

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

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A banner for the U.S. Forest Service Research and Development newsletter. It features the U.S. Forest Service logo on the left, the text "Forest Service" and "Research and Development" in large white font, and a graphic of a globe with leaves on the right. A dark blue box contains the text "Monthly News and Highlights from the World Leader in Forestry Research". The hashtag "#SoundScience" and social media icons for Twitter, Instagram, Facebook, and YouTube are at the bottom right.

U.S. Forest Service

Research
and Development

Monthly News and Highlights from
the World Leader in Forestry Research

#SoundScience

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News from the Washington Office and Research Stations

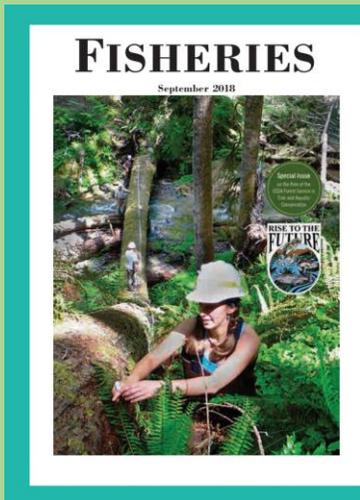
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FEATURED NEWS

White-Nose Syndrome Test Saves Bat Lives with UV Light

USDA Forest Service scientists and partners developed an accurate, non-invasive, cost-effective [method](#) of testing for white-nose syndrome, one of the most serious wildlife diseases ever recorded in North America, without harming more bats in the process. The previous standard test could only be applied to a dead or euthanized bat because it required a bat's entire wing. The new method uses ultraviolet light to make bat wings glow fluorescent orange-yellow if they are affected by the fungus.



FISHERIES

Special Edition of "Fisheries" Highlights Forest Service Aquatic Conservation Efforts

A special edition of the publication "[Fisheries](#)" highlights a new Forest Service strategy for fish and aquatic stewardship, which builds on 30 years of knowledge from the original strategy and addresses 21st century challenges. The issue also includes articles about the importance of crowd-sourced databases for aquatic resource conservation, the socioeconomic benefits of fishing associated with national forests, and other aquatic conservation topics.



GLOBAL IMPACTS

Forest Service Science and Technology Goes Around the World

Carlos Rodriguez-Franco, the Deputy Chief of Research and Development, [explains](#) how the Forest Service shares information across scientific disciplines and jurisdictional boundaries to anticipate far-reaching threats and develop solutions with international partners. This includes helping to find DNA markers for illegally harvested wood, sharing Forest Inventory Analysis tools and techniques, and developing iTree software used to assess the value of trees in cities worldwide.



SUSTAINABILITY

Nations Need to Act Fast to Repair Damaged Ecosystems

Forest Service scientists along with over 100 experts from 45 countries [found](#) that global loss of benefits from forest ecosystems could cost \$1,180 trillion from 2000 to 2050. Also, about 50 to 700 million people could be forced to migrate due to ecosystem disturbances, causing social instability and violent conflict.

But there's hope! Land management strategies including agro-ecology, conservation agriculture,

agroforestry, and sustainable forest management can all help reverse these trends.



SUSTAINABILITY

How Do We Define Sustainable Forests?

The [Montreal Process](#) is an intergovernmental approach to forest health across five continents that provides a consistent definition of sustainability and a backbone for national research. The Forest Service uses the Montreal Process criteria and indicators as a lens to present forest data and identify management techniques in reports such as the [2010 National Report on Sustainable Forests](#) and national assessments on [tropical islands](#) and [agriculture and urban forests](#).



SILVICULTURE

The Climate is Changing--What's a Silviculturist to Do?

A Forest Service [article](#) argues that silvicultural practices focused on resilience and restoration are needed in light of stressors caused by changes in climate. To make forests hardier, scientists recommend that land managers promote genetic, species, and structural diversity by planting new stands, retaining variety during forest thinning, and including stands with trees of different ages alongside even-aged stands.



FOREST ECOLOGY

Forest Shrubs Stunt Tree Growth

A Forest Service [study](#) shows that evergreen shrubs such as rhododendron and mountain laurel don't just suppress forest regeneration-- they also suppress tree height in biomass, even in trees established before the shrubs emerged. Scientists combined LiDAR and other remote sensing tools to better understand the influence of shrubs on forest structure.



INVASIVE SPECIES

Non-Native Plants Move to Higher Ground as Climate Warms

Forest Service researchers published a [study](#) confirming that non-native species concentrate in lower elevation regions, where people tend to spread invasive species as they live, travel, work, and farm. As the climate warms, some non-native species will move to higher elevations, while native plants at the highest elevations will have nowhere else to go.



AQUATIC ECOLOGY

USDA Radio: Tracking Aquatic Species with eDNA

Forest Service scientists [discussed](#) how filtering water samples to collect the unique genetic codes of aquatic organisms (called environmental DNA or eDNA) can help track both threatened and invasive fish species. This method provides a much better idea of where species are located than traditional methods and is also less resource intensive. To learn more, visit the Forest Service eDNAAtlas [website](#).



WILDFIRE SMOKE

Smoke from Wildfires Cools Rivers and Streams

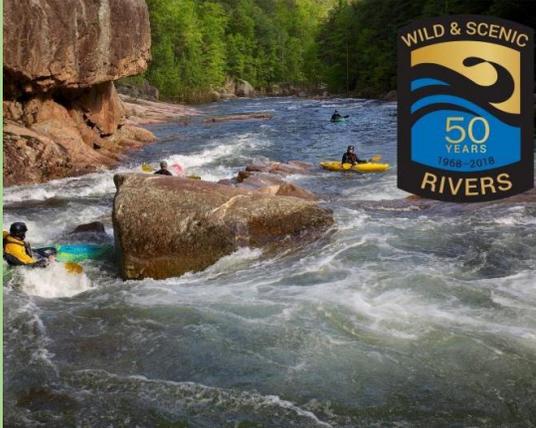
Scientists have known that heat from wildfires can affect stream water temperatures, but the effects of smoke on water temperature had not been studied. Now, a Forest Service [analysis](#) of summer wildfire smoke and nearby freshwater in the lower Klamath River Basin in northern California showed that smoke had a cooling effect on rivers and streams. Because wildfires often occur during warm, dry seasons, smoke may benefit certain species by cooling down the water.



FIRE SUPPRESSION

What Happens When Land Managers Try to Suppress all Forest Fires?

Fire has historically played a valuable role in the Pinaleno Mountains of southeastern Arizona. Before 1880, more than half the mountain range would burn in large fires every 20 years or so. Forest Service scientists [studied](#) how fire, insect, and tree population dynamics in the region changed after land managers began excluding fires. They found that tree population abundance increased 1100 to 1800 percent, spruce beetle outbreaks became increasingly severe, and the area became vulnerable to destructive high-severity fires.



HISTORY

Celebrating the 50th Anniversary of the Wild and Scenic Rivers Act

This year marks the 50th anniversary of the [Wild and Scenic Rivers Act](#), which preserves selected rivers that have outstanding natural, cultural, and recreational values. To improve river management in the next half century, Forest Service scientists and partners are studying the environmental conditions of relatively untouched rivers and applying new research to help quantify what river users value.

These efforts are important in light of river management issues, including: rising public use, a warming climate, increased fire, invasive species, and drastic population losses.



TECHNOLOGY

How Do Douglas-fir Know When to Stop Growing?

Environmental cues signal to Douglas-fir trees when to start and stop growing in diameter, but as climates warm those signals may be changing. Forest Service scientists [modeled](#) how environmental cues drive Douglas-fir growth under both the current climate and in the projected future. The researchers found that Douglas-firs stop growing when high temperatures coincide with long daylight hours, meaning that warmer climates could cut the growing season short for over 30 percent of coastal Douglas-firs by 2100.



FOREST PRODUCTS

Celebrating Forest Products Week and National Bioenergy Day

October 21 through 27 marked [Forest Products Week](#), which honors the value of U.S. forests and their importance to national prosperity. The Forest Service's forest products accomplishments in 2018 include advances in developing cross-laminated timber--exceptionally strong panels of wood that are used in building construction and provide a market for hazardous fuels in overstocked forests. Also, October 24 marked National Bioenergy Day, during which the Forest Service raised awareness about the ecological, social, and economic benefits of renewable energy from wood chips.



DID YOU KNOW?

Chicago Wilderness is an Alliance that Supports over 500,000 Acres of Protected Natural Areas

The Forest Service helped found the [Chicago Wilderness](#) alliance in 1996 and continues to collaborate on projects, research, and planning through the Chicago Urban Field Station. Today, Chicago Wilderness has over 200 member organizations and supports a region of over 10 million people. By connecting leaders in conservation, health, business, and science, the alliance tackles challenging issues to ensure a resilient region.

Recent Blogs



Revolutionary Carbon Foam from Wood

Forest Service scientists and partners are developing a cheaper carbon foam from lignin, a byproduct of the pulping and paper industry. Carbon foam is a material with applications across varied industries.



Elk, Cattle, and Gophers Impact Forest Shrubs

Forest Service research found that forest herbivores can dramatically reduce shrubs.

BY-THE-NUMBERS

Forest Service researchers helped Chicago city managers assess the utility of "The 606," a **2.7 mile elevated trail** that connects six ground-level parks located in diverse neighborhoods that lack access to open space.



[Learn More About The 606](#)

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