

# Silviculture and Wildfire - Making the Link -

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CSC Workshop - February 2010

# The Fire Environment

Weather

- Fire Weather Indices



Fire Behaviour  
Triangle

Topography

- Slope
- Aspect

Fuels\*



# Fuel Layers

Crown Fuels – A  
Ladder Fuels – B,C  
Surface Fuels – D,E  
Ground Fuels – F



Russell T. Graham, Theresa B. Jain, Susan Matthews, 2010 **Fuel Management in Forests of the Inland West IN**: Elliot, William J.; Miller, Ina Sue; Audin, Lisa. Eds. 2010. **Cumulative watershed effects of fuel management in the western United States. Gen. Tech. Rep. RMRS-GTR-231.** Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 299 p.

# Principles of Fuel Reduction

aka Silviculture from a fire perspective

Adapted from Agee and Skinner 2005

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# Silviculture/Fuels Management

Untreated



Rank 5/6



Silviculture

Treated



Rank 2/3



\* fire behavior under the same weather and topographic conditions



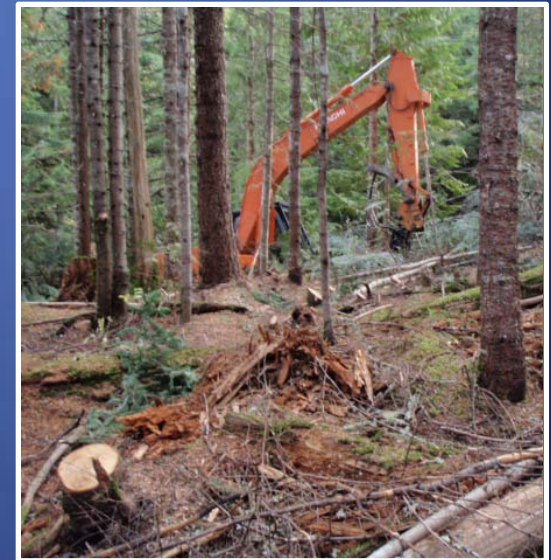
# Reduce Surface Fuels

## Effects

- Reduces potential flame length
- Fire control easier; less torching where torching is the initiation of crown fire
- Surface disturbance less with Rx fire than other techniques

## Silvicultural Tools

- Broadcast (Rx) Burning but smoke/venting issues
- Piling/Burning (above issues)
- Biomass
- Mulching



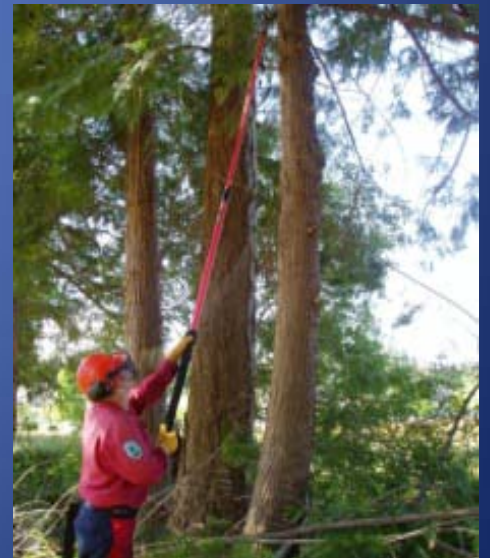
# Reduce Ladder Fuels

- Effects

- Requires longer flame length to begin torching
- Less torching
- Opens understory; may allow surface wind to increase

- Silvicultural Tools

- Thinning
- Pruning



# Decrease Crown Density

## Effects

- Makes tree-to-tree crown fire less probable
- Reduces crown fire potential
- Surface wind may increase and surface fuels may be drier

## Silvicultural Tools

- Thinning
- Stocking Standards





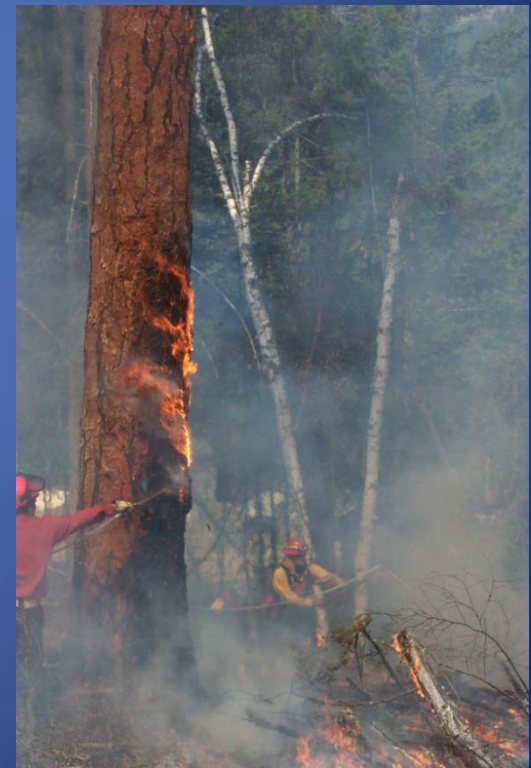
# Keep Big Trees of Resistant Species

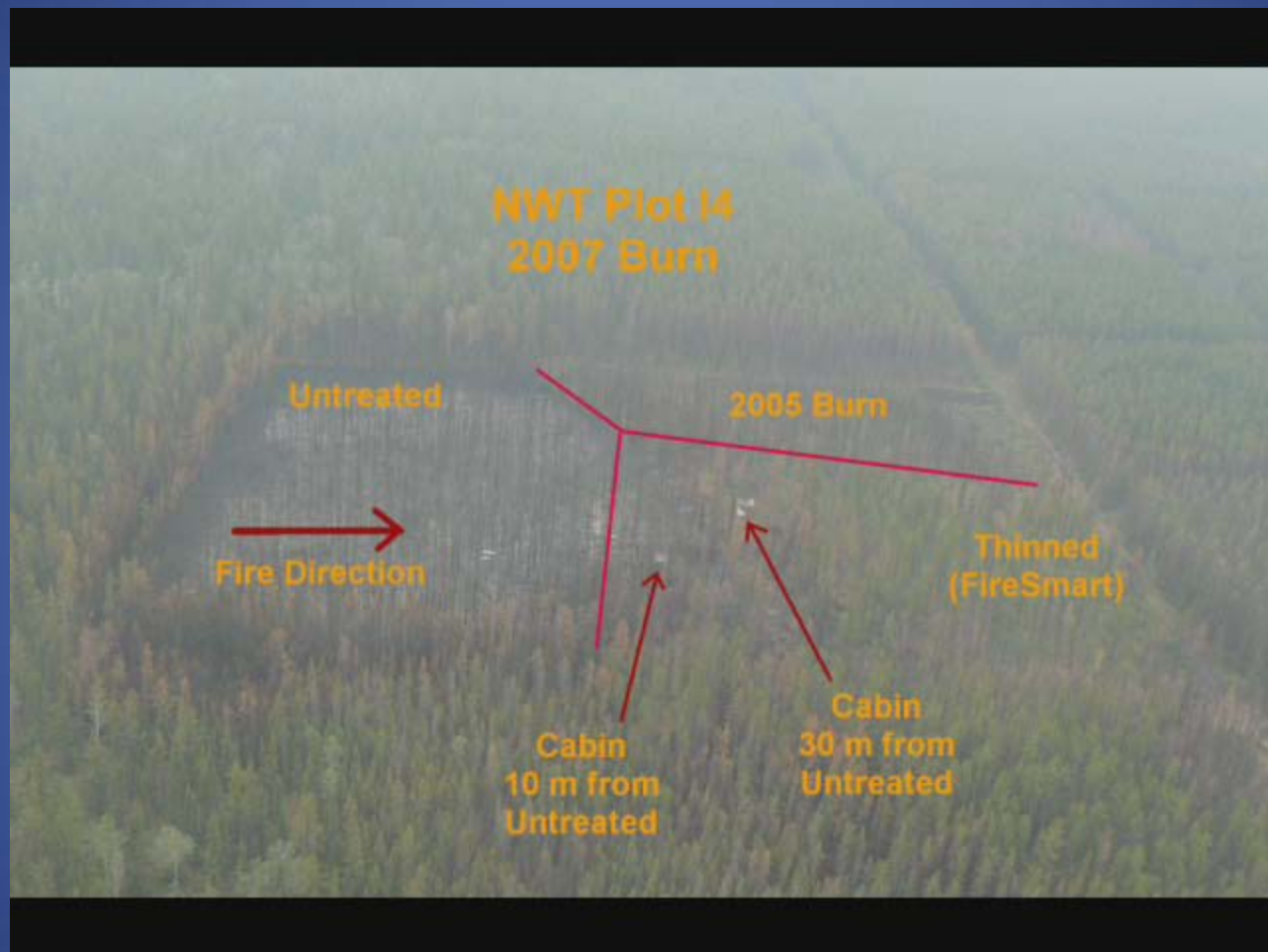
## Effects

- Less mortality for same fire intensity
- Generally restores historic structure (NDT4)
- Less economical; may keep trees at risk of insect attack

## Silvicultural Tools

- Thinning
- Species Selection including Deciduous





# Coastal Applications





# Slash

- Slash fires are generally the problem fire on the coast



## Issues

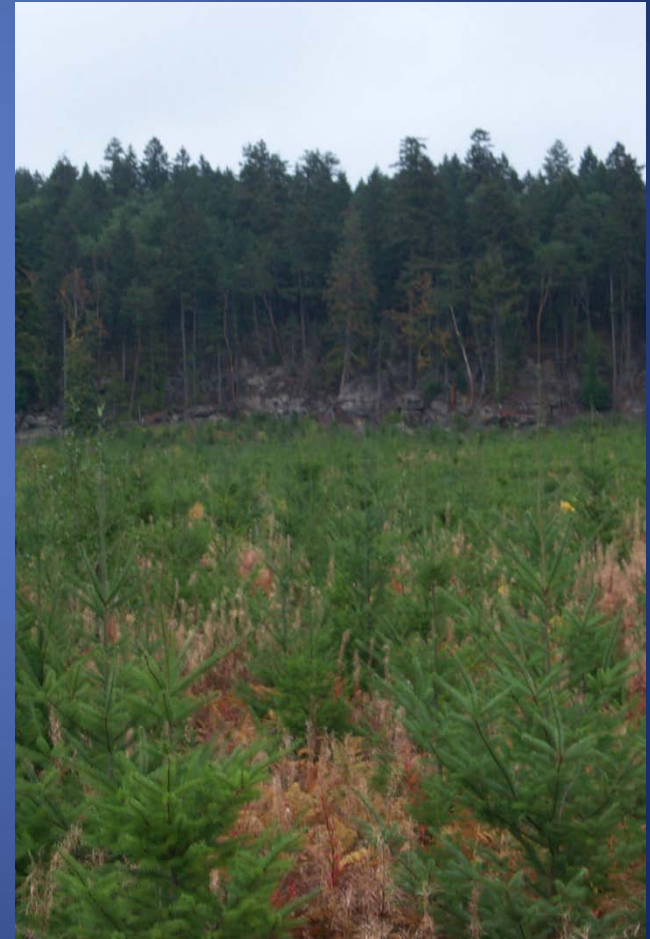
- Quantity



# Slash Cont.

## Issues

- Continuity
- Landscape perspective
- Duration of hazard





# Variable Retention



## Issues

- Slash too much too close to retention trees/patches
- Issues around windthrow contributing to fuel loading



# Variable Retention Cont.

Fire V80698



## Issues

- At least 6 lightening caused fires in variable retention last year in North Island Central Coast Fire Zone

# Wildland/Urban Interface

- A major challenge for much of the coast



## Issues

- High Hazard/High Risk
- Perceptions around fuel treatment
- Smoke and Venting



# Summary

- Keep in Mind Risk/Consequence in Addition to Legal Obligations
- Keep a Landscape and Local Perspective
- Lots of Silvicultural Tools to Work With
- Professional Reliance

