

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

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***** SPECIAL 2 YEAR ANNIVERSARY EDITION *****

This edition marks our second year providing scientists, policymakers, and readers like you with the latest updates from the USDA Forest Service Washington Office and research stations. To celebrate, here's a collection of popular stories from past months along with exciting new features. Cheers to two years of sharing groundbreaking Forest Service science!

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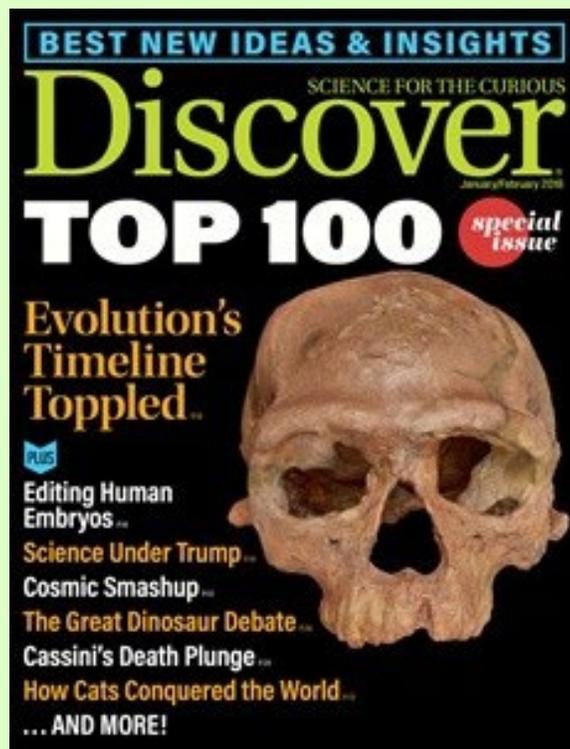


Photo Credit: Discover magazine

FEATURED NEWS

Tree Range Shifts among Discover Magazine's Top 100 Stories of 2017

Each year, a special issue of *Discover* magazine highlights the top 100 science stories of the previous year. Ranked number 59 on the most recent [list](#) was an analysis by USDA Forest Service researchers and their partners showing that the ranges of 86 tree species in the eastern United States are shifting north or west. Researchers attribute these dramatic shifts to changes in temperature and precipitation.



FIRE MANAGEMENT

TED Talk: Spreading the Word About Megafire Prevention

Learn why megafires are increasing and how they may be addressed by practical solutions in this fast-moving, graphically original [TED Talk](#) by Paul Hessburg. Hessburg is an expert on fire ecology and fire-adapted landscapes from the Forest Service Pacific Northwest Research Station.



FIRE MANAGEMENT

How Resilient are California Forests After Fires?

Forest Service researchers from the Pacific Southwest Research Station and the California Academy of Sciences are investigating how prescribed fires may improve the health of forests in northern California. The study uses birds as indicators to understand how forest ecosystems respond over time. Watch the [video](#) to learn more.



FIRE MANAGEMENT

Research Reveals How to Help Protect Homes From Wildfires

More than 100 million Americans live in or near forests and grasslands that may erupt in flames. Forest Service research that may help homeowners protect their homes is featured in this *60 Minutes* [segment](#) and Rocky Mountain Research Station [spotlight](#).



HURRICANE RECOVERY

Post-Hurricane Research and Resilience in Puerto Rico's El Yunque National Forest

Hurricane Maria hit El Yunque National Forest--the only tropical forest in the U.S. National Forest system--with powerful force when it struck Puerto Rico in September 2017. In a [video](#) from the International Institute of Tropical Forestry, research ecologist Grizelle Gonzalez discusses the forest's recovery.



SUSTAINABILITY

Jet Fuel Made from Trees Powers Historic Coast-to-Coast Flight

The Forest Products Lab partnered with Washington State University through the Northwest Advanced Renewables Alliance (NARA) to develop the first wood-derived alternative jet fuel to power a commercial flight. The Alaska Airlines [flight](#) flew from Seattle to Washington, D.C. using a fuel made from the cellulose in postharvest debris, which is often burned as waste.



AGROFORESTRY REPORT

Agroforestry Makes Agriculture More Resilient

A [report](#) by the Forest Service shows how agroforestry--the intentional integration of trees and shrubs into crop and livestock production systems--can improve agricultural production and make farms more resilient when weather conditions, climates, and markets change.



SUSTAINABILITY

eDNA--Not Just for Fisheries Biologists Anymore

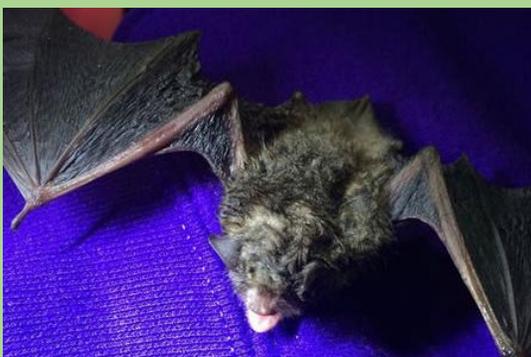
Environmental DNA, or eDNA, is a sensitive new technology that can detect the presence of threatened and endangered species in ecosystems, as well as individuals at the leading edges of invasive species takeovers. Forest Service researchers are developing an [approach](#) to eDNA that can identify a variety of wildlife species from multiple water samples at once.



INVASIVE SPECIES

Agriculture Impacts Native Plants Even More Than Roads

A [study](#) by Forest Service researchers using data from plots monitored by the [Forest Inventory and Analysis Program](#) found that some invasive species thrive on disturbances from road construction--but farms and other human activities benefit invasives even more. The paper earned an "Editor's Choice" honor in the March 2018 issue of the journal *Diversity and Distributions*.



WILDLIFE

The Lethal Fungus Causing White-Nose Syndrome in Bats May Have an Achilles Heel

The fungus behind white-nose syndrome, a disease that has devastated bat populations in North America, may have an Achilles' heel: UV light, according to a [study](#) conducted by the



FOREST HEALTH

Small Pests, Big Problems: The Global Spread of Bark Beetles.

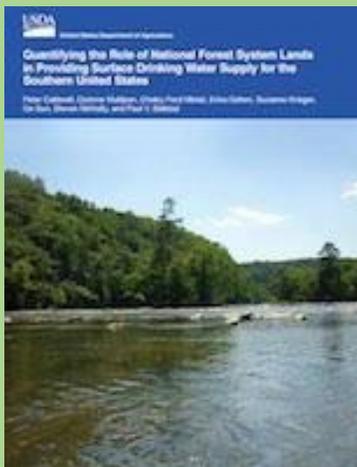
Forest Service scientists are quoted in a *Yale Environment 360* [article](#) about the expansion of pine and spruce beetle outbreaks across North America, Europe, and Siberia that are ravaging thousands of square miles of woodlands. Some forests may never recover from these outbreaks.



SCIENCE EDUCATION

PBS "SciGirls" Features Forest Service Scientist

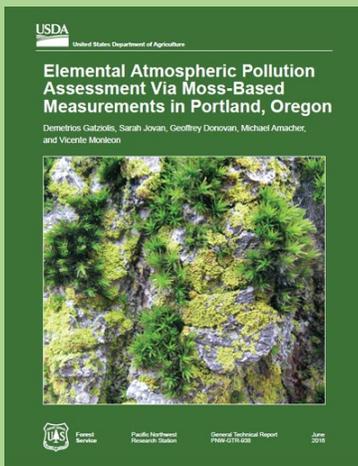
The March 8 episode of the PBS show "SciGirls", which celebrates science, technology, engineering, and math as well as Latino heritage and language, featured research ecologist Grizelle Gonzalez from the International Institute of Tropical Forestry in Puerto Rico. The [episode](#) was filmed in [El Yunque National Forest](#) and addressed forestry topics such as measuring trees, making canopy observations, and interpreting aerial photographs.



FOREST WATERSHEDS

Forests Provide Clean Drinking Water for the South

For over 19 million people in the South--roughly the population of Florida-- clean water begins in the region's national forests. That's according to a [report](#) by the Southern Research Station. This report can help support efforts to conserve the forest cover that provides the South's clean, dependable water supplies.



Moss Helps Scientists Measure Air Pollution

Forest Service scientists are using moss collected from urban trees to develop fine-scale maps of air pollution in Portland, Oregon. A [report](#) by the Pacific Northwest Research Station explains the findings and methods used to collect and analyze the 346 moss samples.



INTERNATIONAL TRADE

Screening for Illegal Wood Imports

In January, the Forest Service International Programs office facilitated a training [session](#) in Florida. Forest Products Laboratory researchers taught USDA Animal and Plant Health Inspection Service botanists about wood anatomy and chemistry techniques that can be used to distinguish wood types often imported illegally.



URBAN FORESTRY

California Street Tree Benefits Valued at \$1 Billion

Researchers from the Forest Service's Pacific Southwest Research Station [found](#) that California's estimated 9.1 million street trees store carbon, remove air pollutants, intercept rainfall, and provide heating and cooling--services that save millions of dollars and raise property values.



URBAN FORESTRY

Growing Need for Urban Forests as Urban Land Expands

A Forest Service [study](#) projects that urban land in the lower 48 states will more than double between 2010 and 2060. This is expected to affect forest and agricultural lands that are being urbanized, and make urban forests even more important to environmental quality and human well-being.



WOMEN IN SCIENCE

U.S. Forest Service Employed Margaret Stoughton Abell as First Female Forester, but Today There Are Many

In 1930, Iowa State College graduate Margaret Stoughton joined the Appalachian Forest Experiment Station in Asheville, N.C. As the first woman to serve as a Forest Service forester, Stoughton (later Stoughton Abell) worked on nearly every Southern Research Station project. Today, the station employs many female [scientists](#). Their contributions span the fields of forestry, ecology, economics, and environmental health.



SCIENCE EDUCATION

Join USDA at the 5th USA Science and Engineering Festival April 7-8

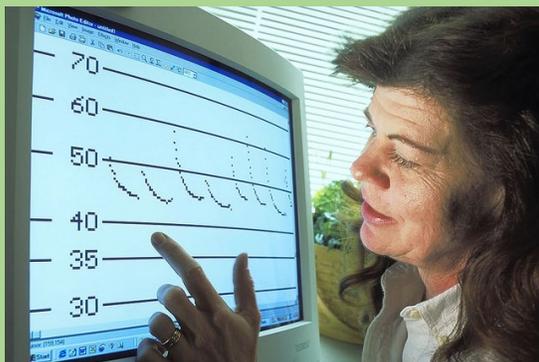
USDA will be among more than 750 of the world's leading professional scientific and engineering societies, universities, government agencies, and high-tech corporations participating in the 5th [USA Science and Engineering Festival](#). This celebration of science will take place April 7-8 at the Walter E. Washington Convention Center in Washington, D.C.



SUSTAINABILITY

International Day of Forests

March 21 marks the seventh annual [International Day of Forests](#), when nations worldwide celebrate the importance of forests and organize activities such as planting trees. The theme for 2018, Forests and Sustainable Cities, underscores the many benefits of trees to urban communities--from storing carbon to reducing noise pollution to promoting health as urban green spaces.



SCIENCE-BASED DECISION MAKING

The Key Role of Science in Sustaining National Forests and Grasslands

The Forest Service's Research and Development arm generates scientific research to inform sustainable management of forests and grasslands across the National Forest System. Download this new [fact sheet](#) about how research provides a science-based foundation for managing wildfires, accommodating outdoor recreation, maintaining water quality, outsmarting invasive species, and protecting fish and wildlife.



MESSAGE FROM THE DEPUTY CHIEF

Celebrating Scientific Breakthroughs

Deputy Chief of Research and Development Carlos Rodriguez-Franco [shares](#) how scientific breakthroughs at the Forest Service are helping prevent and manage wildfires, extend wood use, contain destructive invasive pests and pathogens, and protect water.

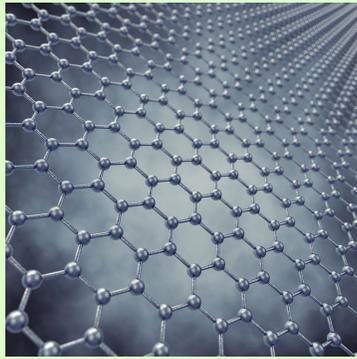


Did You Know? Wood Panels Can Be Strong Enough to Weather a Tornado

[Cross-laminated timber](#) (CLT) is made from layers of lumber stacked in alternating directions and structural adhesive. CLT's [advantages](#) include its light weight, strength and its ease of assembly.

CLT wood panels are ideal for tornado-safe rooms and shelters. (Scroll down for infographic below.) The Forest Service is playing a lead role in researching and bringing CLT technology to the U.S.--partly because CLT provides markets for hazardous fuels in overstocked forests.

Recent Blogs



[A Wood Product Stronger than Steel Could Change the World](#)

Forest Service scientist Zhiyong Cai and his research team have developed a cost-effective way to produce graphene from the lignin in plant cell walls.



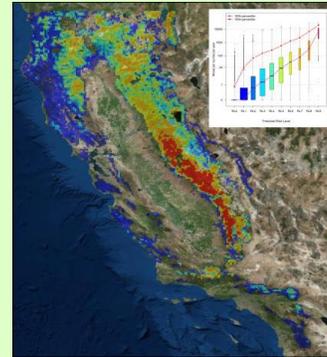
[Giant Sequoia Trees Face "Drying" Times](#)

For the first time in 125 years, Giant Sequoias in the southern Sierra Nevada Mountains are showing significant "dieback" in their foliage.



[Faces of the Forest Service: Meet Thomas Moreland](#)

A love of the outdoors led Thomas Moreland to the Forest Service, and his personal experience obtaining two patents inspired him to become a technology transfer coordinator.



[New Tool Helps California Land Managers Predict Tree Mortality](#)

The Forest Service is helping land managers anticipate the risk of tree mortality through the 2017 Bark Beetle Forecast for California.

BY-THE-NUMBERS

Forest Service researchers developed an easy-to-assemble tornado safe room for residences that can withstand an EF-5 tornado with winds above **200** miles per hour.

The safe room is made of **cross laminated timber** —a durable, renewable wood building material.

Photo: Sean Waugh, NOAA, NSS/PUBLIC DOMAIN

Learn more about CLT

[Click Here to View the Newsletter Archives](#)

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