



# SOUTHERN Fire Exchange

Uniting Fire Science and Natural Resource Management



## FIRE LINES

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Learn more about our [Partners](#) and the  
JFSP Fire Science Exchange Network.

Visit the SFE Resource Center  
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## Snags and Prescribed Fire - Are They Related?

Snags are an important component of forests for many wildlife species and retaining some proportion of snags within the canopy may be a management objective. The relationship between snag creation (or consumption) and fire seems obvious for high intensity fires, but snag dynamics following prescribed fire are not well understood. Recent research addressed these dynamics in three different ecosystems across the South. What have they learned?

### Density of Large Snags in Shortleaf Pine Not Related to Number of Previous Burns

In a 2017 report in *Forest Science*, researchers from the US Forest Service and USFS Southern Research Station asked if there were notable differences in numbers of snags with repeated prescribed fires in shortleaf pine stands following thinning to reduce overstory density and remove midstory trees (Perry, R.; P.N. Jordan, V.L. McDaniel. 2017. Effects of Repeated Burning on Snag Abundance in Shortleaf Pine Woodlands. *Forest Science* 3(3):342-347. <https://doi.org/10.5849/FS-2016-096>). The authors looked specifically at mature stands that were thinned, and had undergone primarily midstory removal. After the thinning, stands were burned 1, 2, 3 or 4 to 6 times (six stands were in each of the four burn classes). The study design was a one-time sampling so it did not allow repeated monitoring over time to determine causes of mortality. The results demonstrated (see figure) that the density of large snags (>6" dbh) was not related to the number of previous burns. On the other hand, density of small snags (<6" dbh) decreased with more burns, probably due to the effects of burning, and the fact that there were fewer trees in that size class overall that could become snags, as many of the smaller trees were cut during the midstory removal.

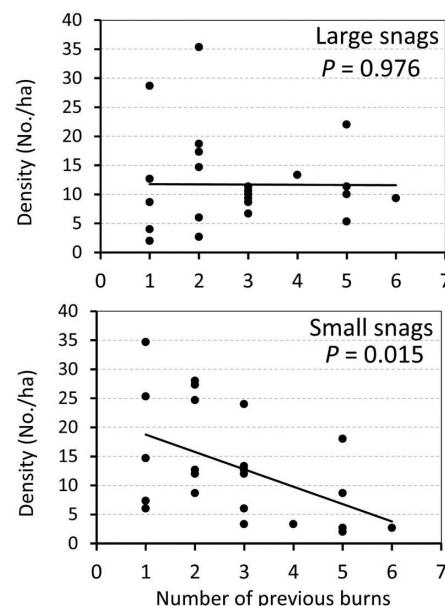


Figure reproduced from *For. Sci.* 63(3):345.

### Burn Prescription Intervals & Seasonality did not Alter Snag Dynamics in South Florida Slash Pine

On the Big Cypress National Preserve in South Florida, research funded by the Joint Fire Science Program (JFSP) took a different approach, and looked at the effects of season of burn and fire return interval on snag dynamics (Lloyd, J.D., G.L. Slater, and J.R. Snyder. 2012. The role of fire-return interval and season of burn in snag dynamics in a south Florida slash pine forest. *Fire Ecology* 8(3): 18-31. doi: 10.4996/fireecology.0803018). Twelve stands of mature slash pine were burned twice before the research began, then 4 times at 3-year intervals or twice at 6-year intervals. Three stands in each interval were burned in the dry seasons (November to April) and three were burned in the wet seasons (May to October). All trees and snags were tagged at the beginning of the study and remeasured 12 to 13 years after the first treatment burn.

Although considerable variation in snag density existed among plots (vertical gray bar in figure), the average number of total snags in each treatment was almost identical (see figure, next page) and included an average increase of 4 snags/acre across all four-burn season and fire interval treatment combinations. In other words, there was no evidence that either of these burn regime variables significantly influence snag formation differentially under normal conditions.

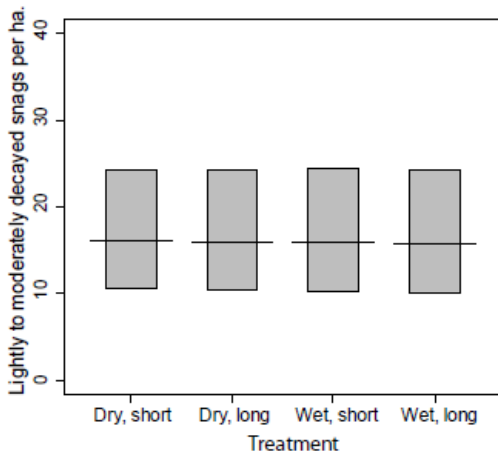
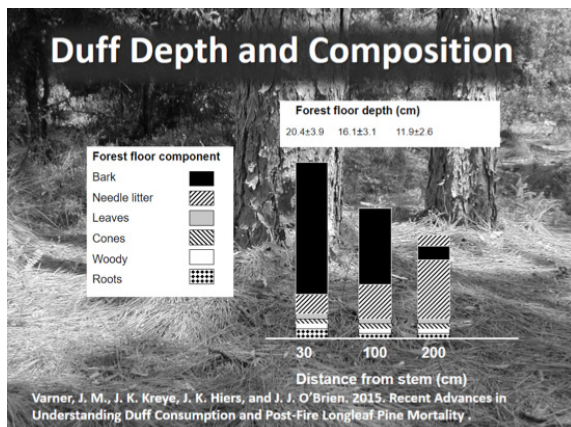


Figure reproduced from *Fire Ecology* 8(3):27

Despite the general conclusion in both studies that normal burn prescriptions did not significantly alter snag dynamics, all authors pointed out that the variables they tested (number of fires, burn season, burn interval) may not by themselves be important predictors of snag dynamics. Rather, factors such as fire intensity, water-table depth or duff moisture, and long intervals without fire, may be far more important in determining prescribed fire effects on snag formation. Which brings us to the third ecosystem.

### Duff Consumption Patterns in Long-unburned Longleaf Pine Stands Related to Snag Formation

Over the last 15-20 years JFSP has funded studies focused on understanding why mortality of large old longleaf is often high in long unburned stands, even after the reintroduction of low-intensity prescribed fires. A paper presented at the 2015 Biennial Southern Silvicultural Research Conference summarized the current understanding of fire-related mortality in these mature stands (Varner, J. M., J. K. Kreye, J. K. Hiers, and J. J. O'Brien. Recent Advances in Understanding Duff Consumption and Post-Fire Longleaf Pine Mortality in Schweitzer, C. J.; Clatterbuck, W. K.; Oswalt, C. M., eds. 2016. Proceedings of the 18th biennial southern silvicultural research conference. e-Gen. Tech. Rep. SRS-212. Asheville, NC: U.S.D.A. Forest Service, Southern Research Station. 614 p.).



Snag formation in these long-unburned longleaf pine stands appears to be closely related to consumption of the thick layer of duff around the base of old, large trees, especially when duff moisture is completely or partially below levels at which smoldering occurs. Smoldering and consumption can kill fine roots within the duff as well as send heat pulses into underlying soil where more roots may be killed or damaged. Root damage impacts carbohydrates, sap flow and leaf

chlorophyll above ground, eventually leading to tree mortality. Not only is duff generally thicker around the stem, it is also often drier than away from the stem, and contains surface or embedded pine cones and woody material that can help ignite the duff because of their slow smoldering.

The authors conclude that "Operational prescribed burns in long-unburned sites should focus efforts on balancing duff consumption with the need to retain overstory longleaf pines." Burning when duff is moist, especially at lower levels, is key to avoiding the formation of too many snags.

### UPCOMING EVENTS

Visit the [SFE Calendar](#) to learn more about upcoming events. To add an event to our calendar, [email us](#) the information.

#### Workshops and Conferences

[Society of American Foresters' National Convention](#)

November 15-18, 2017  
Albuquerque, NM

[2017 AFE International Fire Congress](#)

November 28- December 2, 2017  
Orlando, FL

[Wildland Urban Interface Conference](#)

Feb. 27-Mar. 1, 2018  
Reno, NV

#### Webinars

[Stand dynamics During Transition from Pine Plantations to Mixedwoods using Thinning & Prescribed Burning Prescriptions](#)

Nov. 14, 2017  
12:00 pm ET

### NEWS AND REMINDERS

[Learn More about the Joint Fire Science Program \(JFSP\)](#)

The JFSP provides funding for scientific studies associated with managing wildland fuels, fires, and fire-impacted ecosystems to respond to emerging needs of policymakers, managers, and practitioners.



The Southern Fire Exchange is funded through the Joint Fire Science Program, in agreement with the United States Forest Service, Southern Research Station. This institution is an equal opportunity provider.

## Do You Have Ideas About How to Make Wildland Firefighting Safer?

Help guide the development of "Everyone Goes Home- Wildfire," a program of the National Fallen Firefighters Foundation. The foundation is soliciting input for this national collaborative effort that is focused towards creation of a "safety culture" and promotion of greater understanding of health and safety practices relevant to all wildland firefighters and fire professionals at all levels. Resources from this effort will be available at no or low cost to firefighters, and will also be available for use by individuals or scalable for different-sized organizations. Share your thoughts on making wildland firefighting safer [here](#).

**SAFETY**



## Scientists and Managers Learn about Duff Fire Management at Recent SFE Workshop

A SFE fire science and management workshop held in October at the FSU Coastal and Marine Lab in north Florida assembled over 30 scientists and managers to learn about the latest research findings and management practices related to duff fire management in upland ecosystems. Keynote speakers Dr. Morgan Varner (U.S. Forest Service), Kevin Hiers (Tall Timbers Research Station) and Bryn Pipes (Georgia Department of Natural Resources) gave engaging presentations that summarized decades of research and management experience. Dr. Varner (based in Seattle), presented a summary of his ongoing research in duff management that has been supported by JFSP and began during his graduate work nearly 20 years ago at the University of Florida. Workshop participants spent the afternoon in a nearby long-unburned longleaf pine stand to test out a moisture meter, examine duff loads, learn about fine roots, and discuss management options for the interesting tract. Workshop partners included organizations listed above as well as the Joint Fire Science Program, and the Apalachicola Regional Stewardship Alliance. Look for the workshop presentations on the SFE YouTube channel soon.

*Picture captions: (top) Participants at the workshop had the opportunity to test out a Delmhorst moisture meter in a site with heavy duff accumulation. (bottom) Kevin Hiers talks about management options for stands with heavy duff accumulation.*



### Check out the October Driptorch Digest!

An email newsletter from the Southeast Regional Partnership for Planning & Sustainability (SERPPAS). Subscribe for news & information about RX fire in the South.

## Threats From Forest Pests and Wildland Fire- In Top 7 Forest Sector Challenges in Recent Report on Forestry and Forest Products

The *Blue Ribbon Commission on Forest and Forest Products Research and Development in the U.S. in the 21st Century* (BRC) recently released a report summarizing challenges, opportunities and recommendations. The **report**, which was developed by the U.S. Endowment for Forestry and Communities, listed threats from forest pests and wildland fire as one of the top seven forest sector challenges amongst a list which ranged from market challenges to land conversion and loss of skilled labor, etc. Recommendations from this report focused on collaboration across all forestry related organizations, but also included boosting research and development through enhanced funding, public-private partnerships as well as efforts to retain knowledgeable scientists and practitioners. The report was written for three audiences: leaders and policy makers, federal land management agency leaders as well as private sector and innovation stakeholders. Some ideas included creating a “national” R&D plan across federal agencies, along with forest sector input that avoids duplication and includes a clear goal for the future. They also suggested a new model, where federal scientists serve more as team leaders to engage private sector, university, and federal researchers to facilitate development of needed solutions. Implementation of the recommendations from this commission would impact how fire research and management might be conducted in the future.

## New JFSP Fact Sheet highlights fuel treatment research results

The Joint Fire Science Program (JFSP) initiated a new series of fact sheets recently ([https://www.firescience.gov/JFSP\\_publications.cfm](https://www.firescience.gov/JFSP_publications.cfm)). The first two explain the roles of JFSP and the Fire Science Exchange Network in creating and connecting science to improve fire management in the U.S. The Fire Science Exchange Network, which includes the Southern Fire Exchange, brings fire managers, practitioners, and scientists together to address regional fire management needs and challenges. The third fact sheet, just released, synthesizes key findings from over 100 studies on The Science of Fuel Treatments ([https://www.firescience.gov/documents/Fact\\_Sheets/FuelTreatment\\_Fact\\_Sheet.pdf](https://www.firescience.gov/documents/Fact_Sheets/FuelTreatment_Fact_Sheet.pdf)).

Two findings specific to the Southeast:

1. Prescribed fire reduces the likelihood of ignitions that result in wildfires and/or reduces the intensity or amount of area affected.
2. Application of fuel treatments to a portion of a landscape can reduce the likelihood of wildfires spreading across a broad area.

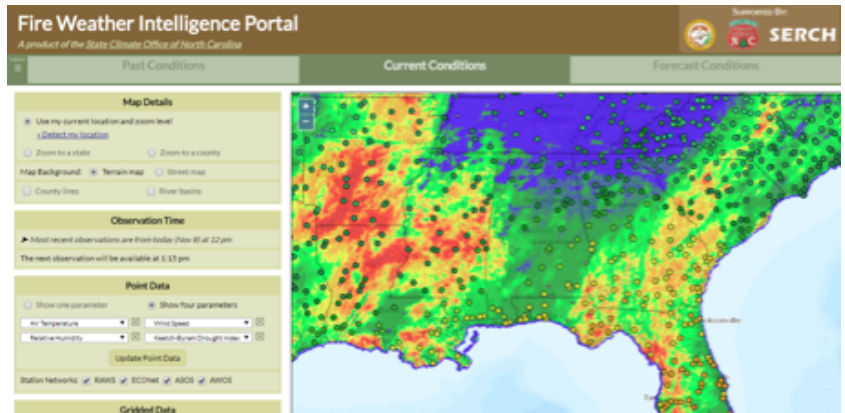
### SHARE YOUR SUCCESSES!

Managers, researchers and scientists, we need your help. Please share your experience in successfully using or adapting research-based fire information, tools and models in your fire and land management programs. Success stories that include Southern Fire Exchange and JFSP contributions are especially nice, but information about applications of other research is equally valuable. It's easy! Just send us a quick email at [contactus@southernfireexchange.org](mailto:contactus@southernfireexchange.org).

STORIES WANTED!  
**WE NEED  
YOUR HELP**

## Updated Fire Weather Intelligence Portal

The Fire Weather Intelligence Portal was designed as a “one-stop shop” for wildland fire decision-making and provides a format for coalescing and assessing critical fire weather information. It is a web-based monitoring tool that was originally developed to show past, current, and forecast weather and fire risk information across North Carolina and has now been expanded to cover 13 states! The web-based tool uses location, observation time, weather parameters (point data) and gridded data to help you estimate current weather conditions. Gridded data refers to different datasets such as radar imagery, lightning strike density, percent of normal precipitation, Keech-Byram drought index, air temperature analysis and more. Informational packages for this tool have been updated and contain critical fire weather and fire danger information that is available at all times. This information can assist prescribed burners and wildfire suppression personnel in assessing weather, burning and smoke dispersion conditions. This portal was developed by the North Carolina State Climate Office and the North Carolina Forest Service with funding provided by the US Forest Service. The portal was described in a SFE Webinar on November 8, 2017 and will be available for viewing on SFE’s webinar archive page in the near future. Learn more and access the portal here: <http://climate.ncsu.edu/fwip/>.



*Submit your Abstract for Presentations and Special Sessions*

### 2nd Annual National Cohesive Wildland Fire Management Strategy Workshop

March 26-29, 2018 - Reno, NV

**Deadline for sessions/presentations: Nov. 20, 2017**

This workshop is co-hosted by the International Association of Wildland Fire, the Wildland Fire Leadership Council (WFLC) and the Western, SE and NE Regions of the Cohesive Strategy.

### The Fire Continuum Conference

May 21-24, 2018 - Missoula, MT

**Deadline for Presentations: Feb. 6, 2018**

The Association for Fire Ecology and the International Association of Wildland fire are partnering to organize a conference that focuses on the “continuum” from science and management activities.

JOIN US IN  
ORLANDO



### 7th International Fire Ecology and Management Congress

November 28-December 2, 2017

Orlando, Florida

[afefirecongress.org](http://afefirecongress.org)



### FireVision 20/20: A 20 Year Reflection and Look into the Future

Presentations • Posters • Workshops • Field Trips • Round Tables



## Fire on the Land: A Retrospective Anthology of Selected Papers from the Archives of the Society of American Foresters.

Fire on the Land explores fire ecology, policy and application of how fire intersects with forest management. The book is a collection of journal articles from Society of American Foresters’ peer-reviewed scientific journals. Each section is led by an introduction which synthesizes the science and links the history of the particular scientific papers to current practices and what’s to come in fire science and forestry. This book is essentially a “history” book of fire and forest management, which provides important information about how things were done in the past and how those past decisions affect current and future management. Find the book [here](#).

## Fire Management Today Special Issue: Weather, Smoke and Fire Science

A recent 2017 special issue of Fire Management Today from the US Forest Service includes great information on weather effects on smoke and wildland fire from smoke plumes, convection and downbursts to air flows and critical fire weather patterns, new weather models and more. Access the issue [here](#).

## Submissions needed for Journal Forests (MDPI) special Issue “Wildland Fire, Forest Dynamics, and Their Interactions”

Do you have a research article, review article or short communication for studies that evaluate factors and stressors that influence fire characteristics as well as extreme weather events, insect-induced mortality, human ignitions and more. Submit your article here by November 30, 2017.

