Assessment Name:

Fuel treatment tradeoffs – Mt. Emily WUI

Presented by:

Nicole Vaillant

Scale:

Project (~40,000 ac)

Management issue:

Large investments in wildland fuel reduction projects are being made on federal lands in many regions within the United States in an ongoing effort by land management agencies to reduce human and ecological losses from catastrophic. The implementation of these projects continues to challenge planners as they attempt to reduce fuels over extensive areas while addressing multiple and often conflicting federal planning regulations, management objectives, and public expectations with finite budgets. A typical policy paradox exists in the Blue Mountains, where extensive fuels build up is being addressed with accelerated fuel reduction treatments. Following guidelines set forth in the 2001 National Fire Plan, planners on national forests have initiated wildland urban interface (WUI) fuel treatment projects adjacent to many of the small towns and dispersed settlements. Roughly during the same period, a number of policy decisions also directed managers to design and invest in forest restoration projects to preserve and enhance remaining late-old forest structure.

We estimated expected wildfire-caused mortality of highly valued large trees when fuel treatments were prioritized based on distance to residential structures. We then studied an alternative scenario that prioritized fuel treatments to overstocked stands on the adjacent wildlands to help achieve stand restoration objectives and preserve large trees. The findings from this study help understand the tradeoffs between competing fuel treatment investment strategies to mitigate wildfire-caused losses.

Project Management:

- Research funded by WWETAC
- Support from forests involved, ODF, and PNWRS/WWETAC staff

Fuel and fire behavior modeling:

Data

- Stand exam data was collected from both the Wallowa-Whitman and Umatilla National Forests, outside of NF photo interpretation
- Fuel loading was sampled on about 10% of landscape and extrapolated to rest based on plant association, stand structure, local knowledge

Scenarios

- Treatments were a 3-yr sequence of thin from below, surface fuel removal, prescribed burn
- Multiple intensities: no treatment, 10, 20, 30, 40, 66% of forested lands
- Two spatial priorities: protect trees (SDI priorities) vs. protect homes (proximity based on density)

Weather

- 97^{th} percentile for fuel moistures
- 6 burn period times used

- Calibrated to historic large burn periods

Model used

- Randig was used, with 10,000 burn periods for each run

HVRAs

WUI – Structure locations

- Data – Individual structures were buffered according to ODF regulations, 100 ft
- Exposure analysis – no response functions applied

Large trees (>21" DBH defined by east side screens)

- Data – Local tree list data, identified in FVS
- Modeled expected loss, no response functions used, modeled using FLAMEADJ in FFE-FVS to correlate to the FIL categories

How the results are being used

- Early adapter paper for wildfire risk and planning
- Used concepts (scatter plots) in planning documents

Highlights and lessons learned

- While there are tradeoffs between managing landscapes to address long-term restoration goals versus protecting residential structures, both objectives can be addressed with spatial treatment designs that factor likely wildfire spread directions and the juxtaposition of values at risk.
- Treatments targeted to WUI are more effective at protecting structures, and treatments targeted to the wildlands are more effective at protecting large trees, but….
    - Substantial reduction in risk to highly valued large trees and structures well outside of treatment areas (5–10 km).
    - The restoration strategy in the wildlands reduced wildfire probability and intensity to structures in the WUI even at the low range of area treated.
- These landscape scale effects could be leveraged in landscape fuel treatment designs to maximize benefits from fuel treatment programs.