's Blue Ridge and Ridge and Valley priority areas will target opportunities to enhance the water and air quality function of forest canopy.



STRATEGIC ISSUES URBANIZATION

Goals, Objectives and Strategies

Goal 1: Enhance environmental services provided by trees and forests in urban and interface areas.

(U = Urban, I = Interface)

Objective 1.1: Increase programming to make communities aware of the benefit of increasing percent canopy cover in Georgia's metro areas from 37% (2005 baseline) to 40% by 2030.

Strategy 1.1.1: Initiate updated tree canopy loss and impervious surface studies. Utilize Urban and Community Forestry funding for studies to reveal trends and provide insight on the impacts of lost forestland. (U&I)

Strategy 1.1.2: Prepare educational programs and training targeting urban rural interface areas. Arm counties with up-to-date information about their particular county and communities, including ways to assess and address tree loss/gain issues and values of canopy cover. (U&I)

Strategy 1.1.3: Continue to educate GFC staff and other state partners on values and methods for maintaining forest canopy in urban and developing areas. (U&I)

Strategy 1.1.4: Expand urban tree planting programs through "Making the Shade" and other public tree planting programs. (U)

Objective 1.2: Facilitate inclusion of trees and canopy cover in stormwater management plans for 15% of Georgia communities by 2030.

Strategy 1.2.1: Provide tree and stormwater education in partnerships with GTC, water authorities and other agencies to show local communities options for managing stormwater with trees. (U&I)

Strategy 1.2.2: Promote model stormwater/green infrastructure demonstration projects and assessment software such as iTree Hydro, the EPA's Stormwater Manual and GFC's Green Infrastructure Planning Guidelines and website for coastal Georgia to communicate the positive effects that trees have on community water quantity and quality. (I)

Strategy 1.2.3: Promote tree benefits specific to priority area HUCs in impaired waters. (I)

Objective 1.3: Demonstrate how to mitigate adverse effects of impervious surface through increased tree planting.

Strategy 1.3.1: Develop a fact sheet that documents the effects of impervious surfaces. (U)

Strategy 1.3.2: Conduct a demonstration project illustrating the benefits of shading impervious surfaces. (U)

Objective 1.4: Increase number of communities that actively manage high-value forest canopy for multiple benefits from four (2009 baseline) to 10 by 2030.

Strategy 1.4.1: Facilitate local community forest assessments, tree ordinance updates, management plans and storm mitigation plans. (U)

Strategy 1.4.2: Identify and promote greenspace connectivity in partnership with the Association of County Commissioners of Georgia using an Integrated Green Infrastructure Management System. (U&I)



STRATEGIC ISSUES URBANIZATION

Performance Measures:

Average canopy cover in Georgia metro areas.

Number/percent of Georgia communities with "Developing" or "Managing."

Number/percent of Georgia communities with leaders trained in tree canopy issues and methods.

Resources Needed:

Collaborations: Expanded partnerships with local governments and new partnerships with land conservation groups to enhance community outreach.

Personnel: Additional resources to expand programming to more communities.

Legislation: Local regulation enhancements to facilitate forestland conservation of natural resources, in addition to closer relationships with elected officials.

Research: Further analysis of resource conditions, arrangement and ownership patterns.

Funding: Grant funds to facilitate program initiation and development.

Other: Communication and educational materials for landowners and mapping resources.



STRATEGIC ISSUES FOREST HEALTH

ISSUE 3: FOREST HEALTH

ISSUE DESCRIPTION

Healthy forests are essential for air and water quality, habitat, environmental resilience, recreation and the multitude of forest products from which Georgians benefit. History shows that a decimating agent such as the chestnut blight in the early 1900s can drastically alter the forest ecosystem and eliminate important resources.

The southern pine beetle (SPB) and other pine bark beetles continue to represent the biggest threat to pine timber in Georgia (*Figure 34*).

Heterobasidion root disease and brown spot needle blight are other serious problems that result in decreased growth and death of trees in pine plantations.

In today's global market, the potential is very real for insects and disease organisms to find their way into Georgia and cause widespread damage. For example, the hemlock woolly adelgid, imported from Japan, was detected in Georgia in 2002, and has now spread throughout the native hemlock range. It drastically reduces hemlock populations in north Georgia and drastically alters the ecosystems in the area (*Figure 35*).

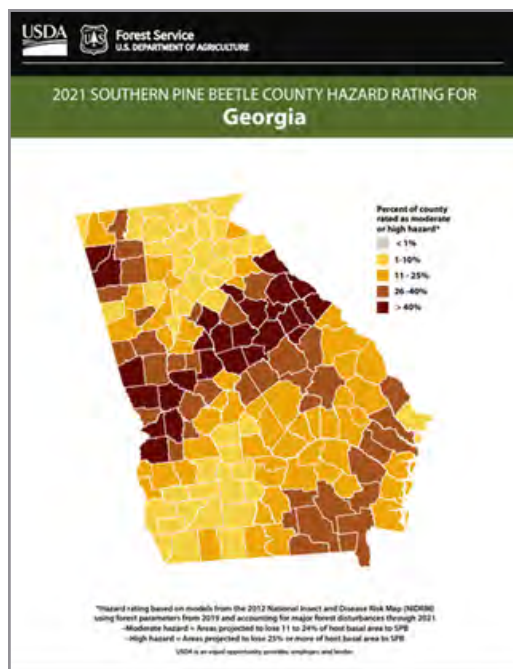


Figure 34
Source: USFS

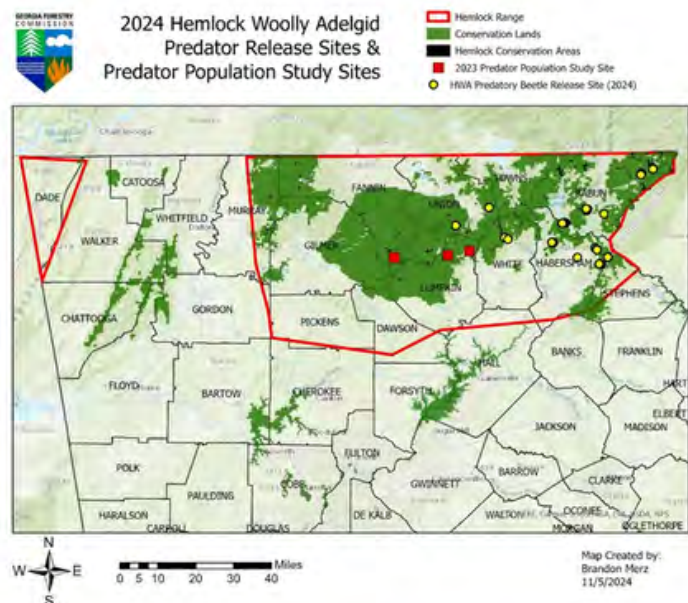
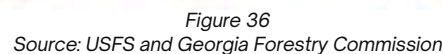


Figure 35
Source: USFS and Georgia Forestry Commission

Legislative support and regulation to prevent the introduction and spread of non-native exotic plants, animals, and pathogens is needed. In addition, interagency cooperation on invasive species management can be improved through the implementation of a statewide Invasive Species Management Plan and continued support of a state Invasive Species Council.





STRATEGIC ISSUES

FOREST HEALTH

POTENTIAL AGENCY AND ORGANIZATION ROLES

- GFC will continue to monitor native forest health issues and aggressively monitor for new insects, diseases, and invasive plants in the forest, urban landscapes, and at points of entry so that solutions can be undertaken while problems are small and the chances of eradication or control are greatest.
- The Georgia Invasive Species Task Force will work collaboratively within the scope of the Georgia Department of Agriculture, Georgia Department of Natural Resources, Georgia Forestry Commission, and University of Georgia to monitor for invasive species and take suppression actions when possible. USDA APHIS has regulatory authorities within Georgia and internationally and will be included in any pest-specific action that is planned or implemented. Full descriptions of authorities of these agencies are included in *Appendix A*.
- GFC is working collectively with eight southern region state forestry agencies to detect and minimize the spread of cogongrass.



STRATEGIC ISSUES FOREST HEALTH

Goals, Objectives and Strategies

Goal 1: Minimize negative environmental and economic impacts of cogongrass in Georgia.

Objective 1.1: Ensure cogongrass does not become well established.

Strategy 1.1.1: Deliver educational programs to landowners, loggers, partnering agencies, and public to reduce spread and encourage prompt reporting of infestations.

Strategy 1.1.2: Expand cogongrass detection programs.

Strategy 1.1.3: Expand cogongrass treatment programs.

Strategy 1.1.4: Enhance interagency partnerships in addressing the cogongrass threat.

Strategy 1.1.5: Coordinate with adjacent states to ensure adequate control measures are implemented in border areas.

Goal 2: Minimize negative environmental and economic impacts of hemlock woolly adelgid in Georgia.

Objective 2.1: Reduce HWA population in the native range of hemlock through the use of insecticides and bio controls in priority areas.

Strategy 2.1.1: Identify and treat hemlocks.

Strategy 2.1.2: Implement treatment of hemlock stands along perennial streams and in high value recreation sites in the Chattahoochee National Forest.

Strategy 2.1.3: Provide technical assistance and training to hemlock owners on HWA and the use of systemic insecticide treatments.

Strategy 2.1.4: Identify strategic predator release sites.

Strategy 2.1.5: Provide support for predator-rearing labs.

Strategy 2.1.6: Identify eastern and Carolina hemlock genetic reserve areas on national forest lands to provide material for research and future restoration projects.

Goal 3: Minimize environmental and economic damage to Georgia's forests by pine bark beetle.

Objective 3.1: Decrease the number of acres infested by pine bark beetles.

Strategy 3.1.1: Conduct prediction trapping and convey results to landowners and land managers.

Strategy 3.1.2: Conduct aerial surveys to detect pine bark beetle infestations.

Strategy 3.1.3: Utilize cost-share program to identify at-risk landowners and assist in forest condition improvement.

Strategy 3.1.4: Utilize cost-share program to suppress active SPB outbreaks.

Strategy 3.1.5: Provide outreach to landowners and land managers to help with technical management decisions during outbreak periods.

Strategy 3.1.6: Provide support for Semiochemical and dsRNA- based insecticide research for control of pine bark beetle infestations.

Goal 4: Reduce the impact of brown spot needle blight (BSNB) on loblolly pine health and productivity.

Objective 4.1: Mitigate the impact of BSNB on loblolly pine.

Strategy 4.1.1: Conduct monitoring to track BSNB outbreaks.

Strategy 4.1.2: Collaborate with researchers to study BSNB on loblolly and evaluate long-term management solutions, including genetic resistance.

Strategy 4.1.3: Provide outreach to landowners and land managers to help with technical management decisions.

Strategy 4.1.4: Employ rapid disease testing to support accurate diagnosis.



STRATEGIC ISSUES

FOREST HEALTH

Goal 5: Minimize environmental and economic damage to Georgia's forests from heterobasidion root disease and little leaf disease.

Objective 5.1: Reduce incidence of heterobasidion root disease in the high hazard areas.

Strategy 5.1.1: Target at-risk landowners and provide technical assistance.

Strategy 5.1.2: Provide outreach to landowners and land managers about the disease.

Strategy 5.1.3: Partner and aid in ongoing research for management techniques.

Strategy 5.1.4: Employ rapid disease testing to support accurate diagnosis.

Performance Measures:

Numbers and acres of active cogongrass infestations.

Number of individuals trained on cogongrass detection and reporting.

Number of acres surveyed for cogongrass detection.

Number of acres treated for cogongrass infestation.

Number of collaborative projects.

Number of hemlocks treated for HWA.

Number of rapid disease tests.

Number of hemlock genetic reserve areas identified.

Number of SPB traps set.

Number of acres surveyed for SPB.

Number of landowners and land managers assisted with SPB.

Number of acres in SPB prevention cost-share program.

Number of landowners assisted with heterobasidion root disease.

Number of rapid disease tests.

Resources Needed:

Collaborations: Implementation of Invasive Species Task Force and Invasive Species Council.

Regulations: State and local policies to address importation of new pests and spread of endemic ones.

Personnel: Continued and improved funding for existing personnel and program expansion.

Legislation: State and federal laws to mandate closer inspection of cargo for forest pests entering the U.S. and movement of pests within the U.S.

Research: State university-driven studies to investigate prevention and suppression options for new and existing pests.

Funding: Grants, state funding, cost-share programs and outreach programs to educate land managers and stakeholders about forest pests.

Other: Educational materials, mapping, demonstration projects, technical assistance and training.



STRATEGIC ISSUES BIODIVERSITY

ISSUE 4: BIODIVERSITY

ISSUE DESCRIPTION

Georgia's rich biodiversity is threatened by several factors, including loss of isolated wetlands, degradation of headwater streams and bottomland forests due to development pressures and other land-disturbing activities, and habitat degradation by invasive exotic species. Many of Georgia's highest-value biodiversity systems (longleaf, shortleaf/oak, sandhills) depend on frequent, low-intensity fire. The strategic gap is scaling safe prescribed burning (people, training, smoke management) across private lands.

Throughout Georgia, habitat loss and fragmentation of the landscape creates specific challenges to biodiversity. Rapid growth in metro and suburban areas that extends into more rural areas is a challenging issue that threatens forests and the biodiversity that they carry. As tracts get smaller, they become more economically challenging to manage through traditional forestry methods and forest markets are key to helping landowners realize a return on their timber investment. Fragmenting the landscape increases management costs, which can impact forest health and the ecological benefits our forests provide. It also impacts fire regimes and the ability to apply prescribed fire to the landscape. Many of Georgia's highest-value biodiversity systems (longleaf, shortleaf/oak, sandhills) depend on frequent, low-intensity fire. The strategic gap is scaling safe prescribed burning (people, training, smoke management) across private lands. GFC plays a lead role in prescribed fire, often in partnership with private landowners, USFS, TNC, etc. The importance of prescribed burning to maintain forest health and biodiversity creates a balancing act for smoke management and a growing wildland urban interface.

Invasive plants, insects, and disease also have a negative impact on Georgia's biodiversity. Invasive plants like cogongrass, non-native privet, tallowtree, etc. can move into our native forests and take over the understory, restricting native species opportunity to seed and grow. Diseases such as laurel wilt can be introduced and drastically change the landscape and biodiversity of an area. Insects like hemlock wooly adelgid can be long term threats that kill native hemlocks and can open the canopy, impacting stream temperatures which can negatively affect trout populations and water quality. It is imperative to remain vigilant utilizing the tools at hand and taking advantage of technology to help monitor and address these non-native threats to Georgia's biodiversity. Early Detection and Rapid Response (EDRR) capacity, cross-jurisdiction coordination, and sustained funding for biological controls will be critical to continue ensuring Georgia maintains native ecological biodiversity.

Native bark beetles, along with storms and drought, have been recent concerns in the state that can impact biodiversity. The northern part of the state has seen increased southern pine beetle activity along with drought conditions that increased wildfire activity. Ips beetle activity is also on the rise in recent Hurricane Helene areas. Georgia also sees tornado activity in the spring. All of these events can increase management costs and introduce or encourage invasive plants into these native habitats. Georgia's coast also sees saltwater intrusion, especially after storms, which can kill native trees and shrubs, providing paths for invasive plants and marshland.



STRATEGIC ISSUES BIODIVERSITY

Georgia has 44,056 miles of perennial streams (approximately 4,000 miles of which are designated as mountain trout waters), 23,906 miles of intermittent streams, and 603 miles of ditches and canals for a total of 68,565 stream miles. The state also has 425,382 acres of public lakes and reservoirs, 4.8 million acres of wetlands (nine percent tidally affected), 854 square miles of estuaries and 100 miles of coastline. Georgia's Forestry Best Management Practices (BMPs) emphasize the protection of the state's water resources by controlling or minimizing soil erosion and stream sedimentation. BMPs are the most appropriate or applicable practices to attain a silvicultural goal while protecting the physical, chemical, and biological integrity of the state's waters.

The Georgia Department of Natural Resources 2025 State Wildlife Action Plan (SWAP) updates priorities for Species of Greatest Conservation Need providing focus on at-risk taxa and habitats. GFC will take opportunities to partner and integrate SWAP actions in training, forest plans, and cost-share opportunities.

POTENTIAL AGENCY AND ORGANIZATION ROLES

- Expand/restore prescribed fire and fuels work on fire-dependent systems, especially longleaf and shortleaf pine/oak ecosystems with suitable soils. Loblolly and slash pine are also important ecosystems to apply fire to in order to increase and improve biodiversity. Expand burner training, cross-boundary Rx fire, and smoke-management planning in WUI counties.
- Scale invasive species EDRR, continue cogongrass eradication service, bolster hemlock biocontrol capacity, encourage landowner reporting and follow-up treatments.
- Watershed health - restore degraded riparian corridors, improve aquatic passage, and ensure forestry Best Management Practices are implemented.
- Partnership-driven conservation - leverage Shared Stewardship and Good Neighbor Authority to align USFS work with state and private lands framework for joint priorities. GFC can conduct forest management work (thinning, restoration), hazardous fuel reduction, and watershed health on national forestlands. GFC will look for opportunities to utilize SWAP with DNR, cost share with Farm Service Agency (FSA) and Natural Resource Conservation Service (NRCS), as well as opportunities that may arise with other organizations for the benefit of Georgia's forests.
- Conservation organizations, DNR, USFS, and GFC will identify and protect significant wetland habitats through fee-simple acquisition or conservation easements as part of the state's Forest Legacy program. SWAP alignment: use the 2025 SWAP to target species/habitat to co-benefits in management plans and conservation easements.
- GFC will work to provide technical guidance and direct financial and other incentives to private landowners to encourage the protection, restoration and management of Georgia's forests.
- GFC will advise landowners with intact natural savanna habitats, particularly longleaf pine systems, on the natural values of these systems and encourage management that retains these values.
- Pine health and biodiversity - thin early, reduce stand density, diversify species/age classes, and maintain beetle monitoring, especially post-storm or drought.

ISSUE SPECIFIC PRIORITY AREAS

Proper forest management and forestry markets are critical to ensuring Georgia's forests are maintained in a healthy manner and continue to improve biodiversity throughout Georgia's landscape.



STRATEGIC ISSUES BIODIVERSITY

Goals, Objectives and Strategies

Goal 1: Restore and maintain fire-dependent ecosystems to enhance habitat of longleaf pine, shortleaf/oak, and other pine and oak forests that also help enhance wildlife species.

Objective 1.1: Increase prescribed fire occurrence and frequency in the fire-dependent ecosystems of the Atlantic Coastal Plain and East Gulf Coastal Plain.

Strategy 1.1.1: Conduct prescribed fire benefits education and outreach for landowners with the Georgia Prescribed Fire Council.

Strategy 1.1.2: Target state and federal landowner incentive programs for prescribed burning in priority area landscapes.

Strategy 1.1.3: Continue to identify and map unique, rare and threatened fire-dependent communities.

Strategy 1.1.4: Maintain a database of prescribed burning activity on conservation lands and provide technical guidance.

Strategy 1.1.5: Promote two-year prescribed burn frequency for existing longleaf and other pine to restore and maintain woodland savanna ecosystems.

Strategy 1.1.6: Use existing Armuchee Ridges Thinning and Restoration project on the Chattahoochee National Forest to restore and maintain native montane longleaf and shortleaf pine habitat communities.

Strategy 1.1.7: Enhance Good Neighbor Authority opportunities to improve forest management on US Forest Service and US Fish & Wildlife Service properties.

Objective 1.2: Restore at least 200,000 additional acres of longleaf and other pine savannas and build habitat connectivity between priority areas within the next five years.

Strategy 1.2.1: Continue the 2008 Alabama-Georgia-Florida Longleaf Pine Ecosystem Recovery Corridor S&PF Grant or similar grants in the East Gulf Coastal Plain to replace, enhance, and restore longleaf pine habitat in its natural range.

Strategy 1.2.2: Continue the Regional Longleaf Pine Restoration Initiative and Fuel Reduction projects to restore longleaf pine and native ground cover and educate the public and forest managers about the values, opportunities, and methods of longleaf pine restoration.

Strategy 1.2.3: Re-establish longleaf pine, slash pine, and loblolly pine ecosystems on state lands through site preparation and planting of pine seedlings on appropriate sites. Utilize prescribed fire and other forest management practices to maintain various ecosystems on state lands.

Strategy 1.2.4: Use existing Farm Bill and state programs to promote frequent forest thinning and prescribed fire frequency (two-three years) necessary to restore and maintain fire dependent ecosystems.

Objective 1.3: Enhance habitat for ruffed grouse, golden-winged warblers, and other priority species in accordance with SWAP and WRD management objectives in the Blue Ridge and Ridge and Valley priority areas.

Strategy 1.3.1: Work with public and private landowners to encourage active forest management to benefit ruffed grouse, golden-winged warblers, and other wildlife species dependent on early and mid-succession stages.

Strategy 1.3.2: Manage appropriate high elevation areas on the Chattahoochee National Forest to sustain a distribution of early-successional grass/shrub and seedling/sapling habitat areas.



STRATEGIC ISSUES BIODIVERSITY

Goal 2: Protect, conserve and enhance ecological functions of bottomland forest habitats and white oak forest habitats.

Objective 2.1: Assess distribution and condition of bottomland forest and white oak forest habitats in all priority areas.

Strategy 2.1.1: Identify and map high priority bottomland forest and white oak forest habitats using aerial photos and satellite imagery.

Strategy 2.1.2: Conduct field surveys of high priority bottomland forests and white oak forest to assess habitat quality and biodiversity value.

Objective 2.2: Increase conservation plans for bottomland forest and white oak forest habitats in priority areas.

Strategy 2.2.1: Develop management plans for bottomland forest and white oak forest sites on state and federal lands to conserve and enhance biodiversity values.

Strategy 2.2.2: Work with private landowners and other agencies to protect, conserve and enhance bottomland forest and white oak forest habitats.

Goal 3: Protect, conserve, and enhance ecological functions of isolated wetlands.

Objective 3.1: Assess distribution and condition of high priority isolated wetlands in all priority areas.

Strategy 3.1.1: Identify and map high priority isolated wetland habitats using aerial photos and satellite imagery.

Strategy 3.1.2: Conduct field surveys of high priority isolated wetland sites to assess overall habitat quality and biodiversity value.

Objective 3.2: Increase number of conservation plans for high priority isolated wetlands.

Strategy 3.2.1: Develop management plans for isolated wetlands on state and federal lands to conserve and enhance biodiversity values.

Strategy 3.2.2: Work with private landowners to protect, conserve, and enhance high priority isolated wetlands.

Goal 4: Manage Chattahoochee-Oconee National Forest lands in Georgia to restore, improve, and maintain forest ecosystems and forest health representative of the ecoregions where they occur.

Objective 4.1: Increase adaptive management through Shared Stewardship and GNA agreements to restore, improve forest health, and maintain native ecosystems, while providing for balanced human use and forest products in priority areas.

Strategy 4.1.1: Implement forest projects to demonstrate the sustainability of diverse ecosystems that support viable plant, wildlife, and fish populations including habitats for species that need large contiguous forested landscapes found on public lands. Forest management is critical to improving the health of State and Federal forests.

Strategy 4.2.1: Implement forest projects to protect or restore the rare ecological communities found on National Forest lands. Examples include mountain wetlands and bogs, oak woodlands and savannas, table mountain pine forests, rock outcrops and cliffs, canebrakes, and various old growth types.



STRATEGIC ISSUES BIODIVERSITY

Goal 5: Create suitable habitats for the continued recovery of the threatened Red Cockaded Woodpecker (RCW) on public lands.

Objective 5.1: Increase management of appropriate ecosystems on the Oconee National Forest to create habitat for RCW in the Fall Line priority area.

Strategy 5.1.1: Implement the U.S. Fish and Wildlife Service's RCW Recovery Plan (January 2003) on the public lands of the Oconee National Forest to provide approximately 46,000 acres of habitat supporting active RCW clusters. Management involves the restoration and maintenance of habitats with forest health a priority. Primary tools include the use of timber harvest to manage stand density and prescribed fire to control competing species.

Strategy 5.1.2: Establish a demonstration area for landowners on managing forestlands in the ecoregion compatible with RCW habitat.

Goal 6: Restore American chestnuts in Georgia.

Objective 6.1: Increase acreage of blight-resistant American chestnut in the Blue Ridge and Ridge and Valley priority areas.

Strategy 6.1.1: Identify appropriate areas within the hardwood forests of the Chattahoochee National Forest in the Blue Ridge ecoregion for restoration of the American chestnut and implement restoration through planting and cultivation of seedlings.

Strategy 6.1.2: Identify interested private landowners with similar ecosystems to restore American chestnut on private lands in the Blue Ridge priority area.

Performance Measures:

Number of landowners contacted through field days, programs and social media.

Number of acres burned in priority areas.

Acres of longleaf pine restored.

Number of acres thinned and burned through cost-share programs.

Total acres of high priority bottomland forest and white oak forest sites protected through conservation easements and/or long-term management plans on private lands.

Total acreage of isolated wetlands mapped and assigned preliminary habitat quality status.

Total acres of high priority isolated wetlands protected through conservation easements and/or long-term management plans on private lands.

Number of projects conducted in rare communities.

Number of acres of RCW habitat managed.

Establishment of an RCW demonstration site.

Number of areas identified for American chestnut restoration.

Resources Needed:

Collaborations: Expanded and new partnerships with NGOs in conservation and outreach.

Personnel: State level forest resource GIS specialist, state level software programmer.

Legislation: State laws to create incentives for forest-based ecosystem services.

Research: Enhanced analysis of resource conditions, threats, and opportunities through GIS-based systems.

Funding: State grant options and special project funding to address needs.

Other: Educational materials, mapping, demonstration projects, technical assistance, and training for personnel to deliver programs.



STRATEGIC ISSUES

AIR QUALITY AND CARBON SEQUESTRATION

ISSUE 5: AIR QUALITY - CARBON SEQUESTRATION

ISSUE DESCRIPTION

Private forestlands have enormous potential to provide climate benefits through carbon sequestration. In addition to their ability to sequester carbon, forests provide numerous benefits to society, including water quality and quantity services, flood control, aesthetics, recreation and wildlife habitat. Historically, these societal benefits have been taken for granted, with no dollar value placed on their environmental contributions. Monetizing forest carbon through private forest landowner participation in these markets provides an opportunity for a measure of compensation for the provision of a societal benefit. Since most of the land in the South is in private ownership, landowners able to generate additional revenue from carbon markets may be more likely to maintain their forestlands, resisting the pressure to develop their lands.

The emerging market for carbon offsets continues to generate significant interest from private forest landowners looking to maximize the financial potential of their forest assets. Generally, a forest offset project is defined as a series of prescribed management actions implemented on particular area of land that result in an increase in removals of carbon dioxide from the atmosphere (sequestration) or a reduction or avoidance of greenhouse gas emissions. Some examples of forest offset activities include planting trees, protecting forests from conversion, modifying forest species composition and increasing tree stocking levels. Forest offset projects that are successful in reducing or avoiding carbon emissions generate carbon credits, which can be sold to entities who wish to mitigate or “offset” their greenhouse gas (GHG) emissions.

Unfortunately, the opportunities for NIPF landowners to participate in this new market continue to be limited due to significant opportunity costs, extremely long term contract commitments, and high annual monitoring (verification) costs. The future opportunities for privately-owned forestlands in any forthcoming regulatory framework are difficult to predict.

Lack of uniform standards for forestry projects, along with an absence of federal policy on GHG emissions, means that landowners must today contend with significant uncertainty when evaluating the economic viability of forest carbon. Those who develop offset projects on their forest properties face significant long term contractual obligations and legal liability, with no guarantees regarding the long-term market viability of a project developed in accordance to an established pre-compliance standard. Large-scale investment in forest offsets in the future will require a national regulatory policy that effectively places a market price on GHG emissions and a clear, practical and economically- feasible national standard for the development and implementation of forest-based offsets within this regulatory framework.

The GFC and The University of Georgia Warnell School of Forestry and Natural Resources have developed carbon accumulation tables for Georgia and an online carbon sequestration registry. This registry lists and documents forestry projects that are managed to sequester carbon.



STRATEGIC ISSUES

AIR QUALITY AND CARBON SEQUESTRATION

In addition to the carbon sequestration benefit, trees remove or trap lung-damaging dust, ash, pollen and other air pollutants. By reducing air pollution, they save money in pollution mitigation efforts and health care costs. To sustain air quality, communities must set goals to minimize the loss of trees while maximizing their benefits.

POTENTIAL AGENCY AND ORGANIZATION ROLES

- GFC has created a Carbon Registry that issues marketable carbon credits to commercial real estate developers who use sustainable materials such as mass timber in Georgia.
- GFC staff worked with the Southern Group of State Foresters (SGSF) to develop a guiding principles paper that focuses on carbon offsets from a southeast regional perspective and will work to promote the principles.
- GFC staff members continue to monitor developments on a national scale concerning changing weather patterns legislation so that Georgia's landowners will be well positioned to participate in carbon markets.
- GFC will identify air quality benefits of community forests related to public health.
- The Georgia Urban Forest Council and GFC will utilize municipal funds, grants and corporate funds to plant trees in communities.

ISSUE-SPECIFIC PRIORITY AREAS

Focus areas for reducing greenhouse gases by increasing carbon sequestration are in the coastal plain of SW Georgia, Blue Ridge, Ridge and Valley and East Gulf Coastal Plain. Urban priority areas will be targeted for community tree planting projects.



STRATEGIC ISSUES

AIR QUALITY AND CARBON SEQUESTRATION

Goals, Objectives and Strategies

Goal 1: Develop and enhance value-capture activity for carbon sequestration in forests.

Objective 1.1: Increase the amount of forest land involved with carbon sequestration offset projects at some market or value-capture level in priority areas.

Strategy 1.1.1: Educate forest landowners and landowner agents to enable their participation in carbon sequestration projects.

Strategy 1.1.2: Promote the GFC carbon registry for sustainable building materials. The activities for promotion will include the following components:

- a) Present the GFC carbon registry for sustainable building materials at Climate Resiliency Conferences and Life Cycle Assessment conferences to ensure that the Sustainability community is aware of the Georgia Carbon Registry for sustainable building materials.
- b) Speak at Architectural and Structural Engineering venues to promote the use of mass timber and its embedded and embodied carbon benefits.
- c) Ensure that UGA and GA Tech are aware of the carbon benefits of building with mass timber and the sustainability of the forest resource in the South.
- d) Have the Carbon Registry protocol for sustainable building materials professionally edited.

Goal 2: Enhance air quality in Georgia.

Objective 2.1: Reduce loss of tree canopy cover in Rural, Urban and Interface priority areas.

Strategy 2.1.1: Assist communities in setting tree canopy goals.

Strategy 2.1.2: The Georgia Urban Forest Council and GFC will utilize grant and corporate funds to plant trees in communities.

Objective 2.2: Increase public understanding of the role of trees and forests in air quality in Rural, Urban and Interface priority areas.

Strategy 2.2.1: Partner with utilities to educate homeowners about the energy benefits of strategically planted trees.

Strategy 2.2.2: Promote air quality benefits of community forests related to public health.

Strategy 2.2.3: Partner with GA EPD to provide cost share funding for landowners to assist with reforestation after timber harvest.



STRATEGIC ISSUES

AIR QUALITY AND CARBON SEQUESTRATION

Performance Measures:

Number of acres of forest land in Georgia compared to prior FIA data sets.

Percent increase in tree canopy.

Number of trees planted.

Number of education program attendees.

Resources Needed:

Collaborations: Collaboration with agencies such as EPD and others will be needed as federal greenhouse gas (GHG) regulations are developed. Georgia EPD has applied for grant funding to provide financial assistance to landowners to replant after final harvest. GFC will assist with performance monitoring of reforestation practices.

Regulations: Federal and/or national standards, protocol and definition of a forest carbon offset are needed. A strong market for forest carbon offsets is dependent upon federal regulation of greenhouse gas emissions.

Personnel: A member of the GFC SUM Department currently handles the carbon offset program.

Research: Financial analysis needed for forest investments which specifically include participation in carbon offset markets. Modification of the Georgia Carbon Sequestration Registry so that it works with any federal offset program and is a value-added tool by facilitating transparency in the developing carbon markets.



STRATEGIC ISSUES FIRE MANAGEMENT

ISSUE 6: FIRE MANAGEMENT

ISSUE DESCRIPTION

Protecting Georgia's forests from wildfire is one of the founding missions of the Georgia Forestry Commission (GFC). Today, approximately 24 million acres - about two-thirds of the state - are forested, and timber remains Georgia's most valuable agricultural commodity, generating \$42 billion annually.

Each year, Georgia experiences an average of 5,700 wildfires that burn approximately 39,000 acres. These events result in the loss of about 110 homes and 185 outbuildings, valued at a combined \$5.5 million. Without GFC suppression efforts, the impact would be far greater - on average, 3,200 structures valued at \$503 million are saved annually.

CURRENT CHALLENGES

Urban expansion, higher forest fuel loads, and tighter restrictions on prescribed burning have significantly increased wildfire risk. Recent updates to the National Ambient Air Quality Standards (NAAQS) present new uncertainty for prescribed burning, raising concerns that future limitations could restrict this essential tool. While suppression is critical, it cannot by itself prevent severe wildfire impacts. Effective fuel reduction, particularly in Wildland Urban Interface (WUI) areas, is essential.

WILDFIRE RISK

Wildfire risk is increasing due to several converging factors:

- Continued urban expansion into Wildland Urban Interface (WUI) areas, where more than nine million acres and over 5,000 communities face "high" or "very high" wildfire risk.
- Rising fuel loads and reduced opportunities for prescribed burning due to public perception, liability concerns, and regulatory pressures.
- Recent updates to National Ambient Air Quality Standards (NAAQS), which create new challenges for balancing smoke management with prescribed fire operations.
- Human-caused ignitions, particularly from debris burning, machinery use, and arson, remain the leading wildfire causes.

RESOURCE CONSTRAINTS

Budget reductions and workforce losses have placed additional strain on personnel and equipment readiness.

ROLE OF PARTNERSHIPS

GFC continues to lead wildfire suppression but increasingly depends on strong partnerships with federal, state, and local agencies, as well as private organizations.

These collaborations are essential for:

- Coordinating suppression and prescribed fire efforts.
- Sharing training and equipment.
- Supporting air quality management.
- Enhancing public outreach and education.



STRATEGIC ISSUES FIRE MANAGEMENT

ISSUE-SPECIFIC PRIORITY AREAS

SWRA data and wildfire history guide program priorities, identifying the Blue Ridge, Ridge and Valley, and Atlantic Coastal Plain as key suppression areas. Prescribed burning priorities include these same regions plus the Fall Line, Okefenokee GOAL area, East Gulf Coastal Plain, and Large River Bottomlands - particularly in longleaf pine ecosystems.

KEY PROGRAM ROLES

To maintain a high level of protection for lives, property, and forest resources, GFC will:

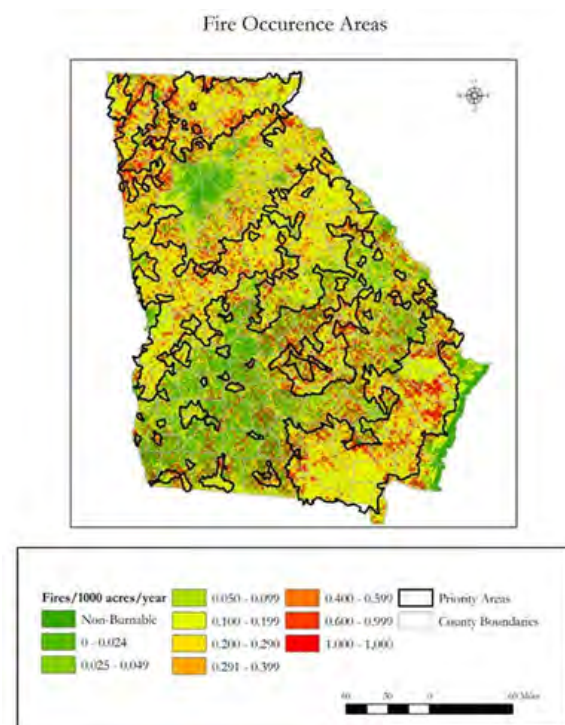
- Strengthen ranger training, including cross-training with structural firefighters.
- Expand use of modern communications and predictive weather systems.
- Maintain and refurbish firefighting equipment.
- Provide burn authorizations and promote prescribed fire through certification programs.
- Support community-level mitigation through CWPPs, Firewise USA, and Fire Adapted Community initiatives.
- Increase law enforcement capacity for arson and timber security investigations.
- Offer plowing and burning assistance to landowners for fuel reduction.

STRATEGIC IMPERATIVE

Moving forward, GFC must balance suppression, prevention, and mitigation to reduce wildfire risk across Georgia. This will require:

- Sustained funding to modernize the firefighting fleet and communications systems.
- Targeted public education to address human-caused ignitions.
- Expanded fuel reduction programs, including mechanical treatments where burning is not feasible.
- Continued development of interagency partnerships for incident management and disaster response.

By combining operational readiness with proactive mitigation and community engagement, Georgia can significantly reduce the threat of catastrophic wildfire while maintaining healthy, productive forests.





STRATEGIC ISSUES

FIRE MANAGEMENT

Goals, Objectives and Strategies

Goal 1: Protect Georgia communities from wildfire.

Objective 1.1: Expand wildfire planning in at-risk areas.

Strategy 1.1.1: Complete and update Community Wildfire Protection Plans (CWPPs) across all counties and integrate them into GEMA hazard mitigation plans.

Strategy 1.1.2: Increase participation in **Firewise USA** and **Fire Adapted Communities** programs.

Strategy 1.1.3: Use **SouthWRAP** (Southern Wildfire Risk Assessment Portal) to target highest-risk WUI zones for prevention and outreach.

Goal 2: Prevent and mitigate wildfire.

Objective 2.1: Reduce wildfire frequency and severity.

Strategy 2.1.1: Strengthen arson enforcement and expand fire investigations.

Strategy 2.1.2: Expand public education campaigns (e.g., "One Message, Many Voices") to reduce human-caused ignitions.

Strategy 2.1.3: Increase use of mechanical treatments such as mastication in WUI areas where burning is not feasible.

Strategy 2.1.4: Enhance the burn permit system with real-time mapping, data analytics, and online access for landowners.

Strategy 2.1.5: Provide expanded firebreak plowing and prescribed burning services to landowners.

Objective 2.2: Safeguard prescribed fire as a management tool.

Strategy 2.2.1: Work with state and federal regulators to ensure prescribed fire remains viable under updated NAAQS requirements.

Strategy 2.2.2: Continue training and certifying prescribed fire managers and increase incentives for landowners to apply fire.

Strategy 2.2.3: Strengthen smoke management practices through emerging technology (forecasting models, remote weather stations, GIS-based smoke tracking).

Goal 3: Maintain effective fire suppression capacity.

Objective 3.1: Modernize workforce and equipment.

Strategy 3.1.1: Recruit, retain, and train new rangers to replace retiring personnel.

Strategy 3.1.2: Expand cross-training with structural firefighters.

Strategy 3.1.3: Replace and upgrade aging suppression tractors, engines, and aircraft.

Strategy 3.1.4: Support the GFC Fabrication shop to maintain and customize suppression equipment for both GFC and volunteer fire departments.

Objective 3.2: Strengthen communication and forecasting.

Strategy 3.2.1: Expand interoperability with partner agencies through upgraded LTE communication systems.

Strategy 3.2.2: Enhance communication coverage in mountainous and rural areas.

Strategy 3.2.3: Utilize GFC weather station network in tandem with National Weather Service fire weather forecasts for accurate, localized predictions.



STRATEGIC ISSUES

FIRE MANAGEMENT

Goal 4: Advance Incident Management Capabilities

Objective 4.1: Maintain Georgia's nationally qualified IMT and enhance to CIMT.

Strategy 4.1.1: Continue training and exercises to support wildfire and all-hazard response.

Strategy 4.1.2: Strengthen interagency partnerships with GEMA and other state agencies for statewide disasters.

Performance Measures:

Number of county CWPPs.

Number of Firewise and Fire adapted Communities.

Number of arson wildfires and arson arrests.

Average wildfire size (target <5 acres).

Miles of firebreaks plowed.

Number of prescribed fire acres burned.

IMT readiness and deployments.

Resources Needed:

Funding: At least \$1,000,000 annually above baseline state support to expand prevention, mitigation, and suppression programs.

Personnel: Additional dispatchers, CWPP specialists, training specialists and law enforcement investigators.

Technology: Advanced GIS systems, smoke modeling, remote sensing, and drones for detection and mapping.

Equipment: Replacement of aging fire suppression tractors, engines, and aircraft.



STRATEGIC ISSUES

FRAGMENTATION AND PARCELIZATION

ISSUE 7: FRAGMENTATION AND PARCELIZATION

ISSUE DESCRIPTION

The future of Georgia's forests is imperiled by increasing forest fragmentation and parcelization. Parcelization results when the number of forest landowners increases, but the forestland is held in smaller parcels, measured at 50 acres or fewer (*Wear and Greis 2002*). Though parcelization may not result in forest canopy loss, in many cases resources on the tract become unavailable to markets.

Forest fragmentation is the division of contiguous forest stands into smaller, isolated pieces or less contiguous tracts, due to development, conversion to agriculture, the divestiture of forestland by the forest industry, and other human activities.

Both fragmentation and parcelization may disrupt wildlife corridors and migration routes of many wildlife species. Those species requiring large, undisturbed expanses may decline. They may also cause adverse changes in water quality and quantity and impede the management of fire and forest pests. Fragmentation and parcelization result in less efficient management units, which contribute to cost increases and resource management difficulties.

Fragmentation has been identified as a key measure of environmental quality, and representative of a forest's ability to provide critical ecosystem services. These services include protection of water quality and quantity, air quality protection, biodiversity protection, and carbon sequestration.

CONTRIBUTING FACTORS

A primary factor contributing to forest fragmentation and parcelization is changing ownership patterns. The majority of Georgia's productive forestlands are in private ownership. These private landowners are facing increased pressure to convert their forestlands to other uses. Decreasing markets, urbanization pressures, taxation, and mass divestitures of forest industry land are leading concerns.

A major urbanization factor is leapfrog development sprawl, a discontinuous pattern of urbanization with patches of developed lands that are widely separated from each other and from the boundaries of recognized urbanized areas. Such sprawl isolates forest patches, drives up the highest and best use value, and ensures their conversion to development.

Several taxation issues affect forestland ownership and the forest industry in Georgia. However, none is more critical to the future of Georgia's forests than property taxes. Georgia's ad valorem tax system was created during a time when the wealth and profits of the state came out of the production of the land – when cotton was still king in the 1800s. As times have changed and Georgia has become increasingly urban, the tax structure has remained the same. As a result, forestland valuations for tax purposes are inconsistent across Georgia and "highest and best use" land valuation threatens forest sustainability.

Non-industrial private landowners throughout Georgia are reporting dramatic increases in local property taxes. Many have been hit with a doubling, tripling or more of ad valorem tax liability just in the past few years. In this environment, a growing number of landowners simply cannot grow trees fast enough or sell them at a price high enough to pay the current property taxes levied on the land. When owners of large tracts die, their heirs may be left with enormous tax bills, often leading to the sale of some or all of the land in order to pay taxes. When this occurs, the land is more prone to be subdivided.



STRATEGIC ISSUES

FRAGMENTATION AND PARCELIZATION

Traditional forest products companies have also been impacted by highest and best use tax assessments, resulting in divestitures to timber investment management organizations (TIMOs) and real estate investment trusts (REITS). One result of greater TIMO and REIT involvement is a more rapid turnover in forest ownership and an increased potential for subsequent parcelization into smaller-sized properties (*Wear et al. 2007*).

In addition, landowners must pay severance taxes on timber. For many, owning forests and timberland has become a poor business decision. Studies show that for every \$1.00 in ad valorem tax generated by Georgia's timberlands, those same lands receive less than \$0.50 return in services. (*2017 study Madison-Morgan Conservancy*)

In 1991, the General Assembly passed the Conservation Use Valuation Assessment Act (CUVA). It provides for a reduction in property tax assessments and is available only to private individuals who own forestland not exceeding 2,000 acres. Lands belonging to forest industry companies are not eligible. As a result, many companies divested their lands. CUVA properties are assessed according to soil type, productivity and a reduced fair market value factor. Landowners are required to place their property in 10-year covenants, severely restricting the use of the property. If a covenant is breached, stiff penalties must be paid. Each county tax assessor's office administers the program independently, so application requirements may vary among counties. Generally, a minimum of 10 acres is required for enrollment, but some counties have recently increased the minimum acreage to 25 acres. No more than 2,000 acres can be enrolled in CUVA by any one non-industrial, private landowner. Because of the mass divestitures of forest industry land, in November 2008, Georgians overwhelmingly voted for a Constitutional Amendment that provides relief for property taxation of Georgia's forests over 2,000 acres. Through the Forest Land Protection Act (FLPA), large tracts of privately or corporately owned forestlands may be eligible for reduced property tax.

Landowners can apply for FLPA valuation of their property if they meet eligibility requirements and sign a conservation agreement to keep the land in a qualified use for 15 years. Landowners receive a reduced ad valorem tax rate for property enrolled in FLPA. Eligible tracts must be used for subsistence or commercial production of trees, timber, or other wood and wood fiber products; and the value of any residences on the property are excluded. Properties must be a minimum of 200 acres, but unlike CUVA, there is no maximum acreage cap.

Forestland designated for conservation use may include land that has been certified as environmentally sensitive property by the Department of Natural Resources. It may also be property that is kept in accordance with a recognized sustainable forestry certification program. The property may have compatible secondary uses such as the promotion, preservation or management of wildlife habitat, carbon sequestration, or mitigation and conservation banking that results in the restoration or conservation of wetlands and other natural resources.

Opportunities are to provide landowners with incentives to retain manageable tracts of forestland that can compete with the financial returns of converting or selling forestland for other purposes. Some of these incentives could be in tax relief and in the development and support of markets to increase the financial investment value of forest resources. Maintaining incentives and smart public policy to allow lands to remain in forest cover will provide both environmental and economic benefits for Georgians in the future.



STRATEGIC ISSUES

FRAGMENTATION AND PARCELIZATION

Georgia's forests are a valuable natural resource and economic engine for our state. Forest landowners should be given every opportunity to hold their property for the benefits of forest sustainability and the security and enjoyment of future generations.

POTENTIAL AGENCY AND ORGANIZATION ROLES

There is still much that needs to be done to address the inequity that exists across Georgia in the application of ad valorem taxes:

- GFC will continue to educate landowners about CUVA and FLPA opportunities and educate local tax assessors about how to adequately evaluate the properties enrolled in these programs.
- GFC will work with the Department of Revenue as it reviews and enhances statewide regulations.
- GFA will use its advocacy role to educate state legislators about the need for ad valorem tax reform in the state and about inequitable tax impacts on forest landowners and the forest industry.

ISSUE-SPECIFIC PRIORITY AREAS

The large forestland base and economic dependence on forestry makes south Georgia counties a priority. Many rural counties throughout south Georgia rely almost entirely on ad valorem taxes for their budgets.





STRATEGIC ISSUES

FRAGMENTATION AND PARCELIZATION

Goals, Objectives and Strategies

Goal 1: Conserve working forest landscapes for multiple values and uses.

Objective 1.1: Protect Fall Line area from fragmentation and parcelization.

Strategy 1.1.1: Determine land ownership demographics and management interests.

Strategy 1.1.2: Identify and assist forest landowners in the Piedmont National Wildlife Refuge and Oconee National Forest area.

Strategy 1.1.3: Deliver education and assistance program to military base areas in the Fall Line priority area in cooperation with SERPPAS.

Goal 2: Protect the high biological diversity of Georgia's forests.

Objective 2.1: Increase the number of acres protected from fragmentation and parcelization in priority areas.

Strategy 2.1.1: Recognize the 12-digit HUC/ 30% forested/ greater than 50% intact landscape layer as the initial delineation of a priority for program delivery and budget available funds for the creation of new or revised plans based on being "in" initial priority delineation (75%) and "out" of initial priority delineation (25%).

Strategy 2.1.2: Adopt new procedure and implement with State Forest Stewardship Coordinating Committee oversight to ensure funds are applied to the worthiest applicants for plan development.

Strategy 2.1.3: Convene a subgroup of the State Forest Stewardship Coordinating Committee to draft an initial ranking process with relevant criteria to ensure the criteria for ranking the applications addresses as many resource concerns and issues as appropriate.

Goal 3: Enhance public benefits from trees and forests including air and water quality, soil conservation, biological diversity, carbon storage, forest products, forestry-related jobs, production of renewable energy, and wildlife.

Objective 3.1: Promote landscape-level approach to program delivery in priority areas especially areas impacted by storms, insects, and disease.

Strategy 3.1.1: Identify landscape-scale pilot projects in priority areas to implement program delivery to:

- Protect and enhance water quality and quantity.
- Improve air quality and conserve energy.
- Assist communities in planning for and reducing wildfire risks.
- Maintain and enhance the economic benefits and values of trees and forests.
- Protect, conserve, and enhance wildlife and fish habitat.
- Connect people to trees and forests and engage them in environmental stewardship activities.
- Manage and restore trees and forests to mitigate storm, insect, and disease issues.

Strategy 3.1.2: Continue/research state and federal grant options and enhance special project redesign funding to address needs.



STRATEGIC ISSUES

FRAGMENTATION AND PARCELIZATION

Performance Measures:

- Number of contiguous forestland acres protected.
- Number of landowner assists.
- Number of educational programs presented.
- Number of landscape scale projects in priority areas.
- Number of acres under an approved management plan.
- Number of acres certified as forest stewards.
- Number of acres within military base ACUB priority areas assisted.

Resources Needed:

Regulations: State and local policies to address recognition of resource values (monetary and non-monetary).

Personnel: State level forest resource GIS specialist and state level software programmer.

Legislation: State laws to create incentives for forest-based ecosystem services.

Research: Enhanced analysis of resource conditions, threats and opportunities through GIS-based systems.

Funding: Continue state grant options and enhance special project redesign funding to address needs.

Other: Educational materials, mapping, demonstration projects, technical assistance and training for personnel to deliver programs.



STRATEGIC ISSUES

ECONOMICS AND CHANGING MARKETS

ISSUE 8: ECONOMICS AND CHANGING MARKETS

ISSUE DESCRIPTION

Georgia's forests sustain a huge economic engine for the state. In 2024, the forest industry brought more than \$59 billion to Georgia's economy and employed 177,389 people. It is the 2nd largest industry in Georgia based upon wages and salaries, and the third largest based upon employment. In order to develop appropriate strategies for improving the environmental, social and economic benefits related to forests in Georgia, it is necessary to combine the "Economics" and "Changing Markets" issues. The overall objective is to increase the value of forests and forest products. Strategies must address both the changing market threats and the opportunities created by changing markets. The threats have been identified as globalization, product substitution, aging pulp and paper mills competing with new-state of the art efficient mills overseas, low housing starts reducing demand for lumber and panels, and demands for certified wood products.

More markets for existing forest product types would lead to competition and increased stumpage values. New forest products, such as bioenergy and various types of engineered wood products, may create additional markets for many forest resources that have not been utilized in traditional forest industries. Increased stumpage values and the creation of additional markets for new products provide more incentives for forest management and reforestation. Currently demand for timber is decreasing while timber stocks are increasing, creating an environment where stumpage prices are declining.

POTENTIAL AGENCY AND ORGANIZATION ROLES

- The GFC plans to positively impact forest values by increasing the quantity and per-unit value of forest products delivered to manufacturing facilities in the state. This will be done by promoting the use of mass timber in commercial construction, attracting new bioenergy and traditional mill development, facilitating certified wood product manufacturing, and assisting companies with identifying new international markets.
- GFC will continue to educate and encourage landowners about forest carbon offset projects.
- GFC will work with GFA and other partners to promote incentives and public policy that allow lands to remain in forest cover and provide both environmental and economic benefits for Georgians in the future.

ISSUE-SPECIFIC PRIORITY AREAS

The Economics and Changing Markets strategic issue is important for the entire state. This issue should be applied with statewide focus, due to an abundance of timber statewide and closure of multiple major pulp and lumber mills.



STRATEGIC ISSUES

ECONOMICS AND CHANGING MARKETS

Goals, Objectives and Strategies

Goal 1: Increase the total value of wood products delivered to mills.

Objective 1.1: Increase the number of mills producing both traditional and new bioenergy products in priority areas.

Strategy 1.1.1: Facilitate marketing referrals through continued collection and dissemination of the Forest Products Marketing Directory, participation in trade shows, online marketing development and other traditional methods.

Strategy 1.1.2: Identify and contact potential new industries that are seeking expansion and could benefit from building mills in Georgia through increasing new partner contacts, participation in trade shows and other meetings.

Strategy 1.1.3: Promote forest products in domestic and international markets.

Strategy 1.1.4: Promote biomass forest products industry – wood pellets, biomass electricity, bio-ethanol, biochar etc.

Strategy 1.1.5: Promote the use of mass timber, with a focus on Southern Yellow Pine (SYP) through webinars, workshops, conferences & other workshops. Promote the Georgia Carbon Registry using the building products carbon storage protocol increasing construction projects listed on the registry.

Objective 1.2: Increase the amount of wood products exported.

Strategy 1.2.1: Pursue international marketing and business recruitment missions.

Objective 1.3: Increase the amount of certified wood products produced in Georgia mills.

Strategy 1.3.1: Facilitate the increase of certified forests in Georgia by identifying landowners who are active in the Forest Stewardship program and assisting with their certification in Tree Farm and other programs.

Strategy 1.3.2: Conduct workshops for forest products companies and landowners to provide information on requirements and benefits of forest certification and wood product certification.

Strategy 1.3.3: Increase marketing referrals made concerning certified wood products.

Strategy 1.3.4: Pursue development of ecosystem services markets through collaboration with land developers, industry, county commissions and soil and water conservation districts to maintain and enhance the forest land base.

Performance Measures:

Number of marketing referrals.

Number of contacts.

Value of production output and value of exported wood products.

New mass timber buildings constructed in Georgia using SYP, new projects on the Georgia Carbon Registry and other outreach.

Number of new mills.

Percent increase in exports.

Number of acres in certification systems and value of certified wood product output.

Number of workshop attendees.

Percent increase in marketing referrals.

Establishment of pilot programs, number of forest acres engaged and number of partner organizations seeking to mitigate impacts.

APPENDIX A

FOREST ACTION PLAN PROCESS OVERVIEW

FOREST ACTION PLAN PROCESS OVERVIEW

The *Georgia Forest Action Plan* was developed under the leadership of the Georgia Forestry Commission (GFC) in accordance with national direction issued jointly by the U.S. Forest Service (USFS) and the National Association of State Foresters (NASF).

The cornerstone of the Assessment is the *2024 Sustainability Report for Georgia's Forests*. In 2007, the Georgia General Assembly enacted into law Senate Bill 176. It requires the GFC to submit a report to the General Assembly every five years which summarizes the sustainability of the state's forests. Specifically, the bill requests verification of "the ability of forest resources in this state to meet the needs of the present without compromising the ability to meet the needs of future generations." The latest edition of the report, submitted to the General Assembly in January of 2024, highlights the current forest resource conditions, along with the challenges and opportunities being faced by Georgia's forest managers and owners. It concludes that while Georgia's forests are being sustainably managed for the numerous needs of the state today, their future viability will be determined by specific actions of state leaders and the forestry community. Forest issues identified by stakeholders and key partners in the report served as the basis for this Assessment's development.

APPENDIX B PUBLIC AND PARTNER INVOLVEMENT

PUBLIC AND PARTNER INVOLVEMENT

At the beginning of the FAP process, GFC conducted a public survey to gather further information relevant to key state issues and the national priorities. The Georgia Forest Stewardship Steering Committee met several times to discuss relevant strategic issues and offer content to the Strategy.

The committee has also functioned as a key reviewer of the original Assessment and Strategy. Issues were placed in a survey on the GFC website for public comment and ranking. The issues, presented in order of their importance as determined by the public, include: Water Quality, Urban Sprawl, Conservation, Taxes, Biodiversity, Forest Health, Air Quality, Fire Management, Fragmentation/Parcelization and Changing Markets (*Table A1*).

Public Stakeholder Survey Results 144 Respondents													
Issue	Rankings	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	Total	
	Weight	10	9	8	7	6	5	4	3	2	1		
Urban Sprawl	# Votes	41	28	7	6	11	5	4	9	16	17	144	
	Subtotal	410	252	56	42	66	25	16	27	32	17	943	2nd
Parcelization	# Votes	11	13	11	11	23	11	14	13	16	21	144	
	Subtotal	110	117	88	77	138	55	56	39	32	21	733	9th
Taxes	# votes	35	11	18	8	14	8	12	8	15	15	144	
	Subtotal	350	99	144	56	84	40	48	24	30	15	890	4th
Economics	# Votes	13	16	11	13	11	9	17	13	16	25	144	
	Subtotal	130	144	88	91	66	45	68	39	32	25	728	10th
Water	# Votes	32	12	17	23	18	10	15	8	5	4	144	
	Subtotal	320	108	136	161	128	50	60	24	10	4	1001	1st
Air	# Votes	12	15	13	7	19	21	11	17	17	12	144	
	Subtotal	120	135	104	49	144	105	44	51	34	12	798	7th
Biodiversity	# Votes	15	10	17	21	16	13	12	19	9	12	144	
	Subtotal	150	90	136	147	96	65	48	57	18	12	819	5th
Fire Management	# Votes	13	17	12	11	12	15	15	20	14	15	144	
	Subtotal	130	153	96	77	72	75	60	60	48	15	786	8th
Forest Health	# Votes	21	16	14	6	14	15	14	19	14	11	144	
	Subtotal	210	144	112	42	84	75	56	57	28	11	819	5th
Conservation	# Votes	28	20	19	12	12	12	14	5	3	19	144	
	Subtotal	280	180	152	84	72	60	56	15	6	19	924	3rd

Table A1

These issues encompass a number of threats which present significant challenges to forest managers, landowners and civic leaders. They are interrelated and often complex. Conservation was a highly ranked public concern that affects and is interwoven with every issue; it is not individually analyzed in this report. Likewise, taxation was included as a contributing factor to the fragmentation and parcelization issue.

GFC contracted with the University of Georgia Warnell School of Forestry and Natural Resources to develop geospatial data layers for use in identifying priority forest landscapes. This geospatial data, together with issues identified in the *2024 Sustainability Report for Georgia's Forests* report, laid the foundation for developing the Forest Action Plan.

The Georgia Forestry Commission coordinated with the State Forest Stewardship Coordinating Committee, State Technical Committee, Georgia Urban Forest Council, Georgia Statewide Water Management Plan Interagency Coordinating Committee, Invasive Species Task Force, U.S. Forest Service and The University of Georgia Warnell School of Forestry and Natural Resources to develop the original Forest Action Plan and identify opportunities for program coordination and integration. The participation of these and other key partners from natural resource and related entities ensures that *Georgia's Forest Action Plan* integrates, builds upon and complements other natural resource plans.

APPENDIX C

INTEGRATION OF OTHER PLANS & ASSESSMENTS

INTEGRATION OF OTHER PLANS AND ASSESSMENTS

Wildlife

Probably the greatest tool available for guiding efforts to sustain overall forest wildlife in Georgia is the “State Wildlife Action Plan” (SWAP). This document, entitled *A Comprehensive Wildlife Conservation Strategy for Georgia*, was completed by the Wildlife Resources Division of DNR in 2025 with the help of many private and public stakeholders.

The SWAP focuses on those species and habitats believed to be most in need of conservation attention because of population declines and continuing threats. It lists over 100 species of highest concern.

It addresses the extent and condition of essential habitat types, as well as habitat problems and conservation opportunities. It also addresses research, surveys, monitoring and habitat restoration needs, and provides an evaluation of existing conservation policies and programs. In addition, the SWAP outlines partnership opportunities and prioritizes the implementation of specific conservation actions. The SWAP can be viewed at <https://storymaps.arcgis.com/stories/542516e03f9848538c32e6ce258427b1>.

Strategies from the *State Wildlife Action Plan* were incorporated into the *Georgia Forest Action Plan*.

Water

The Georgia Comprehensive Statewide Water Management Plan of January, 2008, prepared by the Georgia Environmental Protection Division (*Georgia DNR 2008*) in cooperation with recommendations from the Water Council, stated that of all its natural resources, none is more important to the future of Georgia than water. Meeting future water challenges will require a more proactive and comprehensive approach. The plan can be viewed: http://www.georgiawaterplanning.org/pages/more_information/state_water_plan.php.

During the development of the Georgia Forest Action Plan, the Water Management Plan was used to identify public water supply watersheds and impaired streams on which to focus monitoring efforts.

The Georgia Comprehensive Statewide Water Management Plan was developed with input provided by basin advisory committees, a statewide advisory committee and technical advisory committees. Potential water policies and management practices relating to regional concerns were discussed at numerous town hall meetings held across the state. Hundreds of individuals representing agriculture, forestry and business interests, local governments, water authorities, nonprofit agencies, trade associations and others provided input. It was recognized that water resources and water needs vary widely by region, and future growth and development will occur differently in each region. What emerged was a blueprint that, when executed, will guide future decisions about water management across the state. It provides a flexible framework for regional water planning and allows for these regional differences while also providing statewide policies and management practices to support regional planning. The plan hinges on regional forecasts of future needs and will identify the management practices to be implemented, following state policy and guidance, to ensure that the anticipated

APPENDIX C

INTEGRATION OF OTHER PLANS & ASSESSMENTS

demands can be met. When developed and approved, the state must partner with the various users in the region to implement the plans. This plan will guide the stewardship of Georgia's precious water resources to ensure that they continue to support growth and prosperity statewide while maintaining healthy natural systems. The plan addresses the following elements:

- An integrated water policy
- Water quantity and water quality policies
- A water resource assessment
- Establishing water quantity and water quality management practices
- Water demand and water return management practices
- A water supply management policy
- Enhanced water quality standards and monitoring practices
- Enhanced pollution management practices
- Regional water planning

Going forward, GFC will provide forestry information to the Regional Councils to guide future water quality and quantity policy issues.

Forest Stewardship

Georgia's Forest Stewardship Plan was an important resource used by the State Forest Stewardship Coordinating Committee during the development of the *Forest Action Plan*. The committee coordinates the Forest Stewardship Program and provides advice and recommendations to the State Forester concerning implementation of the Forest Legacy Program. The assistance and recommendations provided by the group during the development of the Assessment ensured a product focused on the interrelatedness of the multiple benefits and needs of Georgia's forests.

Fire Management

The *Prescribed Fire In Georgia: A Strategic Plan 2008-2020*, was developed in 2008 by 40 professionals from Georgia and Florida with over 500 years of combined experience. The three-day "Fire Summit" at the Tall Timbers Research Station and Land Conservancy produced a strategic plan with goals and objectives that reflect the highest priorities based on the current and projected status for prescribed burning. Goals and objectives from this plan were incorporated into the *Georgia Forest Action Plan*. To view the document, visit <https://gatrees.org/resources/prescribed-fire-in-georgia-a-strategic-plan-2008-2020/>.

The Southern Wildfire Risk Assessment was used to identify the potential for serious wildfires within Georgia and to provide information that will help prioritize areas where mitigation options may be desirable. These SWRA products are the primary tools used in assigning priority to GFC Fire Management programs including CWPPs, fire prevention and mitigation efforts.

APPENDIX C

INTEGRATION OF OTHER PLANS & ASSESSMENTS

Forest Health

The Georgia Department of Natural Resources headed an effort in 2008 and 2009 to bring many stakeholders together to formulate The Georgia Invasive Species Strategy. The Committee identified needs and existing efforts for response to or detection of invasive species problems within the state. As part of this process, the committee identified 51 invasive or potentially invasive plant species, 107 animal species and 30 disease-causing organisms. Based on this information, the committee set goals and objectives and proposed strategies for action. The goal of this effort is to prevent and control the introduction of invasive species into Georgia and minimize the further spread and impacts of existing invasive species populations on native species, environmental quality, human health and the economy. The Strategy endeavors to do this through eight objectives:

1. Coordinate local, state, regional, federal and international activities and programs pertaining to invasive species in Georgia.
2. Control and manage the introduction and spread of invasive species in Georgia through education and outreach.
3. Prevent the establishment of invasive species populations in Georgia through early detection and rapid response programs.
4. Control or eradicate established invasive species in Georgia through cooperative management activities designed to minimize impacts to non-target species.
5. Monitor the distribution and impacts of invasive species in Georgia to determine management priorities.
6. Identify and implement needed research on impacts and control of invasive species in Georgia.
7. Prevent the introduction and spread of invasive species in Georgia through legislative and regulatory efforts.
8. Secure adequate long-term funding for invasive species programs in Georgia.

There are actions in the FAP to address these objectives.

For more information on The Georgia Invasive Species Strategy:
<https://gainvasivespeciescouncil.org/>

APPENDIX D

FOREST LEGACY PROGRAM

FOREST LEGACY

PROGRAM DESCRIPTION

In 1990, the Forest Legacy Program (FLP) was one of several programs established to promote the long-term integrity of forestlands. The Secretary of Agriculture was directed to establish a FLP in cooperation with state, regional and other units of government. In carrying out this mandate, the Secretary has been authorized to acquire lands and interests in lands through fee purchases or conservation easements in perpetuity for inclusion in the FLP. Landowner participation in the Program, including the sale of lands and interests in lands, is entirely voluntary.

The majority of Georgia's productive forestlands are in private ownership. These private landowners are facing increased pressure to convert their forestlands to other uses. Greater population density and user demands are placing increased pressures on private lands to provide a wide variety of products and services including fish and wildlife habitat, aesthetic qualities, timber and recreational opportunities.

Good stewardship of privately held forestlands requires a long-term commitment that can be fostered through a partnership of federal, state and local government efforts with land trusts and other non-governmental conservation organizations.

The GFC is the lead agency for the FLP and concurs on all aspects of the *Georgia Statewide Assessment of Forest Resources* that pertain to the program, including the identification of Forest Legacy Areas (FLAs). *Georgia's Forest Legacy Assessment of Need (AON)* is in accordance with the approval process that is required for FLP. The Forest Legacy Committee, comprised of members of the State Forest Stewardship Coordinating Committee and natural resource agencies and organizations with conservation easement experience, developed the AON document. Six FLAs were designated by the committee. Current demographic trends were analyzed along with other selection criteria as set forth in the Cooperative Forestry Assistance Act to give priority to lands as follows:

FOREST LEGACY AREA SELECTION CRITERIA

The Forest Legacy Committee uses the following criteria when determining a potential FLA:

1. Forested areas threatened by conversion to nonforest use, in both the near and long term;
2. Forest resources including:
 - a. Aesthetic and scenic values;
 - b. Fish and wildlife habitat, including threatened and endangered species;
 - c. Minerals resource potential;
 - d. Public recreation opportunities;
 - e. Soil productivity;
 - f. Timber management opportunities;
 - g. Watershed values;
 - h. Native plant communities; and
 - i. Connectivity to other significant areas.
 - j. Ecosystem services
3. Historic uses of forest areas, trends and projected future uses of forest resources;
4. Current ownership patterns and size of tracts, trends and projected future ownership patterns;
5. Cultural resources that can be effectively protected;
6. Outstanding geological features;

APPENDIX D FOREST LEGACY PROGRAM

7. Demographic trends as they relate to conversion of forest areas; and
8. Other ecological values.
9. Economic benefits to local disadvantaged communities

Eligible forestlands must be working forests. A working forest is defined as forestland from which specific objectives are derived following the stewardship principles that address timber management, wildlife management, soil and water conservation, recreation and aesthetics.

FLA boundaries must encompass forestlands with significant environmental and other resource-based values. Areas may also include nonforested areas such as farms and villages if they are an integral part of the landscape and are within the logical boundaries. Since FLA boundaries may not always correspond to property boundaries, tracts located partially within the geographically defined FLA are eligible for the Forest Legacy Program upon approval of a boundary adjustment.

An Assessment and Strategy for FLP is needed to:

1. Document the need for a Forest Legacy Program in Georgia;
2. Identify and delineate the boundaries of forest areas meeting the eligibility requirements for designation as FLAs;
3. Recommend areas to the USFS/Secretary for inclusion in the FLP; and
4. Serve as the current update for the original AON document that was drafted at the program's onset.

The forest stewardship steering committee was convened to address how the new assessment and strategy would incorporate the existing AON for legacy. The committee reviewed the current AON, provided content for the assessment and considered the delineation of priority areas. The committee decided that significant overlap of interests was present and that the current AON would not need further changes.

Goals, Objectives and Strategies

Goal 1: Conserve environmentally important forest areas that are threatened by conversion to nonforest uses by capitalizing on the collective capacity of various organizations.

Objective 1.1: Leverage multiple partnerships with various land trust and conservation organizations to expand the possibilities for land conservation acquisitions.

Strategy 1.1.1: Develop MOUs and other partnership agreements with The Conservation Fund and other groups to facilitate the acquisition of property.

Performance Measure:

Number of acres of protected forest land.

APPENDIX E

COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE



Community Wildfire Protection Plan *An Action Plan for Wildfire Mitigation and Conservation of Natural Resources* Franklin County, Georgia

A Program of the Georgia Forestry Commission with
support from the U.S. Forest Service

+



NOVEMBER 2025

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

Prepared by:

Rusty Carroll, Elbert/Franklin/Hart/Madison County Chief Ranger
James Greeson, Elbert/Franklin/Hart/Madison County Lead Worker
Mark Wiles, Wildfire Mitigation Specialist (Revised 2025)

Georgia Forestry Commission
Franklin/Hart County Unit
56 New Hope Road
Canon GA 30520

The following report is a collaborative effort among various entities; the representatives listed below comprise the core decision-making team responsible for this report and mutually agree on the plan's contents:

County Commissioners Office, Franklin County

Franklin County Emergency Management/911 Director

Franklin County Fire Association

Rusty Carroll
Chief Ranger, Elbert/Franklin/Hart/Madison County Forestry Unit

Jimmy Greeson
Lead Worker, Elbert/Franklin/Hart/Madison County Forestry Unit

Mark Wiles
Wildfire Mitigation Specialist

APPENDIX E

COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

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APPENDIX E

COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

I. OBJECTIVES

A Community Wildfire Protection Plan (CWPP) provides a community with a road map to reduce its risk from wildfire. A CWPP is designed through collaboration between state and local fire agencies, homeowners and landowners, and other interested parties such as city councils, utilities, homeowners' associations, environmental organizations, and other local stakeholders. The plan identifies strategic sites and methods for risk reduction and structural protection projects across jurisdictional boundaries.

Comprehensive plans provide long-term guidance for growth, reflecting a community's values and future expectations. The plan implements the community's values and serves to protect natural and community resources and public safety. Planning also enables communities to address their development patterns in the Wildland Urban Interface and determine how they can reduce their risk through alternative development patterns. The formal legal standing of the plan and its central role in local government decision making underscores the opportunity to use this planning process as an effective means for reducing wildfire risk.

The mission of the following plan is to set clear priorities for the implementation of wildfire mitigation in Franklin County. The plan includes prioritized recommendations for the appropriate types and methods of fuel reduction and structure ignitability reduction that will protect this community and its essential infrastructure. It also includes a plan for wildfire suppression. Specifically, the plan includes community-centered actions that will:

- Educate citizens on wildfire, its risks, and ways to protect lives and properties,
- Support fire rescue and suppression entities,
- Focus on collaborative decision-making and citizen participation,
- Develop and implement effective mitigation strategies, and
- Develop and implement effective community ordinances and codes.

II. COMMUNITY COLLABORATION

Wildfire risk reduction strategies are most effective when approached collaboratively – involving groups of residents, elected officials, community decision makers, emergency managers, and natural resource managers –and when combined with effective outreach approaches.

Collaborative approaches make sense as the initial focus of any community attempting to work toward wildfire risk reduction. In all Community Wildfire Protection Plan collaborations, the goal is to cooperatively identify problems and reach a consensus for mutual action. In the case of wildfire mitigation, a reduction in the wildfire risk to the community's lives, houses, and property is the desired outcome.

The collaborative core team convened in December 2011 to assess risks and develop the Community Wildfire Protection Plan. The group is comprised of representatives from local county government, local fire authorities, and the Georgia Forestry Commission.

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

Below are the groups included in the task force:

- Franklin County Government
 - County Fire Chiefs
 - Emergency Management
 - County Commissioner
- Georgia Forestry Commission

It was decided to conduct community assessments based on the high-risk communities and the individual fire districts in the county. The representatives of the local Georgia Forestry Commission office reconvened in late December for the purpose of completing the following:

Risk Assessment	Assessed wildfire hazard risks and prioritized mitigation actions. The wildfire risk assessment will help homeowners, builders, developers, and emergency personnel whether the area needs attention and will help direct wildfire risk reduction practices to the areas at highest risk.
Fuels Reduction	Identified strategies for coordinating fuels treatment projects
Structure Ignitability	Identified strategies for reducing the ignitability of structures within the Wildland interface.
Emergency Management	Forged relationships among local government and fire districts and developed/refined a pre-suppression plan.
Education and Outreach	Developed strategies for increasing citizen awareness and action, and to conduct homeowner and community leader workshops. Outreach and education programs are designed to raise awareness and improve audience knowledge of wildfire risk reduction needs and practices. In the best cases, education and outreach programs will influence attitudes and opinions and result in effective action.

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

III. COUNTY BACKGROUND AND WILDFIRE HISTORY

Franklin County, in northeast Georgia, was the first county established in the state after the American Revolution (1775-83). William Bartram traveled through part of present-day Franklin County in 1773. At that time members of the Lower Cherokee Indian tribe lived there. The 1783 Treaty of Augusta established the land claim from the native residents. The county was created in 1784 and named in honor of Benjamin Franklin. In 1787 parts of the original lands were ceded to South Carolina.



The exact location of the first courthouse, established in 1793, is unknown. The county

seat, Carnesville, was incorporated in 1807, and in 1826 a second, more substantial courthouse was built there. The town is named for Thomas Peter Carnes, a lawyer and congressman of the Revolutionary War era. The current courthouse dates to 1906.



Other towns include Canon, established in 1875 as West Bowerville (changed to Canon in 1902); Lavonia, established about 1878; Royston, incorporated in 1879; and Franklin Springs, a pre-Civil War (1861-65) health resort known for its mineral springs. Lavonia is the smallest city in the United States with an

original Carnegie Library building. The Franklin Springs property is now owned by the Pentecostal Holiness Church and houses Emmanuel College.

*Franklin County
Courthouse*

The terrain of the county originally consisted mainly of oak-hickory forests. The early settlers cleared large tracts for agriculture, and for 200 years much of the land was devoted to cotton, corn, sorghum, and more recently, livestock.

Some of it is now reverting to old-field succession, which, if uninterrupted, will culminate in broadleaf deciduous forest. Livestock production constitutes an overwhelming majority of the agricultural output of the county; the Franklin County Livestock Market in Carnesville is the largest in the state. The Cromer's Mill covered bridge was built in 1906 and still stands, though it is no longer used for motor traffic. Lake Hartwell, at the northern end of the county, and two state parks, Victoria Bryant and Tugaloo, provide recreational opportunities.

Annual county events include the Junior-Senior Fishing Rodeo at Victoria Bryant State Park in May, the Lavonia Fall Festival in September, and various festivals at Tugaloo State Park throughout the year. Baseball great Ty Cobb was a native of Royston and donated \$100,000 to build a hospital for the town; the Ty Cobb Museum is located in the Joe Adams Building there. Other noted residents include former Georgia governor Ernest Vandiver and D. W. Brooks, the founder and chairman of Gold Kist. Interstate 85 provides transportation links to the county. According to the 2010 U.S. census, the population is 22,084, an increase from the 2000 population of 20,285.



APPENDIX E

COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

Wildfire History

Recent data show that a majority of the fastest growing areas in the U.S. are in wildfire-prone environments. It is not a surprise that some of these fastest growing areas are in Georgia. In last decade of the 20th Century, Georgia's population increased substantially. Homeowners in Georgia must contend with natural hazards including wildfire, tornados, and flooding. This combination of factors – burgeoning population, abundant natural areas, development pressures, and lack of public awareness makes Georgia a perfect state for creating solutions to various hazards. Georgia is looked to throughout the southern region as a leader in comprehensive and hazard mitigation planning.

Many of Georgia's existing and new residents living in the urban interface are unaware of the vital role fire plays in our landscape and that their homes are extremely vulnerable to wildfire damage. Balancing development pressures with wildfire risk reduction and education creates a unique challenge for local governments, emergency managers, and wildfire management agencies such as the Georgia Forestry Commission.

Over the past five years, Franklin County has averaged 21.80 reported wildfires per year. The occurrence of these fires is uniform throughout the year with a slight peak in the months of February and March and a slight decrease during the fall months. These fires have burned an average of 33.91 acres annually. While the numbers of fires remain similar every month, there is a marked difference in the monthly acreage lost. The monthly acres lost during the late winter through summer period show a tenfold increase over the acres lost during the fall and early winter. Additionally, while the annual numbers of fires have not increased noticeably during the 5-year period that records are available, the annual acreage lost appears to have decreased in later years. This is perhaps a result of the increase in the practice of prescribed burning. The local Georgia Forestry Commission office needs to be commended for their valiant work increasing their very impressive, prescribed burning regiment. Despite their work, more homes are being built outside of traditional communities into the wildland urban interface. With this migration of people to the wildland urban interface the potential for a wildfire disaster continues to increase for Franklin County.

The leading causes of these fires in Franklin County were careless debris burning and machine related which came to almost 60 percent of all fires reported. Though these causes are a bit disturbing, local efforts of outreach and education can easily curb this problem.

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

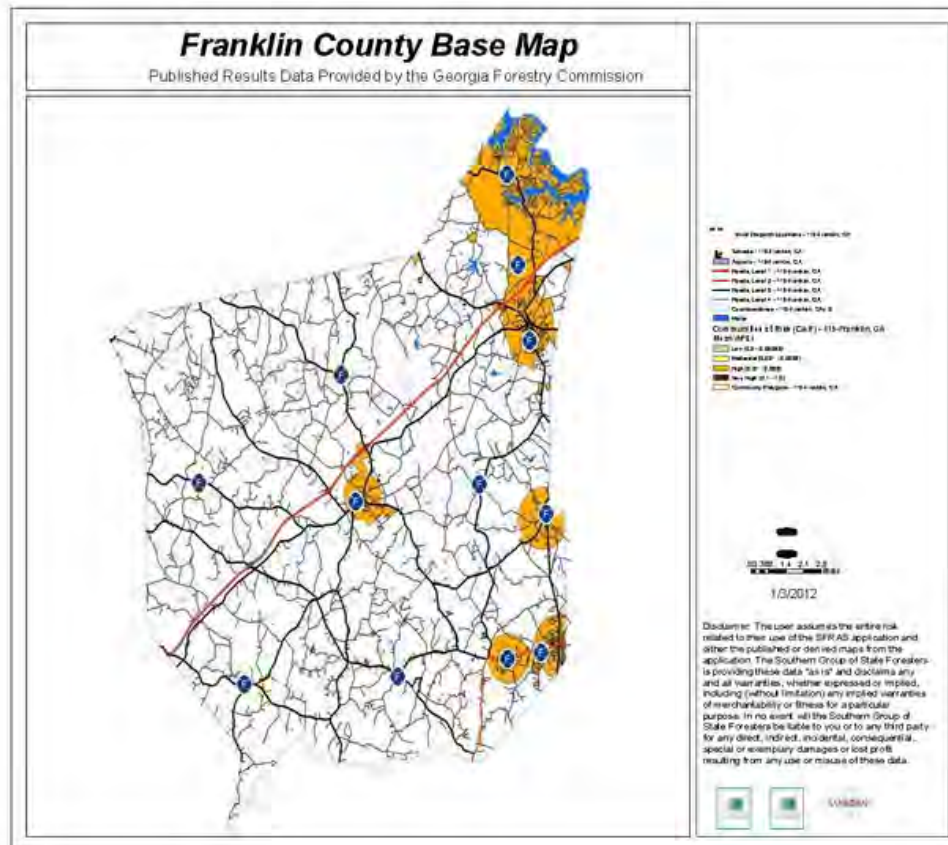
County = Franklin	Cause	Fires	Acres	Fires 5 Yr Avg	Acres 5 Yr Avg
Campfire	Campfire	1	2.60	0.20	0.52
Debris: Ag Fields, Pastures, Orchards, Etc	Debris: Ag Fields, Pastures, Orchards, Etc	0	0.00	0.20	1.44
Debris: Construction Land Clearing	Debris: Construction Land Clearing	1	0.61	0.40	0.36
Debris: Household Garbage	Debris: Household Garbage	2	0.40	1.00	0.17
Debris: Residential, Leafpiles, Yard, Etc	Debris: Residential, Leafpiles, Yard, Etc	2	0.52	1.40	0.99
Machine Use	Machine Use	3	0.83	1.60	1.15
Miscellaneous: Power lines/Electric fences	Miscellaneous: Power lines/Electric fences	0	0.00	0.40	0.33
Miscellaneous: Structure/Vehicle Fires	Miscellaneous: Structure/Vehicle Fires	1	0.50	1.20	0.58
Smoking	Smoking	0	0.00	0.20	0.46
Undetermined	Undetermined	1	1.10	0.80	0.32
Totals for County: Franklin Year: 2025		11	6.56	7.40	6.32

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN AN ACTION PLAN FOR WILDFIRE MITIGATION

IV. COMMUNITY BASE MAP



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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

V. COMMUNITY WILDFIRE RISK ASSESSMENT

The Wildland-Urban Interface

The WUI is described as the area where structures and other human improvements meet and intermingle with undeveloped wildland or vegetative fuels. Population growth within the WUI substantially increases the risk of wildfire.

For the **Franklin County Georgia** project area, it is estimated that **22,035** people or **99.6 % percent** of the total project area population (**22,120**) live within the WUI.

Firefighters in the wildland urban interface may encounter hazards other than the fire itself, such as hazardous materials, utility lines and poor access.

There are many definitions of the Wildland-Urban Interface (WUI), however from a fire management perspective it is commonly defined as an area where structures and other human development meet or intermingles with undeveloped wildland or vegetative fuels. As fire is dependent on a certain set of conditions, the National Wildfire Coordinating Group has defined the wildland-urban interface as a set of conditions that exists in or near areas of wildland fuels, regardless of ownership. This set of conditions includes type of vegetation, building construction, accessibility, lot size, topography and other factors such as weather and humidity. When these conditions are present in certain combinations, they make some communities more vulnerable to wildfire damage than others. This “set of conditions” method is perhaps the best way to define wildland-urban interface areas when planning for wildfire prevention, mitigation, and protection activities.

There are three major categories of wildland-urban interface. Depending on the set of conditions present, any of these areas may be at risk from wildfire. A wildfire risk assessment can determine the level of risk.

1. **“Boundary” wildland-urban interface** is characterized by areas of development where homes, especially new subdivisions, press against public and private wildlands, such as private or commercial forest land or public forests or parks. This is the classic type of wildland-urban interface, with a clearly defined boundary between the suburban fringe and the rural countryside.
2. **“Intermix” wildland-urban interface** areas are places where improved property and/or structures are scattered and interspersed in wildland areas. These may be isolated rural homes or an area that is just beginning to go through the transition from rural to urban land use.
3. **“Island” wildland-urban interface**, also called occluded interface, are areas of wildland within predominately urban or suburban areas. As cities or subdivisions grow, islands of undeveloped land may remain, creating remnant forests. Sometimes these remnants exist as parks, or as land that cannot be developed due to site limitations, such as wetlands.

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

Wildland Urban Interface Hazards

Hazardous Materials

- Common chemicals used around the home may be a direct hazard to firefighters from flammability, explosion potential and/or vapors or off-gassing. Such chemicals include paint, varnish and other flammable liquids; fertilizer; pesticides; cleansers; aerosol cans, fireworks, batteries and ammunition. In addition, some common household products such as plastics may give off very toxic fumes when they burn. Stay OUT of the smoke from burning structures and any unknown sources such as trash piles.

Illicit Activities

- Marijuana plantations or drug production labs may be found in wildland urban interface areas. Extremely hazardous materials such as propane tanks and flammable/toxic chemicals may be encountered, as well as booby traps.

Propane tanks

- Both large (household size) and small (gas grill size) liquefied propane gas (LPG) tanks can present hazards to firefighters, including explosion. See the "LPG Tank Hazards" discussion for details.

Utility lines

- Utility lines may be located above and below ground and may be cut or damaged by tools or equipment. Don't spray water on utility lines or boxes.

Septic tanks and fields

- Below-ground structures may not be readily apparent and may not support the weight of engines or other apparatus.

New construction materials

- Many new construction materials have comparatively low melting points and may "off gas" extremely hazardous vapors. Plastic decking materials that resemble wood are becoming more common and may begin softening and losing structural strength at 180° F, though they normally do not sustain combustion once direct flame is removed. However, if they continue to burn, they exhibit the characteristics of flammable liquids.

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

● Pets and livestock

- Pets and livestock may be left when residents evacuate and will likely be highly stressed, making them more inclined to bite and kick. Firefighters should not put themselves at risk to rescue pets or livestock.

● Evacuation occurring

- Firefighters may be taking structural protection actions while evacuations of residents are occurring. Be very cautious of people driving erratically. Distraught residents may refuse to leave their property, and firefighters may need to disengage from fighting fire to contact law enforcement officers for assistance. In most jurisdictions firefighters do not have the authority to force evacuations. Firefighters should not put themselves at risk trying to protect someone who will not evacuate!

● Limited access

- Narrow one-lane roads with no turn-around room, inadequate or poorly maintained bridges and culverts are frequently found in wildland urban interface areas. Access should be sized-up and an evacuation plan for all emergency personnel should be developed.



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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

The wildland fire risk assessments conducted in December by the Georgia Forestry Commission returned an average score of 106, placing Franklin in the “moderate risk” hazard range. The risk assessment instrument used to evaluate wildfire hazards to Franklin County’s WUI was the Hazard and Wildfire Risk Assessment Checklist. The instrument takes into consideration accessibility, vegetation (based on fuel models), roofing assembly, building construction, and availability of fire protection resources, placement of gas and electric utilities, and additional rating factors. The following factors contributed to the wildfire hazard score for Bleckley County:

- Dead end roads with inadequate turn arounds
- Narrow roads without drivable shoulders
- Long, narrow, and poorly labeled driveways
- Limited street signs and homes not clearly addressed.
- Thick, highly flammable vegetation surrounding many homes
- Minimal defensible space around structures
- Homes with wooden siding and roofs with heavy accumulations of vegetative debris
- No pressurized or non-pressurized water systems available
- Above ground utilities
- Large, adjacent areas of forest or wildlands
- Heavy fuel buildups in adjacent wildlands
- Undeveloped lots comprising half the total lots in many rural communities.
- High occurrence of wildfires in the several locations
- Distance from fire stations.
- Lack of homeowner or community organizations

The Communities-at-Risk within Franklin County that led to its **Moderate Hazard** risk rating are:

Communities-at-Risk	Score	Hazard Rating
Bent Tree Circle	125	Moderate Hazard
Bund Ave.	91	Moderate Hazard
Brittany Cove	155	Extreme Hazard
Brittany Harbor East	134	High Hazard
Brittany Harbor 1&2	121	Moderate Hazard
Brittany Harbor North	140	Extreme Hazard
Brittany Harbor South	125	Moderate Hazard
Brittany Harbor West	113	Moderate Hazard

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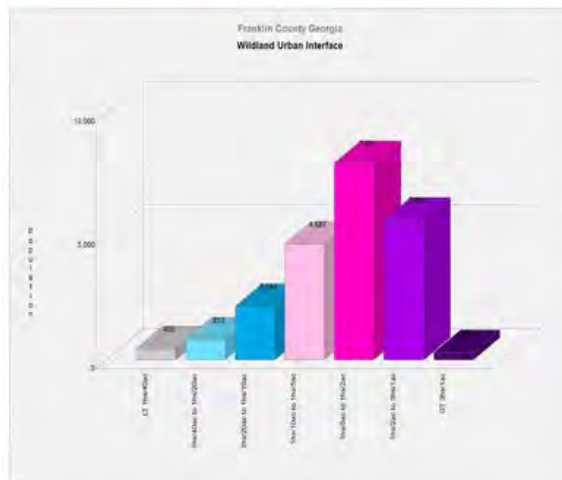
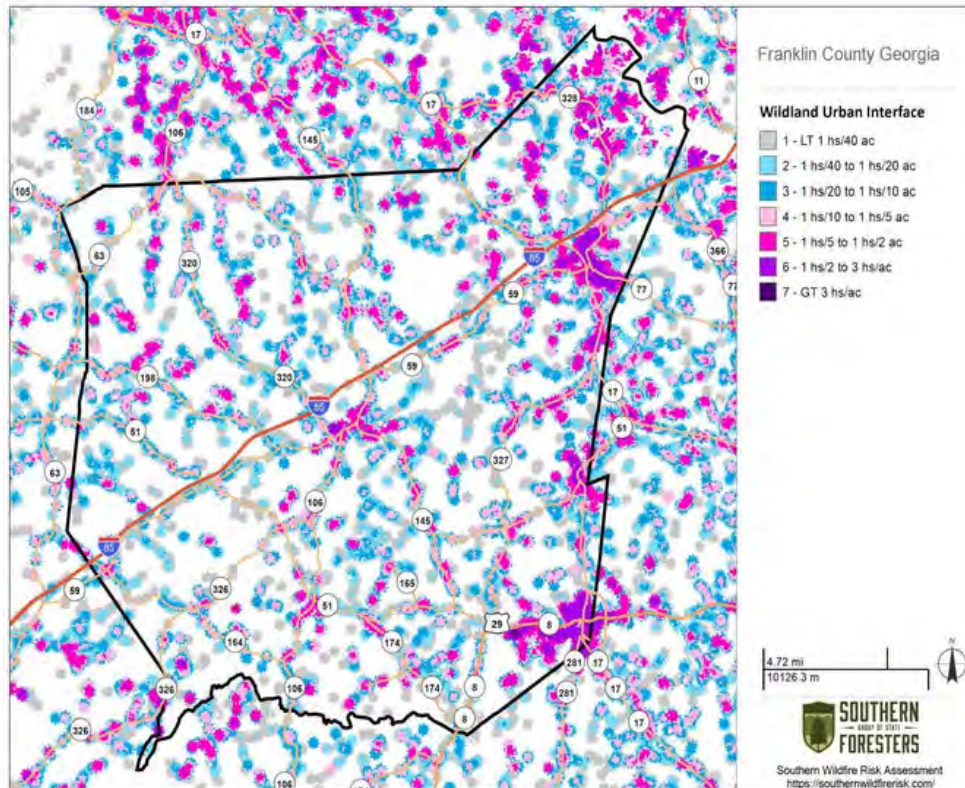
COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

Brookwood Drive	82	Moderate Hazard
Capri Point	92	Moderate Hazard
Chiggers Ridge	129	Moderate Hazard
Cobb Walk	49	Low Risk
Coyote Trails	130	High Risk
Fairview Farms	100	Moderate Risk
Fisherman's Cove	111	Moderate Risk
Foxy Lane	88	Moderate Risk
Ginn St.	40	Low Risk
Governors Walk	97	Moderate Risk
Green Leaf	116	Moderate Risk
Grogan St. / Bowman St.	67	Low Risk
Hardeman Farm Rd.	125	Moderate Risk
Jim Grizzle / Hudson Terr.	164	Extreme Risk
Katheryn Way	76	Moderate Risk
Kesler Rd.	149	Extreme Risk
Lacefield Ln. / Woodrow	117	Moderate Risk
Medinah Rd.	158	Extreme Risk
Methodist Campground	115	Moderate Risk
Nails Creek Crossing	103	Moderate Risk
Nails Creek Rd.	88	Moderate Risk
Paradise Point	77	Moderate Risk
Pittman Rd.	114	Moderate Risk
Red Dog Run	107	Moderate Risk
Reno Rd. (Dirt)	146	Extreme Risk
River Ridge	86	Moderate Risk
River Bend, Royston	55	Low Risk
River Bend, Gum log Area	115	Moderate Risk
Shirley/Timber/ Forest Dr.	50	Low Risk
Summit Cove	38	Low Risk
Sweet Gum Rd.	120	Moderate Risk
Tugaloo State Park	120	Moderate Risk
Victoria Bryant State Park	119	Moderate Risk
Average Rating:	106	Moderate Risk

APPENDIX E COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

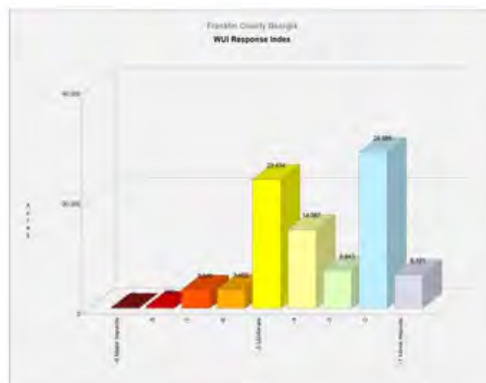
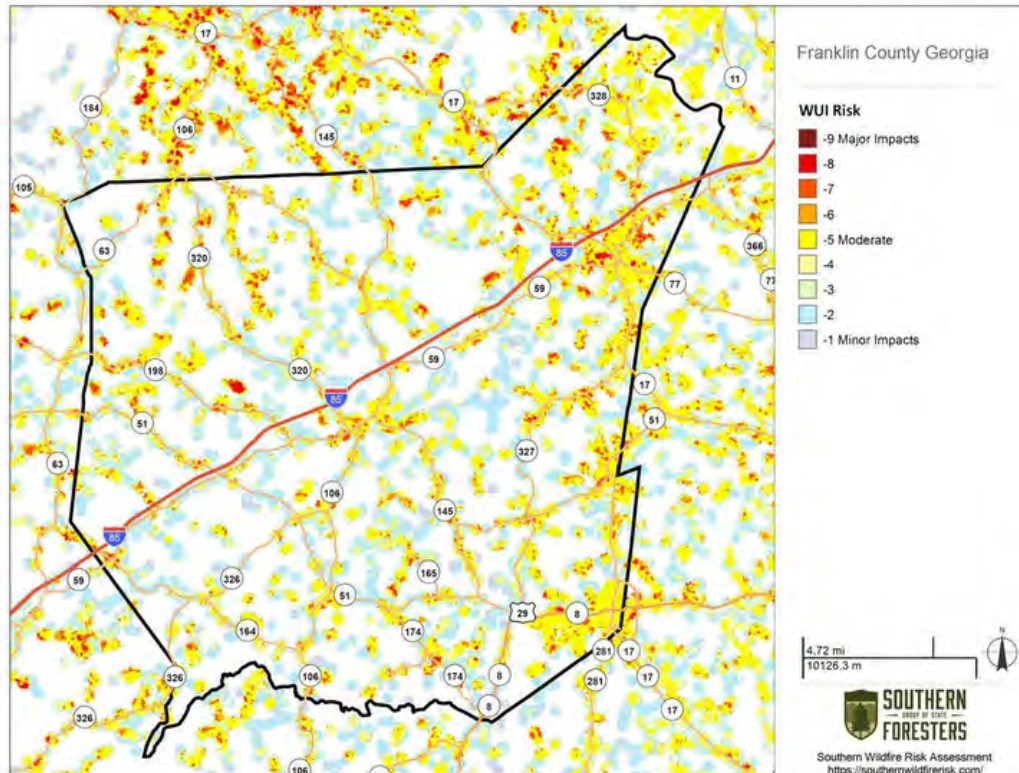


The Wildland Urban Interface (WUI) Risk Index layer is a rating of the potential impact of a wildfire on people and their homes. The key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the Wildland Urban Interface and rural areas is key information for defining potential wildfire impacts to people and homes.

APPENDIX E COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

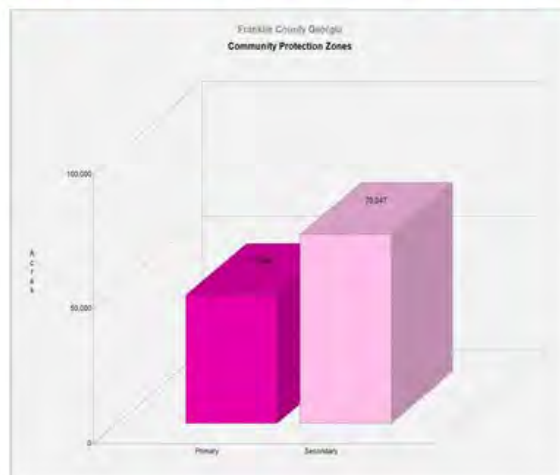
VI. COMMUNITY HAZARDS MAPS



The Wildland Urban Interface (WUI) Risk Index layer is a rating of the potential impact of a wildfire on people and their homes. The key input, WUI, reflects housing density (houses per acre) consistent with Federal Register National standards. The location of people living in the Wildland Urban Interface and rural areas is key information for defining potential wildfire impacts to people and homes.

APPENDIX E COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

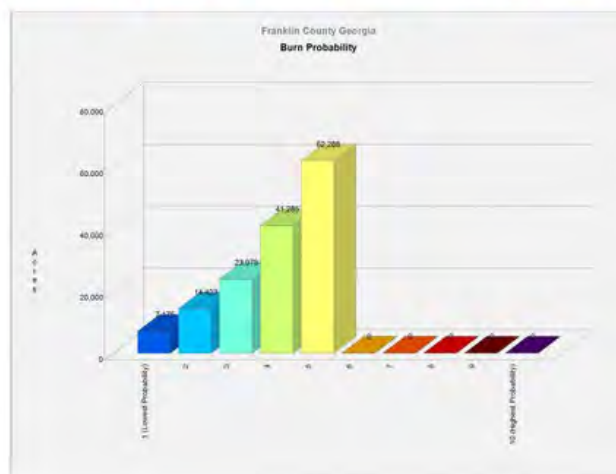
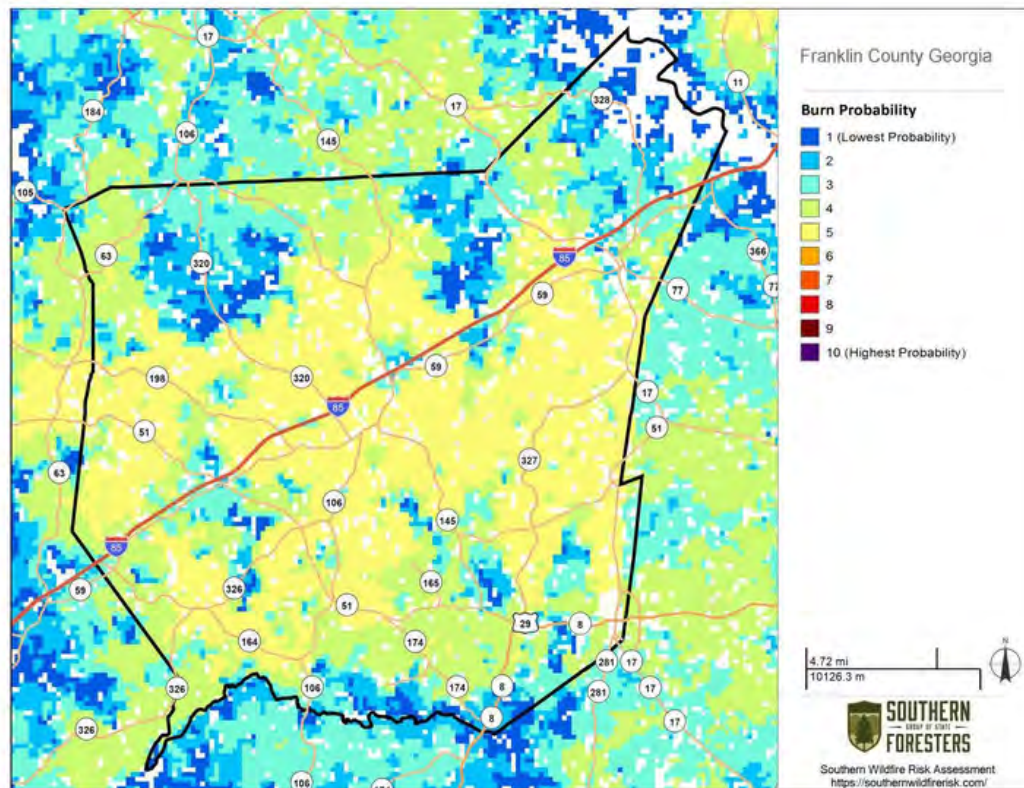
WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION



Community Protection Zones (CPZ) represent those areas considered **highest priority for mitigation planning activities**. CPZs are based on an analysis of the Where People Live housing density data and surrounding fire behavior potential. Rate of Spread data is used to determine the areas of concern around populated areas that are within a 2-hour fire spread distance. This is referred to as the Secondary CPZ.

APPENDIX E COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

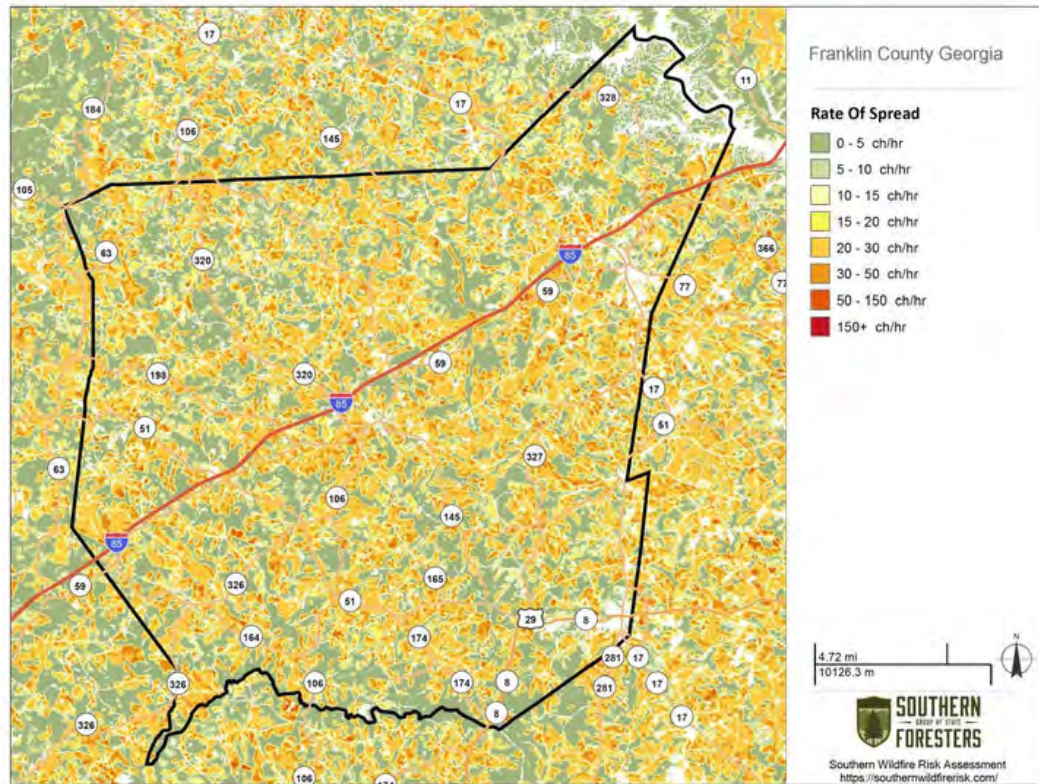
WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION



The Burn Probability (BP) layer depicts the probability of an area burning given current landscape conditions, percentile weather, historical ignition patterns and historical fire prevention and suppression efforts.

APPENDIX E COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION



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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

VII. PRIORITIZED MITIGATION RECOMMENDATIONS

Executive Summary

As Central Georgia continues to see increased growth from other areas seeking less crowded and warmer climates, new development will occur more frequently on forest and wildland areas. The County will have an opportunity to significantly influence the wildland fire safety of new developments. It is important that new developments be planned and constructed to provide public safety in the event of a wildland fire emergency.

Over the past 20 years, much has been learned about how and why homes burn during wildland fire emergencies. Perhaps most importantly, case histories and research have shown that even in the most severe circumstances, wildland fire disasters can be avoided. Homes can be designed, built and maintained to withstand wildfire even in the absence of fire services on the scene. The national Firewise Communities program is a national awareness initiative to help people understand that they don't have to be victims in a wildfire emergency. The National Fire Protection Association has produced two standards for reference: NFPA 1144 Standard for Reducing Structure Ignition Hazards from Wildland Fire, 2008 Edition and NFPA 1141 Standard for Fire Protection Infrastructure for Land Development in Suburban and Rural Areas.

When new developments are built in the Wildland/Urban Interface, a number of public safety challenges may be created for the local fire services: (1) the water supply in the immediate areas may be inadequate for fire suppression; (2) if the Development is in an outlying area, there may be a longer response time for emergency services; (3) in a wildfire emergency, the access road(s) may need to simultaneously support evacuation of residents and the arrival of emergency vehicles; and (4) when wildland fire disasters strike, many structures may be involved simultaneously, quickly exceeding the capability of even the best equipped fire departments.

The following recommendations were developed by the Franklin County CWPP Core team as a result of surveying and assessing fuels and structures and by conducting meetings and interviews with county and city officials. A priority order was determined based on which mitigation projects would best reduce the hazard of wildfire in the assessment area.

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

Proposed Community Hazard and Structural Ignitability Reduction Priorities

Primary Protection for Community and Its Essential Infrastructure		
Treatment Area	Treatment Types	Treatment Method(s)
1. All Structures	Create minimum of 30 feet of defensible space**	Trim shrubs and vines to 30 feet from structures, trim overhanging limbs, replace flammable plants near homes with less flammable varieties, remove vegetation around chimneys.
2. Applicable Structures	Reduce structural ignitability**	Clean flammable vegetative material from roofs and gutters, store firewood appropriately, install skirting around raised structures, store water hoses for ready access, and replace pine straw and mulch around plantings with less flammable landscaping materials.
3. Community Clean-up Day	Cutting, mowing, pruning**	Cut, prune, and mow vegetation in shared community spaces.
4. Driveway Access	Culvert installation	See that adequate lengths of culverts are installed to allow emergency vehicle access.
5. Road Access	Identify needed road improvements	As roads are upgraded, widen to minimum standards with at least 50 foot diameter cul-de-sacs or turn-arounds.
Proposed Community Wildland Fuel Reduction Priorities		
Treatment Area	Treatment Types	Treatment Method(s)
1. Adjacent WUI Lands	Reduce hazardous fuels	Encourage prescribed burning for private landowners and industrial timberlands particularly adjacent to residential areas. Seek grant for WUI mitigation team.

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WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

2. Railroad Corridors	Reduce hazardous fuels	Encourage railroads to better maintain their ROW eliminating brush and grass through herbicide and mowing. Maintain firebreaks along ROW adjacent to residential areas.
Proposed Improved Community Wildland Fire Response Priorities		
1. Water Sources	Dry Hydrants	Inspect, maintain and improve access to existing dry hydrants. Add signage along road to mark the hydrants. Locate additional dry hydrants as needed.
2. Fire Stations	Equipment	Wildland hand tools. Lightweight Wildland PPE Gear. Investigate need for “brush” trucks near communities at risk.
3. Water Sources	Drafting equipment	Investigate need for additional drafting pumps.
4. Personnel	Training	Obtain Wildland Fire Suppression training for fire personnel to include S130, S190, and S215.
**Actions to be taken by homeowners and community stakeholders		

Proposed Education and Outreach Priorities

1. Conduct “How to Have a Firewise Home” Workshop for County Residents
Set up and conduct a workshop for homeowners that teach the principles of making homes and properties safe from wildfire. Topics for discussion include defensible space, landscaping, building construction, etc. Workshop will be scheduled for evenings or weekends when most homeowners are available and advertised through local media outlets. Distribute materials promoting Firewise practices and planning through local community and governmental meetings.

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

2. Conduct "Firewise" Workshop for Community Leaders

Arrange for GFC Firewise Coordinator to work with local community leaders and governmental officials on the importance of "Firewise Planning" in developing ordinances and codes as the county as the need arises. Identified "communities-at-risk" including: Brittany Harbor Community, Jim Grizzle, Medinah, and Reno Rd area should be sought after for inclusion in the National Firewise Communities Program.

3. Spring Clean-up Event

Conduct clean-up event every spring involving the Georgia Forestry Commission, Franklin County Fire Departments, and local residence of Franklin County. Set up information table with educational materials and refreshments. Initiate the event with a morning briefing by GFC Firewise coordinator and local fire officials detailing plans for the day and safety precautions. Activities to include the

following:

- Clean flammable vegetative material from roofs and gutters
- Trim shrubs and vines to 30 feet away from structures
- Trim overhanging limbs
- Clean hazardous or flammable debris from adjacent properties

4. Informational Packets

Develop and distribute informational packets to be distributed by realtors and insurance agents. Included in the packets are the following:

- Be Firewise Around Your Home
- Firewise Guide to Landscape and Construction
- Firewise Communities USA Bookmarks

5. Wildfire Protection Display

Create and exhibit a display for the general public at the local events. Display can be independent or combined with the Georgia Forestry Commission display.

6. Media

Invite the local and regional news media to community "Firewise" functions for news coverage and regularly submit press releases documenting wildfire risk improvements in Franklin County.

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

IX. ACTION PLAN

Roles and Responsibilities

The following roles and responsibilities have been developed to implement the action plan:

Role	Responsibility
Hazardous Fuels and Structural Ignitability Reduction	
Franklin County WUI Fire Council	Create this informal team or council comprised of residents, GFC officials, County Fire department officials, a representative from the city and county government and the EMA Director for Franklin County. Meet periodically to review progress towards mitigation goals, appoint and delegate special activities, work with federal, state, and local officials to assess progress and develop future goals and action plans. Work with residents to implement projects and Firewise activities.
Key Messages to focus on	1. Defensible Space and Firewise Landscaping 2. Debris Burning Safety 3. Firewise information for homeowners 4. Prescribed burning benefits
Communications objectives	1. Create public awareness for fire danger and defensible space issues 2. Identify most significant human cause fire issues 3. Enlist public support to help prevent these causes 4. Encourage people to employ fire prevention and defensible spaces in their communities.
Target Audiences	1. Homeowners 2. Forest Landowners and users 3. Civic Groups 4. School Groups
Methods	1. News Releases 2. Personal Contacts 3. Key messages and prevention tips 4. Visuals such as signs, brochures and posters
Spring Clean-up Day	
Event Coordinator	Coordinate day's events and schedule, catering for cookout, guest attendance, and moderate activities the day of the day of the event.

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Event Treasurer	Collect funds from residents to cover food, equipment rentals, and supplies.
Publicity Coordinator	Advertise event through neighborhood newsletter, letters to officials, and public service announcements (PSAs) for local media outlets. Publicize post-event through local paper and radio PSAs.
Work Supervisor	Develop volunteer labor force of community residents; develop labor/advisory force from Georgia Forestry Commission, Franklin County Fire Departments, and Emergency Management Agency. Procure needed equipment and supplies. In cooperation with local city and county officials, develop safety protocol. Supervise work and monitor activities for safety the day of the event.

Funding Needs

The following funding is needed to implement the action plan:

Project	Estimated Cost	Potential Funding Source(s)
1. Create a minimum of 30 feet of defensible space around structures	Varies	Residents will supply labor and fund required work on their own properties.
2. Reduce structural ignitability by cleaning flammable vegetation from roofs and gutters; appropriately storing firewood, installing skirting around raised structures, storing water hoses for ready access, replacing pine needles and mulch around plantings with less flammable material.	Varies	Residents will supply labor and fund required work on their own properties.
3. Amend codes and ordinances to provide better driveway access, increased visibility of house numbers, properly stored firewood, minimum defensible space brush clearance, required Class A roofing materials and skirting around raised structures, planned maintenance of community lots.	No Cost	To be adopted by city and county government.
4. Spring Cleanup Day	Varies	Community Business Donations.
5. Fuel Reduction Activities	\$15 / acre	FEMA & USFS Grants

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WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

GRANT FUNDING AND MITIGATION ASSISTANCE

- Community Protection Grant: U.S.F.S. sponsored prescribed fire program. Communities with “at-risk” properties that lie within three miles of a national forest or Bureau of Land Management tracts may apply with the Georgia Forestry Commission to have their land prescribe burned free-of-charge.
- FEMA Mitigation Policy MRR-2-08-01: through GEMA – Hazard Mitigation Grant Program (HMGP) and Pre-Disaster Mitigation Program (PDM).
 1. To provide technical and financial assistance to local governments to assist in the implementation of long-term, cost-effective hazard mitigation accomplishments.
 2. This policy addresses wildfire mitigation for the purpose of reducing the threat to all-risk structures through creating defensible space, structural protection through the application of ignition resistant construction and limited hazardous fuel reduction to protect life and property.
 3. With a complete a registered plan (addendum to the State Plan) counties can apply for pre-mitigation funding. They will also be eligible for HMGP funding if the county is declared under a wildfire disaster.
- FEMA – Assistance to Firefighters Grant Program
 1. Assistance to Firefighters Grants (AFG). The purpose of AFG’s is to award one-year grants directly to fire departments and emergency medical services (EMS) organizations of a state to enhance their abilities with respect to fire and related hazards.
 2. Fire Prevention and Safety Grants. The purpose of these grants is to assist state, regional, national or local organizations to address fire prevention and safety. Emphasis of the program is on prevention of fire-related injuries to children.
 3. Staffing for Adequate Fire and Emergency Response (SAFER). The purpose of SAFER is to award grants directly to volunteer, combination and career fire departments to help the departments increase their cadre of firefighters (enhance their ability for 24-hour response).
- GFC Helping Hands Program. The Georgia Forestry Commission’s Helping Hands program assists rural fire departments and industrial forestry cooperators with the purchasing of personal protective equipment for wildland firefighting and related safety items at a reduced price. Applicants serving communities with populations of less than 10,000 may also qualify for “Volunteer Fire Assistance” grants leading to additional cost reductions.
- Georgia Forestry Commission: Plowing and prescribed burning assistance can be obtained from the GFC as a low-cost option for mitigation efforts.
- Individual Homeowners:
 1. The elimination of hazardous conditions around a structure must ultimately be the responsibility of the community and the homeowner. They will bear the cost and reap the benefit from properly implemented mitigation efforts.
 2. GEMA: Pre-Disaster Mitigation Grant Program

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

Glossary of Terms

Community-At-Risk – A group of two or more structures whose proximity to forested or wildland areas places homes and residents at some degree of risk.

Critical Facilities – Buildings, structures or other parts of the community infrastructure that require special protection from an approaching wildfire.

CWPP – The Community Wildfire Protection Plan

Defensible Space – The immediate landscaped area around a structure (usually a minimum of 30 ft.) kept “lean, clean and green” to prevent an approaching wildfire from igniting the structure.

Dry Hydrant - A non-pressurized pipe system permanently installed in existing lakes, ponds and streams that provides a suction supply of water to a fire department tank truck.

FEMA – The Federal Emergency Management Agency whose mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.

Firewise Communities Program – A national initiative whose purpose is the reduction of structural losses from wildland fires.

Firewise Communities/USA – A national recognition program for communities that take action to protect themselves from wildland fire.

Fuels – All combustible materials within the wildland/urban interface or intermix including, but not limited to, vegetation and structures.

Fuel Modification – Any manipulation or removal of fuels to reduce the likelihood of ignition or the resistance to fire control.

Hazard & Wildfire Risk Assessment – An evaluation to determine an area’s (community’s) potential to be impacted by an approaching wildland fire.

Healthy Forests Initiative - Launched in August 2002 by President Bush (following passage of the Healthy Forests Restoration Act by Congress) with the intent to reduce the risks severe wildfires pose to people, communities, and the environment.

Home Ignition Zone (Structure Ignition Zone) - Treatment area for wildfire protection. The “zone” includes the structure(s) and their immediate surroundings from 0-200 ft.

Mitigation – An action that moderates the severity of a fire hazard or risk.

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National Fire Plan – *National initiative, passed by Congress in the year 2000, following a landmark wildland fire season, with the intent of actively responding to severe wildland fires and their impacts to communities while ensuring sufficient firefighting capacity for the future.*

National Fire Protection Association (NFPA) - *An international nonprofit organization established in 1896, whose mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education.*

Southern Group of State Foresters – *Organization whose members are the agency heads of the forestry agencies of the 13 southern states, Puerto Rico and the Virgin Islands.*

Stakeholders– *Individuals, groups, organizations, businesses or others who have an interest in wildland fire protection and may wish to review and/or contribute to the CWPP content.*

Wildfire or Wildland Fire – *An unplanned and uncontrolled fire spreading through vegetative fuels.*

Wildland/Urban Interface - *The presence of structures in locations in which the authority having jurisdiction (AHJ) determines that topographical features, vegetation, fuel types, local weather conditions and prevailing winds result in the potential for ignition of the structures within the area from flames and firebrands from a wildland fire (NFPA 1144, 2008 edition).*

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COMMUNITY WILDFIRE PROTECTION PLAN (CWPP) SAMPLE

WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION

SOURCES OF INFORMATION

Publications/ Brochures/Websites

- FIREWISE Communities materials can be ordered at www.firewise.org
- Examples of successful wildfire mitigation programs can be viewed at the website for National Database of State and Local wildfire Hazard Mitigation Programs sponsored by the U.S. Forest Service and the Southern Group of State Foresters www.wildfireprograms.com
- Information about a variety of interface issues (including wildfire) can be found at the USFS website for Interface South: www.interfacesouth.org
- Information on codes and standards for emergency services including wildfire can be found at www.nfpa.org
- Information on FEMA Assistance to Firefighters Grants (AFG) can be found at www.firegrantsupport.com
- Information on National Fire Plan grants can be found at <http://www.federalgrantswire.com/national-fire-plan--rural-fire-assistance.html>

Assessment Strategy

To accurately assess progress and effectiveness for the action plan, the Franklin County WUI Fire Council will implement the following:

- Annual wildfire risk assessment will be conducted to reassess wildfire hazards and prioritize needed actions.
- Mitigation efforts that are recurring (such as mowing, burning, and clearing of defensible space) will be incorporated into an annual renewal of the original action plan.
- Mitigation efforts that could not be funded in the requested year will be incorporated into the annual renewal of the original action plan.
- Continuing educational and outreach programs will be conducted and assessed for effectiveness. Workshops will be evaluated based on attendance and post surveys that are distributed by mail 1 month and 6 months following workshop date.
- The Franklin County WUI Council will publish an annual report detailing mitigation projects initiated and completed, progress for ongoing actions, funds received, funds spent, and in-kind services utilized. The report will include a "state of the community" section that critically evaluates mitigation progress and identifies areas for improvement. Recommendations will be incorporated into the annual renewal of the action plan.
- An annual survey will be distributed to residents soliciting information on individual mitigation efforts on their own property (e.g., defensible space). Responses will be tallied and reviewed at the next Franklin County WUI Council meeting. Needed actions will be discussed and delegated.

This plan should become a working document that is shared by local, state, and federal agencies that will use it to accomplish common goals. An agreed-upon schedule for meeting to review accomplishments, solve problems, and plan for the future should extend beyond the scope of this plan. Without this follow up this plan will have limited value

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WILDFIRE PROTECTION PLAN: AN ACTION PLAN FOR WILDFIRE MITIGATION



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APPENDIX F

LIST OF PREPARERS

Brett Albanese, Georgia DNR, Wildlife Resources Division

Thomas Barrett, GFC

Dr. Pete Bettinger, Warnell School of Forestry and Natural Resources, University of Georgia

Jonathan Brown, GFC

Wendy Burnett, GFC

Bo Chesser, GFC

Troy Clymer, GFC

Devon Dartnell, GFC

David Dickinson, GFC

Jeff Fields, GFC

Seth Hawkins, GFC

Chris Howell, GFC

Kassie Keck, GFC

Stasia Kelly, GFC

Dr. Roger C. Lowe III, Warnell School of Forestry and Natural Resources, University of Georgia

R.T. Lumpkin, GFC

Paul McDaniel, GFC

Krista Merry, Warnell School of Forestry and Natural Resources, University of Georgia

Ryan Phillips, GFC

Dru Preston, GFC

Scott Thackston, GFC

Michael Torbett, GFC

William Whitley, GFC

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