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U.S. Starts Massive Forest-Thinning Project

In a bid to cut back on devastating forest fires, foresters will thin dense stands of ponderosa pines

By Tiffany Stecker and ClimateWire | Friday, March 22, 2013 | 12 comments

FLAGSTAFF, Ariz. -- The smell of wood-burning stoves seems to permeate this gateway to the Grand Canyon and pit stop on the legendary Route 66.

In this corner of the state, trees, wood and fire have an ever-evolving relationship. Surrounded by the Coconino National Forest, this northern Arizona town sat at the edge of the 2010 Schultz fire, which burned 15,000 acres.

While the Schultz fire visibly marked the landscape, the damage was relatively benign compared with the floods that came a month later. The fire had stripped the hills of trees and vegetation, and soil erosion left a smooth slope allowing the summer rains to push an avalanche of mud, rocks and other debris down into the community. A 12-year-old girl was killed. Millions of dollars in damage ensued. The vulnerability left by the fire was unearthed -- literally.

The fire, plus the floods that followed, had a net economic impact between \$133 million and \$147 million, according to a recent report. It was one in a series of megafires that have ignited Arizona over the past 25 years, including the 2002 Rodeo-Chediski fire and the 2011 Wallow fire, each around half a million acres. Since 1990, nearly 1.2 million acres of Arizona's timber has burned.

"A big fire used to be 1,000 acres," Dick Fleishman said as he walked alongside the fire-scarred boundaries of the Schultz fire on a snow-covered mountain range. "Now, it's in the tens of thousands."

Fleishman is the assistant team leader of the Four Forests Restoration Initiative, called 4FRI. It is the largest forest stewardship project in the country. The plan is to restore 1 million acres over 20 years, from the Grand Canyon to the New Mexico border, by thinning small ponderosa pines -- the dominant species in the region -- and making the forest less dense. 4FRI covers the Kaibab, Coconino, Apache, Sitgreaves and Tonto national forests.

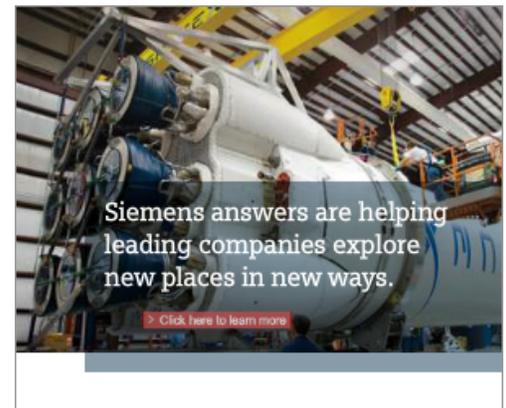
The Forest Service hired Pioneer Forest Products last May to cut and process the trees from the thinned forests. Pioneer will recycle the small-diameter timber into wood products -- for cabinetry, for example -- and wood laminate. Nearly 40 percent will be feedstock for a 30-million-gallon-per-year biodiesel plant run by Western Energy Solutions/Concord Blue USA. The processing plant in Winslow, Ariz., will employ about 500 people. The firm is still waiting to receive financing to begin operations in a budget-strained environment, said Marlin Johnson, a consultant for Pioneer.



"Thin it or lose it" was the lesson of the Schultz fire, which left these trees charred in 2010.

Image: Flickr/Coconino National Forest

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The vision is essentially this: Thin the landscape so that the thick tangle of forest becomes "clumps" of trees, with open spaces in between.

Another key to restoration is to encourage the growth of diverse grasses, which burn quickly and minimize fire damage to the soil. The point, said Ed Smith, a forest ecologist with the Nature Conservancy and a member of the coalition of stakeholders overseeing the massive 4FRI project, is not to stop the fire, but to drop it to the ground.

"It's inevitable," Smith said. "The forest is going to burn, so let's find a way to do this safely and effectively."

Bringing back the 'fire regime'

Fighting fires has become a growing financial burden for the Forest Service. Last year, the agency surpassed its fire suppression budget by \$452 million, pulling the extra funds from other Forest Service programs.

The ultimate goal is to restore what ecologists called the fire regime, a cycle of fire that aids in the dispersal of seeds and the renewal of soil and makes other important contributions to the health of forests. For a century, land management practices across the country have suppressed that regime, leading to a tinder-packed forest that is vulnerable to bigger and much hotter fires.

The fire cycle for ponderosa pines is five to 10 years, in which a natural ignition sparks a low-intensity fire. Every 100 years or so, a major fire would sweep through and kill a stand of trees. Today, those 100-year events are happening more frequently. Schultz was a high-severity fire with severe soil impacts.

"In the Southwest, everybody is in a race. Everybody is trying to try to do things before the wildfire comes," said Jose "Pepe" Iñiguez, a landscape fire ecologist with the Rocky Mountain Research Station.

Before 1870, the area around the 4FRI forests looked more like savannas, Iñiguez said. Fires would run for 30 miles low to the ground, burning grasses but leaving most of the trees intact.

"We believe that it was a clumpy grouping," Iñiguez said, "which is what we're trying to restore now."

The Southwestern monsoons -- the midsummer rains -- would extinguish the fires and promote growth. There was a sudden spike in the ponderosa pine population in 1920, aided by a perfect combination of good rains and temperatures and a lack of fire control.

Today, about 90 percent of the forest is trees that grew in this era, Iñiguez said. For a long time, it wasn't a problem. In the 1940s, a small minority of people became worried that the increasingly dense forests would eventually lead to devastating fires, especially if a drought hit. But the forests continued to be thick.

These trees in the 1920s cohort, as it's called, are not adapted to high-severity fires that destroy acres, Iñiguez said. Because seeds can travel only about a tree's length, some trees must remain after a fire to keep the forest alive.

How thin is thinner?

Wilderness areas, steep slopes and other forest areas that don't have the roads for large vehicles are more likely to be treated with controlled burns, rather than mechanical thinning.

There are managers around the 4FRI area who can't really burn fires because so many people live in their areas, Iñiguez said. As populations expand, so does the size of communities along the forest edges, which leaves residents in the line of wildfires.

"Some people say the whole densification issue is not the biggest," Iñiguez added. "[Others say] the biggest is the planning, with too many people living too close to the forest. Some people say, if we could somehow address that problem, then there would be a lot more

options."

At a stakeholder meeting in the town of Pinetop, Ariz., in January, environmentalists, logging groups and businesspeople met to further the process.

Despite an effort to work together, the history of strained relationships can show. The Forest Service, in its efforts to create resilient forests and communities, must also contend with its history as a pathway for logging interests across national forests.

Taylor McKinnon, an attorney with the Center for Biological Diversity, sat to the side of Pascal Berlioux, the former president of the Arizona Forest Restoration Products and currently executive director of the Eastern Arizona Counties Organization. The environmental group and the industry group mended a chilly relationship with a memorandum of understanding in 2009 to work together on 4FRI.

The Center for Biological Diversity has kept a watchful eye on what it sees as the Forest Service's role as a promoter of logging in the region.

"We try to police the Forest Service and its cutting of old growth," McKinnon said. Old-growth ponderosa pines are characterized by their yellow bark (younger trees have black bark), flat tops and straight limbs. Some are as old as 180 years. In the 4FRI treatment zone, they provide habitat for species like the endangered Mexican spotted owl, mule deer and other animals that depend on a thick canopy to survive. 4FRI team leader Henry Provencio has said the treatments will not touch old-growth trees.

So far, McKinnon said, the planning efforts for 4FRI have been largely qualitative. There need to be quantitative methods to measure the impact of thinning over such a large landscape, he said. The Center for Biological Diversity would like to see maps with the tree stand densities and to match those with wildlife habitat suitability models.

Concerns about a business plan

"The Forest Service will push for as much logging discretion that they can get," McKinnon added. The center, along with another stakeholder, the Grand Canyon Trust, did not approve of the Forest Service's decision to grant the stewardship contract to Pioneer, instead of Arizona Forest Restoration Products. The fact that Pioneer has yet to secure funding for its work has fueled critics even more.

"We were and are skeptical of that decision," McKinnon said. "We don't think that their business plan is a viable one."

In order for a business to serve the ecological need of the forests, McKinnon added, it must use really small wood, which is not in Pioneer's business model. Its plan for a biodiesel plant is based on "totally speculative technology," he said.

But most importantly, McKinnon said, is that the Forest Service is not taking into account the future landscape of the forests. He cited a series of recent studies by Los Alamos National Laboratory scientist Park Williams that found that, by midcentury, the Southwest will see conditions worse than the worst historical drought conditions, ones that are likely to wipe out huge swathes of forests.

"If you think of what that research means, it means that these forests aren't going to be here a century from now," McKinnon said. "Regardless of what we do now."

A large die-off of forests in a climate-changed world is likely, Williams said. But that reinforces the need for restoration.

"When you think of how forests die, they usually die in large events, fires and bark beetle outbreaks," Williams said. "These catastrophic events can spread very easily. With some active management, it won't get wiped out with a large wildfire."

Restoring forests and saving watersheds

At this particular meeting, a local scientist explained how 4FRI would protect the habitat for the Mexican spotted owl, a species of

particular concern in the area. The project would include more than 980,000 acres of "bridge habitat," or connections from one "clump" to another, said Sarah Reif, a wildlife biologist with Arizona Fish and Game.

In addition to providing habitat for the Mexican spotted owl, this would protect the populations of black bears, turkeys, mule deer and tassel-eared squirrels.

The presentation served to calm stakeholders who may have been anxious about the level of treatment.

"When we talk about treatments, they say, 'Oh, my God, there's heavy treatment everywhere, there's going to be nothing left,'" she said. "They weren't even aware there were a lot of areas that were going to be left in denser conditions."

Amy Waltz, program director of science delivery for the Ecological Restoration Institute at Northern Arizona University, said linking these clumps could possibly re-create something that didn't exist historically. It could artificially increase the populations of some species.

Another stakeholder at the meeting was Paul Summerfelt, a wildland fire management officer for the city of Flagstaff who runs the city's watershed protection project. Last fall, residents passed a \$10 million bond measure to plan, conduct and monitor treatments to prevent the devastation that occurred in the Schultz fire's aftermath, on Forest Service land and some state-managed land.

The project seeks to protect Flagstaff's two watersheds: Lake Mary, which provides half the city's water supply, and the Rio de Flag/Dry Lake Hills watershed. "If [the vegetation] burned off and we had that kind of flood event, it would be really devastating to the community long term," he said.

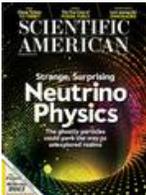
Summerfelt expects to be able to restore the area in the next eight to 10 years. Denver and Santa Fe, N.M., have established similar fee-based systems to restore forests around local waters, but Flagstaff is the first city to fund such a system with voter support, he said.

Patterns of new development in and around forests may have to change, as forest managers choose to let low-intensity fires burn rather than suppress them. And the image of dark, dense woods that draws so many people to forests will probably need to be left behind as well.

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