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Study Shows 84% of Wildfires Caused by Humans

Over the last 21 years, debris burning, arson and campfires have combined with climate change to make the fire season much longer



(Wikimedia Commons)

By [Jason Daley](#)
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In the last decade, mega-wildfires have become routine news. In 2015, fires burned a record [10 million acres of U.S. wildlands](#), and [5.5 million burned in 2016](#), including major fires in California and a blaze that started in Great Smoky Mountains National Park that damaged 2,400 buildings in Gatlinburg, Tennessee, and killed 14 people. While wildfires are a natural phenomenon usually sparked by lightning, it turns out the recent destruction isn't all Mother Nature's fault. A new study shows that 84 percent of wildfires in the United States are started intentionally by humans or by human activity.

According to a [press release](#), researchers from the University of Colorado, Boulder's Earth Lab took a deep dive into the U.S. Forest Service's Fire Program Analysis-Fire Occurrence Database, analyzing all wildfires recorded between 1992 and 2012. The researchers found that humans caused more than 1.2 million of the 1.5 million blazes in the database.

The cost of those human-induced fires is staggering. The researchers estimate that man-made fires have tripled the average fire season over the past 21 years from 46 days to 154 days. It now costs over \$2 billion per year to fight the fires, and that figure does not include the impacts to recreational lands or local economic impact that fires can have.

“We are playing a really substantial role in shifting fire around,” Jennifer Balch, fire ecologist at the Earth Lab and lead author of the study in *PNAS*, tells [Christopher Joyce at NPR](#). “I think acknowledging that fact is really important particularly right now when we have evidence that climate is changing, and climate is warming, and that fires are increasing in size and the fire season is increasing.”

Thomas Swetnam, professor emeritus at the University of Arizona who studies forest fires, tells [Doyle Rice at USA Today](#) that it’s not necessarily the case that more people are maliciously setting fires or that Smokey Bear has failed in his mission to educate the public. Instead, Swetnam says that climate change is the biggest driver of increased fires. An increase in drought, fuel buildup in unburned forests, earlier springs and higher temperatures are all contributing to more combustible forests. So the same actions that might have caused a small, easily extinguished fire decades ago are now creating dangerous infernos.

“[This is a] very well done study,” he said. “We have known for a long time that fires set by people are an extremely important factor in the wildfire problems, but this study shows in detail how important people are in lengthening the fire season and contributing to increasing numbers of large wildfires.”

Rice reports that debris burning starts the most human-caused fires, at 29 percent, with arson the cause of 21 percent of fires. Equipment use causes 11 percent of fires, while campfires and children playing with fireworks or matches each cause 5 percent of fires. The Fourth of July, predictably, is the biggest day for wildfires, with 7,762 fires ignited on that date over the 21-year study period.

Balch tells Joyce that there is a solution. She suggests conducting more prescribed burns on forest land to decrease the amount of fuel in the forests after 100 years of fire suppression.

About Jason Daley

Jason Daley is a Madison, Wisconsin-based writer specializing in natural history, science, travel, and the environment. His work has appeared in *Discover*, *Popular Science*, *Outside*, *Men's Journal*, and other magazines.

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USA TODAY, February 2, 2017

Study: People start 84% of U.S. wildfires

Dovle Rice, USA TODAY Published 3:03 p.m. ET Feb. 27, 2017 | Updated 4:53 p.m. ET Feb. 27, 2017



(Photo: Brandon Reese, The Tennessean)

The horrific wildfire that scorched Gatlinburg, Tenn., last November, killing 14 people, was human-caused — and that's not unusual: Whether deliberate or accidental, a whopping 84% of all wildfires in the U.S. are started by people, says a new study.

The remaining 16% are started naturally, by lightning, according to the report, one of the most comprehensive fire studies to date.

The study also found that humans have added almost three months to the national fire season on average. "Thanks to people, the wildfire season is almost year-round," said study lead author Jennifer Balch of the University of Colorado. Humans also account for nearly half the acreage burned each year.

Balch and her study co-authors looked at 1.5 million wildfires from 1992 to 2012 and found that the human-ignited fire season was three times longer than the lightning-ignited fire season and also added an average of 40,000 wildfires per year.

"Fires are burning earlier in the spring in the Southeast and later in the fall in the West," Balch said. Fighting wildfires in the U.S. has exceeded \$2 billion in recent years, the study said.

"To our knowledge, this is the most comprehensive assessment of the role of human-started wildfires across the United States over the past two decades," the authors said in the study.

"Although considerable fire research in the United States has rightly focused on increased fire activity (larger fires and more area burned) because of climate change, we demonstrate that the expanded fire niche as a result of human-related ignitions is equally profound," the study said.

WILDFIRES: HUMANS vs. NATURE

Fires in the Lower 48 states, 1992-2012:

**Number of wildfires****Acres burned****Average length of fire season (Days)**

SOURCE Proceedings of the National Academy of Sciences

Janet Loehrke, USA TODAY



A series of catastrophic, deadly, expensive and massive fires has scorched the western U.S. over the past decade. Several states, such as Washington, Oregon, Colorado and California have seen some of their largest wildfires ever recorded.

The wildfires in the study were ones that required firefighters to suppress them, not ones that were allowed to burn in remote areas.

Thomas Swetnam of the University of Arizona, who was not involved in this research, called the report a "very well done study. We have known for a long time that fires set by people are an extremely important factor in wildfire problems, but this study shows in detail how important people are in lengthening the fire season and contributing to increasing numbers of large wildfires," he said.

It's not that people are becoming more careless about fire or that more arson is occurring, Swetnam said. He said that lightning-caused fires are also increasing in the West because of warming temperatures, earlier springs and increasing droughts, which mean "that climate change is still a primary driver of the trends in this region."



A firetruck drives past a home destroyed by the Fourmile Canyon fire in Sunshine Canyon, west of Boulder, Colo., on Sept. 11, 2010. (Photo: Jae C. Hong, AP)

The most common day for human-started fire by far was July 4th: There were 7,762 total wildfires started on that day over the course of the 21-year period in the study. Of the human-started wildfires with a known cause, the top five reasons are: debris burning (29%), arson (21%), equipment use (11%), campfires (5%) and children (5%), Balch said.

And what about Smokey Bear's indelible message that "only you can prevent forest fires?" She said the widespread policy to stop all fires was "a 100-year experiment that failed."

She said we should be starting the "right kind of fires," saying that it's better to proactively start smaller fires than to react to huge ones when it's an emergency.

"People are living in flammable landscapes," Balch said, noting how more houses are being built on the edge of forests, the so-called "wildland-urban interface," especially in the West.

The study appeared in the peer-reviewed journal *Proceedings of the National Academy of Sciences*.

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THE SYDNEY HERALD, November 18, 2019

NATIONAL **BUSHFIRES**

This was published 6 months ago

OPINION

Arson, mischief and recklessness: 87 per cent of fires are man-made

Paul Read

Contributor

November 18, 2019 – 12.00am

November 18, 2019 – 12.00am



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There are, on average, 62,000 fires in Australia every year. Only a very small number strike far from populated areas and satellite studies tell us that lightning is responsible for only 13 per cent. Not so the current fires threatening to engulf Queensland and NSW. There were no lightning strikes on most of the days when the fires first started in September. Although there have been since, these fires – joining up to create a new form of mega-fire – are almost all man-made.



About 40 per cent of fires are deliberately lit ... The Hillville fire that destroyed homes last week. NICK MOIR

A 2015 satellite analysis of 113,000 fires from 1997-2009 confirmed what we had known for some time – 40 per cent of fires are deliberately lit, another 47 per cent accidental. This generally matches previous data published a decade earlier that about half of all fires were suspected or deliberate arson, and 37 per cent accidental. Combined, they reach the same conclusion: 87 per cent are man-made.

The cycles of the seasons are changing beyond that which can be explained by known forces, both ancient and modern. Every lethal wildfire since 1857 has happened at the height of summer. Until now. The size of these fires has never been seen in Australia's history this side of summer, and certainly not starting as early as September.

Seasonal changes, in part due to climate change on top of natural oscillations causing the drought and westerly winds, have some origins in man-made emissions. More directly, however, the source of ignition is human.

It's not lost on police, emergency services and firefighters at the front line that most of these fires were lit deliberately, or accidentally through recklessness, nor that they are unprecedented in their timing and ferocity. Since September, it has

been a constant pattern that a few days after the fires roar through we have the first police reports that arson or recklessness was involved.

The mix of people lighting fires always follow the same age and gender profiles: whether accidental or deliberate, half are children, a minority elderly, and the most dangerous are those aged between 30 and 60. Ninety per cent are male.

The psychosexual pyromaniac has long been relegated to dusty tomes from 1904 to the 1950s. At least among those caught, the profile emerges of an odd, unintelligent person from a chaotic family, marginalised at the fringes of society and deeply involved in many types of crime, not only fire.

If I had to guess, I'd say about 10,000 arsonists lurk from the top of Queensland to the southern-most tip of Victoria, but not all are active and some light fires during winter. The most dangerous light fires on the hottest days, generally closer to communities and during other blazes, suggesting more malicious motives. Only a tiny minority will gaze with wonder at the destruction they have wrought, deeply fascinated and empowered. Others get caught up with the excitement of chaos and behave like impulsive idiots.

As for children, they are not always malicious. Children and youths follow the age-crime curve where delinquency peaks in their late teens. Fire is just one of many misbehaviours. The great majority grow out of it. Four overlapping subgroups include: accidental fire-play getting out of control; victims of child abuse – including sexual abuse – and neglect; children with autism and developmental disorders; and conduct disorder from a younger age, which can be genuinely dangerous.

Whereas the first three groups can be helped and stopped, the last is more problematic. These children are more likely to continue lighting fires for a lifetime, emerging as psychopaths in adulthood. This tends to match the finding that only 10 per cent of convicted arsonists will go on to light fires again after prison. They are the recidivists, more fascinated by fire, more prone to giving in to dangerous urges when in crisis, more impulsive, less empathic – the hallmarks of a psychopath.

Some research suggests only a very small percentage of arsonists are ever caught, which has several implications.

One is that we have a biased profile of who they really are. Whereas the children and the dopey get caught, the more cunning would be less represented in our samples. More ominous, many more than 10,000 arsonists might be active.

One of the few prospective studies of almost 3000 fire lighters in South Australia alone found as many as 14 per cent of people in a community sample lit fires. This level is much higher than actual convictions would suggest. Further to this, community sampling suggests females represent 20 per cent of those fire lighters, even though convictions of females are only half this figure. If this trend

continues into adulthood, it suggests we have a biased view of the typical arsonist to begin with.

Those we haven't caught yet are still hiding, but we know enough to recognise them and, one day, maybe stop them.

In the thick of a deadly crisis, it beggars belief that some people would seek to make it worse. But we should be careful who we demonise. Not all children mean to do harm. Careful handling of them will reduce, not exacerbate, their problems and allow caregivers to refer them before the first match is struck.

Emergency services and communities on the front line will shine a light on the very best of humanity; others will disgrace themselves through idiocy or malice. Amid the chaos of confronting fires, the psychopath forever looms – not only the criminals who light fires in the forests and grasslands but perhaps also, figuratively, the people who profit from planetary destruction and ignore the urgent warnings of 23 emergency commissioners to prepare.

When the flames abate, we can have a sensible national dialogue about the prevention of wildfires, handling arson, and maybe even climate change.

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