



'Good fires' gave forest managers a useful tool. Climate change may take it away.

Anton L. Delgado

Arizona Republic

APACHE-SITGREAVES NATIONAL FORESTS — Plumes of smoke drifted across the sky, wispy columns that traced a path to a smattering of downed trees still smoldering in the wake of yet another wildfire.

Federal land managers have started their assessment of the burn scar, but already, life is finding its way back.

At the base of the tree trunks, in patches across the forest floor, grass has grown. The only evidence of the wildfire that burned through the area just a few days earlier was the blackened tips of each blade and the darkened soil where ferns sprout.

"This is good fire at its best," said Justin Gabler, fire management officer for the Alpine Ranger District of the U.S. Forest Service. "This is fire doing exactly what nature always intended it to do, give life a fresh start."

A decade after the 2011 Wallow Fire became the largest wildfire in Arizona state history, five lightning strikes across its burn scar ignited wildfires, which eventually joined to become the 2021 Horton Complex Fire.

Lightning-caused wildfires, like this one, historically burned at low severity, renewing ecosystems by revitalizing soil nutrients and keeping forests from overgrowing. But after decades of ardent fire suppression, such natural fires are now burning on unnatural landscapes.

Each season, land management agencies debate the risk of using natural fires to achieve forest health goals. With warmer temperatures and less rain and snow each season, they are increasingly opting not to.

"We've been able to use good fire here and there over the years, but with trends pointing toward drier and warmer fire seasons there may come a point where the risk of a natural fire getting away from us is too much to take on," Gabler said. "That's exactly what happened with this fire. The risk of letting it run was just too much with how dry things are, so we had to put it out."



Under the right conditions, Gabler said the Horton Complex Fire could have aided the forest's ongoing recovery from the Wallow Fire. Without natural fire as a management tool, agencies would be left to rely on forest thinning and prescribed burns to mitigate future wildfires.

"Fires can be a fresh start," said Natasha Stavros, the director of the Earth Lab Analytics Hub at the University of Colorado Boulder.

Stavros, who specializes in extreme events like megafires and has a background in fire ecology said, "We almost need to have the lightning-fires because they force us to have fire on the landscape whether or not we like it."

Now, in the midst of another catastrophic wildfire season, federal agencies have announced a pause to their "let it burn" policies that allowed them to use natural, lightning-caused fires as a forest management tool.

With the pause in place, firefighting agencies are suppressing both natural and human-caused wildfires across the West.



“The use of natural fire is a major social issue that we have to come to grips with. Would we rather our forests burn when we have some control of the fire? Or no control at all?” said Tom Harbour, the former national director of fire and aviation management for the U.S. Forest Service.

As forest managers weigh the cost of liability with the need for restoration, fire ecologists and researchers search to understand what warming climates could mean for the future of lightning-caused fires.

‘A fresh start’

Red and black soil contrast across the landscape in patches where the Horton Complex Fire reburned the scar of the 2011 Wallow Fire. The red soil outlines where trees, downed by Wallow, had lain for years. The black soil outlines where Horton had burned some of those trees to ash.



"Most of those downed logs have been sitting here since 2011," Gabler said. "Clearing out thousands of acres of burn scar is impossible. We often have to leave these logs till the next fire rolls through, which is risky because those logs can become fuel for high-severity fires."

Horton was the next fire, but it was different.

"Since it was natural and burned at low severity this whole area got a fresh start," Gabler said, crouching down to feel the ash. "This whole area was struggling to regrow after Wallow, but look at it now."

Around him, signs of life were returning to the area.

Grasses and ferns were taking root across the scar, painting the forest floor green. The picked-clean skull of a big game species lay in contrast to the burned earth, proof that both predator and prey have returned.

"It's us humans that say whether a fire is good or bad because of the way it affects us," Gabler said. "But in reality, these natural fires always benefit something."



New questions about megafire aftermath

In burn scars, the benefits of low-severity fires, like Horton, are abundant. But the same can't be said for high-severity burns.

Andrea Thode, a professor in the School of Forestry at Northern Arizona University, said fires are getting bigger and more severe and will continue to as temperatures increase.

"It doesn't matter if you believe how it's happening," Thode said. "The negative effect of what is happening is serious and will have huge implications to our systems and our neighborhoods."

Thode added that as the amount of high severity fires and their size increase, "we simply don't know how regeneration is going to be affected."



In the aftermath of large wildfires, Burned Area Emergency Response teams are among the first to assess the impact of the flames. Paul Brown, the BAER coordinator for the Apache-Sitgreaves National Forests, led the assessment of the Horton Fire.

“In low-severity fires, like this one, the root structure of the grasses are often left intact, meaning the soil structure is still in place,” Brown said. “All it needs is a little water and the grasses grow immediately.”

While the Horton Fire was burning at the ideal severity within the scar of the Wallow Fire, Brown and Gabler had to suppress it. Dry conditions made it too dangerous to manage.

“Typically, we like to manage fires when we have a little bit of moisture because we want predictable conditions. If it’s dry and windy, it’s just more difficult to control those fires. With climate change, that unpredictability makes it more difficult to manage wildfires,” Brown said. “It’s just too risky to let some fires burn, and if we continue on this climate trajectory there will be less opportunity to manage wildfires.”

After the Forest Service announced it would pause policies that allowed for some natural fires to burn, over 40 scientists from universities and organizations around the country signed a letter to express concern over the new directives to stop managing fire for resource benefit.

“I’m a fire guy, through and through,” said Harbour, who spent over a decade as the national director of fire and aviation management for the U.S. Forest Service. “There is no question that we in America and Arizona, in particular, need more of the right kind of fire in our ecosystems. We need to burn in these forests, we need fire in these forests.”

But he didn’t always think so.



'We didn't let natural fire do its job'

As a wildland firefighter decades ago, Harbour was tasked with suppressing a fire in the Blue Range Primitive Area by the Arizona-New Mexico state line. When he arrived at the fire, he saw it slowly moving through the forest, consuming downed debris and clearing up the area.

But the orders were to suppress it. So, Harbour did.

As he and his crew put out the flames, Harbour, who now works as the chief fire officer for Cornea, a company that provides data services for natural disasters, remembers thinking for the first time: “Jeez, should we really be killing this one?”

“We’re in this situation because we suppressed fires. By suppressing all these fires, we didn’t let natural fire do its job. Now forests are overstocked with trees and those conditions help exacerbate wildfires,” Brown said. “If we’re not able to manage fire then those sorts of conditions will persist and we’ll be back where we were.”



Before industrialization allowed fire suppression to become the primary management tactic for natural-caused wildfires, Native American tribes across the West had built years of traditional ecological knowledge on how to manage fires, often letting natural fires run their course.

"The knowledge we gain and the practices we have when managing our land is a large part of Native American culture," said Jon Martin, director of Native American forest and rangeland management programming for the Ecological Restoration Institute, and a member of the Navajo Nation.

But in the aftermath of decades of federal fire suppression, Martin is beginning to question the relevance of traditional ecological knowledge in this current ecosystem, which resembles little of the past.

"The knowledge hasn't changed, but the conditions have," Martin said. "If we don't have even close to the same conditions, does that knowledge now even apply?"



What's happening with our lightning

Lightning is one of the only known ways that wildfires occur naturally. Under historic conditions, these natural fires maintained the health of forests by rejuvenating soil nutrients and creating space for trees to grow.

"We're not getting the same kind of lightning-caused fires that we used to see hundreds and thousands of years ago," said Stavros from the Earth Lab Analytics Hub. "Instead we're seeing more intense fires due to a combination of climate change and land management practices."

While warming climates and drier conditions contribute to megafires, they could also lead to more lightning — a potentially devastating combination.

"CO₂ warms the land surface, which creates a temperature difference with the upper atmosphere that makes it unstable. That creates more updrafts and it makes it more likely to produce lightning," Stavros said. "Usually, when you have wildfires spark because of lightning they can wipe the slate clean."

Under normal conditions, Stavros said this clean slate can allow the land management agencies the chance to return after the wildfire and begin reintroducing prescribed burning on a more regular basis after to create a more manageable fuel load.

But with current conditions so different from those of historic forests, researchers across the West are looking into what the future of lightning on the southwestern landscapes will look like.

As the lands burned by the Wallow Fire a decade ago reap the benefits of the Horton Fire, the still-smoldering trees provide a subtle reminder of an uncertain future.

Source:<https://www.usatoday.com/story/news/nation/2021/09/05/wildfires-climate-change-managing-forests/5714845001/>