

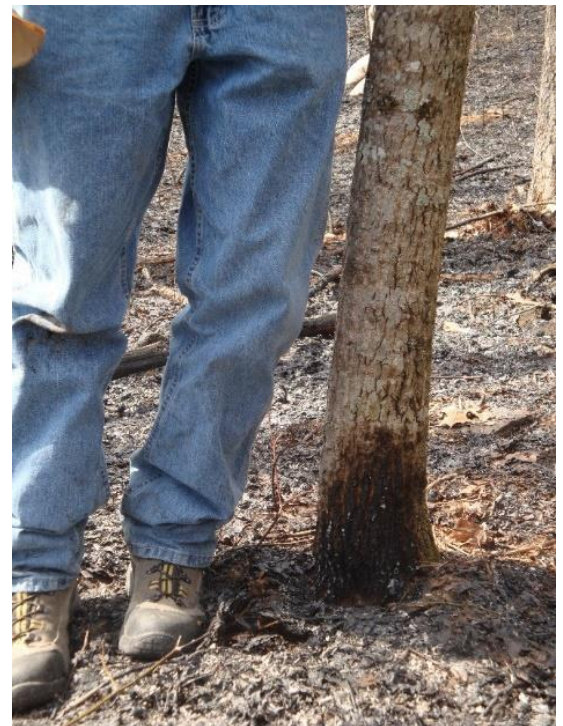


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## National Park Service Fire Monitoring Plots are used to Better Understand Hardwood Stem Mortality after Prescribed Fire

A new research article looks at how well tree diameter (DBH) and fire intensity, estimated by the height of bark char, can predict stem mortality in eastern hardwoods. The data for this study were collected on 210 fire monitoring plots before and after single prescribed fires. The plots were in 13 different National Park Service (NPS) lands, stretching across the southern Central Hardwoods from Shenandoah National Park, VA in the east to Pea Ridge National Military Park, AR, in the west. For more than 4,000 trees of 10 different species, DBH was measured before prescribed fire, the height of bark char was measured immediately after the fire, and then 2 years post-burn field crews recorded whether the tree stem was alive or dead, regardless of whether it re-sprouted. The most abundant species in the study were chestnut oak, white oak, red maple, scarlet oak, and black oak; another common Appalachian species, blackgum was also well-represented.



More than 80% of the prescribed fires were conducted in the winter and spring dormant season and into to the early spring growing season, January through April. Overall, fires were low to moderate intensity, as bark char height was most often 0 to 1.5 feet. Bark chars >3' height also occurred but were not common.



Across all diameters, white oak and chestnut oak had the lowest percentage of stem death, both less than 10%. Species considered fire-sensitive, such as red maple and blackgum had higher stem mortality (20-30%). However, size differences between species were important: most of the stem death in red maple and blackgum occurred in trees <4" DBH, but there were relatively few white or chestnut oaks <4" DBH. Mortality of red maple and blackgum stems >10" DBH was extremely low – similar to the oaks.

For all species, DBH and bark char height together were excellent predictors of stem mortality in the statistical models: stem death became more probable as stems became smaller and bark char height increased. The authors conclude by noting that this wide-ranging study of stem mortality in eastern hardwoods could be used to improve on the FOFEM (First Order Fire Effects Model) computer program, which predicts tree mortality after fire, but has not been well calibrated for eastern tree species.

The lead author, Dr. Tara Keyser, is a Research Forester with the USDA Forest Service, Southern Research Station, Asheville, NC. Dr. Keyser is also a member of CAFMS' Governing Board.

[Keyser, T.L., McDaniel, V.L., Klein, R.N., Drees, D.G., Burton, J.A. and Forder, M.M., 2018. Short-term stem mortality of 10 deciduous broadleaved species following prescribed burning in upland forests of the Southern US. \*International Journal of Wildland Fire\*, 27\(1\), pp.42-51.](#)

# Webinar April 24<sup>th</sup> at 10:00AM EDT: Controlled Burning and Short-term Stem Mortality in the Southern US

Join us for a webinar from Dr. Tara Keyser with the USDA Forest Service Southern Research Station. She will present the background, methods, and findings from her popular *paper Short-term stem mortality of 10 deciduous broad-leaved species following prescribed burning in upland forests of the Southern US* (see summary above). A question and answer period will follow. No pre-registration is required.

<https://connect.clemson.edu/keyserwebinar/>

Link to the article is in the previous article above!



## Ever Wonder How the Fire is Behaving Inside your Burn Unit?



Nicholas Peters, Engine Captain, from the Blue Ridge District of the Chattahoochee NF had been wondering the same thing when we decided to partner with him to expand an ongoing project that he started in 2016. As acting FMO on the Chattooga River District this spring he oversaw the Big Ridge prescribed burn where we placed a Reconyx wildlife camera inside the burn unit to see if fire would trigger the camera to capture fire behavior.



After the fire we discovered that our camera had survived but with damage to the lens. We were able to retrieve all of the photos from the camera and put together a short video of the event. This camera overlooks a seasonality of burn research plot and will continue photographing the re-growth of the area for years to come. Check out the video here:

<http://www.appalachianfire.org/social-media-resources/2018/4/18/video-inside-view-of-a-controlled-burn>





## The Fire Learning Trail – Table Rock State Park, Pickens, SC

There's another Fire Learning Trail in Appalachians this time at Table Rock State Park. During the wildfires of 2016 Table Rock State Park was the site of the Pinnacle Fire. This fire burned over 10,000 acres making it the largest wildfire in the mountains of SC. We now have signs installed and downloadable podcasts to go along with them. If you would like to listen to the podcasts you can download them from iTunes or visit: <http://www.appalachianfire.org/thefirelearningtrail/>

Check out Chapter 6: Fire on the Mountain and Chapter 7: Goodfire on the Ground to hear about the Pinnacle Fire and plans for controlled burns in the future.

# Don't Miss the BehavePlus Update



The BehavePlus version 6 Beta was released on February 7, 2018. This version includes improved estimates of both flanking fire behavior and probability of containment. New features include calculations of crown fire behavior using the method by Scott and Reinhardt (2005), spotting distance from active crown fire, and probability of mortality for longleaf pine.

For more information visit:

<https://www.firelab.org/project/behaveplus>



Have you heard the good news? CAFMS has received 2 more years of funding from the Joint Fire Science Program. We are now funded through September 30, 2020. We would like to thank our members for the many ways you contribute to our work. Without you all we wouldn't be successful.

SAVE THE DATE  
Oct. 29 - Nov. 9

*Southern*  
**BLUE RIDGE TREX**  
2018

Mark your calendar for the first Prescribed Fire Training Exchange in the Appalachians with planned aerial ignition! Gather with fire professionals from across the country to share expertise in prescribed fire management. Details and registration information will be announced soon.

#SBRTrex

**Communicate With Us!**



Find us on twitter @APfirescience or find us on Facebook by searching Consortium of Appalachian Fire Managers and Scientists.

**Join CAFMS:**

The consortium is for all land managers and researchers in the region who deal with any aspect of fire. To join, simply provide us with some contact information at the web site listed below.

[www.appalachianfire.org](http://www.appalachianfire.org)

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