



Ecological Restoration Institute

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Millions of Excess Trees Fuel Catastrophic Wildfires

(Flagstaff, Ariz.) Arizona wildlands are on fire and forest ecologist Dr. Wally Covington says millions of small diameter trees that have grown in during the last century have lined up like sticks of firewood ready to fuel unnaturally intense, destructive wildfires.

“Decades of scientific research reveal the frequent-fire ecosystems of the West are suffocating under too many trees. Where we once had 10 to 25 trees per acre, we now have hundreds,” says Covington, Regents’ Professor of Forest Ecology and Executive Director of the Ecological Restoration Institute at Northern Arizona University.

The Pumpkin Fire that burned nearly 15,000 acres northwest of Flagstaff in 2000 had as many as 7,000 to 8,000 trees packed in on some of those acres.

“As a result of this unnatural forest structure, the forest cannot self-regulate, ecological processes are out of balance, and the heavy fuel load from too many trees is setting the stage for catastrophic wildfire.”

Covington says we now have extensive overly dense forests across vast landscapes in ponderosa pine, mixed conifer, and pinyon-juniper ecosystems. In the ponderosa pine forests, where fire once burned naturally along the forest floor every two to ten years – killing excess tree seedlings, recycling nutrients and cleaning up the dead and dying debris – it is now burning through the treetops.

“We’ve crossed a series of thresholds. Starting in the 1940s, we started seeing small crown fires. In the ‘60s, we saw bigger crown fires on a scale of a few thousand acres. By the ‘90s, we started seeing tens of thousands of acres in crown fires. Now, in this century, what we’re set up for are crown fires on a scale of hundreds of thousands of acres. This is clearly not sustainable.”

The 2002 Rodeo-Chediski Fire, Arizona’s largest wildfire on record, burned nearly half a million acres in the White Mountains.

“If we have disturbances such as wildfires, massive bark beetle infestations and disease outbreaks that are on the scale of hundreds of thousands of acres, then we have to restore landscapes on the scale of hundreds of thousands of acres. That’s exactly where we’re headed with the Four Forest Restoration Initiative and eight other landscape-scale restoration efforts across the West.”

The 4FRI is the nation’s largest forest ecological restoration project, spanning some 2.4 million acres across the Mogollon Rim.

“A lot of people focus on the immediate impacts of these large unnatural fires that we’ve been having and that’s devastating. It’s devastating immediately to wildlife habitat and human habitat. Homes are threatened, homes for wildlife, as well as homes for people. But there’s a secondary impact that people are often unaware of. As these watersheds degrade, as the roots break down, as the vegetation disappears that used to hold the watershed intact, we start having major flood events, as we’ve seen in the aftermath of the Schultz Fire. In these flood events, it’s not only water that’s being delivered, but



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massive amounts of sediment that are swept down to the houses below. So it impacts humans below the burnt over area, but it also impacts that whole riparian system.”

Covington says some 180 million acres of ponderosa pine across the West are at risk, more than 300 million acres with the addition of degraded mixed conifer forests. “Especially with drought and climate change, there is an urgent need to restore forests to their most resilient condition. That requires protecting the old growth trees and thinning most of the small diameter trees.”

He says the abundance of small trees creates the opportunity for jobs and developing a restoration economy. “Without wood utilization, the cost of restoration can be as much as \$1,000 per acre. Businesses that can use the excess wood to make products such as oriented strand board, other engineered forest products and energy from biomass will be critical to restoring forest health. NAU has set the goal of using biomass to supply its electrical needs achieving carbon neutrality by the year 2020.”
For more information, please see http://www4.nau.edu/insidenau/bumps/2010/6_23_10/climate.html.

Changes to the forest since pioneers arrived in the late 1800s resulted from heavy grazing that removed grasses from the forest floor, an overabundance of ponderosa pine seedlings that became established in 1919 and the exclusion of natural fire as wildfires were extinguished as fast as possible.

“Fire is to the forest what wolves are to deer. If we remove an essential component of the ecosystem, there is going to be an upset in the balance. Like the deer population explosion that caused deer to far outstrip the carrying capacity of the land after wolves were eliminated, in the absence of frequent, low intensity fires, the forest has become overloaded with small, sickly trees that are competing with old growth pines and making our forests vulnerable to crown fire.”

Covington says collaborative efforts such as the 4FRI that aim to accelerate large forest restoration efforts will make the difference between forests that have become liabilities and forests that are assets.

“Our success in restoring forest health during the next two decades will determine whether we can leave landscape legacies for future generations.”

Ecological Restoration Institute research plots near Alpine have been burned in the Wallow Fire.

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Video clips of Wally Covington are available [HERE](#)

or http://www.youtube.com/watch?v=2_t6uovjoWw

Interview topics (6 minutes total):

Resiliency of Ponderosa Pine Trees after Ecological Restoration Treatment

Restoring Large Landscapes across the West

Forest Research and Urgent Need to Restore Forests across Millions of Acres

Leaving a Landscape Legacy through Ecological Restoration