



# Leaves OF Change



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## Introduction

### Minimizing the Impacts of Catastrophic Events

THE FOREST SERVICE'S Urban and Community Forestry Assistance Program has recently begun to focus activities on five national program goals, which are to (1) reduce the impacts of land use change, fragmentation, and urbanization on forest landscapes; (2) minimize the impacts of catastrophic events; (3) protect and improve air and water quality; (4) mitigate climate change; and (5) conserve energy.

This issue of "Leaves of Change" focuses on Goal 2 of this program. Though catastrophic events can vary, including severe weather events (tornados, hurricanes, ice storms, and straight line winds), invasive plant species, disease and insect epidemics, and wildfire, we focus here exclusively on weather-related incidents. For a number of reasons, the impacts of these events seem to have become more extreme in recent years. Because of population growth, cities have spread into what were once rural and forested countryside. The southern coastal plain, in particular, has experienced tremendous population growth and resulting urbanization, bringing literally millions of Americans within harms way of devastating hurricanes. Additionally, the frequency, timing, and severity of recent weather events has taken on a certain randomness that makes even the most skeptical wonder if climate change might have a more immediate effect on our future than once thought.

Urban forests are increasingly valued for the ecological services that they provide, such as reduced energy demand, storm water control, and improved water and air quality. After natural disasters occur, remaining trees and urban forests are important for quick recovery of these services. Prompt urban forest recovery efforts can quickly restore the health-rendering benefits that the urban forests provide to society and hazard mitigation efforts can reduce long term risks. In this issue we highlight many of the activities that the Forest Service and partners in the Southern Region are undertaking to help make communities safer and minimize the impact of natural disasters on multiple fronts, through research, science delivery, training, and practical applications.

## Research

### Assessing the Urban Forest Following a Hurricane



WINDSTORM EVENTS can have a dramatic effect on the structure and function of urban forests in the South. Trees can be broken, uprooted, defoliated, and severely damaged in a short period of time. Damage to urban forests threatens public safety and creates adverse economic consequences for state and local governments in both the short term (e.g. funding response efforts, emergency removal of tree debris) and long term (e.g. loss of ecosystem services).

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## Components of i-Tree

The i-Tree software suite (version 2.0) is a set of four loosely connected software applications that can help users to better assess and manage community forests. The suite includes two analysis programs—the Urban Forest Effects Model (UFORE) and the Street Tree Resource Analysis Tool for Urban Forest Managers (STRATUM)—and two utility programs—the Mobile Community Tree Inventory (MCTI) and the Storm Damage Assessment Protocol (SDAP).

UFORE is designed to quantify urban forest structure, environmental effects, and overall value. This is accomplished using standardized field data collection from randomly located plots throughout a community, as well as local air pollution and meteorological data. STRATUM quantifies the value of annual environmental and aesthetic benefits of a community's street trees, identifies tree management needs, and calculates the costs and benefits of maintaining those trees.

MCTI was designed as a basic tree inventory application that allows communities to conduct tree inventories and generate summary reports at various levels of detail and effort. It allows users to track tree location, species and age class distribution, pruning needs, tree health, and identification of hazard trees so that a comprehensive management plan can be prepared. SDAP allows communities to prepare for major natural disasters and quickly assess damage after a storm event through a simple, standardized data collection method. The application calculates potential debris clean-up costs before a storm and approximates costs after an event.

For more information about the i-Tree software suite visit [www.itreetools.org](http://www.itreetools.org).

## In the Next Issue

Look for our summer 2008 issue in which we will focus on Hispanic issues in the South.

### Photo Credits

Larry Korhnek and Sarah Gracey

## Training and Outreach Activities

### i-Tree Pilot Projects Update Partners on Current Urban Forest Technology

**CONSIDERABLE INTEREST** in i-Tree has been generated in the Southeast since its introduction in 2006. Without practical training, however, i-Tree can be a bit overwhelming to use. To address this, Urban Forestry South has trained local communities in South Carolina, Georgia, and Alabama in the use of i-Tree. Specific communities were targeted to implement a local i-Tree pilot project and host a training event. The pilot projects consist of multi-day, hands-on approaches to setting up community forest inventories, collecting and downloading field data, and generating reports from those data. Arborists, planners, and local and state natural resource specialists attended, and it is hoped that they will serve as future trainers of the software for others around the state. For more information about i-Tree pilot projects, contact Eric Kuehler at (706) 559-4268 or [ekuehler@fs.fed.us](mailto:ekuehler@fs.fed.us).

## Research

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Recent hurricane forecasts predict more frequent and severe hurricanes in the near future. State forestry agencies can play a key role in reducing the negative affects of these natural events by being actively involved in planning, response, and restoration strategies. In order to do this, timely information on the extent and location of damage to urban forests is needed. Additionally, tools are required to help plan for and manage the response, clean up, and eventual restoration of urban forests.

Through collaboration with Urban Forestry South, the Southern Group of State Foresters, and state and federal emergency management agencies, University of Florida researcher **Francisco Escobedo** is leading an effort to address this need by developing a rapid assessment model and method to assess urban forest damage and debris from hurricanes. One of the objectives of this project is to develop a rapid remote sensing technique that will allow communities to determine the amount of downed urban forest debris immediately after a hurricane. Another objective is to establish permanent sites for studying hurricane effects on the urban forest and whether trees can mitigate damage to buildings during hurricanes. The methods and model developed by this project will provide city, county, and regional authorities a pre-disaster debris planning tool and post-disaster debris estimates. For more information about this and related projects, visit

[www.sfrc.ufl.edu/urbanforestry/research.html](http://www.sfrc.ufl.edu/urbanforestry/research.html).



UF researcher evaluates the roots of a tree felled by Hurricane Katrina.



Tree and infrastructure damage following Hurricane Katrina.

## Urban Forest Strike Teams

**FOLLOWING HURRICANE KATRINA**, a partnership consisting of national professional organizations, state forestry agencies, local communities, and nonprofits was developed to provide assistance to communities and their urban forests affected by the hurricane. Through this partnership, professional arborists provided post-disaster hazard tree assessments for ten communities in Mississippi and Louisiana during the first half of 2006. This effort demonstrated that professional arborists and urban foresters could be successfully used in post-disaster response efforts.

In 2007, the Urban and Community Forestry program coordinators in Virginia and North Carolina recognized the need for a professional response following disasters in their respective states. They requested assistance from Urban Forest South to develop a training program for agency certified arborists. Leading this effort were Paul Revell and Barbara White from the Virginia Division of Forestry and Leslie Moorman with the North Carolina Division of Forest Resources. The training includes (1) how to estimate tree debris immediately following a disaster; (2) hazard analysis of public trees that remain after initial clean-up; and (3) evaluations of restoration needs (tree planting) of the communities' urban forests.

In August 2007, state forestry agency certified arborists in North Carolina (6) and Virginia (11), and representatives from Alabama, Arkansas, and Tennessee completed three days of training in urban forest disaster response. These arborists are part of an Urban Forest Strike Team (UFST)

composed of a team leader (a trained arborist with disaster response experience) and multiple crews (2 arborists per crew). Each strike team is assisted by a community liaison and technical support for GIS (i.e., mapping) and other related technologies. Strike teams are designed to operate within the Incident Command System and the National Incident Management System.

The recently trained UFSTs got their first chance to apply what they had learned after a December ice storm hit east-central Oklahoma in December 2007. In early 2008, UFSTs worked for three weeks in the Tulsa and Oklahoma City area, providing communities with detailed tree risk assessments and debris estimates to aid with direct FEMA payment. UFST members provided invaluable assistance to the Tulsa Parks and Recreation Department during a time when they were overwhelmed with the task of clean-up (two months after the storm). In



Ice storm damage to the urban forest.

addition, the assessment protocol developed for UFST was robust enough to meet FEMA Region VI needs. For more information about the Oklahoma ice storm response visit [www.urbanforestrysouth.org/resources/ice-blog](http://www.urbanforestrysouth.org/resources/ice-blog).

In June 2008, the UFST coordinating committee will schedule follow-up training in Virginia for UFST members, train UFST Team Leaders, and conduct a full training session (three days) to other state agency Certified Arborists to expand the cadre of trained professional able to respond. For more information contact Dudley Hartel at (706) 559-4236 or [dhartel@fs.fed.us](mailto:dhartel@fs.fed.us).

## Recommended Readings

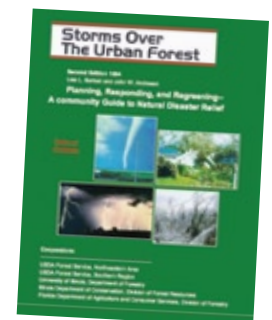
### Assessing Damage and Restoring Trees After a Hurricane

Produced by the University of Florida, this booklet tells how to be safe around fallen trees after a hurricane, when and how to restore damaged trees, and ways to prevent damage in the event of future hurricanes. You can view this booklet at [edis.ifas.ufl.edu/EP291](http://edis.ifas.ufl.edu/EP291), which is also available in Spanish at [edis.ifas.ufl.edu/EP305](http://edis.ifas.ufl.edu/EP305).



### Storms Over the Urban Forest: Planning, Responding, and Regreening

This Forest Service manual is intended to assist community leaders and governmental agencies as they prepare for natural disasters, respond appropriately when these natural disasters occur, and recover from the subsequent loss of vegetation. View this publication at: [www.treearch.fs.fed.us/pubs/11057](http://www.treearch.fs.fed.us/pubs/11057).



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## Upcoming Events

Date	Description	Location	Contact
May 28-30, 2008	<b>Nature and the Network: National Conference on Urban Ecosystems</b> , sponsored by American Forests	Orlando, Florida	<a href="http://www.amfor.org/conference">www.amfor.org/conference</a>
June 8-11, 2008	<b>Annual Meeting of the Southern Group of State Foresters</b>	Columbia, South Carolina	Mike Bozzo at (803) 896-8810 <a href="http://www.state.sc.us/forest/sgsf08.htm">www.state.sc.us/forest/sgsf08.htm</a>
June 16, 2008	<b>Conservation Arboriculture: Care of Veteran Trees</b>	Asheville, North Carolina	<a href="http://admin.urbanforestrysouth.org/events/upcoming/conservation-arboriculture-care-of-veteran-trees/view">admin.urbanforestrysouth.org/events/upcoming/conservation-arboriculture-care-of-veteran-trees/view</a>
June 10-13, 2008	<b>Climate Information for Managing Risk</b> , sponsored by the University of Florida IFAS Extension and the Southeast Climate Consortium	St. Pete Beach, Florida	Mandy Stage (352) 392-5930 or <a href="mailto:mstage@ufl.edu">mstage@ufl.edu</a> <a href="http://www.conference.ifas.ufl.edu/cimr/">www.conference.ifas.ufl.edu/cimr/</a>
July 26-30, 2008	<b>ISA Annual Conference and Trade Show</b>	St. Louis, Missouri	Lisa Gadbury, 888-472-8733, ext 238 or <a href="mailto:conferencereg@isa-arbor.com">conferencereg@isa-arbor.com</a> <a href="http://www.isa-arbor.com/conference/">www.isa-arbor.com/conference/</a>

