

# 6. *Natural Resources and Conservation*

## Purpose

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*Protect, restore and properly manage natural areas, trees and landscapes, and conservation lands in Alachua County while enhancing their resilience and improving their capacity to support climate adaptation and carbon sequestration.*

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## Introduction

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### Natural Resources and Climate Change

Climate change and natural resources are interconnected and interdependent. Climate change can negatively impact natural resources, while the depletion or degradation of natural resources can further intensify climate change's impacts. It impacts wildlife, plant and animal communities, and natural cycles by introducing shocks such as extreme heat and weather events that disrupt natural processes. As natural resources like carbon sinks deteriorate, there are less opportunities to mitigate climate change by sequestering GHGs from the atmosphere.

This interconnected relationship highlights the importance of conservation and proper management of natural resources in buffering and protecting ecosystems and local communities from the worst effects of a changing climate. Appropriately managed, forests, wetlands, and prairies are effective at lowering temperatures, increasing carbon sequestration, and improving water quality. Nature-based solutions can tackle both climate mitigation and adaptation. Because they do not require intensive infrastructure, nature-based solutions are an economically effective and technically feasible option for local governments such as Alachua County.

### Natural Resources in Alachua County

North Central Florida is home to bountiful natural resources, including springs, forests, wetlands and prairies. Alachua County has a long history of valuing and protecting resources that are essential to ensuring a healthy ecosystem for future generations.

Currently, the main threats to our County's natural resources are habitat loss, unsustainable development practices, pollution and invasive species. Climate change, however, also poses a worsening threat to our ecosystems, as shown in the County's Vulnerability Assessment. The risk of damaging wildfires is projected to increase, particularly around the Wildland-Urban Interface and within natural areas such as forested wetlands, pine flatwoods, and pine plantations. As

temperatures increase and droughts become more extreme, water resources, including surface waters and the aquifer, are projected to decline in water quality and available quantity. Meanwhile, more extreme rainfall events may cause new and additional areas to flood. A changing climate is thus expected to negatively affect local biodiversity by inflicting extreme weather events organisms may not be able to recover from. Alachua County has a duty to protect its communities and natural resources from the impacts of climate change through strategically planned development and land preservation and conservation.

## **Natural Resources and Community Resilience**

Natural resource strategies and solutions are critical elements of building community resiliency to the changing climate. As mentioned in previous sections, climate change impacts communities disproportionately depending on geographic location and available resources. One such way is through urban heat islands (UHI). A UHI is a phenomenon where cities are significantly warmer than rural areas. The difference in heat is a result of clearing natural areas and removing trees and plants that provide shade and cooling, as well as replacing natural soils and turf with artificial surfaces that absorb heat.<sup>1</sup> According to the Massachusetts Institute of Technology, UHIs can cause cities “to be 1-7°F warmer during the daytime”<sup>2</sup> (see the Heat and Health Chapter on UHIs’ impacts on health and who is most affected, and the Land Development and Transportation Chapter for further strategies on climate-smart development patterns).

To achieve successful community support and longevity, land conservation must be done with respect for those who live in conservation focus areas and manage the land. Strong conservation practices should respect local voices and create broader partnerships that can ensure long-term success.

Another consideration is the fact that the County’s natural resources are often not accessible to all community members. Those with limited mobility, for instance, are not able to easily access the resources provided by the County in our parks or preserves. It is imperative that these spaces are designed with these community members in mind whenever possible.

## **Alachua County Comprehensive Plan**

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The Conservation and Open Space Element of the Alachua County Comprehensive Plan emphasizes the urgent need to preserve our natural resources in protection of human health and natural resource integrity. This protection of wetlands, floodplains, uplands, and other natural resources within the County are key to supporting the climate resiliency of the County and are

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<sup>1</sup> "Urban Heat Islands." *MIT Climate Portal*. 2021.

<sup>2</sup> Ibid footnote 1

important tools to address aspects of climate vulnerability identified in the County’s Climate Vulnerability Analysis. See Appendix B for a full list of objectives and policies referenced by the CAP.

## Past and Current Efforts

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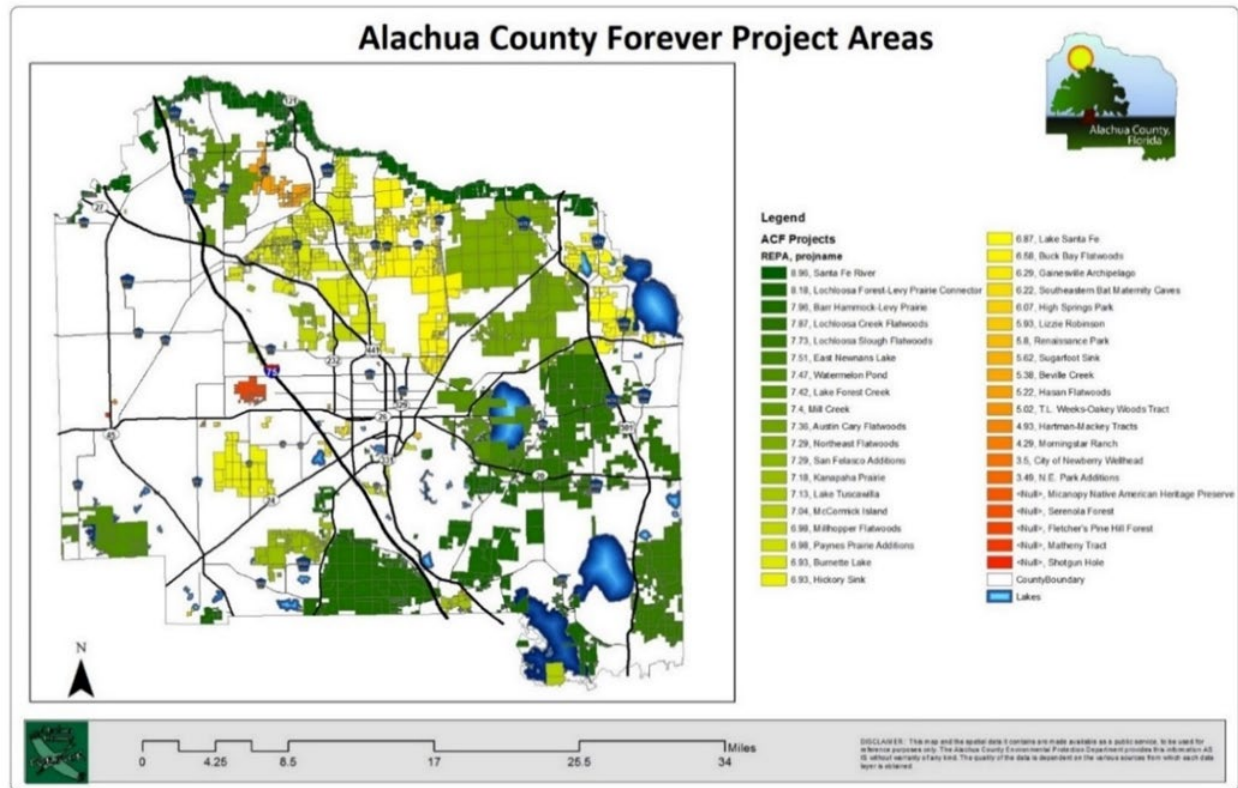
### Alachua County Forever

Conservation of natural and working lands is the most effective nature-based solution available at a broad scale in the County’s climate resiliency strategies. This critical strategy can help lower GHGs while improving community response to climate-driven hazards. Natural lands, particularly forests, wetlands, and grasslands, allow trees, plants, and soils to act as carbon reservoirs, reducing the release of GHGs and capturing GHGs already in the atmosphere. These lands also support community resilience to climate change, improving water and air quality, preserving biodiversity, and reducing inland flooding while protecting essential water supplies that communities depend upon.

Alachua County Forever (ACF), the County’s land conservation program, has successfully protected over 36,000 acres of environmentally significant lands in the County, since the program’s establishment in 2000. These lands are protected through fee-simple acquisition of lands from willing landowners, and through establishment of conservation easements which protect privately-owned lands from future development in perpetuity and protect the most significant environmental resources on-site in partnership with willing landowners. Land acquired fee-simple are managed as nature preserves, while conservation easements allow landowners to retain rights for use and management of their properties, with annual monitoring of ecological value protection conducted by County staff.

The ACF program mission is to acquire, improve, and manage environmentally significant lands that protect water resources, wildlife habitats, and natural areas suitable for resource-based recreation. This is implemented by County staff working with citizens, conservation partners, and willing landowners. To prioritize protection of the most ecologically significant lands, geographic “ACF project areas” have been identified within the County. Three priority corridors were named in 2023, integrating the County’s land conservation with regional and state-level conservation efforts.

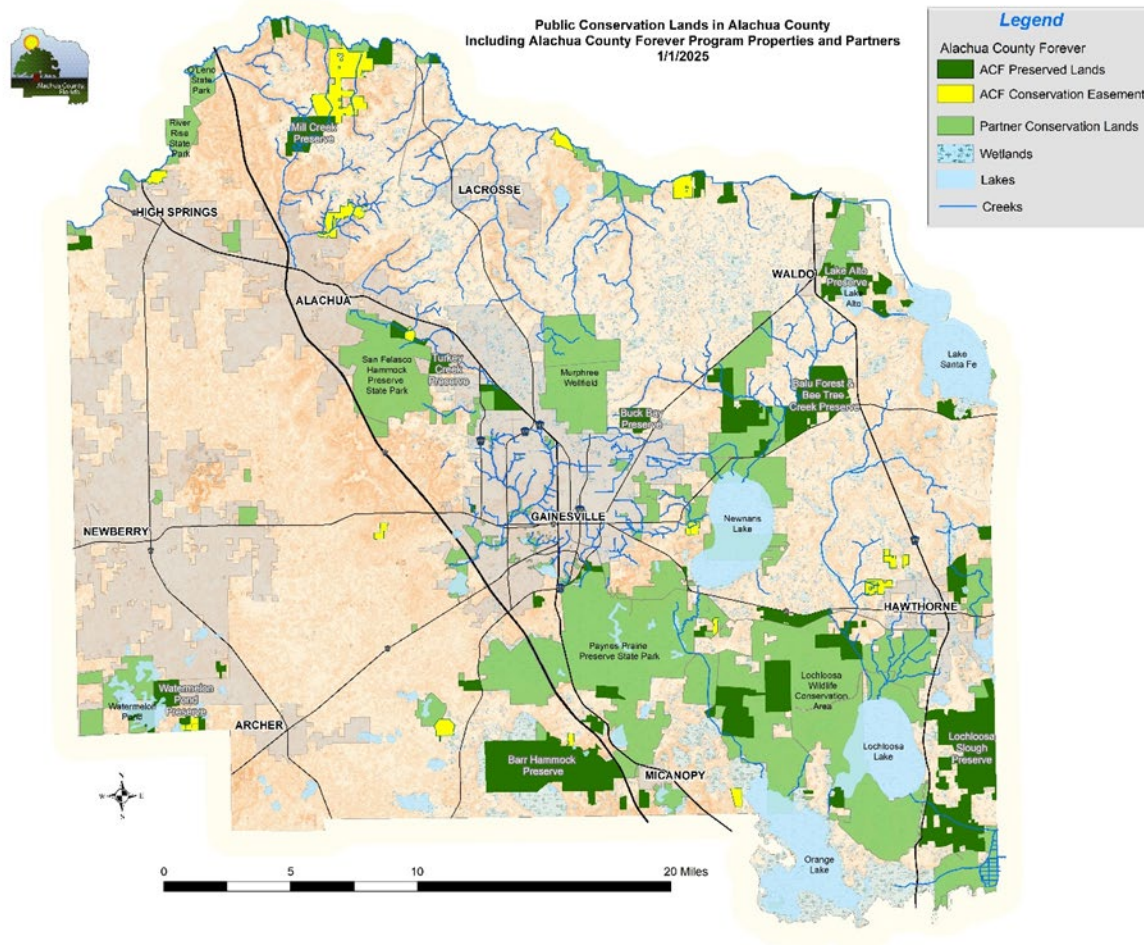
In 2023, the Board of County Commissioners identified the “30x30” initiative as the minimum guiding target for the ACF program. The “30x30”, or America the Beautiful Initiative is a national goal to conserve at least 30 percent of U.S. lands, freshwater and U.S. ocean areas by 2030. Locally led conservation efforts are critical to accomplishment of this goal.



**Figure 6.1. Alachua County Forever Project Area Map**

## Wild Spaces and Public Places

The ACF program is funded by the voter-approved Wild Spaces and Public Places surtax. Since 1998, the voters in Alachua County have passed referenda on four separate ballots (1998, 2008, 2016, and 2022) to support protection of environmentally significant lands and water resources, and to expand recreational opportunities in the County. In November 2022, the Wild Spaces Public Places referendum was re-authorized by Alachua County voters for a ten-year period. With this most recent referendum, from 2023 through 2032, a 0.5% sales tax will be directed towards acquiring and maintaining conservation lands, wildlife habitat, and green spaces such as parks, and improving park recreational infrastructure. Funds dispersed to the nine municipalities are primarily used for recreational park improvements and other built public infrastructure, while County funds prioritize protection of environmentally significant lands while also supporting recreational park improvements.



**Figure 6.2 Alachua County Conservation Lands with Properties Acquired through the Alachua County Forever Program and Wild Spaces and Public Places Surtax Funding**

### Unified Land Development Code

Given the impact land development can have on habitat loss and resource use, Alachua County has implemented several Land Development Codes to protect its natural resources. Since 1993, for example, the County implemented strict protections for wetland and wetland buffers with minimal exceptions. In 2005, upland habitat protections were added, requiring conservation resources outside of wetlands to be protected, including significant habitat, listed species habitat, strategic ecosystems, and significant geologic features. For high quality ecosystems, or areas of significant habitat, up to 25% of uplands on a property proposed for development may be required to be set-aside as a conservation area. For strategic ecosystems, which represent large corridors of high-quality habitat and waterways, up to 50% may be set-aside. Setting aside exceptional upland habitat further protects our water resources as well as wildlife habitat and loss of plant diversity.

Alachua County has some of the most stringent buffer requirements and upland habitat protections in the state, putting residents in a better position to cope with climate change impacts like flooding



and extreme heat. Other parts of the code protect a variety of other green spaces, such as the Open Space Code, which provides protections for open spaces such as community gardens, community fields, greens, or pocket parks. These spaces are not only essential for conservation and wildlife habitat, but they also allow us to build a stronger community by having natural areas where people can gather, traverse, exercise, and play. To protect the natural habitat value of these green spaces, the Code requires removal and management of invasive exotic species on all new developments.

The Unified Land Development Code also implemented two Special Area Studies (SAS); one in the community of Cross Creek and the other in the Idylwild/Serenola community. The intent of the special area studies is to provide specific policies, standards, and guidelines that address significant cultural, historic, and environmental resources and characteristics of unique communities within Alachua County. SAS contain some of the most stringent protections for natural resources in the County. For example, in the Cross Creek SAS, building impact areas are limited to 0.5 - 1 acre for properties located within certain mapped resource protection zones. In the Idylwild/Serenola SAS, all developments must be designed so as to retain at least 40% of the initial canopy.

## **Tree Protection**

Trees are undeniably valuable assets for both the environment and the community. They offer a wide array of benefits that increase over time, including shade, oxygen, and habitat for wildlife. As trees mature, their shade can cool urban temperatures by as much as 10 degrees compared to areas without trees and their capacity to sequester carbon further amplifies. Additionally, they protect people from harmful ultraviolet radiation while filtering air pollutants, reduce energy costs, and enhance property values which further amplifies their positive impact on the lived environment.

The purpose of the Tree Protection Code is to advance these aesthetic, economic, environmental, and social contributions through preserving existing canopy and the creation of tree resources where there is a deficit. In the interest to promote the public health, safety and general welfare; enhance the beauty of Alachua County, and to complement zoning, subdivision and land use ordinances, it is imperative to establish standards and improve measures to preserve trees.

The Tree Protection Code implements policies to preserve, protect, and enhance the quality and quantity of the County's tree canopy while also balancing development and improvement of property. In 2025, Tree Code update provided a variety of additional protections and incentives for tree retention:

- Strengthened protection of high quality 45" Diameter at Breast Height (DBH) trees by defining them as “landmark live oaks”
- Codified definitions to clarify tree protection zones versus dripline
- Codified the tree rating system for tree evaluations and associated mitigation

- Provided incentives for developers some allowable impacts around trees with the intention of integrating mature trees on developed sites as opposed to removing and replanting.
- Reorganized code enforcement procedures for tree removal violations

### **Tree Planting Program**

Trees are essential to many ecosystems and landscapes. Trees clean and cool air through transpiration and filtration, insulate buildings, calm traffic, and provide homes for wildlife and sanctuaries from the heat of summer and many other values. This is why the County not only protects trees, but plants them as well. In 2018, the Board of County Commissioners established the County Tree Planting Program goal “to offset canopy loss and establish high value trees on County owned rights-of-way, developed County properties, and properties directly influencing the general public,” and identified two project priorities:

- **FIRST PRIORITY** – Trees to be planted on road segments where traffic calming is most needed and multimodal transportation choices are most likely to be utilized such as approaches to schools, commercial centers, employment centers and service centers including libraries, parks, churches and community centers.
- **SECOND PRIORITY** – Trees to be planted in locations that facilitate shade and buffering for pedestrians, cyclists, buildings, parking lots, and recreational centers.

The County Arborist prepares an Annual Tree Planting Work Plan identifying and prioritizing new tree planting sites for the year in accordance with those priorities. Since then, 1,630 trees have been planted with a 91% survival rate over the past seven years. The County has also established a Tree Sponsorship program through which private “sponsor” landowners agree to allow the County to plant and establish high quality shade trees, appropriate for site conditions near public rights-of-ways, public spaces, and on properties influencing the public sphere. Ideal tree sponsorship locations include properties adjacent to sidewalks or paths, parking lots of community buildings like churches or businesses, and other areas that contribute to UHIs within the County. offer excellent opportunities for new trees.

In addition, annual wildflower seeding in County rights-of-way provides more spaces for pollinators, plant diversity, and reduces resources to mow or water needed that would be used for sod. Participating in tree planting events is a great way to volunteer toward helping improve tree canopy in Alachua County. In 2025 alone, volunteers dedicated over 700 hours last year to plant trees in the County. Protection of Karst Sensitive Areas

The Unified Land Development Code sets forth protection measures for significant geologic features and karst topography, such as retention of these features and their buffers in their natural condition. Climate influences natural ecosystems in a variety of complex ways, for example warming may force species to seek out cooler areas for survival. Fine-scale topographic complexity creates important microclimates that can facilitate species to grow outside their main distributional range and increase biodiversity locally. Additionally, karst features provide a variety

of microclimatic habitats that may facilitate the persistence of organisms with diverse environmental preferences. Research indicates karst features may provide potential safe havens for multiple plants and fungi under local and global climate oscillations.<sup>3</sup> Locally, most sinkholes promote a moist climate that is moderated from temperature extremes. Protecting the features that provide such microclimates could improve resilience for animal communities in the face of ecosystem migration resulting from climate influences.

Other stressors such as land development, combined with climate change, can lead to more drastic cumulative effects. The County's Comprehensive Plan requires strategies that, "Protect and conserve the quality and quantity of groundwater and springs resources to ensure long-term public health and safety, potable water supplies from surficial, intermediate, and Floridan aquifers, adequate flow to springs, and the ecological integrity of natural resources." In unincorporated areas, the Alachua County Development Review Process also has mechanisms to address the type of development surrounding geologic features.

On the other hand, while the Countywide Natural Resources Protection Code provides some protection of significant geologic features within the municipalities through avoidance and minimization of impacts, it does not currently consider the larger development patterns surrounding those features since it is not a land development code. Alachua County will continue to work with local municipalities to strengthen their comprehensive plans to match the County's protection strategies.

## **Landscaping Code**

Current landscaping methods are water and resource intensive and do not contribute to local ecosystems. Resilient landscaping should thus "work with nature instead of against it," incorporating native plants that are biodiverse and pollinator friendly.<sup>4</sup> To promote resilient landscaping, the County Comprehensive Plan requires and encourages development and landscaping practices that conserve, appropriately use, and protect native vegetation and forests. Landscaping in new development must incorporate water conservation practices while use of invasive species is prohibited. The Comprehensive Plan encourages the use of groundcover alternatives to lawn grass, site design techniques that provide for passive cooling in landscape design and supports strategies that maximize biodiversity of plant species.

Recent updates to the Landscaping Code to further these objectives include changes in the following areas:

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<sup>3</sup> Bátori et al., "Karst Dolines Provide Diverse Microhabitats for Different Functional Groups in Multiple Phyla," *Scientific Reports*, 2009.

<sup>4</sup> McPherson, *The New Yard Pattern Book for Florida's Sustainable Single Family Homes*, 2005, 15.



- **Resilient Landscapes** – increased emphasis on reduced irrigation and fertilizer, promotion of alternative groundcovers and reduced turfgrass; requirements for Low Impact Development to disrupt impervious surfaces; clarity on credit for use of existing vegetation.
- **Urban Forest** – biodiversity requirements for trees, shrubs, and groundcovers; minimum requirements for native species; reduced tree installation sizes for greater species biodiversity; encouragement of edible and keystone species; update of appropriate trees list to remove invasive species, limitation on use of palm species to control Lethal Bronzing Disease.
- **Urban Heat Island** – allow flexibility for tree locations near covered parking solar facilities; for paved area tree canopy coverage, simplify requirements for vehicular areas and add requirement for pedestrian areas.
- **Compact Development** – new standards for root zone volume, width, depth, pervious surface areas for trees in constrained areas; clarification of street trees requirements; standards for geometric, walled, fenced basins as amenities to developments.

## Countywide Wetland Protection Code and the Countywide Natural Resources Protection Code

In 2018, Alachua County adopted countywide wetland protection standards outlined in Chapter 77, Article II of the Countywide Wetland Protection Code. Chapter 78, Countywide Natural Resources Protection Code, was later adopted in 2021, and outlines protection standards for significant habitat, listed species habitat, strategic ecosystems, and significant geologic features. Both codes implement strong protections for wetlands from clearing and other activities, only allowing alterations if authorized by the associated municipality and County Board of County Commissioners.

## Technical Assistance, Community Engagement, and Code Enforcement

In support of the extensive environmental protections in the County's Comprehensive Plan and Unified Land Development Code, staff respond to citizen inquiries, code violations, and provide technical assistance. The County has had a Pre-Application Screening process in place since 2015 whereby all building permits are reviewed by the Environmental Protection Department for compliance. The Department also has a robust outreach program, including regular presentations to school children and civic groups, social marketing campaigns, informational pamphlets, mailings, and more. When code violations cannot be resolved by staff working with citizens or are irreversible and irreparable, the County can proceed with a quasi-judicial hearing with a code enforcement special magistrate and/or civil citation.

## Program Highlight

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## Alachua County Forever: Building Community Resiliency Through Land Conservation



**Figure 6.3: ACF program logos from 2000, 2008, 2016, and 2022**

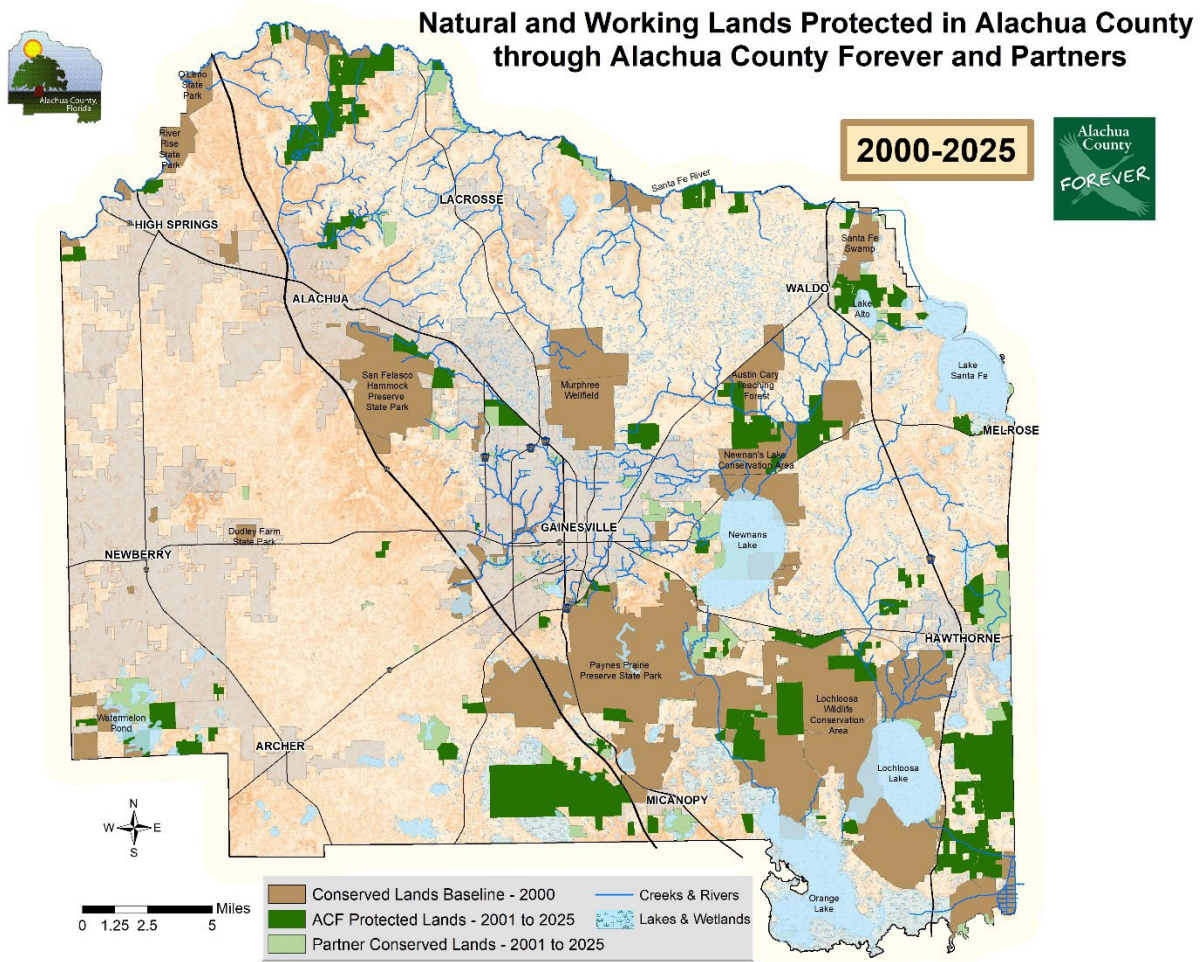
Alachua County voters passed a pioneering local land conservation program called Alachua County Forever in 2000. Alachua County citizens recognized the need to protect environmentally significant lands to benefit the health and well-being of residents as well as plant and wildlife communities. The program has now expanded to protect farm and ranch lands as well (please see the Agriculture and Food Systems Chapter for more information on conservation easements of agriculture lands).

The program has been a clear example of community collaboration yielding expanding benefits. Citizen volunteers and community organizations and non-profits are critical to the ACF program's creation and success. These include: the Nature Conservancy, Alachua Conservation Trust, the Sierra Club, Alachua Audubon, Florida Native Plant Society, Keep Alachua County Beautiful, school groups, scouting groups, the University of Florida and others.

These conserved lands are the keystone green infrastructure in the Alachua County. These natural and working lands help ensure climate resiliency for citizens by:

- Reducing wildfire risk and destructiveness through the practice of prescribed burning,
- Reducing flooding potential (and homeowners flood insurance rates) through wetland protection,
- Aiding mental health and well-being through protected greenspace and recreational opportunities in nature,
- Protecting drinking water recharge and water quality, increasing property values in areas near the protected lands,
- Helping protect local food systems through agricultural land easements, and more.

Today, the ACF program continues protecting local resiliency while also contributing to statewide conservation priorities within our County with partners like the State of Florida, the Suwannee and St Johns River Water Management Districts, the USDA Natural Resource Conservation Service. Originally passed as a bond, the Alachua County Forever program serves as the highly successful cornerstone of the Wild Spaces and Public Places surtax, now benefitting citizens throughout the County and its cities with conserved lands, park improvements, road improvements, fire stations, community spaces, and affordable housing. Citizens across the state continue to recognize and prioritize the value and benefit of land conservation, with local ballot measures similar to Alachua County Forever passing in 23 counties by 2025.



**Figure 6.4: ACF and Partner Protected Lands throughout the County from 2000-2025**

## Future Strategies and Action Items

### Goal 6.1 – Continuation and Expansion of Land Conservation Efforts through Alachua County Forever Program

#### *STRATEGY 6.1.1 – Continuation of Protection of Environmentally Significant Lands through Alachua County Forever Program*

Land conservation, habitat restoration, and land stewardship are nature-based climate actions which increase carbon storage or reduce GHGs in the atmosphere. Natural climate solutions include strategies from special low-impact agricultural practices and habitat restoration to tree planting, nutrient management, and conservation of both public and private lands. Combined at the national level, these and other natural climate solutions could absorb twenty-one percent of the

annual net GHG emissions.<sup>5</sup> Among these strategies, land conservation is one of the most cost-effective.

The voters of Alachua County have approved continued funding of land conservation efforts through the Alachua County Forever Program through 2032 and may likely support additional funding into the future. The Board of County Commissioners, in its 2023 Strategic Guide, identified “Invest in and Protect Our Environment” as a guiding principle, and named “Continue Wild Spaces and Public Places and include agricultural lands as well” as a program action in support of this principle. In February 2023, the Board approved the “30x30” goal for land conservation within the County as a target for the 10-year (2023-2032) management strategies of the Alachua County Forever Program.

Table 6.1: Action Items for Continuing Protections for Environmentally Significant Lands (Strategy 6.1.1)				
Action Items	Jurisdiction	Pros	Cons	Status
<b>Continue acquisition of conservation lands in support of “30x30” land conservation goal. Utilize planning and funding strategies in support of conservation of 30% of the County’s lands and freshwater by 2030.</b>	Alachua County	Increase the amount of conservation lands in Alachua County; reach 30x30 goals	Cost	<u>Ongoing</u>
<b>Continue to evaluate and acquire environmentally significant lands in priority project areas and corridors in support of Alachua County Forever mission.</b>	Alachua County	Increase the amount of conservation lands in Alachua County; reach 30x30 goals	Cost	<u>Ongoing</u>
<b>Continue acquisition of conservation lands in support of “50x50” land conservation goal. Utilize planning and funding strategies in support of conservation of 50% of the County’s lands and freshwater by 2050.</b>	Alachua County	Increase the amount of conservation lands in Alachua County; reach 50x50 goals	Cost	Ongoing

<sup>5</sup> Fargione et al., “Natural climate solutions for the United States,” *Science Advances*, 2018.

<b>Review ACF property evaluation data and process, including and decision matrices, for opportunities to include climate resiliency values and climate change mitigation opportunities by December 2026.</b>	Alachua County	Maximize climate resiliency when conserving lands ; increase climate mitigation strategies	None	Emerging
<b>Continue public education, code enforcement</b>	Local government, FDEP, WMD	Increase habitat value, fewer code violations	Cost	Ongoing
<b>Conserve priority lands as fee simple or conservation easement acquisitions to protect water resources, wildlife habitat, and resource-based recreation where appropriate.</b>	Alachua County, private landowners, FDEP, WMD, USDA	Reduce flooding, reduce risk of catastrophic wildfire, protect water quality and water recharge, mitigate greenhouse gas emissions, protect carbon storage reservoirs	Landowner awareness, real estate market conditions, expanding population.	Ongoing.

**STRATEGY 6.1.2** – Review land stewardship practices on Alachua County Preserves for opportunities to increase climate resiliency and implement selected compatible strategies. Prioritize vulnerabilities identified in the County’s Vulnerability Analysis.

The first step in public land conservation is to acquire land, or interests in land through a conservation easement or similar tool. However, after land is protected, stewardship of that land is the key to unlocking the nature-based solutions for climate resiliency. Climate resiliency benefits from both natural lands and working lands can be maximized through restoration of soils, forests, wetlands, and grasslands, and use of climate-smart agricultural practices, and climate smart forest-management practices.

**Table 6.2: Action Items for Reviewing Land Stewardship Practices on Alachua County Preserves (Strategy 6.1.2)**

Action Items	Jurisdiction	Pros	Cons	Status
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<b>Review the land stewardship practices on County-owned conservation lands for potential climate benefits as well as other priority ecosystem services.</b>	Alachua County	Incorporating climate focus in land conservation practices; climate preparedness for the future	None	<u>Not started</u>
<b>Complete a climate-focused review of Alachua County Forever Timber Business Plan, and Grazing Business Plan by 2027. Include assessments of carbon storage and absorption in analyses</b>	Alachua County	Incorporate climate focus into ACF efforts and plans	None	Not started
<b>Continue and expand prescribed burning on County-owned preserves to help reduce the possibility and intensity of destructive wildfires by reducing fuel build-up.</b>	Alachua County	Climate resiliency.	None	Ongoing
<b>Conserve priority lands as agricultural conservation easement acquisitions</b>	Alachua County, private landowners, FDACS, USDA	Protect local food production, protect open space, reduce flooding risk, protect or mitigate water quality and water recharge.	Landowner awareness, real estate market conditions, expanding population, and challenges in farming longevity.	Emergent

## Goal 6.2 – Tree Protection Code Update

### *STRATEGY 6.2.1 – Increase Tree Canopy Retention Percentage*

Currently, development projects tree protection amounts are based on a flat minimum percentage based on the type of development and do not recognize sites that may have higher quality or lower quality tree resources. In addition, assessments of whether previous tree protection and canopy policies and plantings have been effective should be evaluated for this next tree protection code revision.

**Table 6.3: Action Items for Updating the Tree Protection Code (Strategy 6.2.1)**

Action Items	Jurisdiction	Pros	Cons	Status
<b>Assess various strategies such as retaining trees based on current/historical land resources, existing vs overall canopy, and retention based on overall condition and quality of species</b>	Unincorporated	Increase and diversify protections for trees within Alachua County	None	Ongoing
<b>Evaluate the effectiveness of existing policies such as of 45” diameter landmark live oak, trees, canopy coverage in 20-years, and minimum canopy retention percentages.</b>	Unincorporated	Increase and diversify protections for trees within Alachua County	None	Emergent
<b>Assess policy incentives for low impact development</b>	Unincorporated/County-wide	Transition towards low impact development	Market/Execution	Ongoing

### *STRATEGY 6.2.2 – Update Specimen Tree List*

The current Specimen Tree List overestimates size of specimen trees compared to when specimen trees are observed on site. This creates inconsistencies and prevents the County from protecting trees that are of an appropriate size. The Specimen Tree List should be updated and modified to protect these trees.

**Table 6.4: Action Items for Updating the Specimen Tree List (Strategy 6.2.2)**

Action Items	Jurisdiction	Pros	Cons	Status
<b>Remove minimum sizes for small trees and assess on a site-by-site basis</b>	Unincorporated	Increase amount of trees protected	May require more staff time.	Not started
<b>Clarify mitigation on smaller stature trees and provide a method for capturing uncommon species on a tree survey</b>	Unincorporated	Increase the amount of trees protected	None.	Not started

### ***STRATEGY 6.2.3 – Potential Tree Permit Changes***

Tree removal permits are required for removing regulated trees. These policies will be evaluated to provide more flexibility with replacement trees.

**Table 6.5: Action Items for Potential Tree Permit Changes (Strategy 6.2.3)**

Action Items	Jurisdiction	Pros	Cons	Status
<b>Allow non-native edible species for mitigation</b>	Unincorporated Alachua County	Promotes food forests and more flexibility for single-family residential properties	Potential loss of mature canopy trees	Not started
<b>Determine a process for denial and appeal tree permits for checks and balances</b>	Unincorporated/ Interdepartmental	Prevents Unnecessary Tree Removal and allows owners to appeal decisions to a board	TBD	Not started
<b>Tree advisory board and other municipality Tree City USA certification</b>	County-wide; municipalities	Unified Tree City USA certification within Alachua County	Determining the resources needed to become a Tree City	Not started

## **Goal 6.3 – Community/Urban Forest Management Plan**

### ***STRATEGY 6.3.1 – Develop Community/Urban Forest Management Plan***

Alachua County's currently provides protections to forests or trees through conservation land management, tree protection standards for trees removed on development projects and the permit process for single-family properties; landscaping standards on development projects and mitigating or replanting for trees removed within the County. Some of these protection methods are reactionary to specific situations within the County such as responding to inquiries for removal or evaluating tree concerns for safety. The Community/Urban Forest Management plan will provide proactive, comprehensive goals and strategies to further balance the needs of the environment and people.

Developing a Community Forest Management Plan, or a more tightly geographically focused Urban Forest Management Plan, will require three major components: social systems, governance systems, and the ecological systems. The social component incorporates the framework of community values – what people who live and use these spaces would like to see. The governance provides the guidelines and responsibilities for Alachua County's goals such as how they will be applied and monitored, and the timeframe for implementation methods for trees Countywide. Community/urban forest management will inventory current tree canopy cover, species, health, and distribution. It will also identify public safety hazards to residents and structures which will be a useful tool for extreme weather preparation. The community input and support to establish the public commitment and organizational framework will unify efforts to protect, manage, and care for our trees in the long term.

Initial discussions regarding the scope of the plan suggest the following areas be reviewed for consideration in the plan development, community outreach, and tree inventory areas within the County:

- County Urban Cluster or Urban Service Area
- County Road rights-of-way
- County Parks
- Smaller municipalities within the County as interested

Examples of successful urban forest plans include specific recommendations on policies, procedures and practices, and provide information required by policy makers, planners, utilities, environmental managers, businesses and citizen volunteers to optimize the benefits of the urban forest while minimizing management costs.

The investment in this plan can come at a fraction of the cost of other environmental management programs, such as stormwater system maintenance. A five-city study by the EPA in 2015 found that cities received benefits ranging from \$1.50-\$3 for every dollar invested in trees. Unlike

human-made systems, such as roads and bridges which deteriorate with age, trees are the only urban infrastructure that increase service and value over time.<sup>6</sup>

By properly managing the County's tree population and tree infrastructure through proactive planning of quantity and quality of trees, structural pruning maintenance, pest management, and removal of high-risk trees, the County can increase property values, tourism appeal, and the physical, and mental health of residents while reducing storm water runoff, energy consumption, and air and water pollution.

Overall, a community/urban forest management plan will define the vision, begin the tree inventory and tree assessments, create a strategic plan and timeframe based on the assessments, define the entities responsible for implementation, and monitor efforts towards achieving these goals.

A component of the community/urban forest management plan will require knowing what the composition and condition of trees in Alachua County prior to developing short term and long-term strategies. It is currently estimated through aerial imagery that there is approximately 53% of tree canopy coverage in the County's urban service area. A formal tree inventory should include an assessment of current tree canopy percentage and forest cover; tree species, health, and how they're distributed. This will help make informed decisions on future goals of maintaining canopy coverage, areas to plant high-quality species or improve biodiversity, management of invasive species or removal of trees at risk of causing damage or harm to property or people.

**Table 6.6: Action Items for Developing a Community/Urban Forest Management Plan (Strategy 6.3.1)**

Action Items	Jurisdiction	Pros	Cons	Status
<b>Determine baseline canopy</b>	Alachua County Urban Cluster	Frame of reference	None	Current
<b>Establish Canopy Goals and ways to manage</b>	Unincorporated	Step toward	None	Not started
<b>Community Engagement for Management Priorities</b>	Unincorporated	Community focused priorities	Conflicting needs	Not started

<sup>6</sup> McPherson, E. et al., "Municipal Forest Benefits and Costs in Five US Cities." *Journal of Forestry*, 2005



<b>Tree Inventory/Ecological Analysis</b>	County-owned property	Allows for more proactive management of size, species, and potential risks within the County	Costs	Not started
<b>Obtain and implement Community/Urban Forest Management Plan</b>	Alachua County	Reduce UHI effect, increase storm resiliency, increase habitat	Currently no dedicated funding sources	New/ Not started

## Goal 6.4 – Landscaping Goals

### *STRATEGY 6.4.1 – Create resilient landscapes through sustainable landscaping practices*

In recent years, the land development process has dramatically changed in ways that exacerbate habitat loss and the heat island effect. The current land development process currently results in vast clearcutting and scraping away of existing resources to create a “blank slate.” This method consumes a vast amount of resources, such as new landscaping, irrigation, and fertilizer.

Alachua County currently does not have any requirements for lot level landscaping. As part of the Climate Action Plan, the County will explore adding lot level landscaping requirements, particularly focused on replanting of trees and native vegetation. Additionally, requiring soil amendments for new landscaping will also be considered in order to promote healthy soils and landscaping practices that minimize the use of supplemental resources.

One planting strategy that has gained a lot of attention for its climate benefits is micro forests, or the Miyawaki method. This is an afforestation practice that involves planting a variety of native trees in as little as a tenth of an acre. The result is an accelerated growth of a diverse forest that requires little maintenance once established. While this practice is just beginning to gain traction in the United States, it has proven successful in other countries such as Japan, where the idea originated. Alachua County will consider this strategy to address the increasing need in urbanized areas for cooling and habitat that micro forests have the potential to provide. This could be achieved through first planting a micro forest on County property as a demonstration, then finding ways to incentivize it in the broader development landscape.

As addressed in the County’s current Comprehensive Plan and Landscaping Code, Firewise landscaping is an important strategy for minimizing impacts to developed areas from wildfires. The Climate Vulnerability Analysis points out that chances of extreme drought, and associated wildfires, are expected to increase with climate change. To address this concern, the County will

assess staff and budgetary resources allocated to implementing the wildfire mitigation objectives of the Comprehensive Plan.

**Table 6.7 for Sustainable Landscaping Practices (Strategy 6.4.1)**

Action Items	Jurisdiction	Pros	Cons	Status
<b>Require soil amendments in new construction</b>	Local government	Great water savings if property owner changes watering behaviors	Property owner and builder resistance, potentially staff intensive	Not started
<b>Require trees on new residential lots</b>	Local government	Reduce urban heat island (UHI) effect, modest energy savings	Property owner and builder resistance, potentially staff intensive	Not started
<b>Subsidize native plant nurseries</b>	FDACS	Increase availability and stock	Currently no dedicated funding sources	Not started
<b>Promote movements that assist landowners with native landscaping</b>	Local government, UF IFAS Extension	Increase habitat, marginal water savings and water quality improvements	Difficult to measure	Ongoing
<b>Require green certification of new construction</b>	Local government or utilities	Modest water, energy savings	Political and builder resistance, potentially staff intensive	Not started
<b>Retain higher density inside Urban Cluster, while also retaining greenspace</b>	Alachua County	Reduce UHI effect, incentivize pedestrian transportation	Political and builder resistance	Ongoing

<b>Impose limits on impervious surfaces</b>	Alachua County	Reduce UHI effect, reduce stormwater runoff, protect soil and habitat	Developer and builder resistance	Not started
<b>Update Tree Protection Code to increase tree canopy retention</b>	Alachua County	Reduce water use, protect soils and habitats	Builder/ developer resistance	Not started
<b>Require / incentivize permeable pavement and other Low Impact Development techniques</b>	Local government	Improve water quality and reduce flooding	Builder/ developer resistance, cost, maintenance	Not started

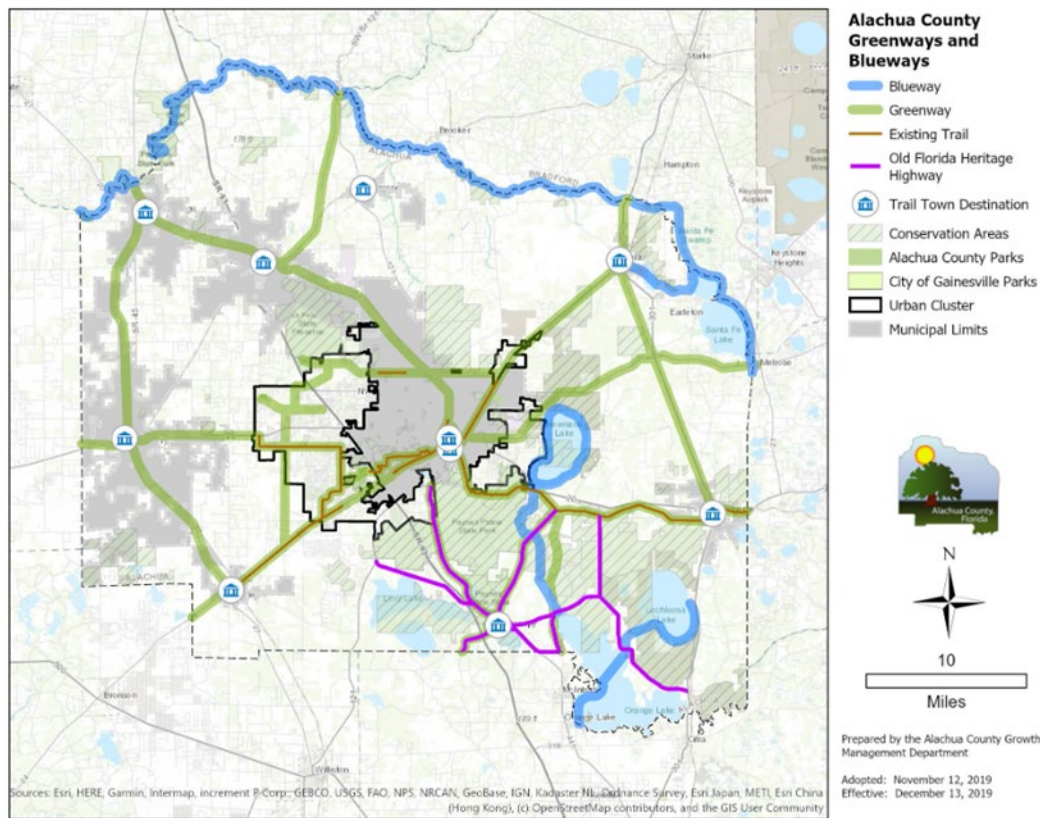
## Goal 6.5 – Climate Action Mapping

### *STRATEGY 6.5.1 – Develop more climate- and resilience-related maps.*

Maps are a helpful visual tool to promote broad understanding of current conditions and policy implications for natural resources. Through the use of Geographic Information Systems (GIS), complex analysis of geographic data can be performed and visually displayed in an easy-to-understand format. The Climate Vulnerability Analysis contains several useful maps, including areas of extreme flooding, heat, and wildfire risk in the County. The following maps could also be included as part of the Climate Action Plan:

- County Tree Inventory
- Updated Greenways Master Plan (Bicycle and Pedestrian Master Plan)
- Climate Action Infrastructure Projects (e.g. tree plantings, flood mitigation, cooling stations, etc.)

Map 7. Alachua County **Greenways and Blueways**



**Figure 6.5: Alachua County Greenways and Blueways**

**Table 6.8 for Climate Mapping (Strategy 6.5.1)**

Action Items	Jurisdiction	Pros	Cons	Status
Develop GIS maps for climate, resilient, and sustainable projects and plans (e.g., County Tree Inventory, updated Greenways Master Plan, infrastructure projects, etc.)	Local government	Better understanding of climate impacts and climate projects; strategic planning	Potentially staff intensive	Emergent

## Triple Bottom Line

## *People*

Preservation of natural resources has immense benefits for the residents of Alachua County. By conserving lands such as parks, citizens have access to trails, springs, and other natural areas. These can be used to improve physical health, mental health, and for recreation. They provide spaces for people to connect and socialize, improving citizens' sense of community and belonging. Volunteering for conservation lands can also provide citizens with a sense of fulfillment. Furthermore, the health and stability of local ecosystems directly impacts the health of people in various ways.

## *Profit*

The Florida Fish and Wildlife Conservation Commission (FWC) estimates the economic impact from recreational hunting, fishing, and wildlife-viewing in Florida is \$10.1 billion every year<sup>7</sup>. These activities create tens of thousands of jobs and generate millions in state and local tax revenue. Outdoor recreation, hunting, and fishing have a tremendous economic impact within Alachua County. Among these are the County's iconic state parks that draw tourism dollars from across the nation. For example, Friends of Paynes Prairie Inc. estimate that Paynes Prairie State Park generates over \$10 million in direct economic benefit annually and supports 164.5 jobs.<sup>8</sup>

Protecting the County's urban forest is also economically beneficial. Trees save billions nationally by reducing energy costs, removing air pollution, and storing carbon while increasing property values and commercial benefits.<sup>9</sup> They also reduce runoff and improve water quality, especially during storm events, which saves money in stormwater treatment and runoff management.

## *Planet*

Conserving local ecosystems protects carbon sinks and provides habitats for the fauna and flora that preserve the natural balance in Alachua County. Integrating more natural spaces into urban or developed areas provides more carbon sinks as well as decreases the incidence of UHIs. Additionally, by transitioning away from intensive turf grass and planting native turf and plants, pollinators can recover and increase in population.

# **Community Engagement**

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<sup>7</sup> Florida Fish and Wildlife Conservation Commission, "Economic Impact of Outdoor Recreation."

<sup>8</sup> Friends of Paynes Prairie, "Friends of Paynes Prairie, Inc."

<sup>9</sup> Nowak et al., "Sustaining America's Urban Trees and Forests," *USDA*, 2010.



## **Volunteering Opportunities**

One of the best ways to get involved with Alachua County's efforts to protect our natural resources is by directly volunteering with the variety of opportunities provided for residents. Volunteer opportunities are available for our Water Resources Program, Arboriculture program and Alachua County Forever Program. Please see the Alachua County Environmental Protection Department Volunteer Page for more information.

## **Implement Native Yards**

Collectively, urban landscapes, particularly those surrounding single-family homes, place a strain on natural and water resources without contributing much to the surrounding ecosystems. It is essential that to shift the paradigm away from resource-intensive traditional yards and towards a more natural approach to landscaping that promotes native plant species and provides habitat for wildlife. There are several resources to assist property owners locally, including the Florida-Friendly Landscaping Program (FDEP and UF/IFAS) and Springs Friendly Yards (Florida Springs Institute) programs. Nationally, the Homegrown National Park movement is a grassroots call-to-action to regenerate biodiversity and ecosystem function by planting native plants and creating new ecological networks within urban landscapes. Similarly, the Wild Ones Program offers free native landscape designs for each unique ecoregion. These programs promote yards that require little to no supplemental inputs such as fertilizers and irrigation once established, while also providing forage and habitat for native species including pollinators.

## **Involvement in Local Governmental Efforts**

There are several ways to get involved with Alachua County's efforts to preserve local ecosystems and trees:

- Contacting elected representatives to support climate resilient policies.
- Joining a County Advisory Committee such as the Environmental Protection Advisory Committee, Citizen Climate Advisory Committee, or Land Conservation Board.
- Reporting clearing of natural areas, excessive water use, and other activities that harm the environment by calling the Alachua County Environmental Protection Department.

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