Project Title: Planning for operationally resilient forests from stands to landscapes

Project Partners: Univ. of Washington Forest Resilience Lab, USFS Regional Ecology Program, USFS Pacific Southwest Research Station, *Stakeholder Collaboratives*

Stakeholder Engagement Need: *We request stakeholder collaborative involvement to assess usability of relative SDI goals to plan and evaluate management units and develop treatment recommendations across mixed landscapes. A letter of support is requested by October 26, 2026.*

Project Purpose: Establish a workflow for using lidar-based relative stand density index (rSDI) to plan spatially-explicit landscape-scale treatments based on pyrosilviculture principles to improve forest and community resilience to wildfire and climate change.

Questions:

1) *Using climate-informed rSDI, where do current forest conditions exceed the current and future climate-based carrying capacity recognizing different ownerships and management goals across landscapes?*
2) *Using simulated mechanical treatment, where are target rSDI conditions achievable within existing landscape, ownership, and regulatory constraints?*
3) *What is the biomass potential of forests treated to meet pyrosilviculture and rSDI targets?*

Pyrosilviculture Management Areas

Anchors – fire-control features (e.g. POD boundaries, WUI core areas)
Ecosystem assets – valuable for biological resources (e.g. owl PACs)
Revenue – prioritized for timber

Project Description: Using three ecoregions where overly dense dry conifer forests are interspersed with the wildland urban interface (WUI), we will map SDI based on individual lidar-identified overstory trees and scale SDImax by current and future drought stress to identify the climate-informed carrying capacity of a site. We will then partition each landscape into pyrosilviculture management areas and specify target rSDI values according to these ecological and community protection principles. Using a modified open-source UW tool, RxSDI, we will simulate treatments based on manager-set goals for target rSDI while prioritizing retaining large trees. The simulations will explore the effect of varying DBH limits for tree harvest. *Outputs will map post-simulated treatment rSDI and resulting aboveground biomass, basal area, and wood volume.*

Proof of Concept: In two pilot studies (North Yuba Landscape Resilience & West Lassen Headwaters Projects), we found that rSDI greatly exceeded desired forest conditions and climate-based carrying capacity, but high-risk areas varied by pyrosilviculture unit. Simulated treatments of each stand showed that achieving rSDI-based resilience targets is limited by DBH-limits in many cases.

