

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

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The banner features the U.S. Forest Service logo on the left, followed by the text "Forest Service" and "Research and Development". Below this, a dark blue box contains the text "Monthly News and Highlights from the World Leader in Forestry Research". On the right side, there is a graphic of a globe with a leaf, and the hashtag "#SoundScience" is displayed. At the bottom right, there are icons for Twitter, Instagram, Facebook, and YouTube.

U.S. Forest Service

Research
and Development

Monthly News and Highlights from
the World Leader in Forestry Research

#SoundScience

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FEATURED NEWS

Wildfire Helps Disperse Whitebark Pine Seeds

USDA Forest Service scientists and partners [discovered](#) a unique relationship between wildfire, declining whitebark pine populations, and the Clark's nutcracker (the bird that disperses whitebark pine seeds). The team found that fire creates competition-free conditions for the Clark's nutcracker to distribute whitebark pine seeds, helping them regenerate after their habitat burns.



CONSERVATION

From "National Geographic": How DNA from Snow Helps Scientists Track Elusive Animals

Forest Service scientists confirmed the presence of a Canadian lynx--a rare cat that is difficult to track down--in the Northern Rockies using [genetic analysis](#) of snow that the lynx had stepped in. Experts believe this process of collecting and analyzing genetic material released by organisms into the environment (called environmental DNA or eDNA) can improve the accuracy of wildlife surveys, thereby helping conservationists identify and preserve the lynx and other snow-dwelling species.



FOREST RESTORATION

Longing for Longleaf Pine

Longleaf pines once spanned 90 million acres in the southern United States, but today only five million acres remain. To help [restore](#) the pines, Forest Service scientists: 1) developed guidelines for producing quality longleaf pine seeds, and 2) helped to quantify the extent of longleaf habitat in various regions across the southeastern United States.



BAT CONSERVATION

Research May Shed Light on Controlling Catastrophic Disease in Bats

A Forest Service scientist is teaming up with other researchers in the Bats for the Future Fund to research a management [strategy](#) for combating white-nose syndrome, a lethal fungus-borne disease. The team plans to explore whether using ultra-violet (UV) light to clean caves where bats live will help enhance their survival. This research builds on previous Forest Service research, which indicated that the virus that causes white-nose syndrome is irreparably damaged by UV light.



BAT CONSERVATION

Researchers Piece Together Disparate Records as Disease Closes in on Western Bats

In order to track the western spread of white-nose syndrome, Forest Service scientists have amassed an enormous [data set](#) of western bat hibernation sites. Using data across 11 western states from federal and state agencies and the academic community, the team gathered 4,529 winter bat survey records. They found that bats in the West tend to roost in relative seclusion, putting them at decreased risk of contracting the disease.



FIRE SCIENCE

Scientists Bring Back the Good Earth

Abandoned mine sites have longstanding ecological effects on nearby streams. But Forest Service scientists have [developed](#) a simple way to restore these degraded and barren lands. The team used organic material, including biochar, wood chips, and biosolids, to create a mantle on top of the rocky substrate. Native grasses, which could provide a growing medium for larger plants, thrived when they were planted on this layer.



FIRE SCIENCE

How do Regional Grasslands Respond to Fires?

Forest Service scientists are conducting a three-year research [project](#) to study how the grass and shrublands of western South Dakota and eastern Wyoming respond to wildfires. The project involves field experiments from 20 small plots of land spread throughout the Buffalo Gap National Grassland, a nearly 600,000-acre protected area in South Dakota. The studies will help land managers and private landowners better understand how plants respond to different types of fire.



HISTORY

Fire and Forestry

Although early foresters in the U.S. followed European models of forest management, they recognized that American forests faced unique challenges--especially more severe threats from fire. This imperative to understand and mitigate the effect of wildfire on American forests was a driving force behind the [development](#) of U.S. forestry.

Soon after the Forest Service was created in 1905, fire protection became a national program and a major justification for the agency's existence.



HURRICANES

From "Business Insider": Worsening Hurricanes Could Devastate Puerto Rico

Forest Service scientists are [studying](#) decades of records on Puerto Rico's El Yunque National Forest to understand how that tropical forest and others might respond to long-term climate change. More than a year since Hurricane Maria hit Puerto Rico, the island territory still hasn't fully recovered.

In El Yunque National Forest, which supplies water to 20 percent of Puerto Rico's residents, more than 1 in 10 trees died. Although hurricanes may--perhaps surprisingly-- promote rainforest regeneration, scientists are concerned about the impact of drier conditions and more intense storms caused by climate change.



ECOLOGY

Why Ecosystems Need Invertebrates

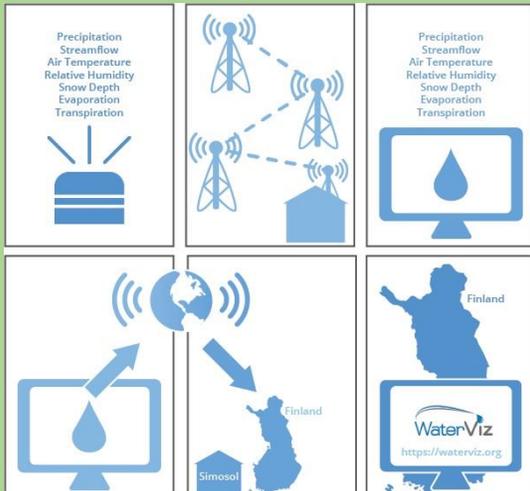
Forest Service scientists carried out a five-year field [experiment](#) in the subalpine grasslands of Swiss National Park in Switzerland in order to learn how these ecosystems respond when large, medium, and small organisms are progressively removed. The results suggest that invertebrates may become increasingly important to ecosystems as mammal populations decrease.



ECOLOGY

While Some Birds Require Mature Forests, Others are Flexible

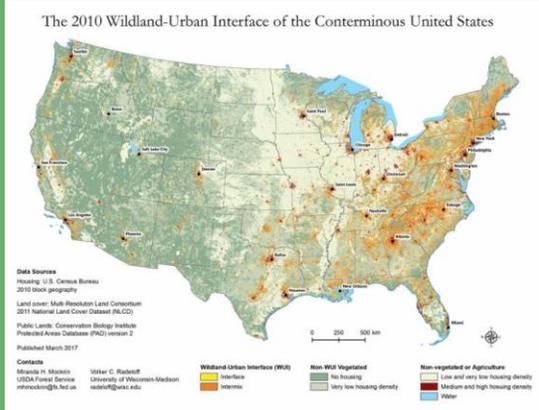
A Forest Service [study](#) suggests that some birds thrive after forests are harvested as long as one or two big trees are left per acre, while others require thick forest midstories for shelter. Overall, the research indicates that using a variety of methods to harvest timber produces a variety of habitats that support forest bird species with different needs. Maintaining some mature forests is also important for certain species.



DATA SCIENCE

Seeing and Hearing Water Cycle Data

Forest Service scientists and partners developed [WaterViz](#), an online tool that converts water cycle data into both video and audio representations of each watershed in nearly real-time. By delivering data through a multi-sensory approach, the tool is designed to make it accessible to a broader audience. The WaterViz will be a featured installation at the Concrete Space Gallery in Doral, Florida as part of the 2018 Miami New Media Festival.



DID YOU KNOW?

The Wildland-Urban Interface is the Fastest Growing Land Use Type in the Coterminous United States

Between 1990 and 2010, the wildlife-urban interface (WUI), where houses and natural vegetation meet, grew 41 percent in number of houses and 33 percent in terms of land area. One in three houses and one in ten hectares are now part of the WUI. With more houses built near forests, wildfires caused by humans are becoming more common and pose a greater risk to human lives and property.

Recent Blogs



Faces of the Forest Service: Meet Andrew "Sandy" Liebhold

Andrew "Sandy" Liebhold is a research entomologist for the Northern Research Station.



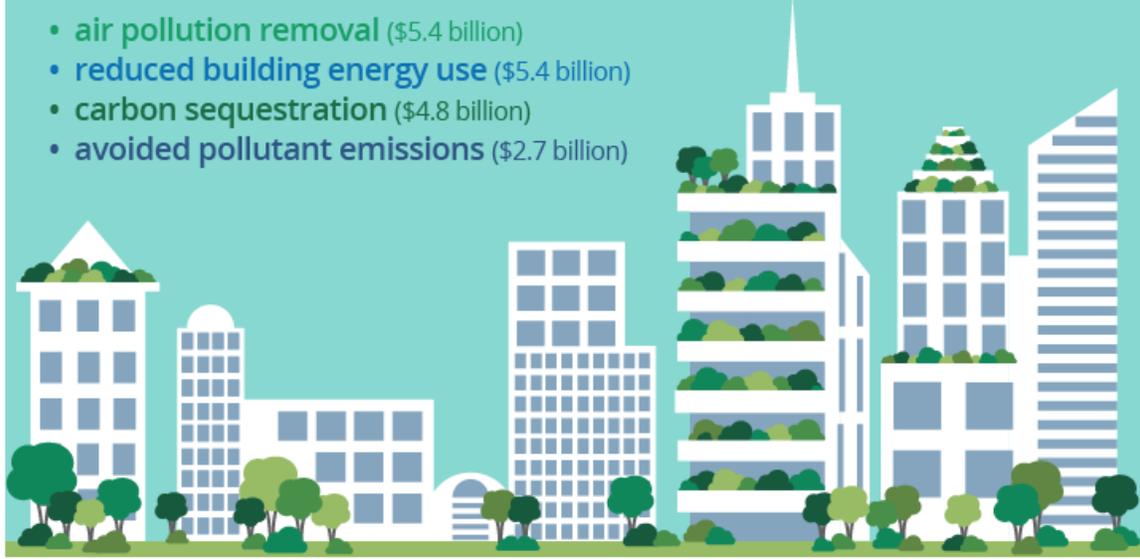
In the Great Lakes Region, Special Trees Have an Absorbing Role

Forest Service scientists are planting trees in the Great Lakes region to reduce pollution and runoff.

BY-THE-NUMBERS

Urban trees in the U.S. annually produce **\$18.3 billion** in value through:

- air pollution removal (\$5.4 billion)
- reduced building energy use (\$5.4 billion)
- carbon sequestration (\$4.8 billion)
- avoided pollutant emissions (\$2.7 billion)



[Learn More About Urban Trees](#)

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