

Researchers explore how shifts in federal approaches can turn the tide of destructive wildfires

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10.3 million

Number of acres burned by U.S. wildfires in 2020—an area larger than New Jersey, Connecticut, Delaware and Rhode Island combined—the most acreage impacted in recorded history.



90%

Approximate amount of U.S. wildland fires caused by people.



4.5 million

Approximate number of U.S. homes at high or extreme risk of wildfire



Credit: Stanford University

It wipes out entire communities in a matter of moments, weakens our lungs and even [taints our drinking water](#), yet federal strategy to combat wildfires remains outdated and largely ineffective. The Biden Administration has an opportunity to rewrite the playbook on combatting wildfires, according to Stanford University science and policy experts whose research on a range of related issues points toward bipartisan solutions.

"We have a wildfire pandemic," said Michael Wara, director of the Climate and Energy Policy Program at the Stanford Woods Institute for the Environment. "The most important thing we need to recognize is that our natural lands require investment and active management to be thriving ecosystems and provide the nature-based services we depend on them for. We have disinvested and neglected these lands for too long and are paying the price today."

To Americans who lived amid smoky air and eerily glowing skies this past year, it's no secret that wildfires have become increasingly destructive. Across the West, conflagrations ravaged an area almost twice the size of New Jersey in 2020—and accounted for up to half of all air pollution in the region. Historically a phenomenon of the summer and early fall, wildfires have broken out almost every month in recent years, thanks to a [drier, hotter climate](#).

Still, the agencies that manage much of the region's wildlands have been constrained by a traditional focus on fighting [fire](#) rather than letting it burn where necessary, limited budgets for prevention efforts and

growing development next to wilderness areas, among other obstacles.

Fire as a solution

Perhaps the most important shift the federal government can make is to alter its longstanding ethos of fire suppression above all else, according to Stanford researchers. Federal agencies, such as the U.S. Forest Service and Bureau of Land Management, are funded and staffed primarily to fight large fires, rather than prevent them from happening in the first place. That approach has led to massive accumulations of wood and plant fuels in forests.

Stanford research led by Tony Marks-Block has found that incorporating traditional techniques into current fire suppression practices could help revitalize American Indian cultures, economies and livelihoods, while cost-effectively reducing wildfire risks.

"The time-tested technology that California Indians used for millennia is prescribed fire, and as many Indigenous fire leaders say, we need to embrace fire instead of fear it," said Marks-Block, who received his doctorate in anthropology from Stanford in 2020, and is now an assistant professor at California State University, East Bay.

Decentralized associations of landowners that cooperate on prescribed burns already exist in California, but [government support](#) is required before the practice can be rapidly expanded across private and public lands.

"If state and [federal governments](#) invested the amount of money they spend on wildfire suppression for prescribed fire, wildfires would be much less costly and damaging in the long-run," Marks-Block said.

Closer cooperation between private landowners and state agencies that

manage adjacent forests on vegetation management and firefighting will also be key, according to Bruce Cain, a professor of political science in the Stanford School of Humanities and Sciences and the Spence and Cleone Eccles Family Director of The Bill Lane Center for the American West. Because land use is a state and local matter, the federal government needs to encourage more prevention efforts through grants and expedite regulatory procedures that incentivize prescribed burns.

Ensuring that prescribed burns maximize risk reduction and ecological benefits will require high-quality simulations of fire risk and impacts. The federal government should develop and make available so-called "catastrophe modeling" tools for use by its agencies and communities on or near federal lands, according to Wara.

Similarly, the Biden administration could build on existing proposed federal legislation to provide grants for community-wide defensible space and home protection, according to Rebecca Miller, a Ph.D. student in the Emmett Interdisciplinary Program in Environment and Resources within the Stanford School of Earth, Energy & Environmental Sciences who has published work outlining a range of [approaches to significantly increase the deployment of prescribed burns](#) in California. This could also support much-needed local, broad-scale wildfire protection efforts in high-risk communities.

Promising technology

Long-term chemical retardants, such as a [Stanford-developed hydrogel formulation](#), could go a long way toward helping prevent wildfire ignitions in known high-risk areas, such as roadsides and utilities infrastructure. These technologies could also support controlled burns by protecting critical infrastructure within the burn area, or by helping to prevent fire escape.

"Every year we hear the same refrain: If only catastrophic fires could be prevented in the first place," said Eric Appel, an assistant professor of materials science and engineering and a fellow in the Stanford Woods Institute for the Environment.

Earmarked federal dollars and streamlined environmental reviews would dramatically boost the use of such prophylactic solutions, according to Appel. Currently, the U.S. Forest Service evaluates long-term retardants, but primarily for fighting fires that have already started. There is no clear mechanism for regulation of prophylactic solutions, so agencies tend to "pass the buck" rather than apply the technology, Appel said. "We need to clarify who is responsible."

Congressional support

While preventive efforts, such as prescribed burns and retardant treatments, are essential, bipartisan congressional support may not come easy. In that case, the Biden administration should focus on organizational and leadership change to realign priorities of federal land managers, according to Wara. New leaders could shift organizations' approaches to recognize positive ecological and societal roles that "good" fire plays on the landscape, and do everything possible to facilitate its presence so "bad" fire can't get a toehold.

Changing mindsets

While governmental agencies may sometimes be slow to adapt, there are strong signs that Westerners are ready for a new storyline when it comes to wildfires.

A survey conducted by Cain and others showed that people's personal experience with wildfires may lessen partisan differences over climate

policy. A soon-to-be-published study led by Gabrielle Wong-Parodi echoes the finding, linking people's firsthand fire experience with an increased likelihood to take actions, such as supporting carbon tax policies, that could eventually lessen the likelihood of wildfires.

"Policymakers who want to change the trajectory of [wildfire](#) destruction would do well to tap into people's lived experience," said Wong-Parodi, an assistant professor of Earth system science in Stanford's School of Earth, Energy & Environmental Sciences. "It's hard to underestimate how powerfully these fires have altered people's lives and outlooks."

More information: Tony Marks-Block et al. Revitalized Karuk and Yurok cultural burning to enhance California hazelnut for basketweaving in northwestern California, USA, *Fire Ecology* (2021). [DOI: 10.1186/s42408-021-00092-6](#)

Provided by Stanford University

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