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Burning our forests is the best way to save them

Plans would let large fires work their benefits in Southern Arizona

By Tom Beal

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Here's the prescription for our catastrophically burned forests: Burn them again ... and again.

In Southern Arizona, scientists and land managers are enlisting environmentalists and residents of threatened settlements to support an effort to make the forests safer and healthier by reintroducing fire on a "landscape scale" to our Sky Island mountains and the grassy plains beneath them.

The Coronado National Forest — where the U.S. Forest Service manages nearly 1.8 million acres of old-growth forests, rolling grasslands and semi-arid deserts — is creating those landscape-scale burn programs, dubbed "FireScape," for most of its 17 Sky Island mountain ranges.

Plans would increase the number of planned fires and would make more use of "resource benefit" fires, in which the Forest Service doesn't immediately extinguish naturally occurring fires.

It's a fairly easy call in the most remote ranges, but it will take finesse and scientific expertise to pull it off on two troubled mountain ranges:

- Near Tucson, where the Rincon and Santa Catalina mountains are right next to 1 million residents who don't want their homes to burn down, University of Arizona scientists began pushing for the program shortly after the Aspen and Bullock fires scorched two-thirds of the Catalinas early this decade, creating a buffer for future fires.

The time is right to reintroduce fire as a natural process, they say, but the window of opportunity will soon close in an avalanche of partly burned timber and a curtain of new vegetation — fuel for the kind of hot, intense blazes this program seeks to avoid.

- In Graham County, multiple fires atop the Pinaleno Mountains near Safford have also created an opportunity for restoring a dying forest that harbors North America's most threatened mammal — the Mount Graham red squirrel — and an array of expensive telescopes atop Mount Graham.

There, the Pinaleno Ecosystem Restoration Project, also led by a coalition of UA scientists and the Forest Service, seeks to restore a 3,705-acre swath of mixed conifer forest beneath the fire-blasted peaks of the Pinalenos to its "presettlement" condition.

Throughout Southern Arizona, the public will soon be recruited to accept some risk, breathe some smoke, tolerate some selective logging and help lobby for millions of dollars to spend on forest-cleansing activities.

A simple truth

The prescriptions for restoration are varied and complex, but experts agree on one simple truth: Our wild lands have grown dangerous and unhealthy over the past century because we have removed fire from the natural process.

The devastating fires of this decade would not have occurred if we had allowed frequent, low-intensity fires to clear and restore those lands.

This is not a new realization. Famed naturalist Aldo Leopold noted in a 1924 essay that "the brush has taken the country." Leopold, then working for the U.S. Forest Service in Southern Arizona, figured out from observation, tree rings and talks with ranchers that 40 years of overgrazing and fire suppression had allowed oak, manzanita, mesquite, catclaw and other brushy plants to claim large swaths of former grassland.

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The same thing happened in bigger vegetation at higher elevations. Spaces between ancient pine, fir and spruce trees grew thick with young trees and underbrush. When those forests dried in this decade's drought, the results were dramatic.

The Bullock and Aspen fires of 2002 and 2003 roared through the canopy of the Santa Catalina Mountains with "stand-replacing" intensity. Those fires, which kill entire stands of big, old-growth trees, were once a rarity but have become the norm.

Similar destruction occurred in the past two decades in the Huachucas, Pinaleños, Chiri-cahuas and Santa Ritas.

A closing window

The salvation of the remaining old-growth forests atop our Sky Islands may lie in that recent devastation.

In the Santa Catalina Mountains, the Aspen, Bullock and Oracle Hill fires created a patchwork of burned and unburned areas that could allow forest managers to safely reintroduce periodic low-intensity fires to the forest.

It will take nerve and political will to let fires burn near the rebuilding settlement of Summerhaven, the fire-threatened town of Oracle and the expensive collection of communications towers and observatories atop the range's two highest peaks — Lemmon and Bigelow. It will take money to create the perimeters of cleared brush and trees that will protect those resources.

Don Falk, UA associate professor of natural resources who heads the science team for Catalina-Rincon FireScope, said one of the plan's primary goals is to "capitalize on mosaics left by Bullock and Aspen fires."

Fire historian Tom Swetnam, director of the UA's Tree-Ring Lab, recognized the opportunity before the embers of the Aspen Fire, which destroyed most of Summerhaven in July 2003, had fully cooled.

"We can either have regular, planned low-severity surface fires and smoke, or irregular, unplanned crown fires and smoke," he wrote in the Arizona Daily Star in early August of 2003.

Fire history

Swetnam, who was a wild-land firefighter himself 29 years ago in New Mexico's Gila Wilderness, said the ponderosa pine forests atop Mount Lemmon and elsewhere in the Coronado burned once a decade and sometimes twice before the area was populated, as detailed in the record found in tree rings.

"If you get to a 15-to-20-year interval, you get an explosive fire," said Swetnam.

Swetnam likes to show his classes photographs of the first large fire fought atop Mount Lemmon in 1902.

J.S. Holsinger, a special agent for the U.S. General Land Office, led 11 firefighters and a cook on a two-day horse-and-burro trek to the top of the mountain and had a 10,000-acre-plus fire contained within seven days.

Holsinger spent less than the \$500 allocated him, according to a monograph written by James B. Klein for the Tucson Corral of the Westerners. That included the cost of the hand tools used by the men.

The next fire of that magnitude in the Santa Catalinas came exactly 100 years later. It took more than 1,000 firefighters, aided by planes and helicopters dropping water and fire retardant, to stop the 30,563-acre Bullock Fire just short of the village of Summerhaven at a cost of more than \$10 million.

In 2003, the following summer, the 84,750-acre Aspen Fire wasn't stopped and it roared through Summerhaven, destroying 340 homes and businesses on the mountain.

The severity of those fires, said Swetnam, was a direct result of 100 years of putting fires out.

Not that simple

The prescription for restoring forest health is actually quite simple for most of the Coronado's Sky Island forests: Reverse that 100-year policy.

When lightning sparked fire in the Winchester Mountains in September, the decision to let it burn across Bald Ridge was easy. The Winchesters rise from the desert floor in the unpopulated northern edge of Cochise County.

The Forest Service has a plan similar to FireScope already at work along the southern edge of the Arizona-New Mexico border where a group of ranchers, the Malpai Borderlands group, embraced fire as a rangeland conservation technique around the Peloncillo and Animas ranges.

The acreage of "resource benefit" fires goes up each year, said Randall Smith, forest-restoration officer for Coronado National Forest, and is approaching 25,000 acres this year. "We've got a lot of landscape," said Smith.

In the Rincon Mountains on Tucson's eastern edge, where there is no road to the top and no settlements or

electronics, the National Park Service has allowed most naturally caused fires since 1971 to burn.

It's a tougher call for Stan Helin, ranger for the Santa Catalina District of the forest, where both the slopes and the tops of the mountains are populated.

His, he says, is a "billion-dollar decision." That's the value placed on the homes and businesses of Summerhaven and the array of observatories, communications towers and radar facilities on the mountain's peak.

Still, Helin made the gutsy call in June to let a brush fire burn up the slopes of the mountains north of Redington Pass. The Guthrie Fire consumed 5,000 acres of grass, trees and shrubs, coming within yards of the Catalina Highway near Molino Basin before monsoon rains put it out.

The science team assembled for the Catalina-Rincon FireScape program would make those decisions easier by helping get pre-clearance for environmental rules and giving managers detailed reports on vegetation and precise forecasts of its burnability.

It will take preparation. Residents of Summerhaven and Oracle want a thinned forest and better fire breaks before they will embrace any such plan.

Helin already has a plan to cut or grind up brush, build fire breaks and burn nearly 15,000 acres on the Catalinas' northern face in Oracle, where residents hold their breath each June, waiting for monsoon rains to green up the oak and manzanita tinderboxes that surround their homes.

Landscape-scale fires demand cooperation among agencies, flexibility in approved plans and "brave decision-makers," said the Nature Conservancy's Brooke Gebow.

Gebow helped put together a FireScape plan for the Huachuca Mountains near Sierra Vista and the grasslands that run south to the border. It involved three federal agencies, private landowners and the State Land Department. She is now working on the environmental compliance details of the Catalina/Rincon plan.

Flexibility is built into the plans, said Gebow. Environmental assessments of entire regions, done by vegetation zones in advance, allow planners to switch gears when nature intervenes. "When you get the whole landscape covered, that sort of blesses future treatments," said Gebow. "If wildfire burns through an area, we would have the compliance paperwork done to allow us to move that project to another place."

Before, said Gebow, the Forest Service would lay out 10 years of projects and do site-specific environmental surveys. If conditions changed, and they often do, all that work was wasted.

Gebow said cooperation has also been good in both places where she has worked on the new approach.

In Tucson, the National Park Service and the Forest Service are working closely with state foresters.

Most of the Rincons are part of Saguaro National Park, managed by the Park Service. The Santa Catalinas are managed by the Forest Service. Both ranges border state land.

In terms of fire management, however, they are one entity. Kristy Lund, a National Park Service fire manager, has authority for the Catalinas as well and half her salary is paid by the Forest Service.

Lund welcomes the input of the scientists but says it does not substitute for experience.

"I will cheerfully take all the inputs from science and technology. Maybe they'll come up with something," she said.

In the end, she said, it comes down to a "gut check. I err on the conservative side. There is nothing out here worth dying for."

Months of smoke

Catalina-Rincon FireScape has several goals: to recognize and document differences in vegetation, soils and topography in the mountains and to create a plan that allows flexibility while satisfying environmental protections and reassuring residents that forest managers know what they're doing — that they can allow fires to burn while protecting property.

"There is a recognition," said fire historian Swetnam, "that we're never going to get there by dealing with it piecemeal in little burn blocks. Down lower, the Coronado has been very good about letting fire burn. Up high is a different story. There is a risk to infrastructure. There is smoke. We're talking about a couple months of smoke (every year). How are the people of Summerhaven going to deal with it and what is the acceptable risk?"

Summerhaven resident Michael Stanley, who fled fire on the mountain twice this decade, said he thinks his neighbors will accept some risk but will want assurances that no fires will be allowed to burn unless fire-fighting resources are available to counter anything that might go wrong.

Predicting the future

Swetnam and Falk, FireScape's science team head, also caution that even the best science can't faithfully reconstruct the past or predict the future.

Southern Arizona is in the 10th year of an extended drought that has already brought massive change to the forests. Researchers have recorded an average temperature increase of 1.25 degrees in the past decade that could be a harbinger of extended climate change.

Tree-destroying insects are "over-wintering" instead of being killed off by cold. Cold-seeking vegetation is creeping higher.

Invasive plants are also changing the fire equation, especially on the aprons of the mountain ranges where introduced grasses now carry fire through desert areas where even low-intensity fires can kill off saguaros, palo verde and other plants not adapted to fire. Desert fires won't be set or allowed to burn.

Restore fire to the landscape and you may not get the forest you envision, said Falk. There are models in the historic record and atop mountain ranges that haven't been disrupted by man, but that doesn't mean they are the right models for this time and this place.

"It's not like restoring furniture or a painting," said Falk. "We are restoring ecosystem processes, not creating a diorama."

What that produces, or even what it should be, are not questions that can be answered precisely.

"You can't wait till you know for certain," said Falk. "then your system is dead and you've waited too long."

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