



September 15, 2016

Volume 6 Issue 2

# Bat Activity in Response to Thinning and Burning in the Appalachians

With the sharp decline in cave-hibernating bats as the result of White-nose Syndrome (WNS), there is great interest in learning about how bats respond to forest management activities, including prescribed fire. Two new papers focus on bats in Appalachian oak forests managed with thinning and prescribed fire. Both studies monitored bat activity with bat detectors that record echolocation calls.

In the Allegheny Plateau of southern Ohio (Zaleski and Richland Furnace State Forests), Silvis and others (2016) monitored bat activity in three types of stands: untreated controls, shelterwood harvest (50% and 70% retention), and shelterwood harvest with fire. The most common species detected were eastern red bats and big brown bats, followed by the *Myotis* plus tri-colored bat species group that are being heavily impacted by WNS. Similar to other studies in a variety of forest types, the authors found that total bat activity was significantly greater in the more open-structured, less “cluttered” stands that had received a shelterwood harvest – this included the eastern red bat, big brown bat, and the *Myotis*/tri-colored group. In shelterwood stands that were cut more heavily (50% retention) and burned, the activity of eastern red bats was reduced in the summer after the prescribed fire was conducted. The authors speculated that a reduction in moth abundance may have limited red bat activity. However, across all treatments, bat activity was greater in the partially harvested stands (with or without fire) than in the untreated control stands.



Silvis, A., Gehrt, S.D. and Williams, R.A., 2016. Effects of shelterwood harvest and prescribed fire in upland Appalachian hardwood forests on bat activity. *Forest Ecology and Management*, 360, pp.205-212.

<http://www.appalachianfire.org/top-30-1/2016/9/8/effects-of-shelterwood-harvest-and-prescribed-fire-in-upland-appalachian-hardwood-forests-on-bat-activity?rq=silvis>

Cox, M.R., Willcox, E.V., Keyser, P.D. and Vander Yacht, A.L., 2016. Bat response to prescribed fire and overstory thinning in hardwood forest on the Cumberland Plateau, Tennessee. *Forest Ecology and Management*, 359, pp.221-231.

<http://www.appalachianfire.org/top-30-1/2016/9/8/bat-response-to-prescribed-fire-and-overstory-thinning-in-hardwood-forest-on-the-cumberland-plateau-tennessee?rq=cox>

Bats continued:

Further south, in the Cumberland Plateau of eastern Tennessee (Catoosa Wildlife Management Area), Cox and others (2016) studied bat activity and insect abundance after woodland restoration treatments that employed thinning and prescribed fire. Their study took place in shortleaf pine-oak stands that had been heavily impacted by a pine bark beetle outbreak in 1999-2000, which eliminated much of the shortleaf. They compared bat activity and insect abundance in unburned control stands (90 ft<sup>2</sup> of BA per acre) with that in stands that were thinned to 60 or 30 ft<sup>2</sup> of BA and then burned. Groups that included the big brown bat and the eastern red bat were the most commonly detected, and tri-colored bats were also fairly common. Similar to the Ohio study, they found that stands that were thinned, and in this case all thinned stands were burned, had the greatest levels of bat activity, particularly the stands that were thinned down to 30 ft<sup>2</sup> BA. Insect numbers did not differ across treatments, so the authors concluded that thinning and burning did not have a significant impact on prey abundance. Further analyses showed that the increased bat activity was largely the result of reduced “clutter” after thinning and burning.

Although the Ohio study showed a decrease in eastern red bat activity immediately after the prescribed fire, taken together, the two studies found that bat activity was substantially greater in open stands than in closed stands. While these studies suggest that prescribed fire may not be necessary to increase bat activity in the short-term, which thinning alone can accomplish, fire is an effective tool to maintain the open structure that supports increased bat activity and fire also favors oak regeneration.

## BehavePlus Workshops

This free, two-day workshop is designed for those with some familiarity using BehavePlus. Interactive, hands-on exercises will introduce the BehavePlus program, demonstrate the various modules and features, and allow you to explore the program's fire modeling capability as we develop elements of sample prescribed burn plans for southern ecosystems. Time will be allowed throughout the workshop for questions regarding the use of BehavePlus in fire behavior modeling.

The workshop is open to ALL agency (federal, state, and local) and NGO fire practitioners. Participants from universities will be accepted as space allows.

The workshop will be offered at five locations.

Oct. 13-14 Ochopee, FL

Oct. 17-18 Niceville, FL

Oct. 20-21 Gainesville, GA

Oct. 24-25 North Little Rock, AR

Oct. 27-28 Pearl, MS

**Registration Deadline is September 30, 2016**



Register Here: <http://www.appalachianfire.org/events-webinars-1/2016/10/13/behaveplus-workshop-ochopee-fl>

## Upcoming Webinar

Regeneration Response to Repeated Prescribed Burning in Appalachian Hardwood Forests -  
Dr. Tara Keyser, US Forest Service Southern Research Station

October 18<sup>th</sup> 2:00pm-3:00pm eastern

More information at: <http://www.appalachianfire.org/upcoming-events-webinars/>

## Bridging the Gap: Managing the Ecological Needs and Social Perceptions of Fire in the Central Appalachians

November 2-3, 2016 – Wintergreen Resort,  
Wintergreen, Virginia

Join your FLN colleagues from Virginia, West Virginia, Pennsylvania, Maryland and Kentucky amongst the prime fall foliage of the Blue Ridge Mountains for the Central Appalachian Fire Learning Network annual partnership workshop.

November 2: workshop – 9:00am - 5:00pm

November 3: field tour – 9:00am – 3:00pm

For detailed information and registration instructions visit:

<https://www.conservationgateway.org/ConservationPractices/FireLandscapes/FireLearningNetwork/RegionalNetworks/Pages/CentralApps-Workshop.aspx>



# Joint Fire Science Research Topics for 2017 – A Sneak Peek



## FON 1- Primary

- Landscape fuel treatment as a fire management strategy
- Effects of wildfire as a treatment
- Post-fire recovery
- Fire effects on herbaceous species, shrubs, and seed banks
- Validating mesoscale, atmospheric boundary prediction models and tools
- Factors that affect the co-management of fire “risk”

## FON 2 - Graduate Research Innovation (GRIN) Award

In partnership with the Association for Fire Ecology, we will likely continue the Graduate Research Innovation (GRIN) program for **current MS and PhD. students** in the fields of wildland fire and related disciplines.

## FON 3 - Fire and Smoke Model Evaluation Experiment (FASMEE)

In partnership with the DOD Environmental Security Technology Certification Program (ESTCP), previously initiated planning for the [Fire and Smoke Model Evaluation Experiment](#) (FASMEE; Phase 1). It is anticipated that the JFSP fall 2016 FON will include an open solicitation for proposals to participate in Phase 2—data collection, data archival, and initial model evaluation—of FASMEE. In brief, this experiment is being designed as a large-scale field campaign to:

- Develop and apply relevant measurement/data collection techniques at different spatial and temporal scales;
- Provide resultant critical observational data necessary to evaluate and advance operationally used and next generation fire and smoke modeling systems; and
- Provide data to support the underlying scientific basis for fire and smoke models.

[See full notice for details.](#)

## Communicate With Us!

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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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