Leaves of Change

A quarterly bulletin of the Centers for Urban and Interface Forestry | Southern Research Station | USDA Forest Service

Fall 2007

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Introduction

Fire in the Wildland-Urban Interface

ONE OF THE major issues in the southern wildland-urban interface is the loss of homes to wildfire. While fire control agencies play an important role in fire prevention and the protection of homes, there are actions that individual homeowners can take to reduce the vulnerability of their homes to wildfire. Creating an area of defensible space is one of the most important actions.

Recommendations for defensible space suggest maintaining an area extending at least 30 feet outward from a house with plants and mulches that are low in flammability. Selecting landscape plants based on their flammability is a challenge since there are few existing plant flammability studies and few plant guides that list firewise plants or rank them by flammability. Mulches have been little studied as well. This issue focuses on the work that InterfaceSouth has been doing to address this critical need for research and information related to fire in the wildland-urban interface.

Research

Shrub and Mulch Flammability

AN IMPORTANT COMPONENT of InterfaceSouth's WUI fire research efforts is related to shrub and mulch flammability. In a joint project with Alan Long of the University of Florida – School of Forest Resources and Conservation, and Alexander Maranghides and William Mell of the National Institute of Standards and Technology, USFS research forester **Wayne Zipperer** has been identifying firewise shrubs and mulch types that are safest to use around interface properties.

In 2004, 34 shrub species were tested under controlled conditions at NIST's Building and Fire Research Laboratory for factors such as time until ignition, heat release rate, and maximum flame height. The results of this study led to a ranking of the 34 shrubs into three categories of flammability: high, moderate, and low. This study also helped validate and refine a flammability key that helps fire professionals, urban foresters, and others to create lists for homeowners of firewise shrubs and other plants species not tested in this study. The list of shrubs and their rankings, as well as the flammability key, can be found on the InterfaceSouth website.

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Currently under investigation is the flammability of commonly used landscape mulches. Last spring Long and Zipperer led a study in which they constructed test beds about 13 feet in diameter of pine needles, small and large pieces of pine bark, and shredded cypress. They mimicked rainfall conditions for 15-day and 30-day drought, and then set the mulch on fire.

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Post-Katrina Study of the Gulf Coast: **Fire Risk & Ecological Impacts**

American Forests (**www.amfor.org**) completed a 30,000 square mile regional assessment of the impacts of Hurricane Katrina in early 2007. The study, funded by the U.S. Forest Service, compared land cover from 2001 and 2006 in the Gulf Coast region of Louisiana, Mississippi, and Alabama. Urban Forestry South provided base data and regional contact information for this project.

The findings show that the greatest concentrated loss in tree cover was measured in St. Tammany and Washington Parishes in Louisiana and in Hancock, Pearl River, Lamar, Forrest, Stone and Harrison counties in Mississippi. These counties were directly in the path of the hurricane. The loss in tree canopy also means a reduction in the environmental benefits that urban forests and other vegetation provides to these communities.

Moderate resolution Landsat satellite imagery and Geographic Information Systems (GIS) software was used to (1) assess the change in land cover pre- and post-hurricane and the impacts these changes had on air and water and (2) update post-hurricane land cover data used by state forestry agencies for fire management.

This updated digital data will also be incorporated into the Southern Fire Risk Assessment Software that will quantify the effects of the storm damage on wildfire risk in the region, pinpointing areas where risk has increased. This will enable the U.S. Forest Service, the Southern Group of State Foresters, and state agency fire chiefs to prioritize areas for managing vegetation for fuel reduction.

The data resulting from this study is available for local, regional, and state agencies working on Gulf Coast recovery projects. Contact Dudley Hartel (dhartel@fs.fed.us) at Urban Forestry South for more information.

In the Next Issue

Look for our winter 2008 issue in which we will focus on urban forestry disaster planning, response, and recovery activities in the region.

Partnership Highlight

The University of Florida and the National Institute of Standards and Technology

THE TWO MAIN partners in InterfaceSouth's WUI fire research projects are the School of Forest Resources and Conservation (SFRC) at the University of Florida in Gainesville, Florida, and the National Institute of Standards and Technology (NIST) in Gaithersburg, Maryland. NIST is a federal technology agency that develops and promotes measurement, standards, and technology. This three-way partnership leverages the technical expertise, available facilities, and financial capacity for conducting this research.

Alan Long, a key InterfaceSouth partner, ignites pine straw mulch.

Alan Long, a professor with SFRC, has been working with InterfaceSouth since 2002 on both fire research and technology transfer projects. Alan is currently working on the mulch flammability studies. He previously worked on studies to determine the flammability characteristics of different plants, the development of risk assessment procedures for landowners, and evaluated and described options for landowners to manage their landscapes to mitigate fire risk.

Alex Maranghides and William 'Ruddy' Mell are InterfaceSouth's partners at NIST. Alex runs the NIST Large Fire Laboratory where the controlled shrub and mulch flammability tests took place. Ruddy is incorporating the flammability research findings into a useful model for community planners to use to identify fire hazards and reduce fire risk. For more information visit their website: **www2.bfrl.nist.gov/userpages/wmell/public.html**.

Recommended Reading

Fire in the Interface Fact Sheet Series

A SERIES of fact sheets that explain WUI fire concepts related to understanding fire and how to select appropriate plants for landscaping in interface areas. You can view these fact sheets at: **www.interfacesouth.org/products/fact_sheets.html**.

Wood to Energy Outreach Program Materials Are Released

THE WOOD TO ENERGY Outreach Program rolled out its set of outreach materials at the September 11-12, 2007 Woody Biomass Outreach Training in Atlanta, Georgia. The training was a joint effort between the Wood to Energy Outreach Program and the Southern Forest Research Partnership's Sustainable Forestry for Bioenergy and Bio-based Products Program. It was attended by seventy-seven representatives from state forestry agencies, energy policy offices, economic development groups, and nongovernmental organizations from across the South. All training participants received the *Wood to Energy Biomass Ambassador Guide*, a notebook of materials designed to help them engage in outreach activities in southern communities that are suitable candidates for using wood for heat, power, or electricity.

Wood to Energy is a cooperative partnership between the University of Florida; the USDA Forest Service, Southern Research Station; the Southern States Energy Board; and the Southern Regional Extension Forester. All of the Wood to Energy Outreach Program materials are available for download at **www.interfacesouth.org/woodybiomass**. Notebooks and CDs of the materials can be requested by emailing Lauren McDonell at mcdonell@ufl.edu.

I-Tree Training & Pilot Projects

ERIC KUEHLER, technology transfer specialist of Urban Forestry South, is scheduling additional i-Tree pilot projects to help urban forest managers of state agency and municipal foresters in the region account for and manage the urban forest. Working with the Georgia and South Carolina Forestry Commissions, Eric is developing two i-Tree training sessions for the first quarter of 2008; one will be held in the Atlanta metro area and the other in coastal South Carolina. These will be two-day sessions covering either the Urban Forest Effects Model (UFORE) or the Street Tree Resource Analysis for Urban forest Managers (STRATUM). Participants will be collecting and processing data in cooperating municipalities. Contact Eric Kuehler (ekuehler@fs.fed.us) of Urban Forestry South for additional information. To learn more visit the i-Tree Web site at **www.itreetools.org**.

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Using monitors placed in the mulch, they closely tracked the speed with which the fire spread through the pile. Tags painted with paints that melt at different temperatures from 200 to 800 degrees Fahrenheit provided data on how hot the mulches burned. Pine straw spread the fastest and had the highest flames. Both large-pine bark and pine straw burned deeper and hotter than the other two mulches. The ability to hold moisture and pack densely together were critical factors influencing mulch flammability. The researchers are also looking at how fire spreads across mulch and from mulch to plants, and how the arrangement of plants affects how fire spreads to homes.

FS and UF researchers measure the flame temperatures and the rate of fire spread as shrubs and mulches burn.

Based on this on-going research, some general recommendations are being made that include the following. Each of the tested mulches burned and none were hundred percent safe. Mulch should not be used next to flammable material or vinyl surfaces on buildings since the heat released from each of the materials burned may ignite the adjacent wood or melt the vinyl. Only decorative gravel or stones or some other nonflammable material should be used immediately adjacent to the home. Of the four mulches tested, densely packed mulch (similar in consistency to that of the shredded cypress tested in this study) can be used within two to five meters of the home. Other mulches can be used at a distance greater than five meters from the house, depending on the type and density of landscape plants in that area.

For maximum effectiveness, homeowners need to maintain the landscape beds by watering them and removing dead plant material and ladder fuels, such as vines, as well as considering the flammability of shrubs and other plants within the defensible space. Additionally, homeowners should consider the sustainability of materials used in their landscape. For example, though cypress mulch burned cooler and shallower than the other mulches, the sustainability of this resource is questionable.

The results of this study will be released in several formats in the coming year. Information such as this will help homeowners to plan their landscapes to reduce fire risk and still retain many of the other landscaping benefits they desire, such as creation of wildlife habitat, conservation of energy and water, and aesthetics. This information will also help improve predictive fire models—and ultimately, develop more firewise communities.

To learn more visit: **www.interfacesouth.org/products/research/flam_natural_veg_and_home_landscapes.html**.

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Upcoming Events

Date	Description	Location	Contact
January 24-25, 2008	**i-Tree Workshop**	Plant City, Florida	Eric Kuehler (706) 559-4268
March 4-6, 2008	**2008 Wildland-Urban Interface: New Fire Frontiers**	Grand Sierra Resort and Casino, Reno, Nevada	International Association of Fire Chiefs (703) 273-0911 conferences@iafc.org www.iafc.org/displaycommon.cfm?an=1&subarticlenbr=854
March 15-18, 2008	**International Society of Arboriculture Conference, Southern Chapter**	Knoxville, Tennessee	ISA Chapter (888) 339-8733
March 24-26, 2008	**The 6th Annual Southern Forestry and Natural Resources Management GIS Conference**	Orlando, Florida	Pete Bettinger (706) 542-1187 pbettinger@warnell.uga.edu soforgis.net/2008/