Assessment Name:

Deschutes National Forest

Presented by:

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Scale:

National Forest

Management issue:

Designing effective fuel treatment strategies to achieve the goals of new US federal wildfire policy (USDA-USDI, 2013) will be a major challenge to land managers given the diversity of ecological and social environments within and around federal tracts of land. From a fire management perspective, the long distance spread of fire across anthropogenic and ecological boundaries complicates the development of policies designed to reduce associated financial and ecological losses. We were specifically interested in understanding the origin of wildfire threats to conservation reserves and adjacent wildland urban interface (WUI), and the potential to alter impacts from fuel treatments on the managed portion of the national forest.

Project Management:

- Research funded by WWETAC
- Support from Deschutes National Forest

Fuel and fire behavior modeling:

Data

- LANDFIRE for fuels/topography
- Forest data for fire history/occurrence
- Forest data for HVRA mapping

Scenarios

- Existing conditions
- Post-treatment (species specific prescriptions: thin from below, fuel removal, prescribed fire)

Weather

- Extreme burn period events, dry fuels
- Four wind speed/direction scenarios

Model used

- Randig was used, with 200,000 burn periods for each run

HVRAs

Eleven land designations under the forest LRMP, NW Forest Plan, and PACFISH, WUI mapped by the state of OR and the Central Oregon Fire Management Service, and other land holdings (BLM, State, Private, BIA, and other National Forest Lands)

How the results are being used

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Highlights and lessons learned

- The methods can be readily scaled up and adopted for broader scale assessments.
- The simulation results suggested that a large scale fuel management program on a typical western US national forest can potentially reduce overall wildfire exposure as measured by burn probability, flame length, and wildfire transmission.
- Treating 20% of the national forest within the managed land designations could reduce burn probability, mean fire size, and conditional flame length, 32, 35 and 13%.
- The fuel management effects were observed both inside and outside of the treated national forest land designations in terms of both local and transmitted fire
- The network had a density of 79%, meaning that almost 80% of the designations exchange fire, which we interpret as a relatively high level of connectivity.
- In general, conservation reserves with small polygon size (AQUA, OLG, OWL, OWLCH) had relatively high amounts of transmitted versus non-transmitted fire, and contributed more fire to other designations than they received.
- Most fuel treatment modeling studies have used small landscapes (5000–20,000 ha) relative to the size of common mega-fires (e.g., >100,000 ha), and thus there may well be a scale mismatch between the size of the disturbance and the landscape used to test the effectiveness of fuel management scenarios.
- Network methods can inform landscape planning for restoration, conservation and fire protection efforts both on federal lands and adjacent privately owned parcels