

What Works, Where, and For How Long? Empirical Insights on Fuel Treatment Effects and Effectiveness In California Forests

A lecture presented by

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As part of the 2026 FFERAL (Fire and Forest Ecology Random Lecture) Series jointly hosted by the California Fire Science Consortium and the Safford Lab at UC-Davis

Wednesday, January 14, 2026, 3:00 – 4:30 pm, Wickson Hall 1017 or via Zoom

Register for virtual event at <https://tinyurl.com/u44ckfdv>



Bio: Dr. Katharyn Duffy is a Senior Scientist at Vibrant Planet and an Adjunct Faculty member in Ecoinformatics at Northern Arizona University. Her work integrates empirical observations, remote sensing, and ecological data science to quantify the realized effects of forest management interventions across Western landscapes. Her group's research focuses on how fuel treatments and fire use restore ecosystem function, influence wildfire severity, and change recovery trajectories across a range of potential measures including forest retention, ecosystem water use, and drought resilience. Dr. Duffy collaborates with federal, state, tribal, and community partners to integrate evidence-based approaches into proactive management, multi-benefit planning, and climate-resilient forest stewardship in California and beyond.

Lecture Abstract: Land managers and practitioners need reliable, empirical evidence about which forest treatments reduce wildfire impacts—and how long those benefits persist. This seminar introduces a framework designed to meet that need. Part 1 presents findings from Yackulic et al. (2025), which use a natural-experiment design in the Central Sierra to show how thinning and prescribed fire reduce biomass loss, moderate fire severity, and improve forest retention. Part 2 highlights expanded methods now applied across regions, treatment types, and ecosystem processes. By integrating extensive treatment records with remote-sensing time series and counterfactual controls, we quantify treatment effectiveness over its full lifespan—from changes in fire behavior to shifts in ecosystem water use and post-fire recovery. These results offer tangible performance metrics that can inform project design, build trust in proactive management, and support multi-benefit planning at landscape scales.

