

Community Destruction during Extreme Wildfires Is a Home Ignition Problem

Dave Strohmaier and Jack Cohen

We must abandon our expectation that we can suppress 100% of wildfires and reject the false narrative that community protection requires wildfire control. Community wildfire disasters have only occurred during extreme wildfire burning intensities, when high wind speed, low relative humidity, and flammable vegetation result in rapid fire growth rates and showers of burning embers (firebrands) starting new fires. Under these conditions, wildfire suppression, the principal method used for protecting communities, quickly becomes overwhelmed.

But wildfires are inevitable and wildland fuel treatments don't stop extreme wildfires. Does that mean wildland-urban (WU) fire disasters are inevitable as well? Absolutely not! Wildfire research has shown that homeowners can create ignition resistant homes to prevent community wildfire disasters. How can this be possible?

Recall the destruction of Paradise, CA, during the extreme 2018 Camp Fire. Most of the totally destroyed homes in Paradise were surrounded by unconsumed tree canopies. Although many journalists and public officials believe this outcome was unusual, the pattern of unconsumed vegetation adjacent to and surrounding total home destruction is typical of WU fire disasters. Home destruction with adjacent unconsumed shrub and tree vegetation indicates the following:

- High intensity wildfire does not continuously spread through the residential area as a tsunami or flood of flame.
- Unconsumed shrub and tree canopies adjacent to homes do not produce high intensity flames that ignite the homes; ignitions can only be from burning embers and low intensity surface fires.
- The “big flames” of high intensity wildfires are *not* causing total home destruction.

Surprisingly, home ignitions during extreme wildfires result from conditions local to a home. A home's ignition vulnerabilities in relation to nearby burning materials within 100 feet principally determine home ignitions. This area of a home and its immediate surroundings is called the home ignition zone (HIZ). Typically, lofted burning embers initiate ignitions within the HIZ. Although an intense wildfire can loft firebrands more than one-half mile to start fires, the miniscule local conditions where the burning embers land and accumulate determine the ignitions. Importantly, most home destruction during extreme wildfires occurs hours after the wildfire has ceased intense burning near the community; the residential “fuels” – homes, other structures and vegetation – continue fire spread within the community.

Given the inevitability of extreme wildfires and home ignitions determined by conditions within the HIZ, community wildfire risk should be defined as a home ignition problem, not a wildfire control problem. Unfortunately, protecting communities by creating ignition resistant homes runs counter to established orthodoxy.

There are good reasons to reduce fuels or “treat” vegetation for ecological and commercial objectives. But fuel treatments are most effective on wildfire behavior *within* a fuel treatment. They do not stop extreme wildfires. So let’s call a spade a spade and not pretend that most of these projects truly reduce home ignition risk during extreme wildfires. The most effective “fuel treatment” addressing community wildfire risk reduces home ignition potential and occurs within HIZs and the community, which is to say, we can prevent WU fire disasters without necessarily controlling wildfires.

To make this shift, land managers, elected officials, and members of the public must question some of our most deeply ingrained assumptions regarding wildfire. For the sake of fiscal responsibility, scientific integrity, and effective outcomes, it’s high time we abandon the tired and disingenuous policies of our century-old all-out war on wildfire and fuel treatments conducted under the guise of protecting communities. Instead, let’s focus on mitigating WU fire risk where ignitions are determined – within the home ignition zone.

For further information, check out:

- Fire Adapted Missoula County, <https://sites.google.com/view/famcounty/home>
- "Your Home Can Survive a Wildfire" video, <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Preparing-homes-for-wildfire>
- Preparing your home ignition zone for wildfire, <https://www.nfpa.org/Public-Education/Fire-causes-and-risks/Wildfire/Preparing-homes-for-wildfire>

Dave Strohmaier is Missoula County Commissioner. He previously worked for both the Bureau of Land Management and US Forest Service in fire management, and has published two books on the subject of wildfire in the West.

Jack Cohen, PhD retired from US Forest Service Research after 40 years as a Research Physical Scientist where he conducted experimental and theoretical wildland fire research. In addition, he developed operational fire models for management applications and served operationally as a Fire Behavior Analyst.