

U.S. Forest Service R&D Newsletter - May 2018

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U.S. Forest Service

Research and Development

Monthly News and Highlights from the World Leader in Forestry Research

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## FEATURED NEWS

### [American Pikas Tolerate Temperature Changes Better than Expected](#)

Previous studies suggest that pikas could not survive temperature extremes and risk running out of mountaintop habitat as temperatures rise. But USDA Forest Service [research](#) found that pikas inhabit wetter, colder, warmer, and drier conditions than previously described.



## URBAN FORESTRY

### [Scientific American: U.S. Cities Lose Tree Cover Just When They Need it Most](#)

A *Scientific American* [article](#) on urbanization showcased Forest Service research that found declining tree cover in cities. This decline involves a loss of about 36 million trees nationwide and \$96 million in associated benefits in metropolitan areas each year.



## SOCIAL JUSTICE

### Reducing Urban Gun Violence

Forest Service [research](#) shows that firearm assault frequency dropped after abandoned buildings and vacant lots were improved. The research also suggests that tree cover reduces the likelihood of assault and that neighborhood improvements cost less than gun-related crimes cost communities.



## FIRE AND WATER

### Fire Impacts Freshwater Resources

A recent Forest Service [study](#) examined how wildland fires, including megafires, and prescribed burns, affect river flow. The research found that large wildfires increase river flow across the U.S., and the effect can last for years. The consequences of increased water flow can be either positive or negative.



## BIOLOGY

### Bats Go Quiet During Fall Mating Season

Forest Service [research](#) shows hoary bats, the most widespread bat species in North America, sometimes fly with little or no echolocation--the emission of high-frequency sounds to detect objects. This challenges the long-standing assumption that bats always navigate nocturnally using echolocation. The research also might help explain why thousands of bats are killed each year by wind turbines. Scientists believe reduced echolocation may be a mating-related behavior.

Determining the situations in which hoary bats and other species reduce echolocation may help inform practices for monitoring bats at wind energy facilities and protecting them from collisions with turbines.



## CONSERVATION

### Sex in the Sagebrush: Protecting Greater Sage-Grouse Mating Areas

Sagebrush ecosystems are among the largest and most threatened ecosystems in North America. Habitat loss has decreased populations of the greater sage-grouse, but Forest Service research may help protect their mating sites. The [research](#) suggests that genetic analysis of DNA from the birds' feathers can be used to identify and map locations where they mate, which will help land managers identify high-priority sites to preserve.

To learn more about the Forest Service's work with sage-grouse conservation and to watch the sage-grouse's unique strut display, check out this [video](#).



## CONSERVATION

### Saving the Torreyia Tree

Forest Service scientists attended the [Torreyia Tree of Life Workshop](#) to discuss restoration strategies for the Florida torreyia, a tree in danger of extinction from a fungal disease. Participants made plans to collect torreyia samples and conduct trials to identify which genotypes are resistant to the fungus.



## TREE MORTALITY

### Predictor Map Forecasts Lower Tree Mortality in 2018

The Forest Service helped create a [map](#) of the projected trees likely to suffer from beetle- or drought-related mortality this year. From three to 26 million trees are projected to die in 2018 from drought or beetles, down from 27 million in 2017 and a peak of 62 million in 2016.



## INVASIVE SPECIES

### Preparing the Great Plains for Invasive Pests

Forest Service scientists and state forestry agencies conducted the Great Plains Tree and Forest Invasives Initiative (GPI) to evaluate how trees function as agricultural windbreaks. The [initiative](#), which is intended to help natural resource professionals prepare for invasive species, found many trees aging and in poor to fair condition. This suggests they are vulnerable to invasive species like the emerald ash borer.



## AIR QUALITY

### Of Moss and Men: Using Moss as a Bioindicator of Toxic Heavy Metals

A Forest Service [study](#) using moss collected from urban trees to develop fine-scale maps of air pollution in Portland, Oregon shows that moss can be used as an inexpensive screening tool to help cities quickly identify where to place pollution monitoring equipment. It would have cost more than \$17 million to use instruments at the same spatial resolution as the moss sampling in Portland.

The Oregon Department of Environmental Quality is phasing in the use of moss in its monitoring, and other cities are also interested in doing so. The study has had further implications for human health and policy.



## CULTURE

### Tribal Members Trained to Locate Culturally Valuable Sites

In January, the Forest Service hosted a [program](#) to train tribal members to work as specialized crews that identify and record culturally valuable places. The crews use both traditional knowledge and modern archaeological techniques.



## SCIENCE EDUCATION

### Whiteboard Videos Teach the Value and Diversity of Forests

The North American Forest Partnership (NAFP) released two whiteboard [videos](#): one outlining the ways forests [make our lives better](#) and another celebrating forest [diversity](#).



## WILDFIRE ADAPTATION

### Video Series Paves a Path for Community Wildfire Adaptation

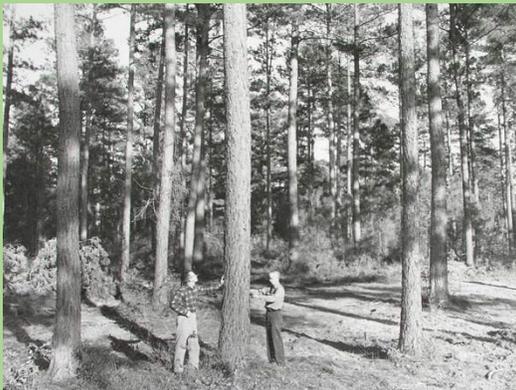
The Wildfire Research (WiRē) Team has created a series of three short illustrative [videos](#) that explain how the team is helping communities adapt to wildfire. The videos were developed by the Forest Service Rocky Mountain Research Station with National Fire Plan Funds.



## CONSERVATION

### Wings Across the Americas Award

Forest service scientists and land managers received the Research Partnership Award at the [Wings Across the Americas](#) award ceremony on May 1 in Washington, D.C. The scientists and land managers are part of an interagency team that has worked to understand Mexican spotted owl ecology and translate the results into management recommendations.



## HISTORY

### Timber Management Research on the Crossett Experimental Forest

The Crossett Experimental Forest in Arkansas has been instrumental to research on sustainable and profitable timber management in the South since 1934. Forest Service [research](#) on Crossett has shown how owners of small loblolly and shortleaf pine forest tracts can return the land more quickly to production with less investment through simple, sustainable practices, such as avoiding clearcutting.



## **Did You Know? Longleaf Pines House Incredible Diversity**

Longleaf pine ecosystems of the southern U.S. are among the world's most ecologically diverse and home to many plant species found nowhere else. Longleaf pine forests once covered more than 90 million acres in the southern U.S. Today, about 4.3 million acres of longleaf pine or mixed pine and oak forests remain. The Forest Service belongs to the [Longleaf Partnership Council](#), which works to [increase the area of longleaf pine ecosystems](#).

(Scroll down for an infographic on southern forests).

## **Recent Blogs**



### **Where Your Front Door Meets the Forest**

Tips to help your home survive a wildfire.



### **A Food Forest Grows in Atlanta**

The Forest Service Community Forest and Open Space Conservation Program helped establish an urban food forest in southeastern Atlanta.



### **Celebrating STEM at the 2018 USA Science and Engineering Festival**

Forest Service scientists and science communicators led hands-on activities about research on April 6-8 at the 2018 USA Science and Engineering Festival, the nation's largest STEM festival.



### **Why Monitor Air Quality During Wildland Fires**

The Forest Service and partners implemented a proactive response to the threat posed by wildfire smoke to human health and safety.

BY-THE-NUMBERS

Restored southern forest lands are a principal economic resource, considered the nation's **"wood basket."**



The South contains

**40%**

of the nation's

**521**

million acres  
of timber land.

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