

# Stand Response to Vegetative Treatments

*Long term owl habitat  
development and fire risk*



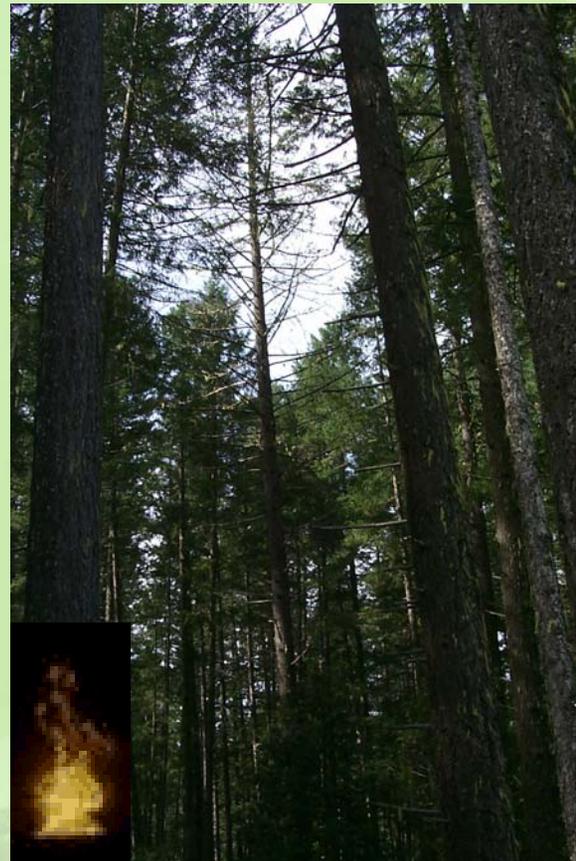
# Major Concepts

- Regardless of Rx: owl habitat and fire risk will be dynamic
- How do the two match up?
- How do certain silvicultural treatments affect owl habitat and fire risk?
- Landscape considerations
- Interpersonal/agency dynamics



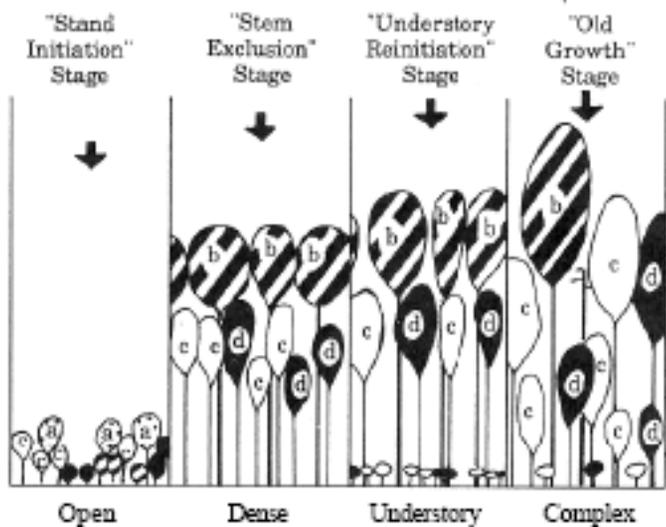
# Forest Stand Dynamics

- A conceptual model
  - Oliver and Larson (1996)
- Can be used by all disciplines
  - Current stage
  - Future development
- No Action/No Fire
  - Stand initiation, stem exclusion, understory reinitiation and old-growth

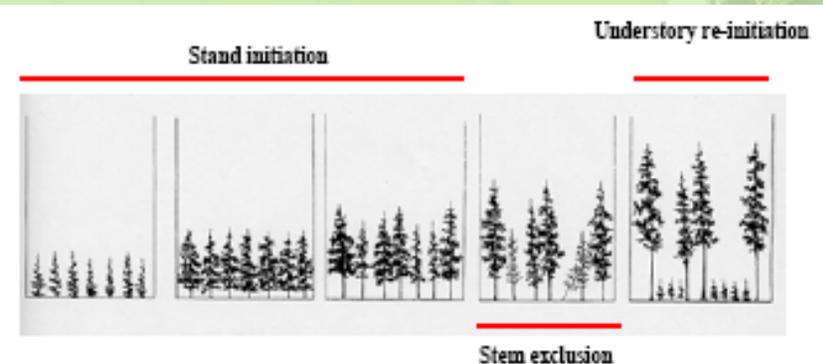


# Overview

... and the forest re-grows (develops) through four phases:



Mix Species Model



Single Species Model



# Stand Initiation



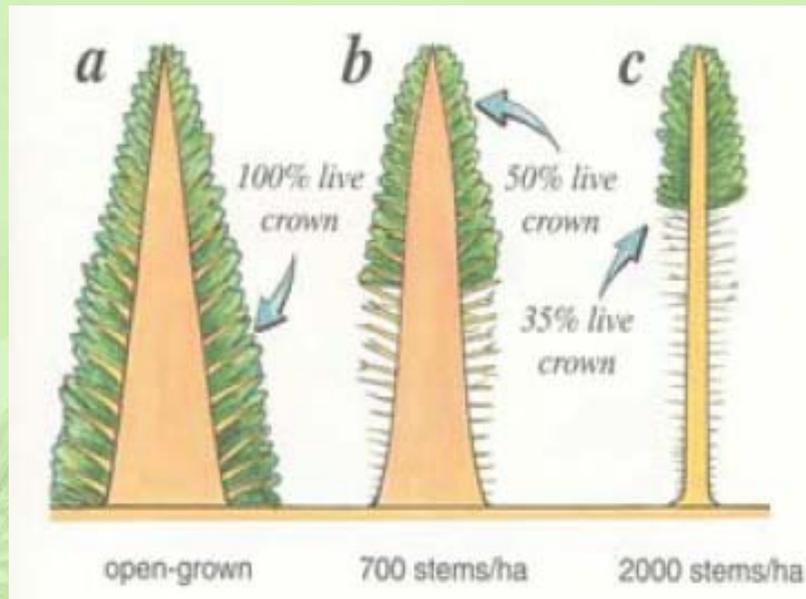
# Stem Exclusion



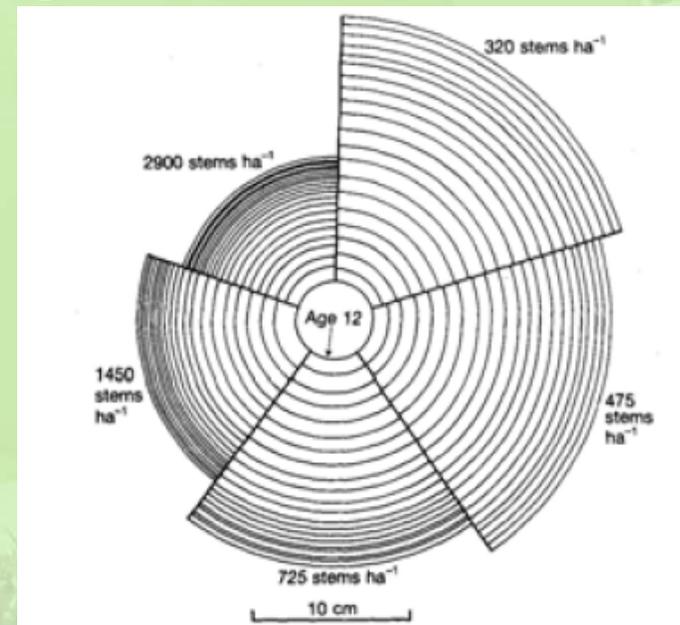
Mixed Conifer- Untreated

# Effects of Shading/Competition

Significantly limits diameter growth!



Crown recession cannot be reversed in many species!



# Understory Reinitiation

- Characteristics
  - New regeneration
  - Two or more layers
  - Understory vegetation
  - Increased diversity

- Dynamics
  - Gaps are created
    - Large tree mortality
    - Snags fall
  - New species establish

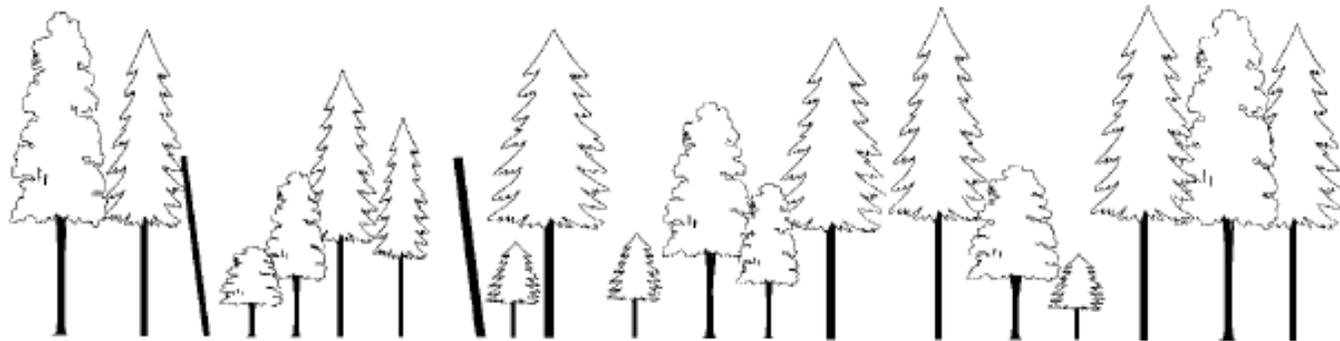
**Up to 250 years!**



# Old-growth or Complex

- Dry forests do not:
  - Follow the typical old-growth trajectory
  - Disturbance is more prevalent
  - Canopy closure is impacted by insects and pathogens
- Dry forests are:
  - Mosaics of small old-growth stands
  - Gap dynamics
  - Very complex

**May develop into complex by 250+ years old!**





# Owls and Fire

- High canopy closure 
- Large tree structure 
- Multi-layered 
- Deadwood 
- Prey base 
- Nesting structure 
- Canopy bulk density
- Fire resistant trees
- Ladder fuels
- Surface fuels
- Continuous fuels?
- Flammable mistletoe?



# Silvicultural Prescriptions

- Small diameter thinning (<8" dbh)
  - Understory or pre-commercial
- Larger diameter thinning (>8" dbh)
  - Commercial thinning, density management, single tree selection, variable density thinning, salvage, sanitation, etc.
- Prescribed fire
  - Underburning, broadcast burning, pile burning



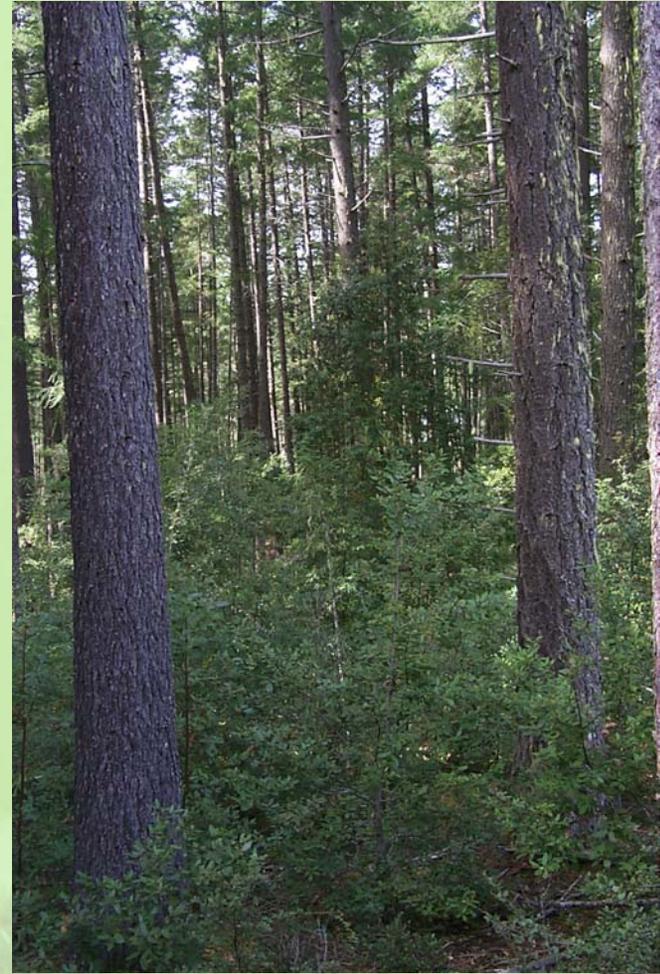
# Pre-Commercial Thinning

- Planted vs natural
- No overstory
- Forest development
- Wide spacing
  - Retains lower limbs
  - Low crown base height
  - Pruning might be the solution
- Species selection
  - Opportunity to retain species diversity



# Understory Thinning

- Existing overstory
- Slash, handpile, & burn piles
- Follow-up underburn?
  - Aspect considerations
- Retain regeneration
  - How much? Where?
- Species selection
  - Hardwoods and shade intolerants for species diversity





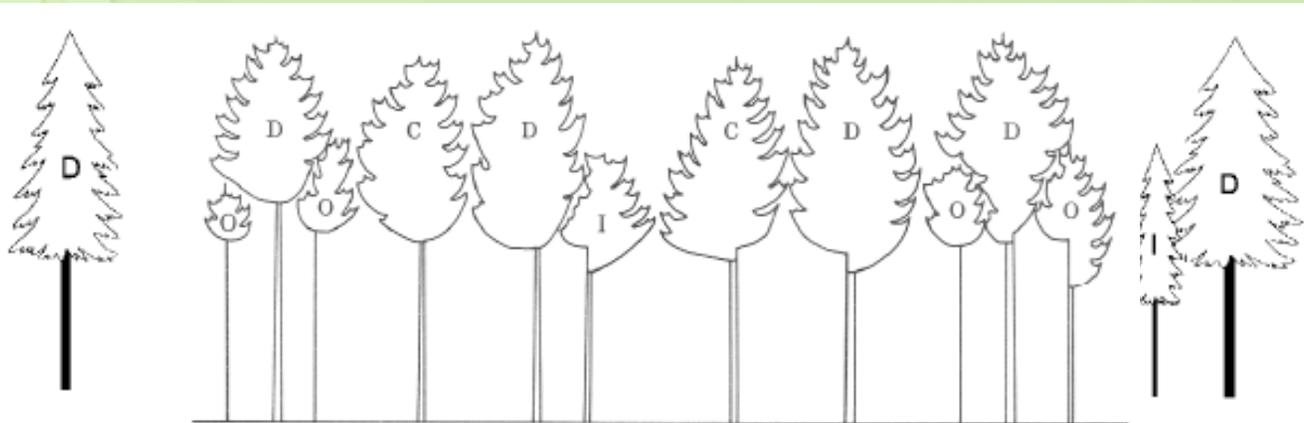






# Commercial Thinning

- Primary objective defines density target
  - Stand health/growth (~40% crown closure)
  - Owl habitat (>60% crown closure)
  - Fire risk (canopy separation)
- Many different approaches
  - General thin from below vs strict thin from below







AFTER - Commercial Thin 1998, Bloody Jones Timber Sale



# Prescribed Fire

- Underburning
  - Existing overstory
- Reduce surface fuels/  
reintroduce fire
- Integrate multi-  
resource objectives
  - Retention of regen
  - Deadwood retention/creation
- Identify maintenance schedule



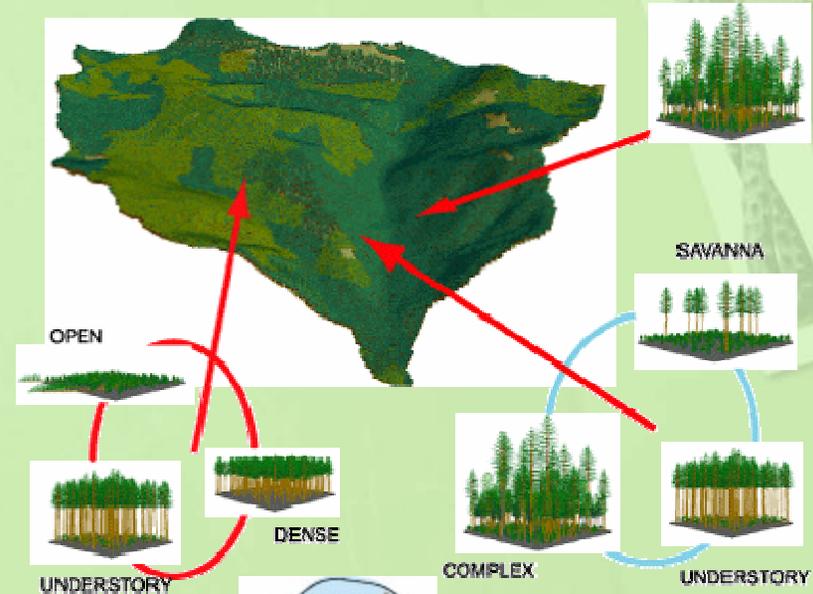
# Post-fire Evaluation

- Overstory mortality?
- Regeneration
  - New and old
- Maintenance schedule
  - Can we wait so that second layer will develop?



# Landscape Considerations

- How to create a diverse condition
- Where is fire likely?
- Location of existing habitat
- Dominant land-use
  - Timber production vs late-successional habitat



# Where is fire likely?

- Wet vs dry sites
  - Dry sites support less biomass
  - Plant associations
- Ridges/roads
  - Strategic places
- Aspect
  - North slopes tend to be more mesic



# Adjacent Land Uses

- Industrial forest land
  - Stand initiation
  - Stem exclusion
  - Harvest
- Rural residential
  - Owls
  - Fire risk
- Wilderness or other set-asides



# Interpersonal/Agency Dynamics

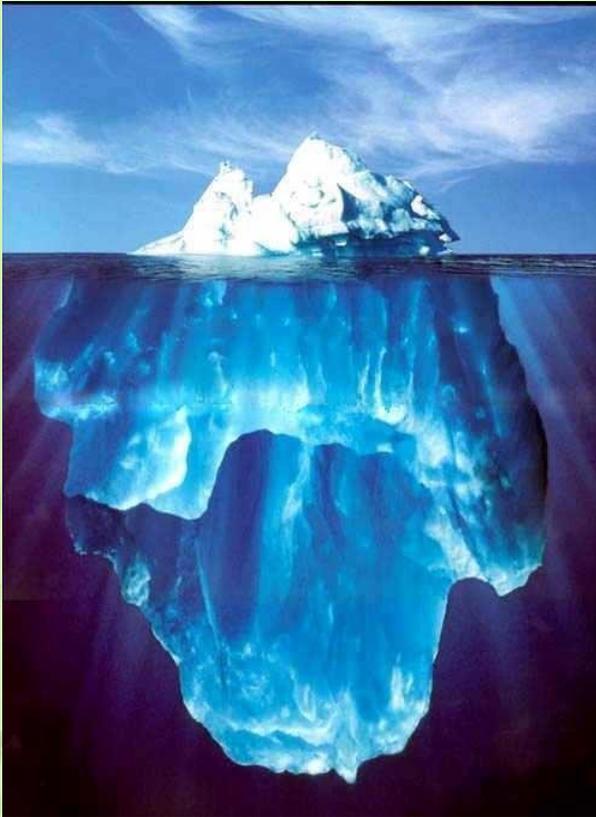
- Short-term effects vs long term gains
  - Federal land: fire is the #1 threat to habitat
  - Structural diversity can be enhanced
    - Retain layers
    - Protect species diversity
    - Variable density by site and fire risk
    - Identify deadwood targets
  - Monitor, monitor, monitor!



# Interpersonal/Agency Dynamics

- Cross training
  - Biologists do prescriptions
  - Foresters and fuels specialists type habitat
- Team work
  - Find the common ground
- Silvicultural toolbox
  - Assess needs: use the appropriate tool





Questions?  
Comments?  
Fears?

