



The Council Quarterly

Quarterly Newsletter of the Florida Urban Forestry Council

2016 Issue One

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NATURAL INTERSECTIONS: CLIMATE CHANGE ACTION PLANS AND URBAN FORESTRY

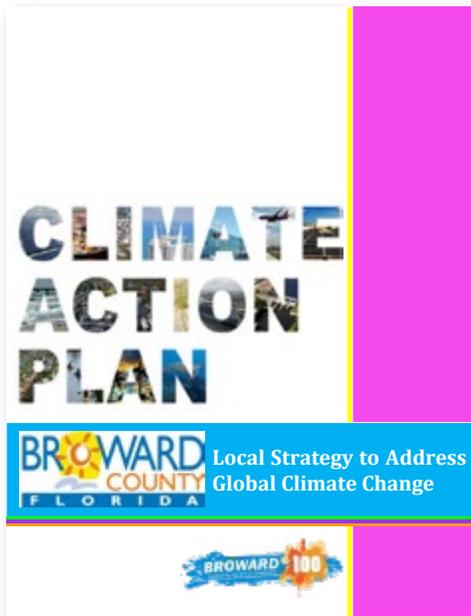
Submitted by Justin Freedman, M.S., Senior Scientist and ISA Certified Arborist, E Sciences, Inc.

World leaders recently gathered in France to discuss climate change from a global perspective. Like previous meetings in Cancun and Copenhagen, leaders focused on top-down solutions.

Meanwhile, a growing number of municipalities are developing their own Climate Change Action Plans to create bottom-up solutions. These come as a response to the 2005 U.S. Conference of Mayors Climate Protection Agreement, the 2007 U.S. Cool Counties Climate Stabilization Declaration and the International Council for Local Environmental Initiatives. Climate Change Action Plans can take many forms and vary in their development and format; however, all Climate Change Action Plans share the same overall goal: to begin to change their community's behaviors in ways that will reduce their overall impact on the climate.

As municipal arborists and urban foresters know, the urban forest sequesters and stores carbon dioxide (as well as greenhouse gasses and air pollutants) from the atmosphere. Thus, urban forestry plays a key role in the development of a Climate Change Action Plan. Municipal arborists and urban foresters should get involved early in the creation of Climate Change Action Plans.

As an environmental scientist specializing in urban forestry and marine biology in southern Florida, I consult for municipal and state agencies on a variety of habitats (upland and coastal forests, wetlands and seagrass meadows) that sequester and



store carbon. I know from my clients that funding for the protection, enhancement and maintenance of natural resources is scarce. Highlighting the role of these resources in climate change mitigation is a great way to justify existing expenditures and even secure additional funding.

I recently had the privilege of taking part in the development of the Broward County Climate Change Action Plan. I helped promote the prominent role of the urban forest in the mitigation of climate change by developing recommendations that will benefit the County's urban forest, support existing programs and generate and maintain public support and participation for the plan.

Climate Change: The Facts

While some people are skeptical about the anthropogenic origins of recent warming trends, there is overwhelming data that greenhouse gas emissions, global temperatures and sea levels are rising at accelerated rates. The U.S. Climate Change Science Program (CCSP) reported in 2009 that that there has been a 25 percent increase in greenhouse gas emissions (carbon dioxide, methane and nitrous oxide) into the atmosphere over the last 100 years. According to the National Oceanic and Atmospheric Administration State of the Climate Report from 2008, the global surface temperature has risen 1.4°F over the same time period—and the 10 warmest years over that period of time have occurred since 1996.

The CCSP also reports that sea levels have risen globally at increasing rates and models

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PRESIDENT'S MESSAGE



Hello FUFC members and a special welcome to all new members!

I am honored and excited to serve as your President for 2016. This is a very special year for FUFC as we are celebrating our 25th anniversary. For the organization to survive for this long is a testament to the leadership of the Executive Committee, support of the membership and sponsors and most importantly the continued focus of our mission to promote the value, enhancement and sound

management of the urban forests through leadership and education.

Last year's President, Justin Freedman, is an example of this strong leadership and I thank him not only for his dedication and commitment to FUFC, but also for his passion in protecting and promoting Florida's natural resources. I would also like to thank the Executive Committee for their talent, knowledge and hard work in coordinating the many educational programs such as "Trail of Trees" and the "Urban Forestry Institute" and providing the educational resources and materials for our membership through "The Council Quarterly" newsletter, "In a Nutshell" and the website. Finally, I would like to thank Lou Shepherd, our Florida Forest Service liaison, for his guidance and Sandy Temple, our Executive Director, who keeps us focused and moving in the right direction.

Once again, the Executive Committee has already been busy planning the year's activities. We recently hosted the annual Urban Forestry Institute on March 10-11, 2016, in Gainesville. This year's theme, "Urban Forests Forever! Creating a Sustainable and Resilient Urban Forest," covered topics ranging from forest and biological diversity to insect and disease to climate change effects on the urban forest. No matter if you were a forester, urban designer, landscape architect or utility forester, there was something to learn during the conference that will help with the day-to-day and future challenges in managing the urban forest.

I encourage each and every one of you to be involved in FUFC. From attending the regional workshops or volunteering at a local display booth opportunity, we welcome you. Our members are what make our organization great!

Linda Seufert

Linda Seufert
2016 FUFC President

REQUEST FOR ARTICLES

Please let us know what urban forestry projects you have going on in your neck of the woods. The Florida Urban Forestry Council would greatly appreciate the opportunity to share your information in our newsletter. These articles can include:

- New trends in the industry
- News about tree advocacy groups
- Volunteer projects
- City tree programs
- Letters to the Editor
- Questions for "Stump the Forester"

We look forward to hearing from you on this or any other interesting topic related to the urban forestry industry and profession. Please send any articles or ideas to Jerry Renick, FUFC newsletter editor, at Jerry.Renick@wantmangroup.com.



Thanks for contributing!

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suggest that sea level rise will accelerate in the next century. The Intergovernmental Panel on Climate Change reported in 2007 that greenhouse gas concentrations, global temperature and sea levels are rising at comparable rates.

By sequestering and storing carbon, our urban forests have historically served as the carbon "sinks" that balance the emissions caused by human activities. However, as we release increasingly larger amounts of greenhouse gases into the atmosphere and cut down more and more of our forests, the balance appears to be shifting. And while academics agree that it will take global participation to reduce greenhouse gas emissions and mitigate their potential effects on the climate, it is often easier for people to act effectively and efficiently on a local level.

Developing the Climate Change Action Plan

Broward County, Florida is likely to experience the effects of climate change more quickly than many counties within the United States due to its low elevation, dense coastal development, history of hurricane and tropical storm involvement, and limited supply of fresh drinking water. Fortunately, Broward County has a few forward-thinking officials and staff members that decided to act at a local level to slow the effects of climate change by developing and implementing a Climate Change Action Plan.

The first step in developing a Climate Change Action Plan is to decide who will be preparing the plan and how stakeholder input will be acquired and incorporated. In some cases, a municipality writes the plan utilizing existing staff, holding a few public meetings to solicit input from the community. In other cases, the public is engaged at a deeper level by creating a task force from within the community to develop recommendations for the plan in partnership with the municipality.

The Broward County Commission started the process on June 24, 2008 by resolving to create a Climate Change Task Force with 23 volunteer members from the environmental, scientific, governmental, transportation, law enforcement, and business communities. The Task Force invited leaders from various fields within the community (such as natural resource management, clean energy, water, transportation, and recycling) to form subcommittees and

develop recommendations in seven areas: economic and social issues, greenhouse gas reduction, intergovernmental affairs and communications, natural systems adaptation, property and infrastructure, renewable and alternative energy, and scientific and technical aspects.

The subcommittees met monthly between February 2009 and December 2009 to develop recommendations. They received input and guidance from County staff, metropolitan planning organizations, the Department of Transportation, and others to ensure that the recommendations were feasible and compatible with County and regional long-term plans. The Task Force then shaped and prioritized the recommendations and prepared the final Climate Change Action Plan.

I was asked to join the Greenhouse Gas Reduction subcommittee to help shape recommendations related to the County's urban forest resources. During the process,

I worked with a heterogeneous group of stakeholders and experts, including architects, lawyers, planners, builders, entrepreneurs, researchers, alternative energy representatives, and environmental advocates. Everybody involved was a volunteer, so it was evident that everyone felt strongly about the need for local action.

"Because recommendations need to be measurable in their implementation, one of the first suggestions that our group put forward was to conduct a baseline canopy study using one of the many tools available."

Because recommendations need to be measurable in their implementation, one of the first suggestions that our group put forward was to conduct a baseline canopy study using one of the many tools available. We also recommended continued support for existing County programs, such as the backyard conservation program Nature-Scape and the Master Gardener program at the Cooperative Extension Service. These provide outreach on proper urban forestry and landscaping practices and promote the planting and protection of appropriate native ("Florida Friendly") trees and plants.

The Broward County Plan

The Broward County Climate Task Force ranked and categorized the recommendations (over 175) put forth by the subcommittees and put together a draft Climate Change Action Plan in spring of 2010. The recommendations included items anticipated to reduce greenhouse emissions and waste, improve energy efficiency, promote greener building practices, increase utilization of public transportation, encourage recycling, and increase the size and health of the community's urban forest canopy. Of these recommendations, 65 were ranked high, meaning that the mission of the task force could not be met without their implementation.

These highly-ranked recommendations were reformatted into action items and categorized into the following groups: Policy and Coordination, Natural and Urban Landscape, Infrastructure Master Planning, Water Resources, Modeling, Monitoring and Mapping, Zoning and Building Codes, Mass Transit/Vehicle Miles Traveled, Renewable and Alternative Energy, Recycling/

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To be effective, action items must be quantifiable. Carbon storage and sequestration is already occurring at a baseline level in every community. In the Broward County Climate Change Action Plan we recommended quantifying the current baseline level of carbon sequestration and storage by conducting a canopy study and following up every five years with additional studies as Action item NU-2.2.

While this action item is still pending as funding is sought for Broward County, I conducted a similar study for Manatee County on Florida's west coast in 2010. For the Manatee County study, I analyzed county-wide aerial photography from 2009 using a combination of ERDAS Imagine 2010 software and CITYgreen software, developed by American Forests, a non-profit conservation, education and research organization based in Washington, DC. This study concluded that Manatee County has 37 percent canopy cover, only three percentage points shy of the 40 percent canopy goal recommended by American Forests.

With the baseline canopy established, a community can develop a goal (such as the

40 percent goal recommended by American Forests). Canopy reforestation goals can be accomplished by incorporating new or more restrictive tree protection measures into the development code, implementing municipal beautification programs that include tree plantings and/or initiating tree giveaways so that homeowners can participate in the reforestation efforts.

In the Broward County Climate Change Action Plan, we recommended reaching a 40 percent canopy through Action Item NU-2.1, which encourages urban reforestation of plant, trees and shrubs known to sequester and store high levels of carbon through planting on public and private lands. This includes encouraging people to plant trees on "unused properties, school and government properties and conservation lands utilizing trees and shrubs acquired through grants, private-public partnerships with the green industry, and with developers or agencies looking for opportunities to offset carbon emissions and become carbon neutral. Also encourage the connectivity of natural areas and green urban areas to reduce heat islands and improved energy efficiency of adjacent structures."

A Climate Change Action Plan should include follow-up canopy studies conducted on a regular basis to check progress. Broward County plans to perform updates

to the canopy study every five years. Using the canopy analysis tools, the net gain in annual carbon sequestration and total carbon storage can be quantified so that the overall effect of the reforestation can be presented to residents.

As has been the case with Broward County, finding funding sources for Climate Change Action Plan creation and implementation can be challenging, but there are grants available—check with your state's Urban and Community Forestry coordinator. The Florida Forest Service Urban and Community Forestry grants program has funded canopy studies for other communities in Florida, including one that I conducted in Manatee County. Manatee County's study was funded through the grant and through matching participation from the non-profit group Keep Manatee Beautiful. Broward County's internal sustainability team is still seeking funding for its initial study.

Final Thoughts

It is important for Climate Change Action Plans to include action items that residents will be likely to understand and support, such as tree planting and preservation programs. Incorporating tree plantings and tree giveaways into the Plan is a great way to gain public support for the project.

One additional benefit of a Climate Change Action Plan is that the actions proposed generally have benefits beyond the mitigation of climate change. For example, changing a municipal vehicle fleet from standard unleaded gasoline vehicles to hybrid, diesel, electric, or compressed natural gas can reduce greenhouse gas emissions and also save money when gas prices rise. Replacing light bulbs in government buildings with energy efficient bulbs can save money over time. Policies that emphasize walking- and transit-oriented development reduce car trips (and greenhouse gas emissions) and lead to a healthier population.

Accordingly, implementing programs to plant and maintain trees, a common element of Climate Change Action Plans, provides a number of additional benefits to communities, well known to city foresters.

The Broward County Climate Change Action Plan can be accessed from: <http://www.broward.org/NaturalResources/ClimateChange/Documents/BrowardCAP-Report2015.pdf>



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- places squirrel guards atop the transformers to protect a variety of animals from danger, particularly squirrels.
- offers net metering to members interested in renewable generation such as photovoltaic systems.
- recycles retired power equipment, scrap steel, aluminum, copper, porcelain, fluorescent lights, ink printer and copier cartridges, plus much more.
- researches and writes *Nature's Reflections*, a special column in the members' newsletter developed to educate the community on the flora and fauna of Florida with eco-friendly topics like xeriscaping and conservation.



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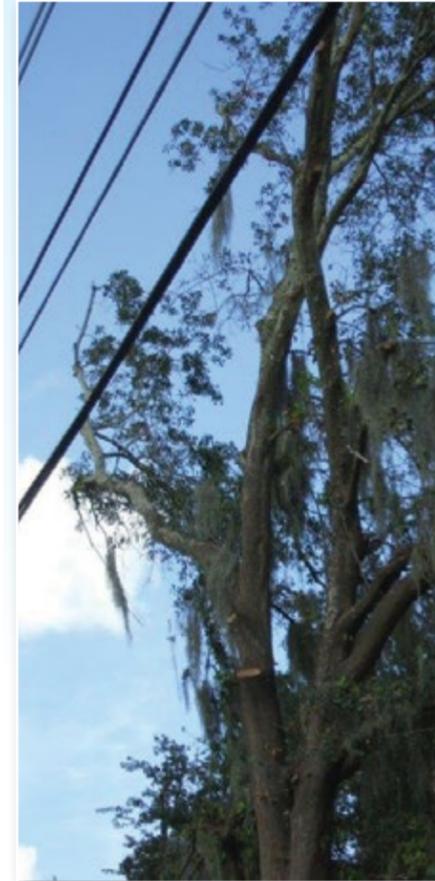
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STUMP THE FORESTER



QUESTION: My utility company has been trimming our tree for years. Now, most of the weight and large branches are on one side of the tree. Is there a chance that the tree will, one day, fall on our house?

ANSWER: Thank you for your question and concerns about your tree. Trees have evolved to get big and to take up space. In an urban/community forest, tree-care responsibilities commonly cross borders and are shared by more than one person or entity. The responsibility of the utility and the municipality is often limited to electrical and right-of-way hazards. If the trimming conforms to best management practices of industry standards, you can expect to enjoy the benefits of your tree for years to come.

Here's why. Trees are genetically engineered to get big and take up space, though the available space rarely allows a tree to grow straight and balanced. This is true for trees growing in a natural or urban setting. Trees have a wonderful ability to form *Reaction Wood*. *Tension wood* and *compression wood* are two examples of how trees react and compensate for environmental stresses. Reaction wood provides reinforced cell growth necessary to brace and overcome the pull of gravity caused by slope, weight distribution and lean.

More importantly though, trees grow and take up space above and below ground. The roots are the primary anchoring system for a standing tree. If intact, the roots will support a tree regardless of the shape of the crown, whether due to utility trimming or natural forces. If the tree falls, it won't be due to the shape of the crown. Trees fail due to poor health, structural defects, root failure, age, and neglect of proper maintenance. In most cases, the homeowner is responsible for the portion of a tree that grows over private property apart from right-of-way.

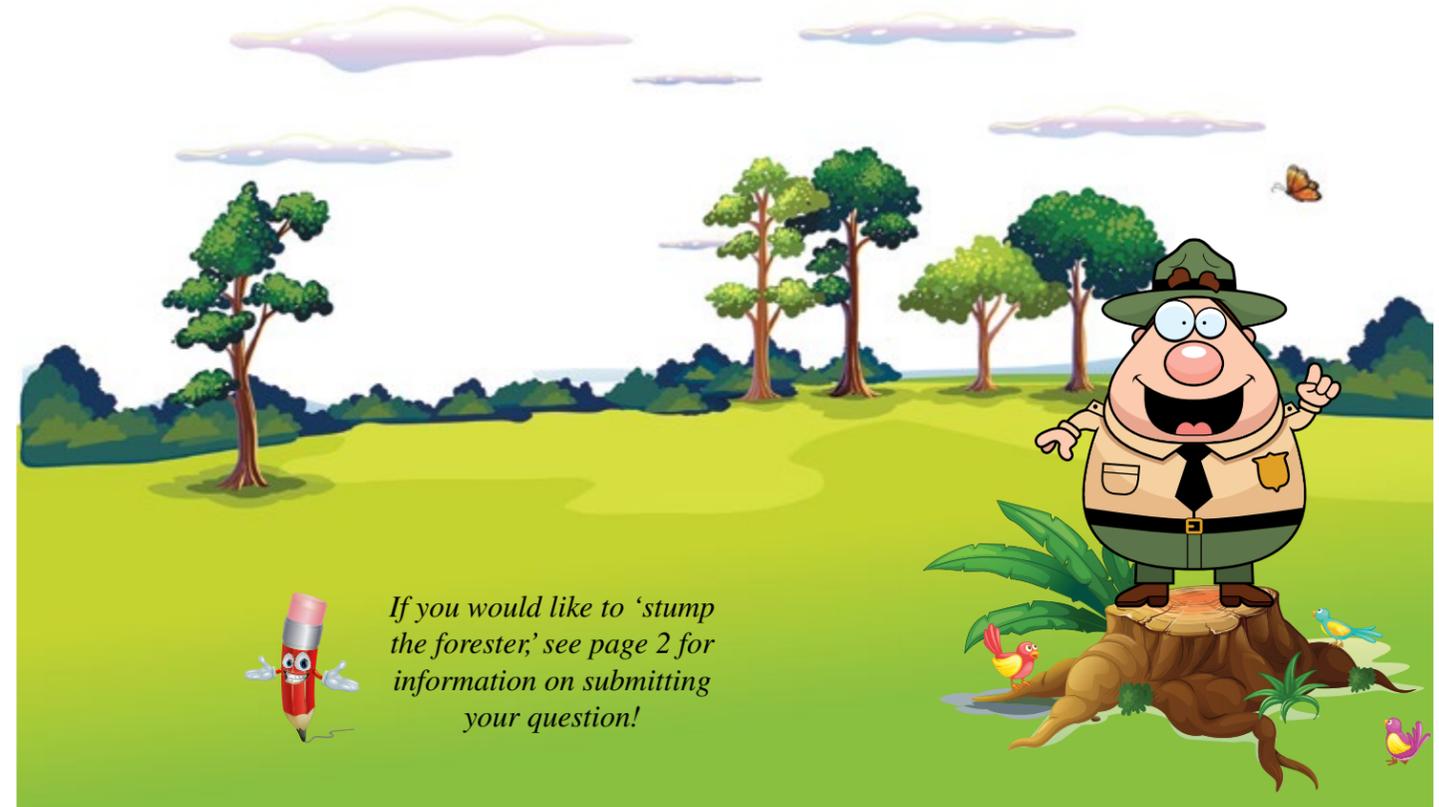
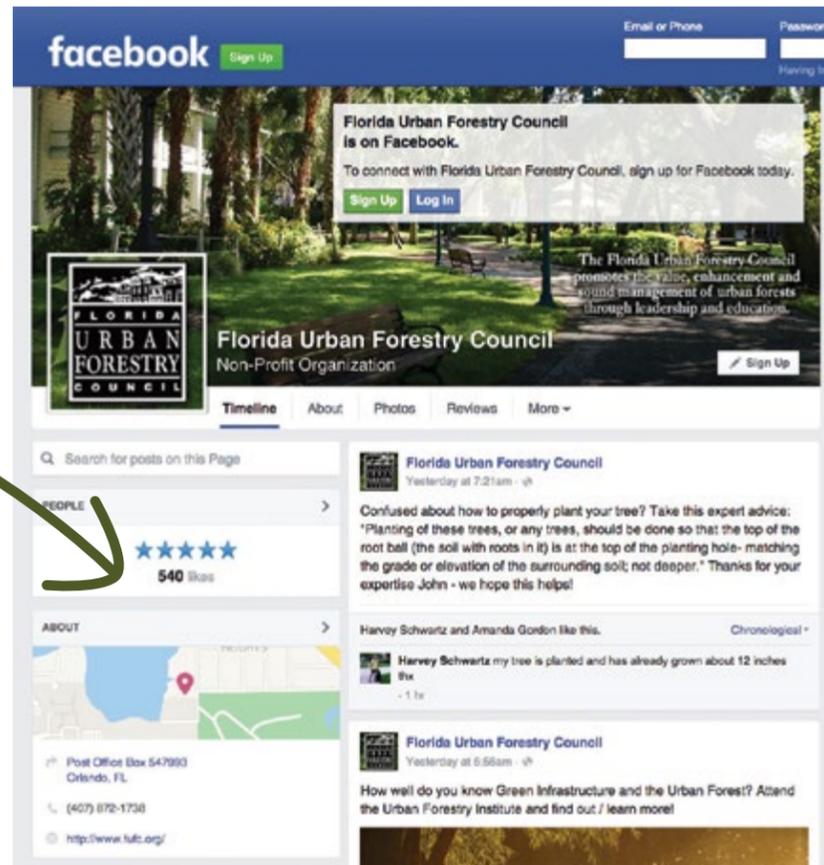
The potential hazards associated with any tree--particularly an old tree of large size--should be addressed and can often be mitigated through corrective pruning. I recommend that homeowners with tree questions consult an arborist to inspect their particular tree, identify potential hazards and assist with the development of a plan to reduce any existing risk. Your utility provider can assist with the removal of electrical hazards or other utility conflicts. Minimizing tree risks will increase the value of your home and maximize the contribution your tree offers to a healthy, urban tree canopy.

Answer provided by Joe Anderson, Utility Forester - JEA

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If you would like to 'stump the forester,' see page 2 for information on submitting your question!

Tree of the Quarter

YAUPON HOLLY (*Ilex vomitoria*)

Submitted by Julie Iooss, Horticulture and Irrigation Program Manager – City of Orlando Parks Division



to Florida and west to southeast Oklahoma and Texas. It generally occurs in coastal areas in well-drained sandy soils, and can be found on the upper edges of brackish and salt marshes, sandy hammocks, coastal sand dunes, sandhills, maritime forests, non-tidal forested wetlands, well-drained forests, and pine flatlands.

Habitat: Full sun to full shade, wet to well-drained soils, high drought tolerance and aerosol salt tolerance. Tolerant of soil with a pH in the 7's and adapts to small planting spaces.

Habit and Growth Rate: Rounded base, open and symmetrical. Moderate growing, 15-25' x 15-25'. Routinely grown with multiple trunks.

Leaves: The leaves are 1/2 to 1 1/2 inches long, simple, alternate, ovate to elliptical with a crenate or serrated margin. Leaves are gray-green above and paler below, glabrous, stiff, and evergreen.

Bark: White to gray, smooth, thin and may become scaly with age, no thorns. The holly can be easily damaged by mechanical impact.

Flower: The Yaupon holly flowers in the spring. The male flowers are 1/3" across, greenish white, fragrant and emerge in



clusters. The female flowers are 1/3" across, greenish white, fragrant and emerge solitary or in clusters.

Fruit: The fruit is a 1/4" round, shiny and red (sometimes yellow) drupe that is only produced on female plants. You must have both a male and female plant to have berries. Mature in October and November. These are dispersed by birds eating the fruit.

Environment: The Yaupon holly berries provide an important source of food for birds and other wildlife in late winter when there's not a lot of other things to eat. They in turn, disperse the seeds of this plant far and wide, but especially under utility lines, fences and other roosting spots. Birds, armadillos, American black bears, gray foxes, raccoons, and skunks feast on the red ripe berries.

The foliage and twigs are browsed by white-tail deer. The birds, which use the holly as a



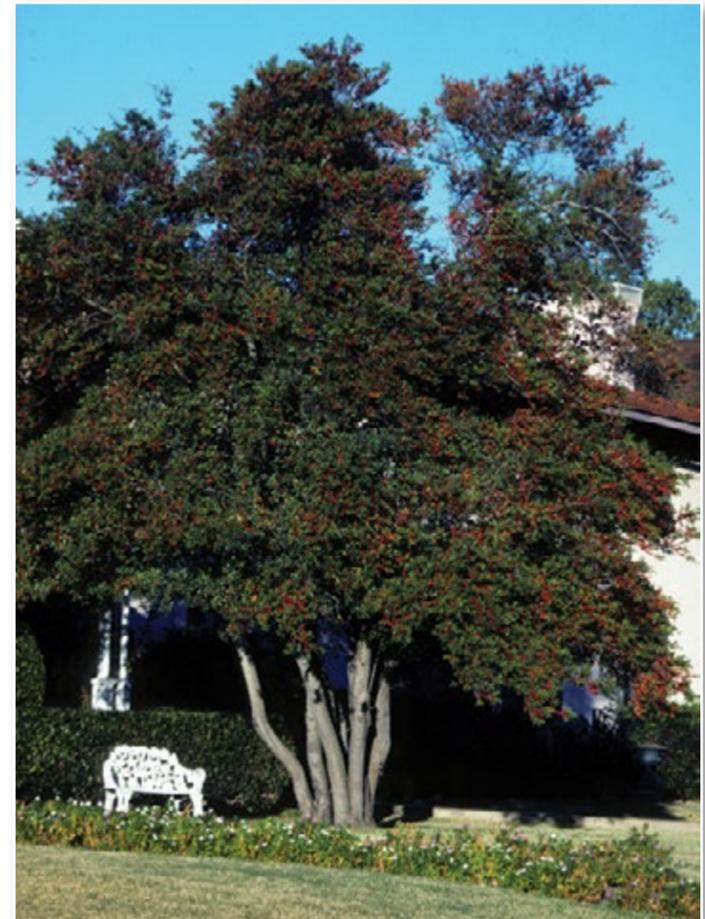
food source, are Florida duck, American black duck, mourning dove, ruffed grouse, bobwhite quail, wild turkey, northern flicker, sapsuckers, cedar waxwing, eastern bluebird, American robin, gray catbird, northern mockingbird, and white-throated sparrow.

Usage: The Yaupon holly is a common landscape plant in the southeastern United States. The most common cultivars are slow-growing shrubs popular for their dense, evergreen foliage and their adaptability. The Yaupon holly is well-suited for exposed parking lots, along highways and other stressful urban sites. It may however be difficult as a street tree because it requires regular pruning for vehicular clearance. Use Yaupon holly in natural plantings and to provide food and shelter for birds and wildlife.

Problems: In their native habitat, plants have good resistance to insects and diseases. Potential insect problems include holly-leaf miner, spider mites, whitefly, and scale. Potential disease problems include leaf spot, leaf rot, tar spot, and powdery mildew.

Cultivars: A few of the available cultivars include: 'Folsom's Weeping', similar to 'Pendula'; 'Jewel', female plant with heavy fruit production; 'Nana', dwarf, compact shrub form, male plant, no berries; 'Pendula' ('Grey's Weeping'), large weeping specimen, sparsely foliated, to 35 feet tall; 'Pride of Houston', medium-sized shrub with heavy fruit production; and a low shrub called 'Schelling's Dwarf' ('Stroke's Dwarf'), more compact than 'Nana'. Yellow-fruited cultivars include: 'Aureo', yellow berries; 'Otis Miley', small leaves, yellow fruit; 'Wiggins' Yellow', yellow fruit.

Resources: Wikipedia, Trees: North & Central Florida (UF/IFAS Extension: Kooser, Hasing, Friedman & Irving), Floridata, Native Trees of the Southeast (Kirkman, Brown & Leopold), Trees for Urban Suburban Landscapes (Gilman).



Yaupon Holly is a species of holly that is native to southeastern North America. The word yaupon was derived from its Catawban name, yopun, meaning tree. Native Americans used the leaves and stems to brew a tea, commonly thought to be called asi or black drink high in caffeine. Settlers enjoyed the teas so much they preferred it to the tea from their homeland. As the word vomitoria suggests, this tea will induce vomiting if enough of it is ingested. For this reason, Native Americans also used this tea during purification and cleansing ceremonies.

Native Range: Yaupon Holly is native in the United States from Maryland south



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BENEFITS OF SUSTAINABLE URBAN FORESTS IMPROVE THE RESILIENCE OF COMMUNITIES

Submitted by John A. Harris, RCA, CF, CA, CLI, PMT – President of Earth Advisors

Sustainability is a complex term with multiple interpretations and meanings for different user groups and different professions. In the book titled *Sustainable and Resilient Communities, A Comprehensive Action Plan for Towns, Cities, and Regions* (published by John Wiley and Sons), author Stephen Coyle, along with his chosen co-authors who are experts from various professional disciplines used in urban planning, an action plan is presented containing successful examples of urban planning that improved communities. Each chapter is one of the basic supporting systems that encompass the built environment (urban areas). In the forward by Andres Duany (of Duany Plater-Zyberk), it states “He and his colleagues do not underestimate the patient and skillful work that must be done to recover our lost cities ... Wherever planning has succeeded, it has involved the patient re-weaving of the urban fabric into whole cloth; socially, physically, economically, and administratively.”

When discussing and planning for sustainable urban forests in communities, I consider three principles for evaluating sustainability. At a smaller scale, you can also use these in decisions for single trees or small groups of trees (for a residential or commercial property). Think of these topics as the main branches to consider when maintaining a single tree or the management areas when managing a total urban forest.

1. Economic Sustainability - does the urban forest (tree) add any values, will it increase economic values for properties and the community, is it cost effective to maintain?

2. Social Sustainability - is the urban forest (tree) aesthetically desirable, is it positively affecting people and society, will it stand the test of time in public eyes?

3. Environmental Sustainability - does the urban forest (tree) provide habitat (for wildlife and people), is it regionally appropriate, is it resilient (will it survive)?

Sustainable principles for managing urban forests involve planning for the longevity of each tree with the past, current and future land uses of each tree location in mind. They include using the current and future predicted maintenance budgets in determining trees to use. They include public and professional opinions for tree choices and locations. They include calculating the expected tree benefits. One example for calculating benefit values is by using the U.S. Forest Service i-Tree program for estimating the value of benefits obtained from trees. Another value calculation is by using current tree appraisal methods, showing the increase in value for individual trees or an urban forest based on improving their health and structure through maintenance. Lastly, sustainable management principles also include prioritizing financial, political and human resources to preserve and maintain the trees that are in our communities; both public and private trees.

“Sustainable principles for managing urban forests involve planning for the longevity of each tree with the past, current and future land uses of each tree location in mind.”

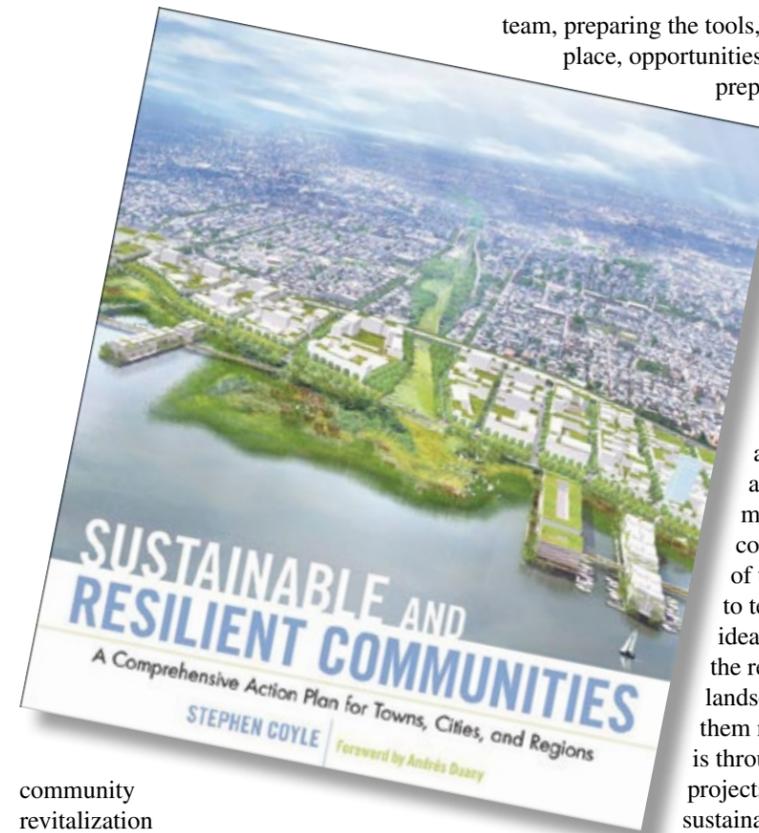
sectors. They cannot be sustained without a knowledgeable population that values the trees for their additions to our shared environment. Education comes from formal classes and college degree programs, from professional organizations providing continuing education for professionals in the Green Industry, and from public education events and programs in our communities. Education and demonstrations of successful urban forests are key to citizens funding and maintaining urban forests.



The shared environment is my term for where Arborists and Urban Foresters work—managing and enhancing the natural landscape within the built environment (designed and constructed urban areas) to assure that nature is alive and healthy where people live and work. If we realize that the environment is shared between the natural and built parts, we can resolve the stresses and constraints found in urban areas to improve our communities for current and future generations. Plant and wildlife health can be used as an indicator of overall community health (health of people, health of the economy, health of society) in sustainable community planning and management.

There are many separate parts to having and keeping a sustainable urban forest. Each part is determinable and each must be included at whatever level is attainable in your community. Basic parts include tree management plans and inventories, tree planting, tree maintenance, invasive plant eradication, hazard tree removals, tree replacements, tree protection, and tree preservation. If you leave out any of these parts, the forest will decline; the social, economic and environmental benefits will decline; and your community will decline. If you focus on the resilience of your community’s urban forest, through decisions and actions in each part of managing it, it will more than survive, it will thrive. Be an active participant for maintaining and improving our shared environment.

Gaining improved and maintained urban forests has been used as a jump start to



community revitalization projects across the United States. Retirees, elders, working adults, parents, professionals, politicians, and youth can all obtain benefits and have wants fulfilled by having an urban forest that thrives. This is a winning base concept to bring energy, publicity, and recognition to your community. Community activism for resilient and sustainable urban forests can start reversing urban decline through exciting citizens to improve their environment. This brings a beginning to urban renewal or redevelopment because you are improving living conditions (trees and greenspaces), not just building new buildings and grayspaces (roadways, parking areas, pavement). Research by social scientists in Seattle, WA has shown the positive effects trees have for people and neighborhoods. This research is being shared both online and in presentations across the country. Resilience of the urban forest can relate to the resilience of people in a community, so trees thrive with happier people.

In Chapter 8 of *Sustainable and Resilient Communities*, the Natural Environment Chapter, I am a co-author writing about Sustainable Landscaping [and urban forests]. To provide a Sustainable Landscape, community planning and management involves: preparing the

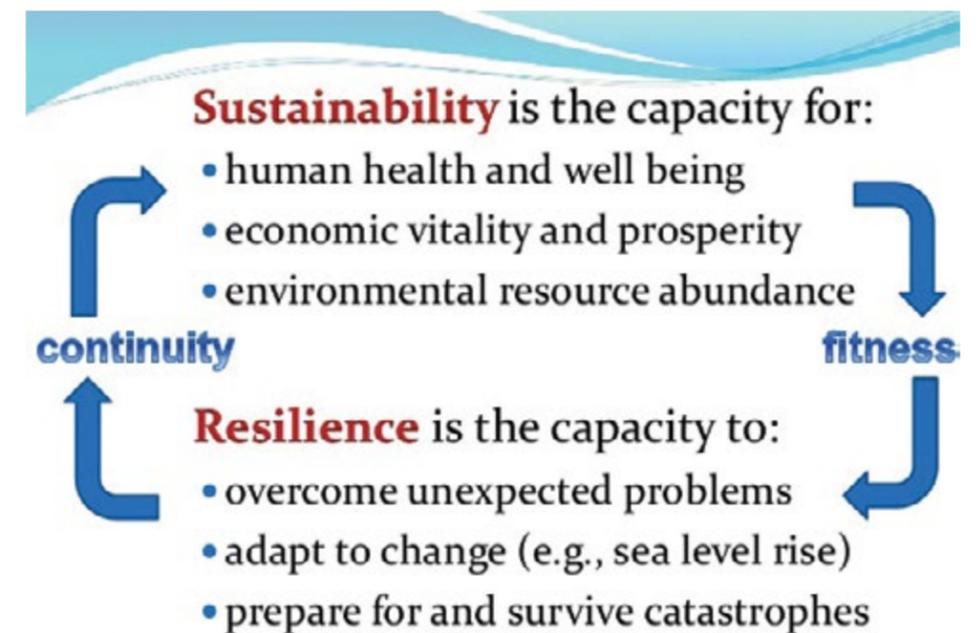
team, preparing the tools, preparing the place, opportunities and constraints, preparing the people, setting goals and objectives, then developing the strategic plan and the action plan, implementing the action plan, and finally monitoring and evaluation as we maintain a more sustainable community. One of the best methods to test a new plan or idea for increasing the resilience of urban landscapes (making them more sustainable) is through demonstration projects. “Demonstration sustainable landscapes are best done in public areas where people can see and learn about them for their own properties.”

(Page 254, Figure 8-8).

As a vision for sustainable communities, I wrote “The sustainable community vision must include green spaces [greenways, parks, residential landscapes, urban forests] and blue spaces [waterways, water bodies]. These natural environments are necessities

in any community. The Earth is a worldwide ecosystem that has successfully operated through the natural systems for millennia.” (Page 244). Planning, or re-planning, urban developed communities to cooperate with, instead of be set apart from, natural systems is what improves the resilience of communities against natural disasters, weather events, age and deterioration, and consumption by the population. We continue to see more research that supports this vision, and successful urban planners who follow the principles of resilient and sustainable communities are winning awards while those communities thrive.

Working together for a more resilient urban forest is part of our mission for the Florida Urban Forestry Council. Learning more about what is improving an urban forest versus what is declining an urban forest in Florida helps all of us slow decline and speed up improvements. Share with us examples of projects and situations where communities improved their resilience and sustainability through improving their greenspaces and trees. Apply for our FUFCA Awards Program and let us congratulate your efforts. Provide an article describing what you are doing to increase resilience for your community’s urban forest. We want to be an organization that has success stories to share, so please send in your experiences, ideas, and/or stories about how you are increasing the resilience of your community’s urban forest for a sustainable future!



FLORIDA FOREST SERVICE TAKES AIM AT GREEN HOUSE GAS EMISSIONS

Submitted by Lou Shepherd, Urban Forestry Coordinator – Florida Forest Service
Photographs by: Florida Forest Service

The Florida Forest Service is taking advantage of all available opportunities to increase tree canopy cover and decrease green house gas emissions.

Florida's gross emissions of greenhouse gases (GHGs) equaled roughly 337 million metric tons of carbon dioxide equivalent in 2005, amounting to a 35% increase over 1990 levels and paralleling the state's population growth rate during that time. Sources of GHGs have included primarily carbon dioxide, methane, nitrous oxide, hydro-fluorocarbons, primary fluorocarbons, and sulfur hexafluoride. Without the implementation of measures to control GHG emissions, the level of carbon dioxide equivalent is projected to increase by 86% over 1990 levels by 2025 (Florida Governor's Action Team on Energy and Climate, 2008).

In 1977 Secretary James R. Schlesinger, with the Department of Energy said, "We have only two modes – complacency and panic."

Trees are one of the most effective ways to mitigate the impacts of climate change. The Florida Forest Service, the Arbor Day Foundation and the Florida Urban Forestry Council have partnered to help utility company customers throughout the State of Florida take advantage of this exciting program by providing trees to lower GHG emissions and homeowner energy costs.

Strategically, the Energy-Saving Trees Program has tools in place to evaluate and enhance the homeowner's ability to help mitigate local impacts of climate change by reducing carbon emissions from power



The urban heat island effect is one of the biggest challenges for city and town residents. It amplifies heat and humidity. The state's urban heat island effect is already creating disproportionate literal hot spots in urban centers where older adults and children are vulnerable to extreme heat conditions.

This long-term strategy is intended to reduce energy costs and urban heat island effects while increasing wildlife habitat, carbon sequestration, biodiversity, and improve storm water management.

For the homeowner, this translates into a low investment cost which yields a proven method of saving money on energy. Based on research from the U.S. Department of Energy and the U.S. Forest Service, studies have shown planting strategically placed trees helps to reduce energy consumption. According to these studies, planting a tree which provides shade to the home can reduce household electrical use by up to 20 percent.

plants. According to the U.S. Department of Agriculture, a single healthy, young tree can provide the same net cooling effect as ten room-sized air conditioners operating 20 hours per day.

Energy-Saving Trees Program is designed to:

- Promote energy efficiency
- Advance the notion that trees are a viable option for energy reduction
- Educate the public on the value of trees
- Identify levels of interest and generate support
- Provide jobs for Florida nursery growers
- Help reduce carbon emissions from power plants

The program software incorporates technology to help people save energy and money. The Arbor Day Foundation and the Davey Tree Institute created a web-based planting tool to help consumers understand the "Right Tree, Right Place" principles of planting trees around their home.

Within seconds of accessing the website, an online tool helps homeowners find the most strategic location for planting and estimates the annual savings and benefits that will result from the tree. There is also a dedicated call center to answer customer questions about the program. The Florida Forest Service selected an appropriate species palate based on the states' climatic zones. Citizens could reserve one tree per household that was delivered to their door. The goal of providing 10,000 trees in the

initial pilot program has been reached. Once the customer plants the trees, it is then up to the participant to maintain the trees for best results in reducing energy consumption.

Urban forestry practices in our rural and urban communities are one of the most cost-effective investments we can make. The Arbor Day Foundation's Energy-Saving Trees Program statistics indicate a Positive Cost/Benefit Ratio: For every \$1 invested up to a \$3.09 return in community benefits result.

This project's design blends dimensions of urban ecosystems, biophysical and social needs. Part of the mission is to discover, understand, and communicate the value of ecosystems services as it relates to climate change. It is also hoped that the program creates partnerships collaborating on how to best share results and to encourage community change.

The 20-year total estimated cumulative electric savings for Florida consumers is \$1,781,000, and the total savings in energy and community benefits is \$3,718,000.

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The trees already reserved are estimated to produce within 20 years:

- Over \$1 million in customer savings
- 15 million kilowatt hours (kWh) in energy savings
- Mitigate over 305 million gallons of stormwater runoff
- Sequester 50 million pounds of carbon
- Remove 131,000 lbs. of air pollutants

Looking ahead, The Florida Forest Service and the Arbor Day Foundation are already preparing for the 2017-18 giveaway seasons of Energy-Saving Trees, Florida. And, we wish to introduce and welcome the Georgia Forestry Commission for joining the effort in 2017. We would like to thank the U.S. Forest Service for funding and the Arbor Day Foundation, the Davey Institute and Florida's utility companies for their partnership as we enhance our urban and community forestry program to provide the best possible service for Florida's citizens.

We hope Florida's pilot program generates a groundswell of citizen support making the program sustainable. We are asking all Floridians, please support the program by contacting your local electric service provider and urge their active participation. This healthier planet initiative is to encourage community change through outreach, networking and understanding of the social psyche as it relates to our natural world.

Florida homeowners, reserve your free tree today (available in 2017) at: www.arborday.org/FloridaTrees.



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URBAN FORESTS, HUMAN HEALTH AND WELL-BEING

Submitted by Rob Northrop, Extension Forester – UF/IFAS Hillsborough County Extension



States, counties and cities face an ongoing and chronic problem in addressing health care. Basic to the economic issues associated with health care, especially for the poor and uninsured, are the stressors of human health caused by environmental degradation, which are often accentuated in our metropolitan regions (Dadvand et al., 2012; Frumkin, 2001; Tzoulas et al., 2007).

The societal services provided by the healthy and well-managed urban forest are far-reaching and extensively documented (Dwyer et al., 1992; McPherson et al., 1997). More than 40 years of research across a range of disciplines demonstrates a broad array of health and well-being services associated with the interaction of people with nature in cities (Bell et al., 2008; Holbrook, 2009; Jackson, 2012; Kuo, 2003; Kaplan, 1995; Parsons, 1995). This research evidence concerning the beneficial aspects of the human response to urban forests has significant implications for cost effective approaches to the maintenance of human health and related reduction of health care costs (St Leger, 2013).

In his landmark study, Ulrich (1984) demonstrated that hospital patients with views of natural scenes, e.g. trees and animals, recovered faster, spent less time in the hospital, required fewer painkillers and had fewer post-operative complications. While studying the health of prison inmates, Moore (1981) found that having cell views of plants and animals lowered the number of prisoner sick calls. In Holland, Maas et al. (2006) reported on the positive relationship between green open space and self-reported health. Lovasi et al. (2008)

found that children living in New York City neighborhoods with more street trees were less likely to have asthma. Donovan et al. (2013) demonstrated that the loss of trees leads to increased mortality related to cardiovascular and lower-respiratory diseases.

Recent investigations in Tampa, FL, by the University of Florida IFAS and the University of South Florida, have demonstrated that the positive benefit/cost implications of urban forests and associated natural resources are substantial. Using the Environmental Benefits Mapping and Analysis Program (BenMAP), developed by the U.S. Environmental Protection Agency, these investigators estimate the health impacts and associated economic benefits occurring when populations experience changes in air quality due to the urban forest. In 2011, reduced health impacts and economic benefits for Hillsborough County amounted to nearly \$30 million per year. The City of Tampa experiences a total of \$5,240,340 in reduced health impacts and economic benefits per year (Andreu et al. 2013). These health-related economic benefits are in addition to the reduction in cooling costs, increased property values, increased tax base, and amelioration of stormwater water quality and flows.

Other Examples of Connections between Urban Forests and Human Health:

- Studies in urban woodlands have found effects of improved immune system response, lowered stress indicators, reduced depression and lower glucose levels in diabetics.

- Increasing tree density, and resulting reduction in air pollution, has been shown to lower the prevalence of asthma attacks.
- Exposure to air pollution has been positively correlated with negative birth outcomes such as preeclampsia, preterm birth and heart defects in newborns. Urban forests have been shown to effectively remove 5 of the 6 criteria air pollutants regulated by the U.S. EPA.
- Bronchitis rates and hospital admissions are highly correlated with air pollution, in particular PM 10. Urban forests have been shown to effectively remove PM 10 from the air.
- Increases in air pollutants such as sulfur dioxide (SO₂) can result in increased respiratory-related hospital admissions. Urban forests have been shown to effectively remove SO₂ from the air.
- Hospital admissions for heat-related illnesses such as dehydration, heat stroke and heat exhaustion increase significantly during heat wave events. These heat-related illnesses are often more pronounced in urban areas due to a lack of shade and cooling effects of vegetation from evapotranspiration.
- Green parks and restorative settings are becoming standard features at hospitals and recovery facilities. The experience of nature promotes more rapid and thorough healing.

The considerable body of evidence that demonstrates a positive correlation between human health and interaction with nature in our metropolitan regions emphasizes the need to be vigilant in ensuring that parks and other semi-natural areas can be easily accessed by our citizens. To support these interactions with nature, urban conservation will need to take a more prominent position in our land use decisions and health promotion policy development.

Human response to nature in cities is much richer than aesthetics and beautification, and suggests that higher density living, if properly planned, can be a satisfying and more sustainable alternative to sprawl development. Active planning and design to enhance human health and well-being benefits derived from urban forests can create places that provide better human habitat, reduce government health costs and encourage targeted economic growth.

URBAN FOREST SUSTAINABILITY AND MANAGEMENT AUDIT SYSTEM: CHECKLIST AND PROCESS

Submitted by Ed Macie – Southern Region Urban Forestry Group Leader – U.S. Forest Service



The Urban Forest Sustainability and Management Audit (UFSMA) System can help urban forest programs benchmark changes in capacity over time and provide program direction, among other benefits. The UFSMA team collects and evaluates evidence related to the stated purpose of the audit and communicates the findings through an audit report.

The Audit Checklist

The Urban Forest Sustainability and Management Audit system uses a comprehensive checklist covering every aspect of urban forest management and condition by categories (Box 1), components within the categories, and evaluation criteria for each component (see an example of components and categories in Box 2).

The audit checklist also establishes and describes standards of care, base practices, and a scoring system for each component.

Box 1. Urban Forest Management and Sustainability Audit Checklist Categories

1. Policy and ordinances
2. Professional staffing and training
3. Funding and accounting
4. Authority
5. Inventories
6. Urban forest management plans
7. Risk management
8. Disaster planning
9. Practices (standards and best management practices)
10. Community
11. Green asset evaluation (trees, soils):
Observed outcomes

Box 2. Green Asset Evaluation: Components and Evaluation Criteria

COMPONENTS	EVALUATION CRITERIA
Deadwood	Evidence of periodic or ad hoc deadwood removal (i.e., lack of dead limbs $\geq 2"$ in the trees or on the ground).
Genus Diversity	No genera exceed 20% of population; make specific observations for Acer, Quercus, and Ulmus.
Mature Tree Care	Mature trees are retained in the landscape and are of acceptable risk (i.e., veteran tree management).
Mulching	Evidence of adequate (i.e., spatial extent, depth, and material) roots zone mulching for all age classes.
Planting Site Volume Optimization	Species and sites are matched for optimization of above ground canopy (i.e., right tree in the right spot concept).
Rooting Volume Optimization	Species and sites are matched for optimization for below ground rooting volume (i.e., right tree in the right spot concept).
Species Diversity	No species/cultivars exceed 10% of population; make specific observations for Acer, Quercus, and Ulmus genera. Also evaluate the role of regionally local native species.
Soil Compaction	Evidence of soil compaction by users or staff during maintenance. Include "desire" lines and construction activity at time of evaluation.
Tree Health	Rating of overall tree health in all size (age) classes; look for crown dieback, decay, foliage density, and color.
Young Tree Pruning	Evidence of periodic (e.g., every 3 years to year 9) structural pruning (e.g., subordination cuts, dominant central leader, co-dominant stems lower than 20').

"Standards of Care" represent the minimum group of urban forestry management "best practices" that a municipality/owner should consider for implementation within a component. "Base Practices" represent additional urban forest management elements that may effectively expand a program beyond the standards of care group.

Finally, the audit checklist establishes a relative scoring system that can be used to monitor changes in a program over time. For each component that is evaluated,

0 points are attributed if the component doesn't exist or is not practiced; 1 point is given if the component is in development; 2 points are given if the component is routinely practiced; and 3 points are given if the practice is exceeded. The points can then be totaled for an overall score.

The Audit Process

The audit process begins with the establishment of an audit team. The team leader should be an expert in urban forest

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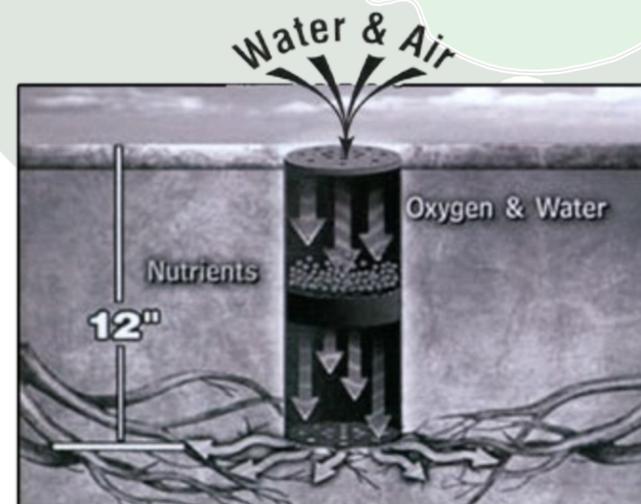
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program management who is external to the program being audited. Team members should be made up of individuals who are knowledgeable of the program and practices being audited, such as a tree advisory board, but not directly involved with the program's day-to-day decisions. At least one team member should be completely external to the program being audited. Once the audit team is assembled the audit should begin by following the phased protocol outlined in Box 3.

For more information contact: Ed Macie, 404-347-1647, emacie@fs.fed.us

Box 3: Audit Protocol

Discovery	All written documents (current and historical) pertaining to the urban forest management program are obtained for the audit team and organized in a matrix with the document titles in the first column and the Audit Checklist categories in the first row, and an assigned document number in the box where that document might align with a category.
Review	Using the documents from discovery, the audit team evaluates all defined processes in the current program. During this phase a preliminary assessment is made to identify acceptable, exceptional, and deficient practices.
Green Asset Evaluation	Members of the audit team who are not directly involved with the management conduct an on-site assessment and report on the condition (i.e., health) of the green assets within the scope of the audit. This assessment may be coincident with the review and interview phases of the process and should be conducted during a season that would provide optimum evaluation of the condition (i.e., probably leaf-on).
Interview	The team discusses and interviews others identified during the preliminary review about the actual day-to-day operation.
Discussion	The team discusses findings from discovery and interviews.
Report	The team prepares a final report with rating and recommendations.
Outreach	The team holds an exit (press) conference for management and the broader community (leadership, management, and citizens).
Response	Management develops an action plan for the next 1-3 years to address and improve critical deficiencies. This may also include a 6-month to 1-year priority plan to address critical issues.
Audit Process Review	How well did this process work?

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