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PREScribed FIRE IS COOL ON FLORIDA HIGHWAY

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Abstract: Though unprecedented in the sunshine state, plans for a prescribed fire on US319/SR61, Kate Ireland Parkway in north Florida sparked enthusiasm and excitement among roadside managers. The recently expanded high speed corridor passes for ten miles through the Red Hills Region (www.ttrs.org/rhcp); a rural landscape that is host to America's largest remnant of the great longleaf pine forest (www.longleafalliance.org). Prescribed fire is a necessary and popular landscape management tool used by generations of adjoining private land managers with responsibility for conserving this scenic, natural, and cultural resource. Using prescribed fire along this highway is safe and appropriate. It is authorized to maintain a commitment to visually and ecologically restore and reconnect the landscape that is bisected by the four lanes of pavement. Further, the high visibility of this location, provides a dramatic means to inform the public about the benefits of prescribed fire, and to demonstrate that motorists can travel safely in the presence of prescribed fire.

Years before the burn, landscape architects, landscape contractors, landscape ecologists, engineers, foresters, firefighters and friends initiated their collaboration with the Florida Department of Transportation and Division of Forestry to prepare a landscape plan and management plan for the corridor. The plan complements the natural beauty and function of the adjoining plantations. Fortunately, Tall Timbers Research Station (www.ttrs.org) is only three miles from the parkway. At Tall Timbers, scientists study the ecology of fire and natural resource management. Without their expertise and leadership, the burn would not have been possible. Finally, after manually and mechanically managing fuels within the wide forested medians, and after planting fire adapted ground cover, understory, and canopy tree species, it was time for the first authorized prescribed burn on a Florida state highway. Weather permitting, the burn was scheduled in concert local news media, and with Florida's annual Prescribed Fire Awareness Week.

On schedule, March 7, 2005, from the peach state line, south for one and a half miles, a perfectly executed prescribed burn ignited a new era in Florida roadside management.

- A traffic control plan similar to what is used during construction, proved safe and effective. Smoke was managed well, except in one instance for a short time near a drain. The Florida Highway Patrol acted quickly to redirect traffic to another lane. There were no accidents or injuries.
- Eighty percent or more of the targeted median area burned, significantly reducing fuel load and potential for wildfire.
- Ninety percent or more of the small hardwood sprouts were eliminated, leaving behind the vigorous longleaf pine saplings and clumps of wiregrass.
- Longleaf saplings were generally scorched back close to the apical meristem, potentially acting as a control on pathogens on the old needles.
- Cogongrass, *Imperata cylindrical*, and other invasive plant species known to be in the vicinity thrive after fire. The burn, however, increased their visibility, and provided easier access for treatment.
- Hundreds of motorists enjoyed a safe driving experience with a close up view of the prescribed burn. Over the following weeks and months thousands enjoyed resprouting foliage and blooming wildflowers.

Prescribed burning along the ten miles will continue in three phases, on a three year or shorter interval. In addition to being safe and cost effective, Florida's roadside managers can now report that prescribed burning helps reduce the risk of wildfire, increases native species diversity, enriches habitat, and releases bountiful wildflowers. Though it may never become routine, where appropriate, and where resources and expertise are available, prescribed burning has proven to be safe and effective for roadside vegetation management.

Introduction

Though unprecedented in the sunshine state, plans for a prescribed fire on US319/SR61, Kate Ireland Parkway in north Florida sparked enthusiasm and excitement among roadside managers. The recently expanded high speed corridor passes for ten miles through the Red Hills Region (www.ttrs.org/rhcp); a rural landscape that is host to America's largest remnant of the great longleaf pine forest (www.longleafalliance.org). Prescribed fire is a necessary and popular landscape management tool used by generations of adjoining private land managers with responsibility for conserving this scenic, natural, and cultural resource. Using prescribed fire along this highway is safe and appropriate. It is authorized to maintain a commitment to visually and ecologically restore and reconnect the landscape that is bisected by the four lanes of pavement. Further, the high visibility of this location, provides a dramatic means to inform the public about the benefits of prescribed fire, and to demonstrate that motorists can travel safely in the presence of prescribed fire.

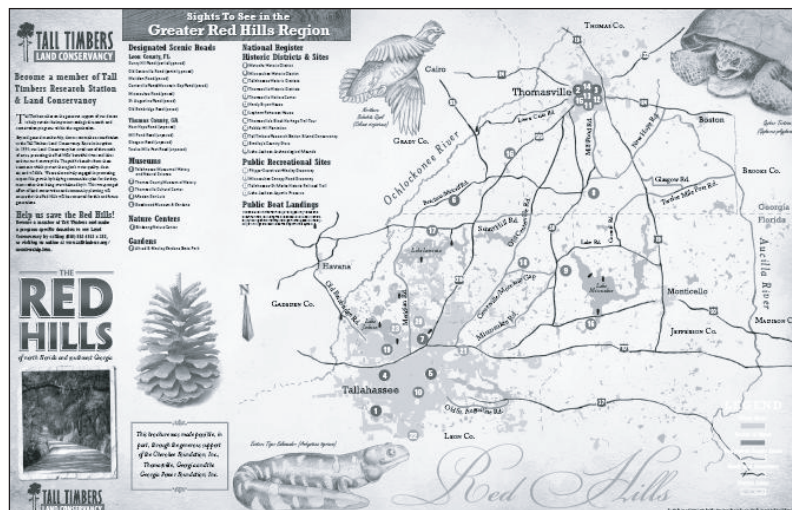
In Florida, fire is as natural as wind and rain. Only you can prevent forest fires! For all our lives we've heard this message. Now, we know it is not true. You can't *prevent* forest fires. We can, however, prevent catastrophic wildfires. The new message from Smokey is "Only you can prevent *wildfires*." Forest fires will occur naturally, as surely as wind and rain. Forest fires need to occur; frequently. The frequency and intensity of fire, and the amount of damage they cause



Before the continent was widely settled, fires crept for day, weeks, or months across the southeastern pine forests, great plains, and western slopes. Native flora and fauna that are part of these fire adapted communities rely on frequent fire to sustain their ecosystems. Unlike today's wildfires, these natural fires occurred frequently, before ground fuels could build up to catastrophic proportions. Insects, plants, and animals flourished. Homes, schools, businesses, and highways were not impacted. Smokey Bear and associates effectively suppressed most fires for the past 100 years, giving time for hazardous fuels to accumulate. The dense and unnatural under-story extirpated many native plants, insects, birds, mammals, and reptiles. At the same time, millions of families moved into suburban homes, now surrounded by volatile fuel.

Having lost our understanding and appreciation of the natural role of fire, and now having regained it, land managers are scrambling to restore a natural balance, to meet ecological, economic, aesthetic, and safety objectives. In many places, this is nearly impossible, and frequently prohibited. Fire suppression policies over the past 100 years or so, gave planners, architects, and landscape architects freedom to practice without consideration of the natural role of fire. As a result, homes, businesses, communities, highways, farms, and forests have been planned in a fashion that is incompatible with any kind of fire. Throughout Florida, and elsewhere, there are places where fuel has accumulated to catastrophic proportions. Eliminating the fuel is the only way to eliminate the hazards. Fuels can either be mechanically removed or burned with prescribed fire. Mechanical control is often too expensive to be a viable alternative. Prescribe fire is relatively inexpensive, but not always possible if there is too much fuel, or if the location is too close to homes, schools, hospitals, airports, or other sensitive areas. The *urban wildland interface* is a dangerous place to live. Where neither fuel reduction alternative is available, the inevitable risk is building.

The Red Hills Region of north Florida and southwest Georgia is a distinct American landscape. These private scenic lands, from Tallahassee, Florida to Thomasville, Georgia and from the Aucilla River to the Ochlockonee River, form an ecologically rich area protecting some of the last remnants of the great longleaf pine forests remaining in the nation. This region also serves as some of the highest recharge areas for the Floridan Aquifer, a pristine underground sea critical to the drinking water supply for residents of Florida, Georgia, and Alabama. The Red Hills is a model working landscape in which the stewardship ethic of landowners is paramount to ensuring the future health of the Region's forests and wetlands. Sustainable forestry, agriculture, and recreational hunting are the land use traditions of the Red Hills.



Longleaf Pine-Wiregrass ecosystems once covered approximately 90 million acres in the southeast United States. This unique ecosystem, shaped by thousands of years of natural fires, relies on frequent fires to maintain biological richness and to keep the Pine-Wiregrass ecosystem healthy. Fire events in this type of ecosystem mold tall, majestic pine trees with open tops that seldom touch one another, allowing sunlight to nurture grasses and forbs in the ground cover. The Longleaf Pine is valuable in many ways due to their tolerance of fire and ability to survive well in poor conditions. There are more than 30 plant and animal species associated with Longleaf Pine ecosystems including the Red-cockaded Woodpecker and the Northern Bobwhite Quail.



While a Longleaf Pine forest may appear to be comprised solely of Longleaf Pines and wiregrass, a closer look reveals that the ground cover of wiregrass is actually comprised of a number of forbs, grasses, and low woody species. Many of these resident species are considered endangered or threatened because this type of ecosystem is rare and the species are found only in these fire-maintained habitats. The variety of plant species found in these communities are among the highest reported in North America, with more than 40 countable species in a ten foot area and well over 100 possible species in a quarter of an acre.

Planning and Planting for Fire

When the Florida Department of Transportation was ready to widen US Highway 319 (Thomasville Road), the two lane rural highway north of Tallahassee that crosses into Grady County, Georgia, additional right of way needed to be acquired. Nearly all that was needed was part of a few large historic plantations. Owners of Foshallee, one of the largest plantations, agreed to donate enough right of way and scenic easements on both sides of the highway to construct four lanes, and preserve the rural character of the corridor. One stipulation of the 1992 right of way agreement was that the Department of Transportation would collaborate with the Division of Forestry to manage the right of way with prescribed burns, just as the donated land had been managed for generations. This would maintain the continuity of the landscape across the full field of view as one travels north and south.

Years before the first prescribed burn along US Highway 319, landscape architects, landscape contractors, landscape ecologists, engineers, foresters, firefighters and friends initiated their collaboration with the Florida Department of Transportation (FDOT) and Division of Forestry to prepare a landscape plan and management plan for the corridor. The plan complements the natural beauty and function of the adjoining plantations. In 2001 Department of Transportation staff and consultants were called to Foshallee Plantation to meet with Miss Kate Ireland, and to learn of her intent to donate funds to be spent on landscaping of the Kate Ireland Parkway (US 319). Kate Ireland's previous donation allowed motorists to experience a true "parkway", open and rolling with a wide, forested median. The corridor was appropriately named in honor of her generosity and life long record of landscape conservation. Miss Kate (as she is known by friends) desired to provide money to install plants that would compliment her vision for the landscape to include "plantation-type" plants and ones that would provide four-season interest. During the development of landscape concept drawings, the FDOT was re-introduced to Mr. Wilbur Jones, a former Florida Road Board Chairman (1955) and friend of Miss Kate's. Mr. Jones, a historic proponent of conservation and beautification, apparently had played a key role in Miss Kate's donation of the right of way for the widening project.



Along with the extensive right of way previously donated by Kate Ireland; in 2003 she donated \$300,000 to the FDOT to transform the parkway into a scenic corridor, and compensate for any landscape disturbance caused by construction in the area. Miss Kate is the Chairman of the Tall Timbers Research Station and Land Conservancy Board of Trustees. Tall Timbers, located just three miles from the corridor, is a non-profit, charitable organization committed to fostering good land stewardship through research, conservation and education. There, scientists study the ecology of fire and natural resource management. Without their expertise and leadership, along with the Division of Forestry, the Kate Ireland Parkway prescribed burn would not have been possible. Fulfilling Miss Kate's vision, plans were developed to enhance the landscape and to create a sense of place for those driving through this rural gateway into the state of Florida.



Landscape concepts were developed that identified dominant vegetative communities within the medians, and proposed planting concepts to provide the longleaf pine and wiregrass appearance that is commonly found through the Red Hills region of North Florida and South Georgia. The concepts were turned into construction drawings using the FDOT District-wide Landscape Architecture consultant. The plans had many features to ensure a successful re-vegetation/restoration project. Ultimately five phases were planned and constructed. The design consultant remained involved during the construction phases of the projects; being present at pre-bid and pre-con meetings to discuss the importance of the project with the contractor, and to ensure the contractor had no issues with the information and requirements found in the plans. In the field, the consultant remained focused solely on providing the Department with the necessary expertise to ensure a project was delivered that met the requirements of the plans. In addition, it was critical that the team remained on site for:

1. Inspection of plants prior to and after installation to determine if the plants met a Florida number one quality.
2. Determining if proper preparation of planting sites was occurring
3. Preparation of punch lists of items in the contract found to be deficient during construction and during the one-year establishment phase.

Finally, after manually and mechanically managing fuels within the wide forested medians, and after planting fire adapted ground cover, understory, and canopy tree species, it was time for the first authorized prescribed burn on a Florida state highway. Weather permitting, the burn was scheduled in concert with local news media, and with Florida's annual Prescribed Fire Awareness Week.

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With the success of the prescribed burn event in 2005, FDOT confidently executed other burns along the corridor in 2006 and 2007. Led by Division of Forestry professionals and supported by staff and resources from Tall Timbers, prescribed burning along the ten miles will continue in three phases, on a three year or shorter interval. In preparation for the next burn:

- Care will be taken to delineate areas with fire sensitive species.
- Invasive species and other non-native grasses and forbs will be treated with herbicides.
- Fire adapted species will be planted to replace non-native species.
- Badly damaged and undesirable trees and snags will be removed
- Stumps will be ground



In addition to being safe and cost effective, Florida's roadside managers can now report that prescribed burning helps reduce the risk of wildfire, increases native species diversity, enriches habitat, and releases bountiful wildflowers. Though it may never become *routine*, where appropriate, and where resources and expertise are available, prescribed burning has proven to be safe and effective for roadside vegetation management.

Interdisciplinary Cooperation

Landscape architects were a critical component of the project team that also included other transportation professionals, engineers, surveyors, forestry professionals, a native plant specialist and a highway beautification specialist. Throughout design and construction, the team worked together to address challenges and to create solutions to keep the project on schedule. The team's problem-solving abilities and flexibility were critical to navigating the project's budget, time and material constraints.

When developing the project's design, a major concern was the lack of sufficient budgeting for an accurate survey for this length of project. As a result, the team had to locate existing trees, drainage features and structures along the entire corridor through field verification.

Irrigation during construction also proved challenging. A sprinkler system used during Phase One proved an inappropriate method for a natural wooded median. The sprinkler system watered project areas that should have remained dry, which created a maintenance problem with weeds and vines. In Phases Two and Three, the team found a watering truck was the best irrigation method to use during the remainder of the project.

The landscape was enhanced in three distinct areas: Oak Hammock, Longleaf Pine-Wiregrass Habitat, and Wet Area Plantings. The Oak Hammock areas are the dominant feature of the entire corridor. The Longleaf Pine-Wiregrass areas were developed with the intention that FDOT would allow for prescribed burns within the right-of-way. This is believed to be the first time that sections of a US highway have been designed with the intent of utilizing prescribed fire as part of routine maintenance. The Longleaf Pine-Wiregrass areas were designed in the first three of five phases. In spite of all the trials encountered, the team successfully created a sense of place by preserving the Oak Hammock and Longleaf Pine areas, and enhancing the wet areas with suitable plant communities. An ecologically-sound environment was created, recreated, and conserved at this gateway to Florida for visitors and residents to enjoy.

This project's preservation and conservation efforts seek to initiate a growth trend for the expansion and flourishing of the Longleaf Pine-Wiregrass ecosystem. This would help increase the population of numerous flora and fauna species and secure their existence for many years to come.

Preservation along the corridor was a major concern addressed in the concept plan because of the Oak Hammock and Longleaf Pine that exist within the medians and along the right-of-way. Leaving the Oak Hammock and Longleaf Pine as they were, exotic flora species were removed and replaced with native plants. These changes enhanced the corridor and opened up the views of the grand Live Oaks and Longleaf Pines. Preservation was also a concern in areas that are either dominantly or seasonally wet. Here again, native plants were used to replace any exotic species to improve water quality, to reduce erosion, and to beautify the corridor.



Inspired Conservation

In an invitation to the public to join and support Tall Timbers' efforts, Kate Ireland states, "*The Red Hills Region of Southwest Georgia and North Florida is a truly unique and special place. Designated as one of America's "Last Great Places", the Red Hills contains some of the finest remaining examples of old-growth longleaf pine forests and woodlands anywhere. This landscape is teeming with wildlife, majestic forests, and magnificent lakes and streams from which we all enjoy clean air and water.*" There is great importance in the preservation and conservation of the Longleaf Pine-Wiregrass forest to maintain the delicate ecological balance needed to sustain and protect the biodiversity of the various species that reside in it.

Frequent fire creates and sustains Longleaf Pine-Wiregrass habitat. The benefits of prescribed burning are: reduction of hazardous fuels, altering vegetative communities, improving wildlife and livestock habitats, controlling pest problems and tree diseases, restoring the maintained natural communities, reducing chances of destructive wild fires, perpetuating fire-adapted plants, cycling nutrients and opening scenic vistas.

Only with leadership provided by the Division of Forestry, Tall Timbers Research Station and Land Conservancy, and FDOT Midway Operations could the necessary research and planning be completed. Their time and talent helped determine the most effective and feasible alternatives to create a beautifully landscaped corridor that is both aesthetically pleasing for a sense of place, and ecologically friendly for a safe and balanced habitat for flora and fauna to flourish. The result was the creation of Longleaf Pine-Wiregrass areas along the corridor that can offset the impacts of a high speed high volume highway.

Project Contribution to Road Ecology Body of Knowledge

With the cooperation of State highway and forestry officials and Tall Timbers, prescribed burning was used for the first time ever on a US highway in Florida. As a State precedent, if not a national one, it is one from which both State highway officials and landscape architects alike can learn. For decades, transportation agencies have been well trained and equipped with mowers and herbicides. Now, when conditions are right, and resources are available, prescribed burning is a demonstrated safe alternative.

The Kate Ireland Parkway (U.S. 319) is an important, groundbreaking first step in the right direction of encouraging options and maintenance methods for preservation and conservation. The benefits of prescribed burning on some ecosystems and in the urban wildland interface is too important and valuable to ignore. Hopefully, in the future, prescribed burning will be used more frequently in areas where it is compatible with the surrounding natural landscape to achieve a safer and healthier environment.



Biographical Sketch:

Jeff Caster

Born in the Garden State

Celebrating 30 years of good fortune... to live in La Florida, land of flowers

Life long conservationist

Florida Registered Landscape Architect

Florida Department of Transportation, Since 1993

Present position: State Transportation Landscape Architect

Adjunct Assistant Professor of Landscape Architecture

Florida A&M University, School of Architecture

1997-2007

Member and Past President, Florida Chapter, American Society of Landscape Architects

Vice Chair, Florida Wildflower Advisory Council

BS, Community Development, Purdue University

BS, Landscape Design, Florida A&M University

Master of Landscape Architecture, Cornell University

References

Caster, Jeff
Prevention and Mitigation of Wildfires, It's Hot in Florida. 2000

Rodriguez, Rose
The Kate Ireland Parkway- Conservation in Practice 2006

McBurney, Willson
Farley, Patrica
Project Narrative, Kate Ireland Parkway, 2006

McGorty, Kevin
Green, Lane
Tall Timbers Website. www.ttrs.org