Multi-Scale Assessment of Wildfire Impacts to Human and Ecological Values to Support Forest Service Fire Management Policy

A team of researchers at Oregon State University is working with Alan Ager with the US Forest Service Rocky Mountain Research Station to advance landscape and wildfire simulation modeling to understand cross-boundary wildfire and management challenges, and support recent regional and state shared stewardship initiatives. The OSU College of Forestry research team includes Faculty Research Assistants Rachel Houtman, Michelle Day, and Chris Ringo, along with Research Associate Ana Barros, Assistant Professor Meg Krawchuk, and USFS International Visiting Scholar Fermin Alcasena.

Predicting wildfire disasters presents a major challenge to the field of risk science, especially when fires propagate long distances through diverse fuel types and complex terrain. A good example is in the western US where large tracts of public lands routinely experience large fires that spread from remote wildlands into developed areas and cause structure loss and fatalities. This work provides the first comprehensive assessment of where public wildlands potentially contribute wildfire exposure to communities in the western US. We use simulation modeling to map and characterize the composition of the source landscapes (firesheds) and recipient communities in terms of fuels, fire behavior and forest management suitability. The information can be used to build an investment prioritization framework that targets highly exposed communities where forest and fuel management activities are feasible. The methods demonstrate how cross-boundary exposure can be factored into prioritizing federal investments in hazardous fuels reduction on national forests in concert with community protection measures. The work will also examine a wide range of questions pertaining to the management of forested areas on US national forests. Specifically, tradeoffs will be examined among alternative prioritization schemes to identify conflicts and opportunities to reduce wildfire risk to water, communities and other ecological values.

Link to initial work: https://www.fs.fed.us/rm/pubs_series/rmrs/gtr/rmrs_gtr392.pdf
RMRS press release: https://www.fs.fed.us/rmrs/news-releases/new-research-quantifies-future-wildfire-impacts-communities-western-united-states