



Review of 'Elemental', a film by Balance Media

With increasing wildfire size and severity in the American West, we are seeing widespread damage to communities and vital watersheds, along with loss of life and forest habitats. Wildfires and climate change are front and center in the news, spurring questions about how society can adapt.

Any film that can help people readily understand the problem and its solutions is a welcome addition. 'Elemental' takes on several aspects of this dilemma, but in an oddly unbalanced and disjointed way. It explores topics ranging from the reasons homes ignite, how people can protect themselves and their communities, the pre-colonization role of Indigenous burning, importance of forests as carbon sinks and habitats, the history of fire suppression, and the role of 20th and 21st century timber harvests. The footage is often compelling with high production value. The filmmakers give Indigenous burning its due, which is commendable, but it feels disconnected from the rest of the film. While solid points are made by experts in the field, some topics are erroneously conflated with others and key pieces to the full story are left out. The result is that the movie comes across as one-sided in a few important areas, with the potential to confuse audiences about matters of great importance. The purpose of this review is to highlight several of these shortfalls to facilitate a more nuanced understanding.

In the imagery and narrative, fuel treatments are conflated with logging, but *logging* doesn't mean that fuels are treated. Logging can be many things, ranging from industrial forestry clearcuts, like those highlighted in the film -- which aren't a fuel treatment at all -- to an understory thinning, which mainly removes smaller trees that have grown in under the influence of fire exclusion. Logging can improve or worsen fire hazard. The tools are not inherently good or bad. How they are used matters.

In many western forests, a critical target of fuel reduction is the excessive amount of litter, duff, and downed wood that has accumulated on the forest floor. Forest thinning alone will not stop a wildfire, nor is it designed to. Fuel treatments are designed to allow future fires to burn with less intensity, increasing the number of trees that survive, and reducing fire suppression expenditures. As the movie correctly points out, previous fire that consumes these downed fuels is typically what stops a wildfire. For this reason, the goals of comprehensive and broadly effective fuel reduction treatments are rarely met through forest thinning alone.

If the film had spoken to the massive changes that have occurred in many western US forests over the past 150 years, it would be clearer why forest thinning is often a key component of fuel reduction today. The impact from fire exclusion policies, loss of Indigenous burning, and historical logging practices that removed the largest fire-resistant trees and left the fuels, has been profound. Forests in many areas now contain up to ten times more trees than they once did. Meadows and open woodlands filled in with trees, increasing landscape fuel continuity. Litter, duff, and dead wood accumulated on the forest floor instead of being consumed and turned into nutrients by frequent predominantly low- and moderate-intensity fires. Excess forest density increased the susceptibility of forests to drought and insects, with newly killed trees adding even more fuel to the system. In terms of forest fuels, overstory tree density and fuels on the ground are intimately linked.

What do we do about the excess fuels, especially in a warming climate when all that fuel is now drier and more flammable? The degree of change from historical conditions and appropriate management varies by forest type, fire history, community goals, and land use patterns. Place-based discussions and solutions are

therefore key. Not all forests benefit from thinning or look like the relatively moist forests of central Oregon that are featured in the film. And what happens after a large severe wildfire occurs in an unnaturally dense forest? Blackened snags far exceeding historical numbers replace a living forest, with few seed sources left for future tree regeneration. Woodpeckers prosper for a handful of years, until the snags fall to the ground, increasing the intensity of the next fire. The movie also makes the unsupported claim that California spotted owl nest occupancy increased after the 2013 Rim Fire but fails to mention that no spotted owls remained in areas where the landscape burned at high severity – the very sort of fire outcome that fuel treatments can help prevent. These important management dilemmas lack simple answers. How we balance fuel management with the needs of wildlife and other forest values are among the critical challenges of our time and viewers would benefit from a full accounting of options as well as the trade-offs.

This movie had the potential to shed light on these complex issues, add nuance, and illustrate a path forward. Instead, 'Elemental' leaves us hanging. If only 1% of the total forested area is treated for fuel reduction and wildfires rarely encounter these scattered treatments, does that mean that they don't work? This is implied in the film. Or does it simply illustrate that the scale of treatment up to now is grossly inadequate to substantially alter fire behavior? All the doubt-casting about the effectiveness of fuel treatments doesn't change the fact that properly implemented fuel treatments have consistently been shown to reduce wildfire intensity under a range of conditions, especially when prescribed fire is used as a part of the treatment. Most fire scientists and fire managers believe that an order of magnitude greater area needs to be treated annually to shape outcomes for the better. Follow-up to the indigenous burning piece is also lacking, leaving the audience no closer to understanding how these important practices can be encouraged and expanded.

The movie makes a compelling argument that reducing home loss to wildfires is best accomplished by preventing ignitions from flying embers, through improvements to construction methods and materials, and removing combustible items in the zones immediately adjacent to homes. The story here too is more nuanced than the film suggests. Even though wildland fuels do not typically directly deliver flames to structures, home hardening and forest fuel management are not mutually exclusive. After all, the embers from crown fires that ignite homes can fly up to five miles and often originate from wildlands that have not seen enough fire. This is part of the Paradise, CA story as well.

Preventing houses and communities from burning is not the only reason for fuel treatment, even though this too is implied. Maintaining forests and the species that depend on them, conserving our municipal watersheds, and mitigating against drastic loss of carbon stores are also essential. The movie offers few suggestions other than acknowledging that prescribed fire cannot be used everywhere.

Uncharacteristically severe wildfires are not inevitable. Decisions about how we manage forests have played a role in how we got to where we are today and will play a role in determining how much forest we can retain with the current climate and fire reality. Area burned in wildfires is projected to triple or quadruple in the 21st century. In their current fuel-loaded condition, many of our formerly frequent-fire forests simply aren't ready for this. To solve these challenges, the people are best served by hearing an unfiltered story and making choices based on an understanding of conditions and our shared values.

If choosing to see the film, the Association for Fire Ecology encourages viewers to then dig deeper and learn about these important topics. Develop your understanding of the pros and cons of action and inaction and enter dialogues that seek solutions.