



# The Council Quarterly

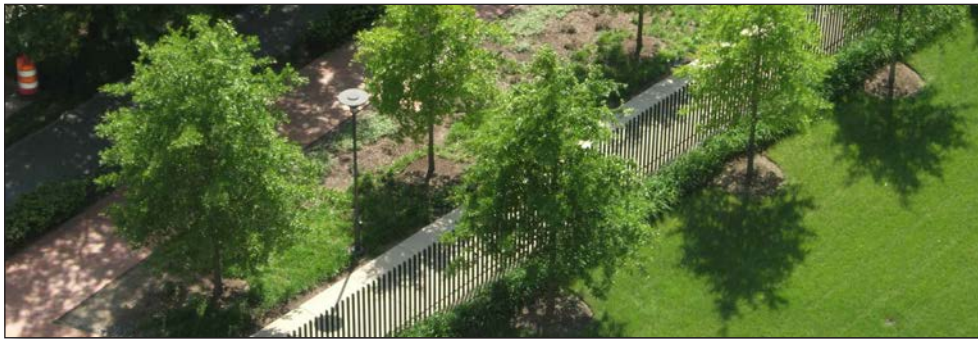
Quarterly Newsletter of the Florida Urban Forestry Council

2014 Issue Two

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## OPENTREEMAP - A NEW TOOL FOR URBAN FOREST INVENTORY, EDUCATION AND ADVOCACY

Rob Northrop, Extension Forester / Urban and Community Forestry – University of Florida/IFAS Extension Hillsborough County



Urban forests provide a myriad of proven benefits for communities by providing shade, improving air quality, assisting with stormwater runoff, raising property values, decreasing utility bills, enhancing the look and feel of communities, and improving health of citizens. An inventory and assessment is considered the initial step needed in management of the urban forest to assure a continued flow of these benefits to society. But creating a complete inventory is a time consuming and resource intensive process. OpenTreeMap (OpenTreeMap.org) provides an easy-to-use public inventorying platform that enables individuals, organizations and governments to collaboratively contribute to a dynamic map and database of a tree population. OpenTreeMap can be used in a single municipality (City of Tampa) or cover a broader geographic

region (England) with many communities, anywhere in the world. The spatial data and database can be exported in file formats for use in spreadsheets, databases and ArcGIS.

In Florida, OpenTreeMap has been adopted by the City of Tampa, TampaTreeMap (TampaTreeMap.usf.edu), as its tree inventory and social media tool to support community and organizational participation in the creation of a searchable and updatable map of urban trees. The accessible inventory software encourages community members to work with the municipality urban forest managers and collaborate with their neighbors in the mapping and conservation of urban forest resources.

It is a practical complement to professional urban forest inventories, assessments, public outreach, and advocacy.

*“The accessible inventory software encourages community members to work with the municipality urban forest managers and collaborate with their neighbors in the mapping and conservation of urban forest resources.”*

The OpenTreeMap originated from the Urban Forest Map project in San Francisco and was subsequently developed by Azavea, a Philadelphia-based software design and development firm, with funding from the United States Department of Agriculture (USDA). The software is free for downloading and use with no license fees. But as the Tampa project found out, there can be significant customization and set-up costs associated with getting the system up and running properly. Azavea does provide technical support, hosting and other services for a fee. Interested Florida communities are encouraged to contact the TampaTreeMap project technical software team at the University of South Florida

*continues on pg. 3*

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## PRESIDENT'S MESSAGE



### *"Urban Trees on the Job"*

*As the Florida summer weather breaks into full swing, our community forests take center stage in providing more than just the aesthetical beauty we enjoy, they also help protect us from the sun and summer storms common for this time of year. Whether you are scrambling to get to work early and grab the "prime"*

*shaded parking spots or taking advantage of a well-planned windbreak as an afternoon shower rolls through, our urban trees are "on the job."*

*So how did all these urban shields end up so strategically placed? In some cases the urban environment could have been built around existing trees, but in most cases the trees were placed with a specific purpose in mind. Many times it is relevant to the age of the city, but even the most historic locations have evidence of long-term urban forestry planning. In either case make sure to take some time on your next visit through town to identify and appreciate some of the tasks your community trees are taking on.*

*I also urge you to check out all the great articles focusing on "Technology in Arboriculture" in this issue of the newsletter. The diversity of our membership is our greatest asset and we will continue to put forth topics in our newsletter that spotlight our unique and varied family of supporters.*

*Get out and enjoy this great summer season!*

*Seasonally warm regards,*

Ken Lacasse  
FUFC President



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## 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 [jrenick@landdesignsouth.com](mailto:jrenick@landdesignsouth.com).

*Thanks for contributing!*

(TampaTreeMap.usf.edu) who can provide advice and implementation services.

OpenTreeMap incorporates the i-Tree ecological models allowing users to view calculated ecosystem benefits of a tree or a group of trees such as carbon sequestration and storage, air pollution removal rates, erosion control, and stormwater mitigation. These calculations help residents and community associations better understand the benefits of trees in their yards or neighborhoods and support local advocacy for management and conservation.

OpenTreeMap is web-based. Participants are able to map a tree, input information, add photos of documented trees, write comments about specific trees, and search for trees by species, location, size, or other features. The City of Tampa's TampaTreeMap project developed apps for iPhone and iPads now downloadable from the online Apple Store (Androids Fall 2014). The City of Tampa's apps allow trees to be mapped and data input from the field. It uses the device's internal GPS to initially locate the tree and aerial photos (Google Maps) to fine tune its correct location. Alternatively, data can be collected using paper forms and entered back at the office or home using a desktop computer.

Users create personal profiles that track their activity on the site and garner points and rewards for contributions and accuracy. An accompanying Tree ID and Measurement Guide, such as the one created for the TampaTreeMap (TampaTreeMap.usf.edu), helps citizen scientists with tree identification, tree measurements (diameter, height, crown characteristics, etc.), and other essential inventory tasks.

Because data collected by residents, volunteers and professionals are likely to vary in accuracy, the system can be customized to require administrative approval of all edits prior to publishing, which mitigates data quality concerns. TampaTreeMap uses a system of numeric ranking for professionals, knowledgeable amateurs and inexperienced users. This method of identifying the source of tree data ensures that future users of the data sets have a clear understanding of its source and expected accuracy.

TampaTreeMap is currently being used as a platform for a risk assessment project along major emergency routes within Tampa and

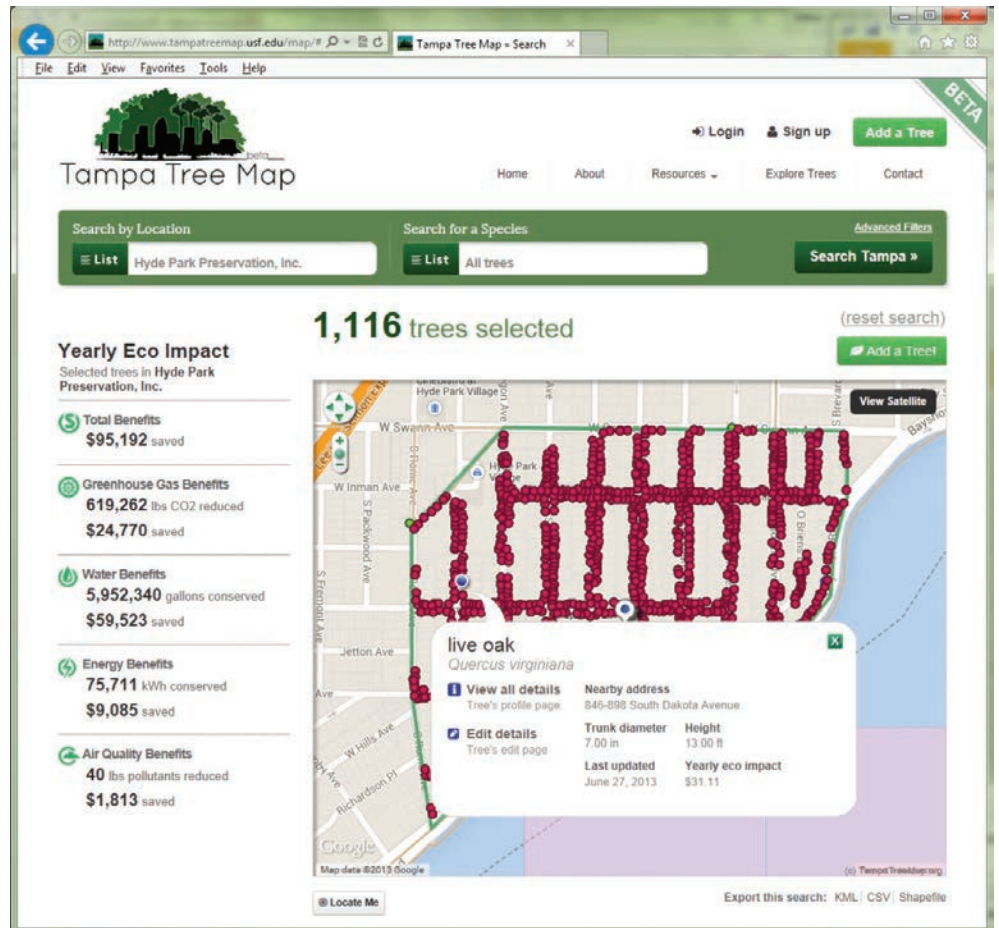
is being conducted in cooperation with the University of Florida/IFAS Extension. Training planned for fall 2014 will initiate its use by arborists in the Planning Department and code enforcement professionals to track mandated tree protection, maintenance, planting, and establishment associated with urban development.

OpenTreeMap enables non-profits, government, volunteer organizations, and the general public to collaboratively create an

accurate and informative inventory of the trees in their communities, support urban forest advocacy and educate the public. It can be configured to upload existing inventories and can export in file formats for use in spreadsheets, databases and ArcGIS. The mapping and database system can be integrated into the municipal urban forest operations to track ongoing projects, identify areas in need of immediate attention and assist with strategic planning.

### Some Key Features of OpenTreeMap:

- It's open source so you don't pay a license fee!
- Spatially locate trees using GPS and aerial photography
- Add trees individually or load tree datasets to the system
- Edit and add information about existing tree records including species name, location, height, planting plot size and type, conditions, actions needed, funding sources, data owner
- Database can be expanded to include any number of tree or site attributes
- Upload tree photos
- Search for trees by species, location or advanced filters such as diameter, date planted or tree characteristics (flowering, native, etc.)
- Export tree lists as KML or CSV files
- Automatically calculate ecosystem benefits (greenhouse gas, water, energy, air quality) based on a tree's species and diameter
- Monitor user accounts, comments and system edits
- Get optional integrated tree key to assist in identifying tree species



# Tree of the Quarter

FLORIDA FLAME  
RED MAPLE  
(*Acer rubrum*)



The 'Florida Flame' Red Maple is a cultivar created especially for Florida and its hot, sunny weather, and the Latin name is *Acer rubrum* 'Florida Flame.' This hardy tree has lush green leaves in the early spring, then beautiful red flame leaves start to appear on the tips of its branches in mid spring, lasting through the summer months.

As fall approaches the tree will turn a beautiful red giving your landscape a breath-taking appearance. The 'Florida Flame' Red Maple can grow 40 to 50 feet tall, creating a stunning shade tree with a spread of over 30 feet. A fast growing tree, it does well in a variety of soil types and

extreme heat. The 'Florida Flame' Red Maple will grow in full sun or partially-shaded areas, and once established, this tree should be watered regularly, but not over watered.

#### Form:

This maple has a fast growth rate and reaches a height of 40'-50' and a spread

of 25' -35'. The maple is upright and oval and has plenty of head room beneath its branches, making it an excellent lawn, patio or street tree.

#### Leaves:

The maple's foliage is an array of color; new growth is red, turning bright green when mature and the flame red in fall before defoliating. The leaves of the red maple offer the easiest way to identify from its relatives. The maples are deciduous and arranged oppositely on the twig. They are typically 2"-4" long and wide with 3-5 palmate lobes with a serrated margin.

### Bark:

The bark is a pale grey and smooth when the tree is young. As the tree grows the bark becomes darker and cracks into slightly raised long plates.



### Flower and Fruit:

The fruit is ½” to ¾” long double samara with somewhat divergent wings at an angle of 50 to 60 degrees. They are borne on long slender stems and range in color from light brown to reddish. They ripen from April through early June, before even the leaf development is altogether complete. After they reach maturity, the seeds are dispersed



for a 1 to 2 week period from April through July.

The flowers are generally unisexual, with male and female flowers appearing in separate sessile clusters, though they are sometimes also bisexual. They appear in spring from April to May, usually coming before the leaves.

### Roots:

The tree's ability to thrive in a large number of habitats is largely due to its ability to produce roots to suit its site from a young age. In wet locations, red maple seedlings produce short taproots with long and developed lateral roots, while on dry sites, they develop long taproots with significantly shorter laterals. The roots are primarily horizontal, however, forming in the upper 12” of the ground.

### Environment:

This red maple is hardy from zone 6 to 10 and prefers partial to full sun. Grow 'Florida Flame' Maple in a well draining, slightly acidic soil. Avoid growing the tree in alkaline soils, which may cause the tree to develop chlorosis, a nutrition deficiency which causes yellow leaves.

### Wildlife:

The red maple is used as a food source by several forms of wildlife. Squirrels are attracted to its buds in the early spring. White-tailed deer in particular use the current season's growth of red maple as an important source of winter food. Several Lepidoptera (butterflies and moths) utilize the leaves as food.

### Attributes:

This red maple is a good choice of a tree for urban areas when there is ample room for its root system. It is tolerant of pollution, although the tree's fall foliage is not as vibrant in this environment. Like several other maples, its low root system can be invasive and it makes a poor choice for plantings near paving.

### Little known facts:

Red maple seldom lives longer than 150 years, making it short to medium lived. It reaches maturity in 70 to 80 years.

## MOBILE APPS FOR TREE IDENTIFICATION

Elizabeth Harkey, Urban Forester – City of Sanford

There are a growing amount of tree apps available for arborists and tree professionals to utilize. **LeafSnap** is a mobile app that was shared with me on a recent FVMA fieldtrip. While walking and identifying trees, our group was “stumped” on revealing a tree's identity. One of the participants pulled up this app on their smartphone. It was very helpful with vivid pictures of leaves, flowers, fruits, seeds, and bark. We were able to narrow it down to a final selection. This app was launched by the Smithsonian and collaborators to launch a traditional field guide for the 21st century. As people use the free mobile app, it shares the images, species and identification and tree locations with a community of scientists. This app is free.

**Tree-App.com** is a free app. This app has tree classification by leaves, descriptions of trees, a tree profile with up to 6 images, and tree fungi. Classification by tree fruits, common trees, tree control, tree care, and tree evaluation is also included.

**Tree Identification** is the tree determination app of baumportal.de. Forest trees, park trees, street trees, and conifers are identified with the help of this app. Determinations aids are:

1. Tree leaves
2. Tree Fruit
3. Winter Characteristics
4. Conifers

This app is not free.

**The Arbor Day Foundation Tree Identification Guide: What Tree is that?** Is the mobile version of the award winning field guide. There is a cost of \$4.99 for this app.

**The Arborist** app is an app for the mobile office for the tree industry. This app allows users to give new quotes and invoices, write site risk assessment and hazard tree assessment and gives tree health and hazard reports. The app is free, but there is a cost to create more documents if required.

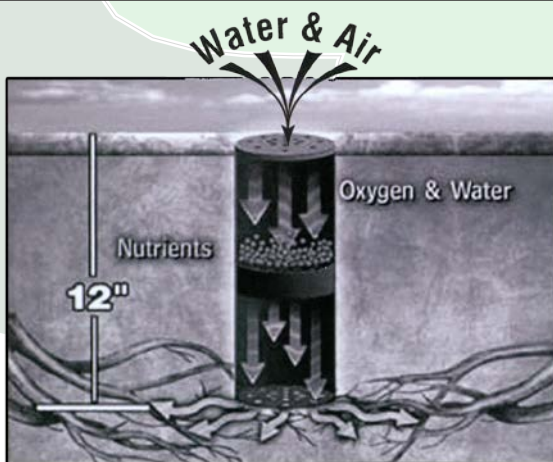
**Editor's Note:** Readers should carefully study product descriptions and reviews before purchasing and installing any identification app. Assessment criteria should include the number and geographic range of the species included, the methodology used for tree identification, and the quantity and quality of photos and supplementary information. How well will the app work for doing what you would like it to do?



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# MAKE ROOM FOR TREES

Dr. James R. Fazio, Editor (Adapted from *Tree City USA Bulletin #69*)

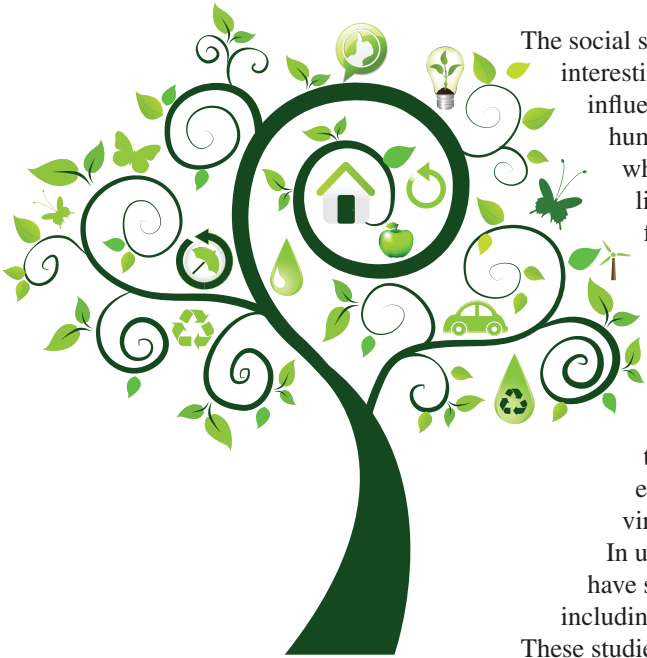
Whether in traditional suburban areas or redeveloped urban sites, sharing our environment with trees continues to be critically important. Even though the practical

benefits of trees are becoming better known, competition for ever-scarcer space requires determination and techniques to include trees in the landscape.

reduce crime, increase healthful exercise, improve mental states, and make other positive behavioral contributions to society.

Professor Adam Alter, writing in the *New York Times*, noted that we humans are “more like chameleons who instinctively and unintentionally change how we behave based on our surroundings.” He added that “environmental cues can shape and reshape us as quickly as we walk from one part of the city to another.”

With all the evidence available today that trees play an essential role not only in modifying social behavior but also in providing environmental services ranging from cleaner air to reducing storm runoff, the question should not be whether we include trees in the landscape, but how to make room for them.



The social science literature is rife with interesting experiments about the influence of urban environments on human behavior. For example, when researchers intentionally littered a parking lot and placed fliers on windshields, nearly half of the drivers tossed the fliers on the ground. When the scientists repeated the experiment by first sweeping the parking lot clean, only one in ten of the motorists threw down the fliers. In this experiment, condition of the environment makes the difference.

In urban forestry, other researchers have shown the importance of including trees in the environment. These studies have shown how trees help

## Working in Harmony with Nature

**Sumter Electric Cooperative has always placed a high priority on the environment** by working to stay in harmony with nature. Evidence of SECO's environmental stewardship is displayed through the following programs.

### Sumter Electric Cooperative:

- was named a *Tree Line USA* utility for the fourth consecutive year by *The National Arbor Day Foundation*. Employee arboriculture training, public education, and maintaining abundant, healthy trees in SECO's service area are common practices.
- installs osprey nesting dishes atop of the utility pole cross arms as needed for these magnificent birds.
- 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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# STUMP THE FORESTER

**QUESTION:** Five years ago I girdled a tree at the base and removed the top so there would be more sunlight on my garden. Why is this tree still alive and producing new branches on the remaining 20-foot-tall stump?

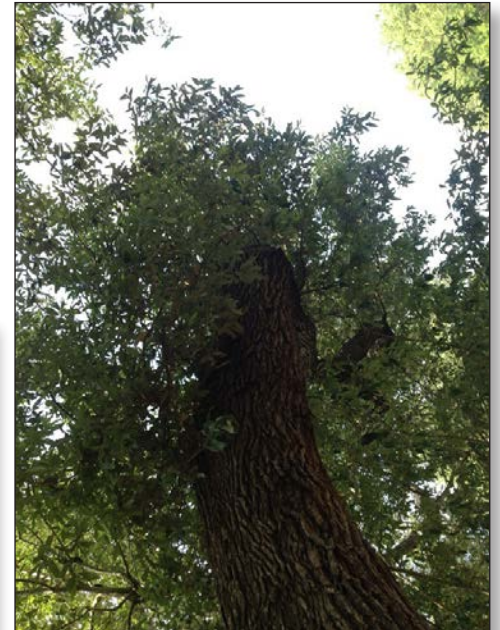
**ANSWER:** Let's start with a quick review of how water, nutrients and carbohydrates are moved around in a living tree. Water and nutrients come into the tree through the roots and are distributed throughout the organism via the xylem tissue located in the sapwood. The carbohydrates are manufactured in the leaves by photosynthesis and then distributed via the phloem, a thin tissue between the bark and the wood. Girdling removes a band of bark and phloem around the trunk, thus stopping the downward flow of essential carbohydrates. The roots die and

stop sending water to the crown when their carbohydrate reserves are depleted. Leaves and other tissues in the crown die later when water and nutrients no longer come up from below. Death of the tree following girdling may be rapid if the tree has been stressed for an extended time and has few carbohydrate reserves. A tree may survive for many years, however, when its roots are connected with those of adjacent trees and receive sufficient carbohydrates to keep functioning.

With the above information and the pictures of your tree, we can now answer your question. The tree you girdled and topped 5 years ago is still healthy because its roots are being nourished via root grafts with adjacent trees. Additionally, dormant buds have sprouted and produced

epicormic branches with sufficient leaf area to maintain growth in the above-ground portion of the tree. Barring a catastrophe or additional treatment, this tree will probably continue to live for many years.

*Answer submitted by John Foltz, Forest Entomologist (retired)*



*Epicormic branches are now present on the previously branchless trunk of a tree that was topped 5 years ago.*

*Girdling the trunk failed to kill the tree on the right owing to the life-sustaining nutrition it received via root grafts with the tree on the left.*

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





# UNIVERSITY OF FLORIDA WEB-BASED RESOURCES

*Jerry Renick, FUFC Newsletter Editor*

Dr. Ed Gilman is a professor in the University of Florida's Environmental Horticulture Department in Gainesville. He is known as the "guru" of urban trees including nursery production, planting, pruning, and other urban design elements associated with trees. As a result of his extensive research and history in the field, Dr. Gilman has developed an incredibly extensive and useful web site (<http://hort.ifas.ufl.edu/woody/>) for all landscape plants, especially urban trees. Topics include urban design, site selection, nursery production, planting techniques, pruning, species, root structures, utility arboriculture, and many more items.

This information is available from the web site in many forms including PDF format, videos and cue cards. If you are an industry professional, a student, or just looking for some information, this web site is a great resource.



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**Marshall Tree Farm**  
Morrison/800-786-1422

**Spectrum Tree Farms**  
Live Oak/800-753-1379

**Stewart's Tree Service**  
Brooksville/352-796-3426

## Associate Members

**Cherokee Manufacturing**  
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Full page advertisement..... \$450

To place an advertisement in *The Council Quarterly*, please contact Sandy Temple, FUFC Executive Director (407-872-1738).

*RPG Growers are committed to enhancing the image and quality of field-grown trees through the hardening-off process. Research continues to show that hardened-off field-grown trees are more wind resistant, use water more efficiently at planting, establish faster after planting, and when planted with container trees in a situation of limited water or irrigation will have dramatically higher survival rates.*

To Subscribe to the RPG Times Newsletter or to request copies of the Tree Grading, Planting or Pruning Cue Cards contact an RPG member or visit [www.rootsplusgrowers.org](http://www.rootsplusgrowers.org)



**Deadline for Submission:  
October 31, 2014**

**CATEGORIES**

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- OUTSTANDING TREE ADVOCATE OR TREE ADVOCACY GROUP
- OUTSTANDING PUBLIC EDUCATIONAL PROGRAM
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**AWARD CATEGORY (please check one):**

- Outstanding Professional
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- Outstanding Public Educational Program
- Outstanding Project
- Outstanding Urban Forestry Program / Large Community
- Outstanding Urban Forestry Program / Small Community
- Lifetime Achievement Award

**GUIDELINES**

- Nominate your own work, the work of your organization or the work of another.
- Each application must be typed and presented in a standard three-ring binder (no larger than 1/2 inch capacity). The completed awards entry form must be the first page of the application. The second page of the application should be a 200-word overview of the nomination. (Note: For winning nominations, the overview of the nomination will be used for presentation purposes and to highlight the individual, project or program in *The Council Quarterly* newsletter.) Following the brief overview should be a summary of not more than three typewritten pages that describe the project's, program's or individual's

contribution to urban and community forestry as outlined in the Award Categories.

- Support documentation such as photographs, press clippings, printed pieces, and letters of commendation are encouraged, but shall be limited to 12 additional pages. All supporting documents must be attached or secured inside the application. Please, no loose documentation such as videotapes. Each application must include at least three digital photos in order to be considered. Examples include photos of the individual recipient, project logo, etc.
- Deadline for entry is **October 31, 2014**. Submit the original, one full copy and the three digital photos to:

**SEND ALL NOMINATIONS TO:**

Friends of Our Urban Forest Awards Program  
Florida Urban Forestry Council  
Post Office Box 547993  
Orlando, FL 32854-7993

*All submitted materials become property of the Florida Urban Forestry Council. **Please note:** The Awards Committee reserves the right to reassign the entry to another category if deemed appropriate. For questions or additional entry forms, please contact Sandy Temple, Florida Urban Forestry Council Executive Director at (407) 872-1738.*

# WATER AND WELLNESS: GREEN INFRASTRUCTURE FOR HEALTH CO-BENEFITS

Kathleen L. Wolf, Research Social Scientist at the University of Washington, College of the Environment

With careful design, green spaces can manage runoff and provide a range of co-benefits. Integrated planning of green infrastructure and parks systems helps to cost-effectively provide multiple benefits and contributes to more livable communities.

Designing green infrastructure for stormwater management as well as co-benefits, particularly human health, offers several opportunities. The cost-benefit analysis of green infrastructure installations can include a broader set of economic returns. Design and project messaging that incorporates the co-benefits of health and well-being may engage additional community partners and be more compelling to the general public. Further, organizations and neighborhoods can be enlisted to help with installation and maintenance, partake in green jobs training, and build greater social capital. Green infrastructure that provides better human habitat is a win-win for community buy-in.

The benefits to the environment and human well-being, as reported here, are but a small sample of growing evidence about the importance of nearby nature in cities and towns.

## Defining Green Infrastructure

For many urban residents the term infrastructure brings to mind roads, pipes, and power lines. Green infrastructure systems, however, are practical integrations of built and ecological systems that incorporate all natural, semi-natural and constructed green spaces within, around, and between built areas, to replace or augment more traditional gray infrastructure.

## Multitasking nature and co-benefits

Stormwater systems planners and engineers are using low-impact development, including bioswales and vegetative systems, to reduce flow to pipes and drains. Meanwhile, park planners and managers are integrating larger park parcels, conservation lands, and community open spaces into nearby nature systems that are accessible and improve quality of life.

Can these two efforts be combined? In many cities, land for public use is expensive or difficult to repurpose. Every parcel or easement is ever more valuable. The use and public value of each bit of urban public land must be optimized.

While dividing attention across multiple activities can actually reduce a person's productivity, nature, on the other hand, multitasks quite well. Every small patch of nature in cities and built areas can be 'hyperfunctional' and provide co-benefits. While performing the primary purpose of stormwater management, green infrastructure also can be designed to augment park systems and provide places of respite, recreation, and delight.

There is precedent for this approach. Urban planners once segregated land uses across the city, with residential units placed away from commercial parcels. Today mixed-use zoning emphasizes residential buildings that have retail and commercial businesses at the street front. These combinations typically contribute to more dynamic, livable communities. Similarly, green infrastructure installations can be integrated with citywide parks and green spaces.

## Health and wellness benefits evidence

Scientific evidence should be the basis of future efforts to make cities more sustainable. Nearby nature--including small plots or parcels imbedded within all land uses--directly contributes to quality human habitat and is profoundly important for health of mind and body. A project at the University of Washington provides access to this knowledge base. The website Green Cities: Good Health represents a collection of more than 2,800 scholarly works, most of which are peer reviewed. The papers are sorted into key themes, each represented by a summary with citations. Here are facts from the research literature.

## Active living

Over the last 30 years, adult obesity has doubled in the U.S., and childhood obesity has more than tripled. The Centers for

Disease Control provides recommendations for weekly rates of moderate-level physical activity to reduce health risks from obesity and chronic disease. Improving the walkability of neighborhoods and increasing recreation access helps promote more healthy weights for people of all ages, including the elderly. A study found that seniors with nearby parks, tree-lined streets, and walkable spaces showed higher longevity over a 5-year period.

## Stress reduction

Stress is a major contributor to ill health in modern times. Unresolved, long-term stress can lead to immune system issues and illnesses. The experience of nature is one antidote to stress, and the body's positive response is remarkably fast, occurring within minutes. Studies by Roger Ulrich and other environmental psychologists show that visual exposure to nature in the form of trees, grass, and flowers can effectively reduce stress, particularly if initial stress levels are high. Mental restoration also is gained from spending time in an urban green space, and increased visit duration--up to 1.5 hours--improves the restorative effect.

## Mental health and functioning

Experiences with nature contribute to better mental health and improve one's capacity to be productive. Modern life often demands sustained focus on tasks, and this effort can lead to cognitive overload, bringing on irritability, inability to function effectively, and physical symptoms. Brief experiences with or even views of nearby nature help to restore the mind from mental fatigue, as natural settings provide respite from high-focus tasks in school or at work. This psychological response may contribute to higher workplace productivity as employees with a view of nature are better able to attend to tasks, report fewer illnesses, and have higher job satisfaction.

## Healing and therapy

Stormwater holding parcels can be designed with multiple 'zones' of function and benefit. More naturalistic vegetation can be 'framed' by more refined and manicured spaces that invite people to enter and interact.

Natural experiences also are associated with healing and treatment of emotional and physical disabilities. Hospital patients with

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*"... organizations and neighborhoods can be enlisted to help with installation and maintenance, partake in green jobs training, and build greater social capital. Green infrastructure that provides better human habitat is a win-win for community buy-in."*

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continues on pg. 12

views of nature display less pain, shorter hospitalization, less anxiety, and higher hospital and room satisfaction. Participating in nature activities also can be used in rehabilitation programs. A group of inmates in a horticulture program had a recidivism rate of 25%, compared to the 65% rate of the general prison population.

### Social capital

Social capital is formed from people's interpersonal relationships and resulting supportive networks. Social capital is a critical condition for a host of community benefits and contributes to development of socially resilient communities. The mere presence of landscapes or trees appears to promote community connections. Views of green space from homes are linked to greater perceptions of well-being and neighborhood satisfaction. Public housing residents reported feeling a greater sense of safety if developments had well-maintained landscaping, including trees and grass. Greener public housing neighborhoods tend to be safer, with fewer incivilities and reported crimes. Active involvement in community greening and nature restoration projects also produces a range of social benefits, including strengthening

of intergenerational ties and organizational empowerment.

### Community economics

Most economic valuations of city nature have addressed residential property values. According to the *proximate principle*--described by John Crompton, an economist at Texas A&M University--homes adjacent to naturalistic parks and open spaces are valued from 8% to 20% higher than comparable properties. Having adjacent street trees also positively affects home values and time on market during sales, while yard trees are associated with both higher property values and rental rates.

There are many more opportunities to express benefits in economic terms. Increased worker productivity and school performance have implications for local industry and workforce development. Nature-based healing and therapy may be reasonably priced supplements in human services programs. Perhaps the most promising valuation opportunity is the relationship between outdoor space and active living. The potential economic consequences of routine, mild physical activity are enormous, when aggregated across entire cities or the nation.

### Will they buy in?

Large green infrastructure spaces may be naturalistic and look unkempt. More formal edges provide the 'cues to care,' as described by Joan Nassauer in a *Landscape Journal* article, that improve social acceptability of naturalistic landscapes.

'Social acceptability' is a term social scientists use to describe the willingness of communities and individuals to adopt or support proposed changes in their communities. The U.S. Environmental Protection Agency provides evidence that green infrastructure can provide more benefits at lesser cost than single-purpose gray infrastructure. Yet in some communities, there is social resistance to green infrastructure installations at a large scale due to concerns about costs and potential nuisances.

Concerns often can be relieved and even transformed to public support. Green infrastructure pilot programs that showcase both stormwater management functions, and health and community co-benefits, offer solutions for a variety of important public issues.

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