



Fuel Succession Dynamics and Effective Fuel Treatments

- Wildfire and Management
- NCASI Forestry and Research Engagement Session
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What is a fuel treatment?

- Objective driven
 - Fire behaviour
 - Fire effects
- Silvicultural treatment can be compatible with fuel treatment provided the primary objective is altered fire behaviour and fire effects.
- Need to be clear about long-term objectives.





Example Fuel Treatment Objectives

- Reduce the probability of “active” crown fire,
- Reduce surface fire intensity and spotting distance (create and maintain a safe work environment for firefighters),
- Increase wildfire resilience.



Increase Wildfire Resilience

- Goal is to create conditions where the ecosystem can bounce back from the disturbance,
- Significant costs are incurred (i.e., restoration, weed control, soil stabilization, replanting, spacing, etc.) and fire hazard can increase if the forest is lost.

Fuel treatment tactics

- Species conversion
- Vegetation type conversion
- Mechanical treatment
- Manual treatment
- Mulching/chipping
- Prescribed fire – piles and broadcast



No Treatment

Thinning + Prescribed Fire

Thinning Only

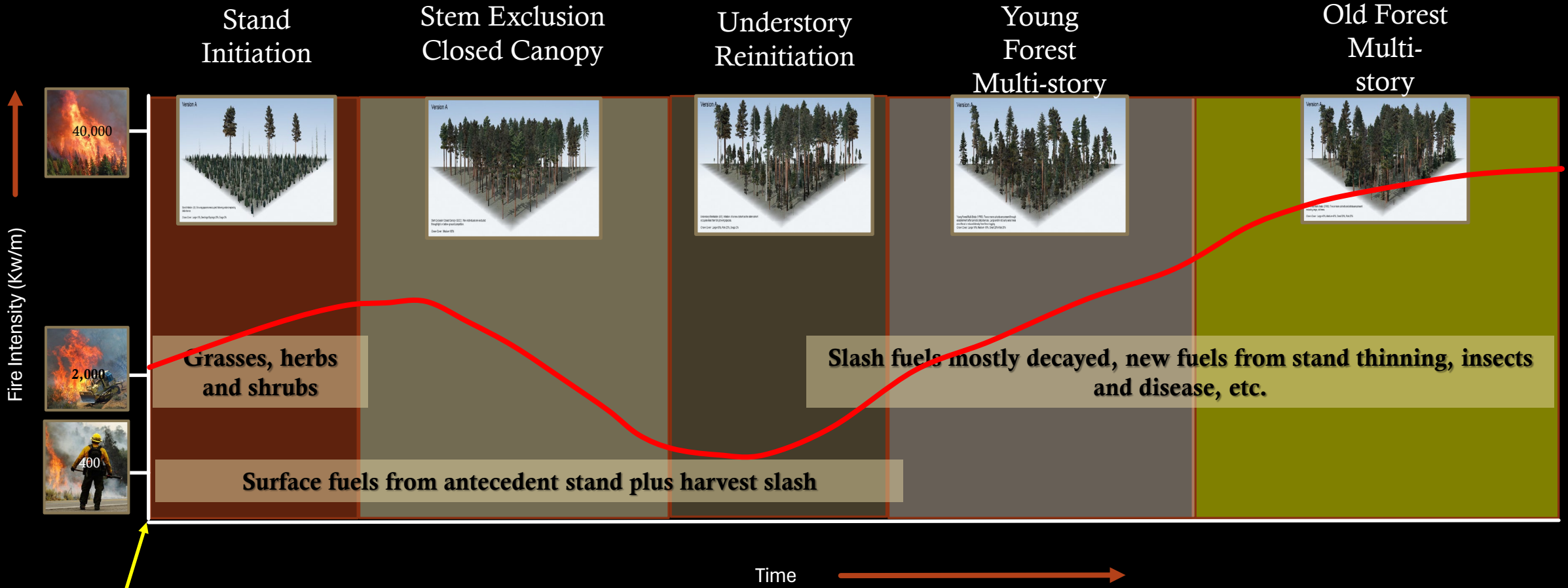
Fuel treatment limitations....

How long is a treatment effective?

- Fuel/fire hazard succession dynamics,
- Vegetation is dynamic – fuels grow back!
- How does potential fire behaviour and fire effects change over time?
 - Site ecology,
 - Antecedent disturbance,
 - Future disturbances.



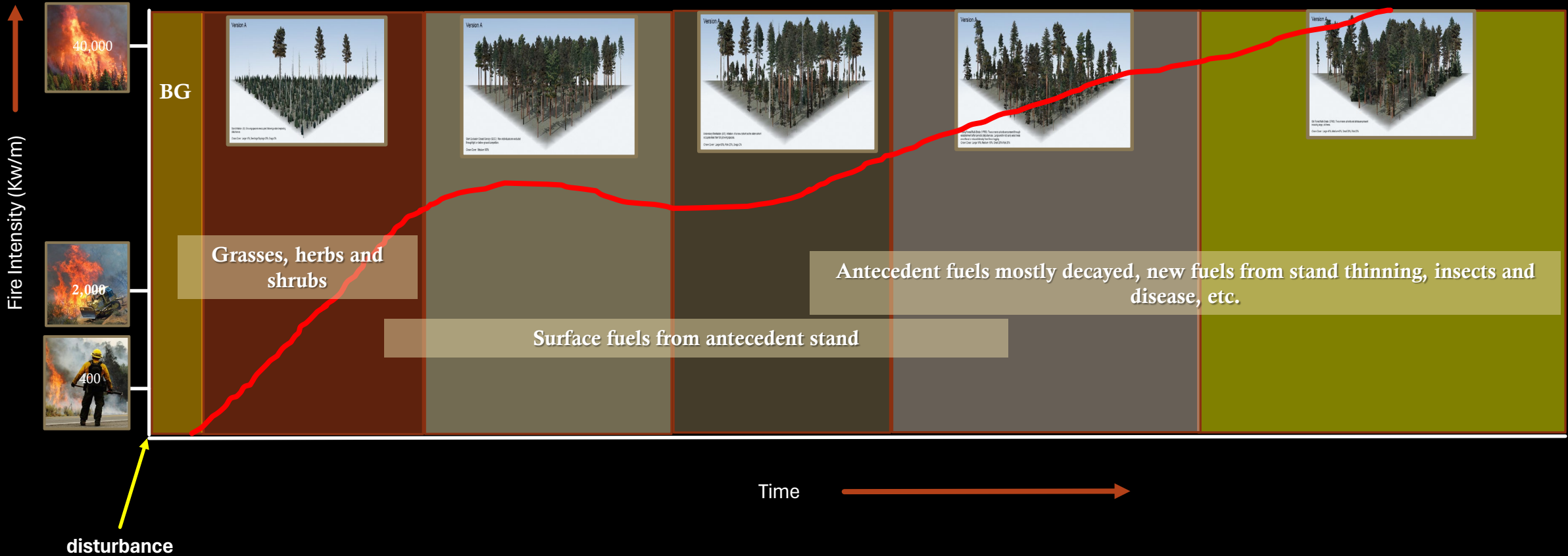
Relative Fire Hazard by Stand Structure Type



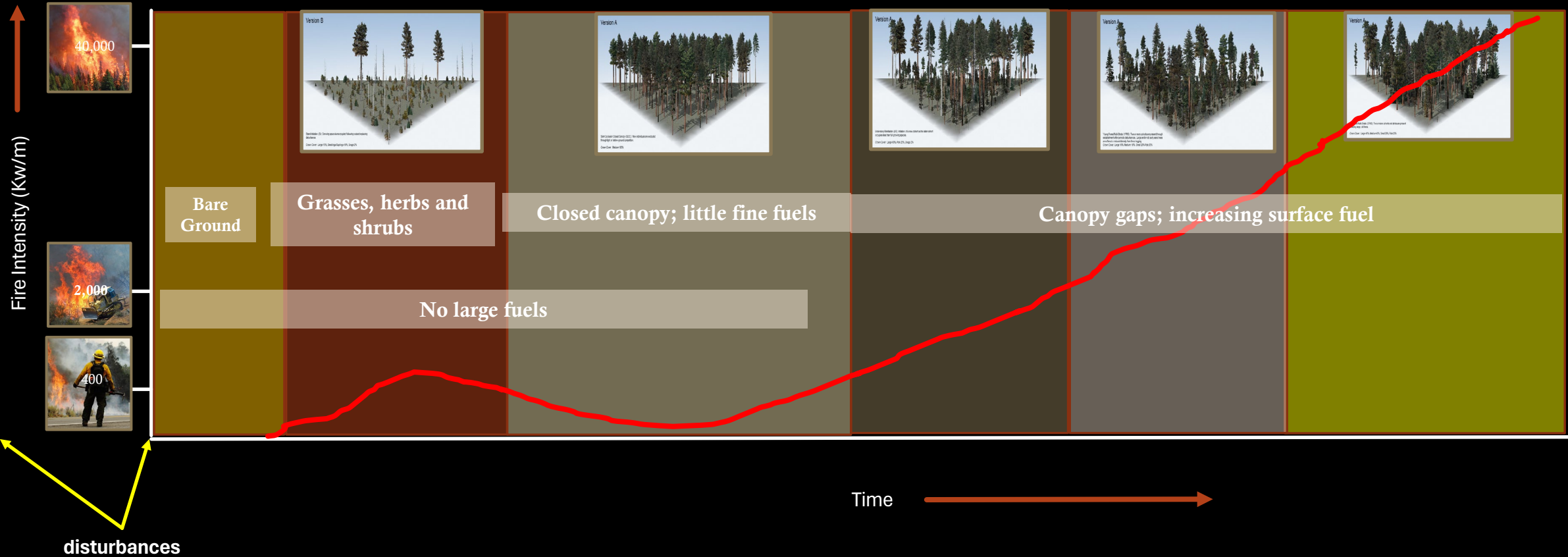
disturbance

SUCCESSION TRAJECTORIES, FUEL LOAD, AND POTENTIAL FIRE INTENSITY: TRADITIONAL HARVEST AND REPLANT

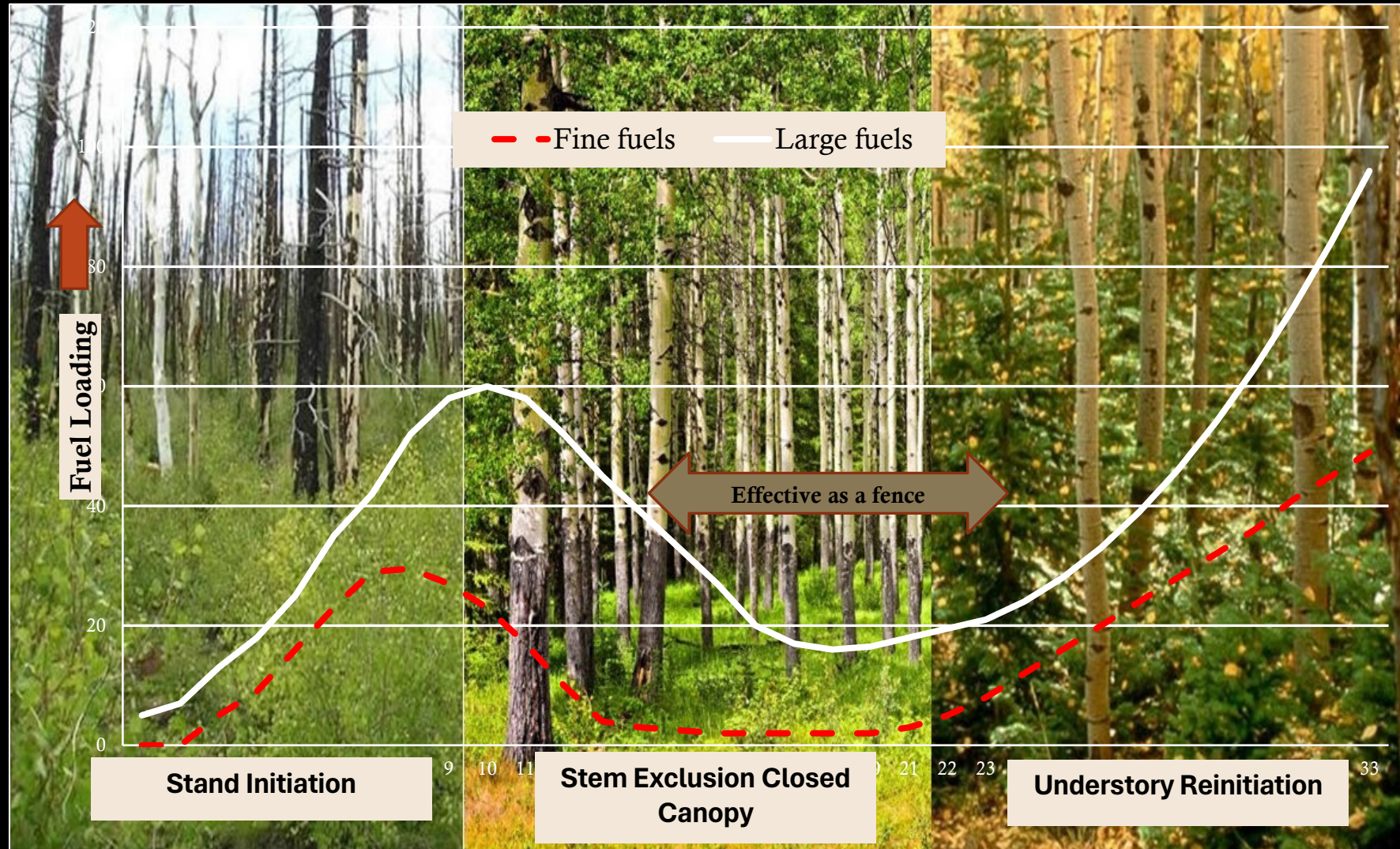
WILDFIRE (NO SALVAGE) AND REPLANT



REBURN AND REPLANT



Aspen Fuel Succession Dynamics: Post-Wildfire; No Salvage



Post-Wildfire Salvaged or Prescribe Burned



East Kootenay Wildfire Risk Reduction Project

- Determine where fire flow patterns exist and how much area is being burned at high severity,
- How will that change over time with a rapidly changing climate?
- Where do treatments need to go to be most effective – start with an unconstrained landscape,
- How long are treatments effective?
- How do we balance the multiple value on the landscape with the need to reduce area burned at high severity?
- How much is this going to cost?
- What is our capacity to do this work?
- What barriers are in the way of aggressive action at large scale?



Questions?

