Consortium of Appalachian Fire Managers and Scientists
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The Contribution of Duff Consumption to Fire Emissions and Air Pollution of the Rough Ridge Fire

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In a paper just published in *International Journal of Wildland Fires*, Fengjun Zhao, Scott Goodrick, and Benjamin Hornsby from the Center for Forest Disturbance Science of USFS Southern Research Station and Jeffrey Schardt from the Chattahoochee-Oconee National Forests of USFS Region 8 report an important feature of the 2016 southern Appalachian wildfires. They found that duff burning was a major source of the pollutant emissions and air quality impacts of the Rough Ridge Fire (RRF). The RRF burned 27,868 acres in the Cohutta Wilderness, Georgia, from mid-October to late November 2016.

Forest duff is composed of decomposing organic materials that are typically unavailable for wildfires to consume due to its high moisture content in the southeastern Appalachian Mountains. However, duff was burned substantially during the RRF under the persistent drought conditions. The researchers measured fuel types and loading at the RRF site, calculated fuel consumption and fire emissions, and simulated smoke and the air quality impacts.

Key findings

Deep duff layer The measured fuels had a very deep duff layer that had accumulated over decades due to the lack of historical fires. Duff accounted for nearly half of the total fuel loading. Most of the duff layer was burned by the RRF.

Large fire emission The burning of this deep duff layer contributed substantially to the increased fire emissions at the fire site. The $PM_{2.5}$ emissions from the measured fuel loading and consumption were more than twice of those calculated based on the Fuel Characteristic Classification System (FCCS) fuel loading and consumption.

Duff layers measured in unburned areas (Sites 1 and 3) and burned areas (Sites 2 and 4)

Air pollution The large fire emissions estimated based on the measured fuel consumption proliferated the air pollution episodes in metro Atlanta. In contrast, smoke simulations using the emissions based on the FCCS fuel consumption and a hypothetical normal-moisture scenario did not produce the air pollution episodes. This highlights the contribution of the duff burning under drought to the air pollution episode within Atlanta.

Implications The findings suggest that the better quantification of the duff layer in areas such as the southern Appalachians could lead to greatly improved air quality predictions. In addition, prescribed fire can consume the litter layer and therefore prevent it from decomposing to form a deep duff layer. On the Cohutta Wilderness lands where the current fire management plan does not specifically allow prescribed fire due to its wildlife impacts, the application of prescribed fire to reduce duff accumulation and prevent air pollution of future wildfires should be explored. To read the full article click here:

The contribution of duff consumption to fire emissions and air pollution of the Rough Ridge Fire

Save the Date

Another TREX event is coming to the Southern Blue Ridge!

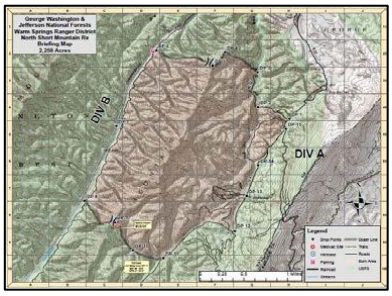
When: October 26-November 6, 2020

Where: Table Rock Wesleyan Camp and Retreat Center, Pickens SC

Registration will open in May of 2020

Congratulations to Tom Waldrop – The 2018 recipient of the Herbert Stoddard Lifetime Achievement Award

Herbert Stoddard Award: Dr. Thomas Waldrop
Significant Contribution to Fire Ecology and Management in the Eastern United States
Dr. Waldrop retired from the US Forest Service as Supervisory Research Forester and Team Leader for Fire Science at the Center for Forest Disturbance Science, Southern Research Station in Clemson, South Carolina. He earned Bachelor's and Master's degrees in Forest Management at Clemson University and a Ph.D. in Forest Ecology at the University of Tennessee. His research focused on fire ecology and fire technology in the southern Appalachian Mountains. Throughout his career, Tom worked tirelessly to share research results by authoring over 260 publications, presenting numerous talks and tours, and serving as chair of many professional and technical meetings. He served as an associate editor for fire research for the Journal of Forestry for several years. Tom was recognized by the JFSP as their most prolific scientist in 2004 and by the US Forest Service with their Distinguished Scientist Award in 2011. Tom actively participated in many professional organizations, advised over 50 graduate students, and led the Consortium of Appalachian Fire Managers and Scientists (CAFMS) until his retirement.



BURNING BIG!

Large Burn Implementation in the Central Appalachians

DATE: FEBRUARY 4-5, 2020

Heart of the Appalachians Fire Learning Network is hosting a multi-disciplinary workshop focused on tackling the challenges of increasing prescribed burn size. Join us for a lively discussion, skill building and sim table exercises. There is no admission fee. Please register at https://forms.gle/riGjvwk5DBBzEYEN6

Workshop Topics:

Burn Unit Design

Aviation Best Practices

Firing Techniques

Smoke Management

Science & Adaptive Management

LOCATION:
FRONTIER CULTURE MUSUEM
1290 Richmond Ave
Staunton, VA 24401

For More Information Call:
Nikole Simmons
(540) 839-3599

Click Here to Register for Big Burn Workshop:
https://forms.gle/riGjvwk5DBBzEYEN6

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.

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