Southern Fire Exchange

Resources for Prescribed Fire and Natural Resource Management

David Godwin, Ph.D.
Program and Outreach Coordinator

March 2015
Southern Fire Exchange Lead Organizations and Team

Leadership:
Leda Kobziar, Ph.D. (UF) (Project PI)
Alan Long, Ph.D. (UF Emeritus) (Director)
Joe Roise, Ph.D. (NC State)
Kevin Robertson, Ph.D. (Tall Timbers)
Annie Hermansen-Baez (USFS InterfaceSouth)

Staff:
David Godwin, Ph.D. (UF) (Outreach Coordinator)
Annie Oxarart, M.S. (UF) (Tech Transfer Specialist)
Chet Buell (NC State) (IT Specialist)
Carol Kimball (Tall Timbers) (Librarian)
Southern Fire Exchange Mission

“Increase the availability and application of fire science information for natural resource management and to serve as a conduit for fire managers to share new research needs with the research community.”
SFE is one of 15 JFSP regional Fire Exchanges serving fire managers and science providers

SFE Started 2010

Goal: enhance fire science delivery and adoption
SFE Resources for Managers
Online Southern Fire Science Resource Center
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- News/events in Southern fire
- State info on rxfire / PFCs / permits
- Tools for rxfire planning
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- Regional events calendar
22 Free SFE Fact Sheets:
Fire Science Resources
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- Mechanical Treatments in Pine Flatwoods
- Ignition Devices Primer
- How to Use a Backing Fire
- Fuel Moisture Primer
- GPS Enabled Maps on a Mobile Device

Mechanical Treatments in Pine Flatwoods: A Temporary Rearrangement of Fuel Structure

Jesse Kruse, David Goedsch, and Leslie Lockcar

MECHANICAL FUEL TREATMENTS

Prescribed burning is a dominant forest management tool used across the southeastern U.S., yet burning is often limited due to successional, ecological, or economic factors. The use of mechanical methods as a fire surrogate or as a means to treat overgrown fuels prior to reintroducing fire has become increasingly used in the region, especially in the wildland-urban interface (WUI) and other areas with significant smoke concerns. Mechanical treatments can include thinning of the overstory, treating understory shrubs and small trees, or a combination of both. Understory treatments commonly used in the Southeast include “moving”, “unbalking”, “misting”, or “shifting” depending on the equipment used for shrubs and small trees. While different terms are used, each treatment is aimed at transforming fuel complexes or surface fuels to reduce fire behavior. Treatments are often employed as a stand-alone option in the WUI or are followed up with prescribed burning where possible. While specific treatment objectives may vary, reduction of potential fire behavior or attributes including flame length, rate of spread, and crown fire potential, are emphasized. Early suppression fire behavior factors are important to both follow-up prescribed burning and potential wildfire.

TREATMENT OF FUELS IN PINE FLATWOODS

Mowing is a common mechanical fuels treatment method, especially in long-needled pine flatwoods (e.g., > 30yr old rough) of the southeastern coastal plains, where understories are dominated by saw palmetto (Serenoa repens) and galloway (Lexiglossum) shrubs. Although understory shrubs in these stands can be very dense, mature longleaf pine (Pinus palustris) and slash pine (P.elliottii) in the overstory are often sufficiently open to facilitate moving without damage to mature trees. While shrubs are typically the target of moving in flatwoods, understory and midstory hardwoods may also be targeted in forests where they have gone without fire for longer durations.

Importantly, moving itself is not a “fuel reduction” treatment as it doesn’t actually reduce fuel loads, but rather alters the rearrangement fuel structure. During treatment, shrubs and small trees are stranded and spread across the forest floor creating a dense and shallow fuel bed (usually 2-4 inches deep, with the depth depending on the quantity of vegetation removed).

SUMMARY

Mechanical “moving” treatments can alter the structure and arrangement of understory and midstory fuels in pine flatwoods thereby decreasing post-treatment flame lengths and rates of fire spread. Shrubs, however, can quickly recover following treatment and reduce the longevity of this effectiveness. Surface fuels resulting from the moving of small trees and shrubs may present challenges given that long-duration combustion can occur in these compact fuels. The timing of subsequent mechanical or prescribed fire treatments may be very important for achieving management objectives.

Following treatment, fuel bed height is greatly reduced while fuel bed bulk density is substantially increased, both of which can influence fire behavior. Fast beds created from moving are much smaller diameter wood fuels composed of broken sticks from shrub stems or fractured (shredded) woody debris from large shrub or tree stems. Fine flatwoods, the bulk of the post-moving forest floor material is often composed of shredded saw palmetto foliar material. These fine flatwoods post-treatment fuel beds can be somewhat “fluffy” or arteried compared to moving debris generated in forests where woody shrubs at trees dominate the understory. Although the surface of such fuel beds may initially appear “fluffy”, the lower layers of mixed fuels remain relatively dense and may become more compact over time.

Although shrubs are converted to dense surface fuels by moving, they recover quickly following treatment in pine flatwoods. It is unclear how moving impacts shrub or tree regeneration from seeds, but palmettos, galloway and many other flatwoods shrub species grow vigorously after a disturbance. Where the rate of shrub regrowth exceeds that of decomposition of unburned surface fuels, total fuel loads may actually increase following moving treatments. Timing post-treatment application of prescribed fire or subsequent moving treatments may be critical to achieving management objectives.
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Wetlands

Longleaf Pine

Restoration
Questions?

Thank you!

David Godwin, Ph.D.
Program and Outreach Coordinator
Southern Fire Exchange
drg2814@ufl.edu