



Summary Abstract

Mega-Wildfires in the Western U.S.

A New Phenomenon or Merely Predictable Events?

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(The following is the opinion and analysis of the writer; June 2019)

Summary Abstract

Fire has taken a natural and essential evolutionary role in maintaining the health of many forested ecosystems throughout the western United States. However, due to fire suppression as a result of Euro-American settlement in the late 1880s, many forests of the west are overgrown and degraded, and are, thus, susceptible to catastrophic wildfire.

Decades of fire suppression have, in many places, prevented smaller, less-intense surface fires that help to naturally thin forests. As a result, many forests have grown so dense that once ignited, flames quickly climb understory “ladder fuels” and set tree canopies ablaze. Crown fires can burn so hot they have the ability to create their own weather, spreading the fire across large landscapes and greatly complicating control efforts. In contrast, managed fire can be an important tool in managing forested ecosystems. However, there has been a dramatic increase of unusually large and severe “megafires” over the past two decades. The recent 2018 wildfires were noteworthy due to acreage burned, structures and lives lost, and long-lasting impacts to humans and ecosystems in the path of the fires.

The ecological, economic, and social costs of recent megafires will likely continue to have devastating affects into the foreseeable future. Managing such wildfires has resulted in an extraordinarily complex and high-stakes challenge. The increase in large, fast-moving, and intensely hot megafires not only creates increased risks and unacceptable impacts to the human environment, but these fires often have the result of permanently transforming ecosystems and habitats that are burned.

News media services continually proclaim western “wildfire seasons” to be record setting, year-to-year. The National Interagency Fire Center (NIFC) in Boise, Idaho has kept detailed records of the number of wildfires and acreages burned in the U.S. since 1926. Of particular interest, on federal and most state lands included in the record keeping statistics, the first 25 years show an average of approximately 119,000 wildfires burning over 30 million acres on a yearly basis. In contrast, the 2018 wildfire statistics indicate 55,991 fires impacted just over 8.5 million acres in the U.S., well below the overall historic average.

So, why are the mega-fires over the past decade so significant? The current large fire crisis in the western U.S. is a product of a number of factors stemming from wildfire and forest management that has resulted in some interacting dynamics: fire suppression and fire-use policy in forest management strategies over the past several decades; dramatic increases in the number of people choosing to live in forested landscapes, further risking lives and property and putting a significant strain on agency budgets; and notable effects of a changing climate that is weakening the resilience of many natural ecosystems. Reducing risks from megafires can only be addressed if each of these underlying problems are dealt with, including significantly increasing the pace and scale of treating the massive backlog of

forest restoration efforts, encouraging more responsible and fire-wise development in and adjacent to fire-prone forested areas, and accurately identifying effects from the changing climate and implementing effective outcomes through forest management and restoration strategies.

The human environment is often overlooked as a significant "causal factor" in the development of megafires. There are now 45 million people in the western states who live in what is known as the Wildland-Urban Interface (WUI), where homes intersect and become part of the forested environment. Records indicate that over 80 percent of all wildfires now are attributed one way or another to a human cause.

The mega-wildfire challenge is also driven by two overriding problems. First, long-term trends indicate that costs and inherent capacity of firefighting resources associated with defending homes will need to continue to increase. For example, in the west, 84 percent of forested lands within reach of community expansion are not yet developed, so as new homes continue to move into the WUI, firefighting costs will no doubt continue to increase. Second, research suggests that regional warming and drying in the western United States is linked to increased fire frequency and size, as well as to longer fire seasons. So, in considering the 2018 wildfire statistics, it's imperative to consider "where" the fires occurred as well as the frequency of fires burning in the WUI environment.

Given these factors, there is an imperative for people to learn to live in a completely different way with wildfires until solutions to mitigate the risks of large fires are implemented. The scale of forest restoration needs is enormous. The U.S. Forest Service estimates that between 65 and 82 million acres are in need of restoration just on lands within the 193 million acre national forest and grassland system. There is, however, no "one size fits all" approach for forest restoration due to the wide range of forest types, natural fire regimes, and priority for treatments.

There is a growing recognition, along with significant opposition, that treating forest ecosystems and utilizing managed fire are more viable paths out of this problem. However, the irony of these solutions is that the strongest opposition comes from the people most affected; those people living near or in the forest who don't want to have their view changed by thinning, or to deal with smoke that's caused by prescribed burns.

Experts are stating with certainty that fire is inevitable. It is a question of whether we want to deal with fire on our own terms or wait for something as catastrophic as the California megafires of 2018. If the trends continue, it is expected that there will be more and larger fires in the future.