Wildfires that Could Impact Human Communities in Eastern Colorado Rockies Most Likely to Start on Private Lands, Experts Say

Scientists find that on the front range of the Colorado Rockies the highest fire risk factors are from privately owned lands and threaten other privately held land and property.

Washington D.C. – Fires ignited on private lands pose the most significant wildfire threats to populated areas on the eastern-facing range of the Colorado Rocky Mountains, according to risk analysts who used extensive evidence regarding a combination of forest and vegetation types, wind and climate conditions to reach their conclusions. The risk assessment findings—based on an examination of ignition locations on landscapes, the underlying potential for fire to spread, and human population density—could help prevent and manage future wildfire risks.

In their new paper, “Wildfire Risk Transmission in the Colorado Front Range, USA,” Jessica Haas, David Calkin and Matthew Thompson of the Department of Agriculture’s U. S. Forest Service comprehensively analyze major contributors of risk to human and economic development associated with wildfires in eastern Colorado counties. The authors combine new risk tools—such as fire spread and burn probability modeling and maps of human development—in concluding that ignitions on privately held lands on the Eastern Rocky Mountains pose elevated wildfire risks. The paper recently appeared in the online version of Risk Analysis, published by the Society for Risk Analysis.

Wildfires continue to damage property, communities and human life the world over, and some experts predict more extreme weather events, such as drought, will increase the number and severity of wildfires. The 2007 forest fires in Greece resulted in 84 fatalities; in 2009, bushfires in Victoria, Australia, resulted in 173 fatalities and millions in property damage; and the Fourmile Canyon Fire in 2010 outside Boulder, Colorado, led to the loss of 168 homes and damages totaling $220 million. Approximately 3.65 million people reside in the Colorado Front Range area.

As expected, dry and windy conditions increase the severity of fire spread and damage. The areas with extensive grass and shrub coverage on private lands tend to have higher burn probabilities, although populated Department of Defense lands near Colorado Springs have combinations of forest and vegetation types that increase transmission probabilities, the authors say. “Air Force Academy lands affect the largest amount of people, with an average of 10,122
people affected per fire, which is 10 times higher than” other neighboring areas in Colorado. These results cement the importance of the spatial juxtaposition of fire potential and human communities in contributing to elevated levels of risk.

More broadly, the researchers note that identifying fire transmission pathways near populated areas is the key to cost-effective prevention investments on both public and private land. Toward this end, they say that identifying “the areas of highest exposure of human populations to wildland fires under extreme, but not uncommon, weather events” is the optimal way to assess, prevent and fight fires. They test the notion that fires ignited on private land result in greater human exposures to wildfires than federal ignitions and that risk transmission levels will be greatest from private to other private landowners. “By quantitatively producing maps which identify the areas of highest risk transmission, landowners may be more motivated to mitigate the risk from their property if they can visually recognize their lands as a source of wildfire risk,” according to the authors.

“Our results highlight areas on the Colorado Front Range, where if an ignition were to occur under severe fire weather, expedited measures should be taken to extinguish the fire before spread occurs, or, if failing that, emergency evacuation and response may be warranted,” the researchers conclude.

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