DESIRED CONDITIONS DIALOGUE

Dry Mixed Conifer Workshop

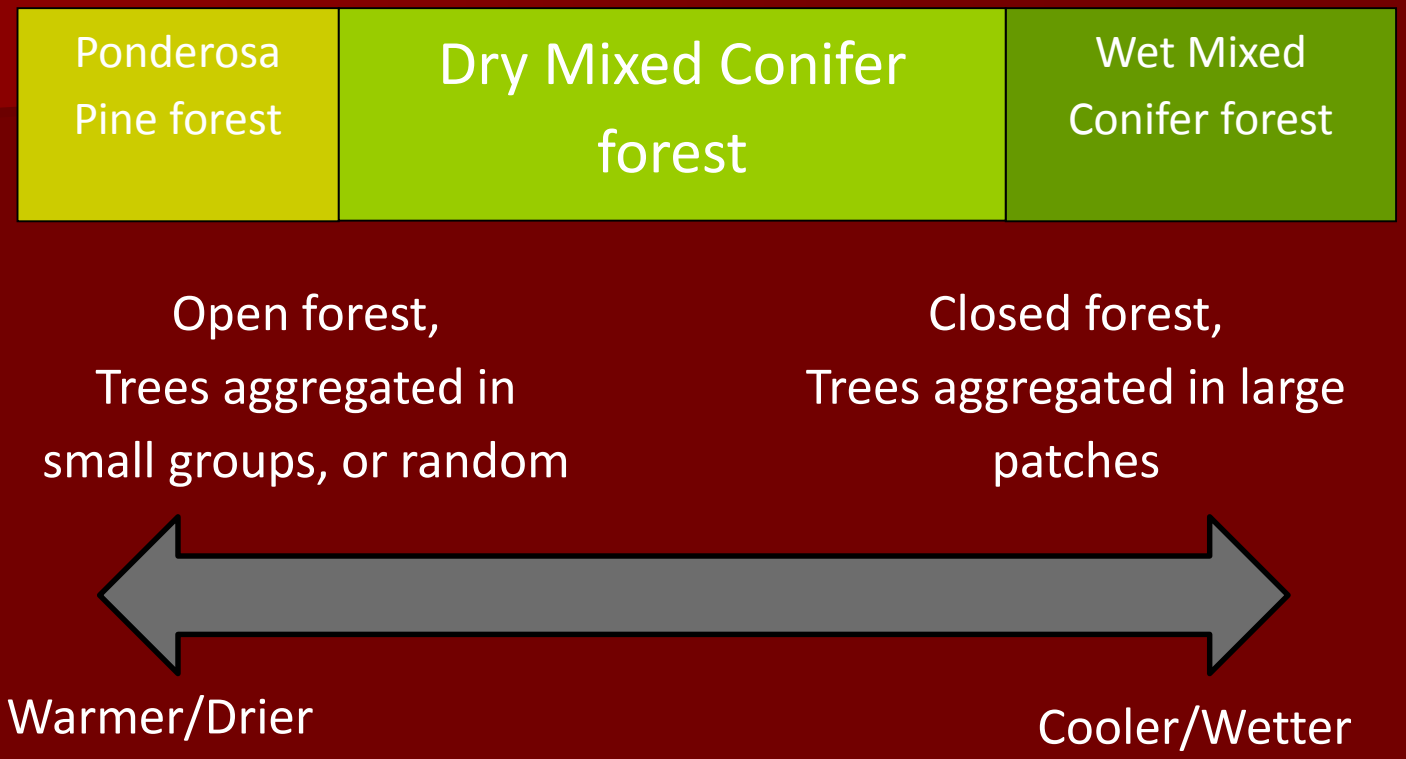
October 2016

Lincoln NF

OBJECTIVES

- Describe dry mixed conifer forests (classification)
- Begin a dialogue on desired forest conditions to develop a common understanding and a framework for shared learning
- Describe desired conditions for dry mixed conifer forests
- Describe links between desired conditions and ecological restoration
- Discuss use of desired conditions as a target and measure of success

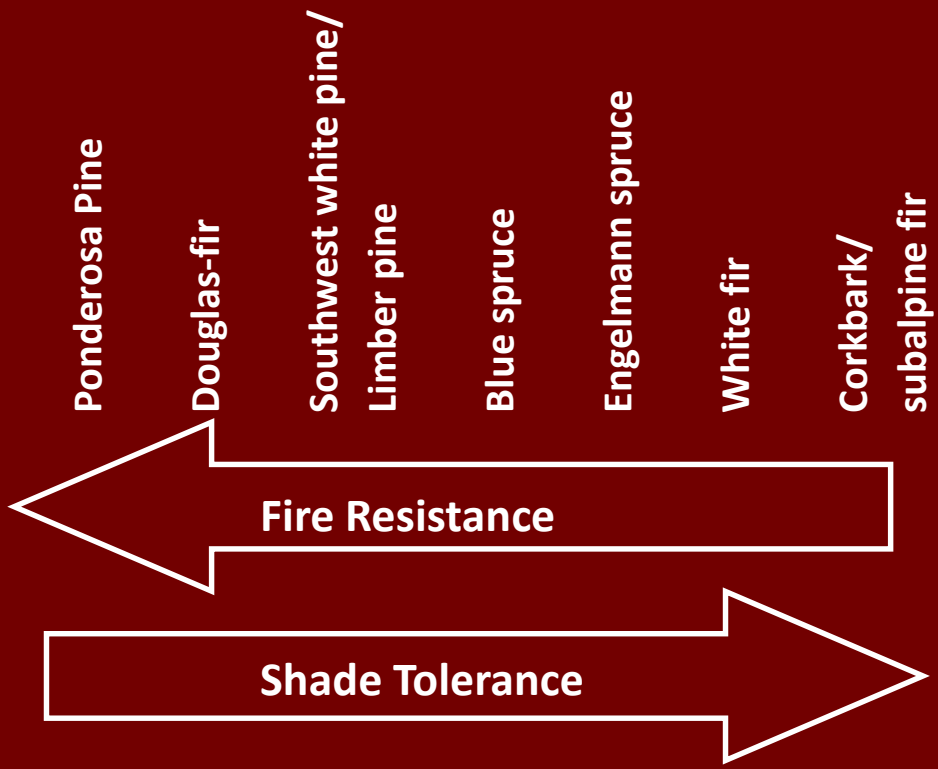
Montane Forest Characteristics



Mixed Conifer Forest Classification

Forest Type (sub-type)	Fire Regime		Fire Type	Forest Structure	Seral Species	Climax Species
	Fire Frequency	Fire Severity				
Dry mixed-conifer (warmer/drier)	Regime I (common) 0-35 years	Low	Surface	Uneven-aged, grouped, open	Dominant: ponderosa pine Subdominant: aspen and/or oak (in sub-stand scale patches)	Shade-intolerant species under fire dis-climax historic conditions. Dominant: ponderosa pine Subdominant: Douglas-fir and Southwestern white pine or limber pine
	Regime III (rare) 35-100+ years	Mixed	Mixed	Uneven-aged, patched, open		
Wet mixed-conifer (cooler/wetter)	Regime III (common) 35-100+ years	Mixed	Mixed	Uneven-aged, patched, closed	Dominant (depending on habitat type): aspen or Douglas-fir	Shade tolerant species. Dominant (depending on habitat type): white fir and/or blue spruce
	Regime IV (rare) 35-100+ years	High	Stand-replacing	Even-aged, closed		

Relative shade and fire tolerance of common conifer tree species in mixed conifer and spruce-fir forests



Development of R3 Desired Conditions

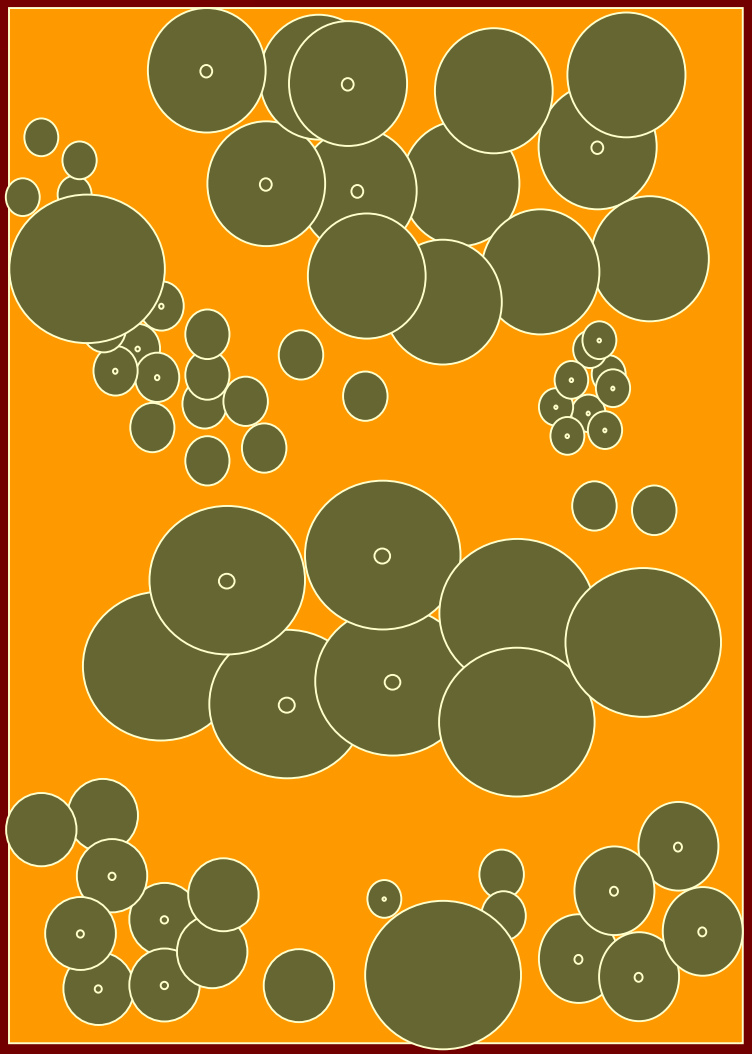
- History of development
  - DC developed for Forest Plan Revision
  - Iterative and adaptive process
- DCs guide project level development
- Based on best available science for forest ecology, wildlife ecology, natural range of variability, etc.

Desired Conditions: key elements

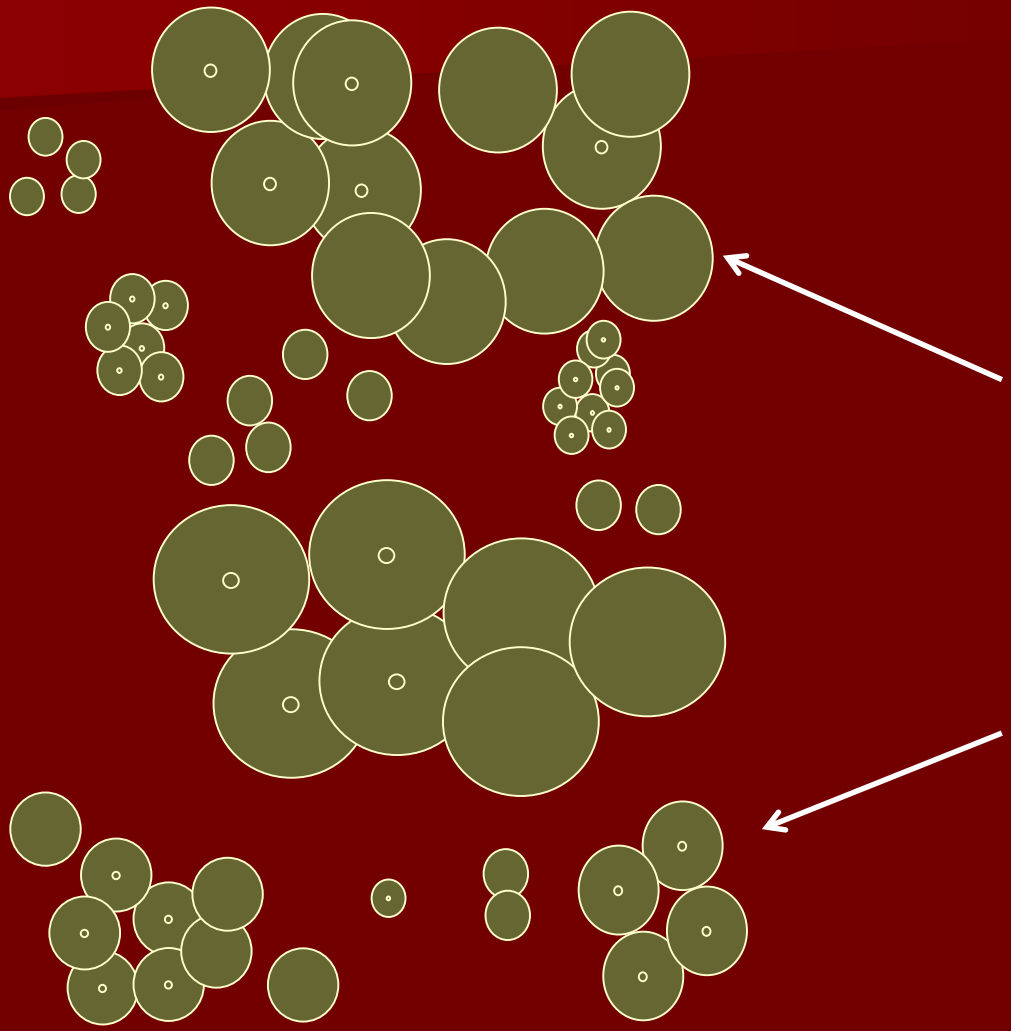
- Tree species and age composition
  - Composition & sustaining a tree age balance
  - Spatial characteristics of forests
  - Tree groups: size, density, arrangement
  - Interspace: composition, size, arrangement
- Processes and Functions
  - Biological diversity, foodwebs, hydrologic processes, nutrient recycling, etc.
  - Disturbances (fire, insects, disease, windthrow) at natural frequencies and levels

Spatial and Age Characteristics

- Trees grouped with interlocking crowns
- Interspace between tree groups
- All age classes and as much old forest as is ecologically sustainable
- High interspersion of age classes



Tree group size and variability



Group size ranges from a few trees to 1+ acre in size. Highly variable based on site conditions.

Spatial and Age Characteristics

Conceptual uneven-aged mosaic

Grass/ seedlings

Poles
20-60 years

Mid/mature
60-150 years

Old
150+ years

0 100 200 300
Scale - feet

Desired Forest Conditions

Openness and Variability

Area under tree cover

Interspace grass/forb/shrub

North-facing slope example:

About 30-40% of area is open grass/ forb/ shrub interspace

About 60-70% of area is under mid-old tree cover

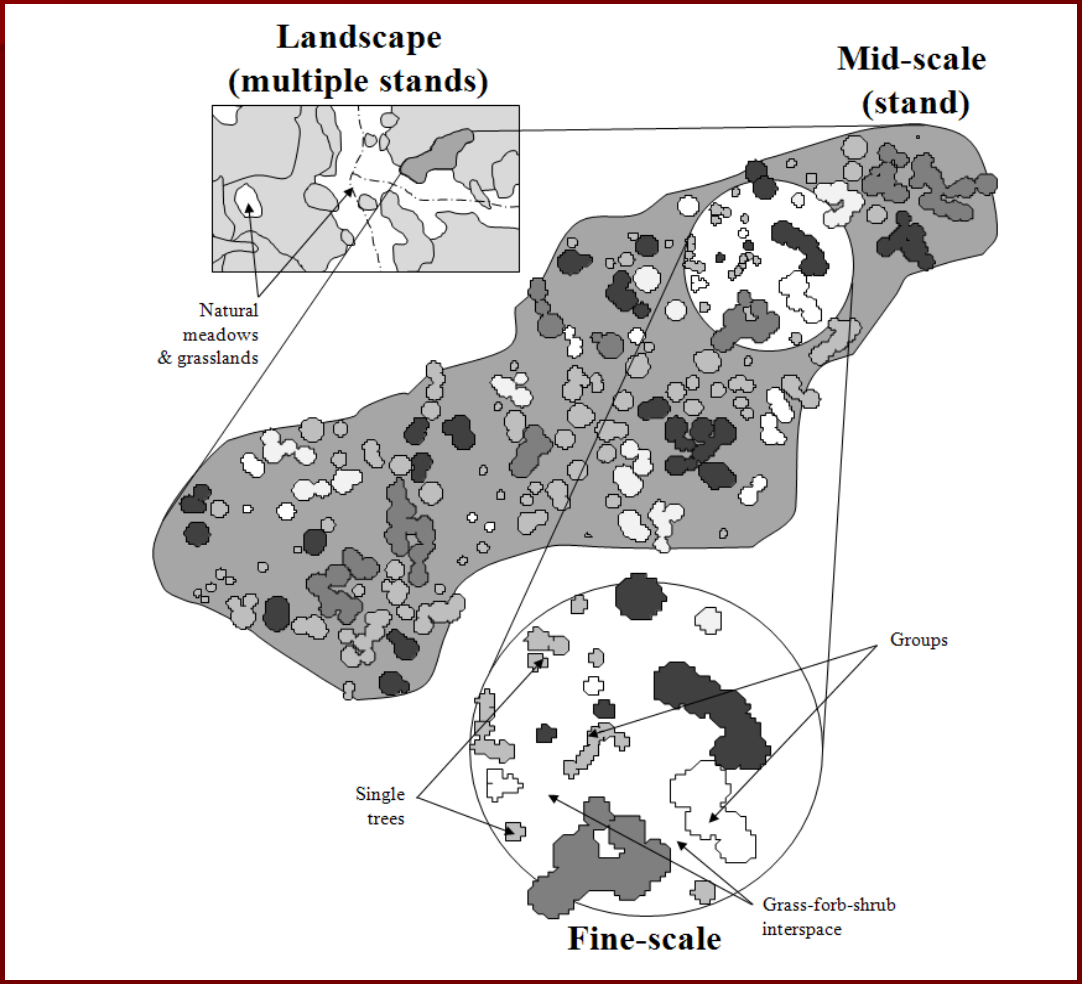
Openness and Variability

South-facing slope example:

About 40-60% of area is open grass/ forb/ shrub interspace

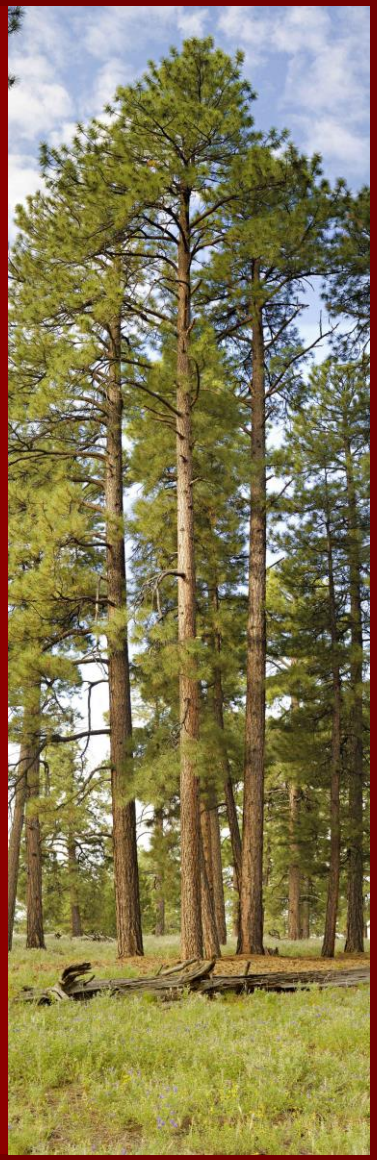
About 40-60% of area is under mid-old tree cover

Conceptualized forest reference condition at three spatial scales



Spatial Characteristics

Trees grouped with interlocking crowns



Spatial Characteristics
Interspace between tree groups

Tree Age

All age classes and

as much old forest as is ecologically sustainable

Age and Function

Large tree components

- Big trees
- Snags
- Logs
- Woody debris

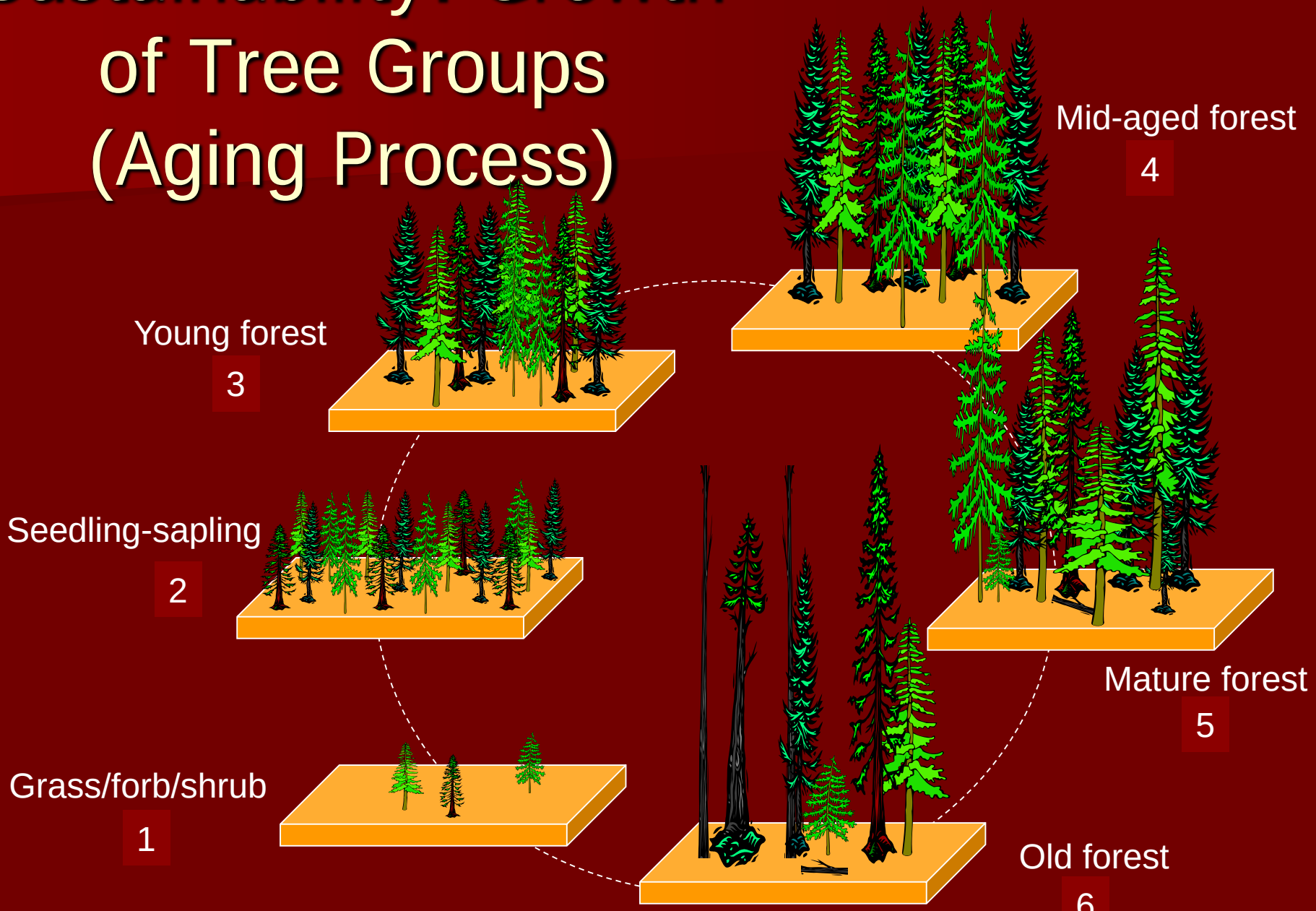
Composition and Function

Grass/forb/shrub Interspace

Processes

- Frequent surface fire
  - 5 to 10 yrs ponderosa pine
  - 7 to 35 yrs dry MC

Sustainability: Growth of Tree Groups (Aging Process)



Concepts

- Desired Conditions are a work in progress
  - Will be adapted to new science/information
- Desired Condition characteristics are presented in ranges, not single targets, to account for variability across most of a landscape. For dry MC:
  - Percent of area general openness, generally 50+% (less on some sites, ranges from 30-60%)
  - Typically 40 to 125 sq ft/BA per acre
  - Generally 8 to 16 tons woody debris per acre
- Desired Condition at three scales
  - Landscape
  - Mid scale
  - Fine scale

Links between desired conditions and ecological restoration

- The Desired Conditions fall within natural historic conditions
- Natural conditions are a good example of functioning, sustainable, and resilient ecosystems
- Attaining the Desired Conditions will achieve restoration objectives

Challenges

- Desired Conditions may not be attainable in a single treatment
- Operational feasibility (funding, workforce, industry capacity, etc.) may constrain our ability to achieve desired conditions everywhere
- Necessitates prioritizing landscapes and strategies for achieving desired conditions
- Maintenance of desired conditions

Outcomes of Desired Conditions

- Reduced severity of fire effects
- Reduced fire hazards and increased flexibility for managing fires
- Increased resilience to climate variability and change, insects, disease

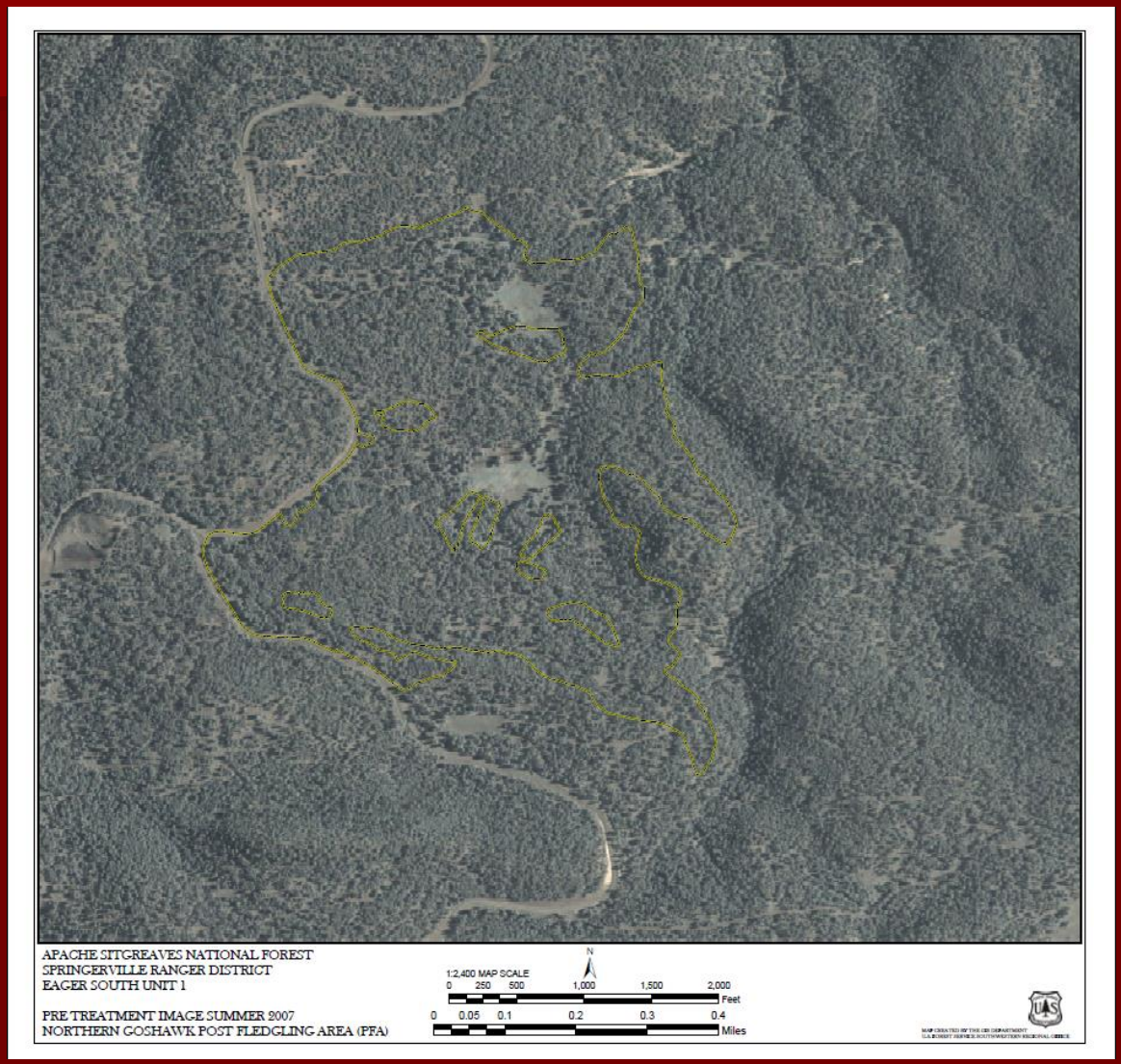
Outcomes (cont)

- Sustainable old growth condition
- Restored hydrologic function
- Sustainable wood supply
- Improved forage production
- Enhanced visual quality
- Improved plant and animal habitat, biodiversity, foodwebs

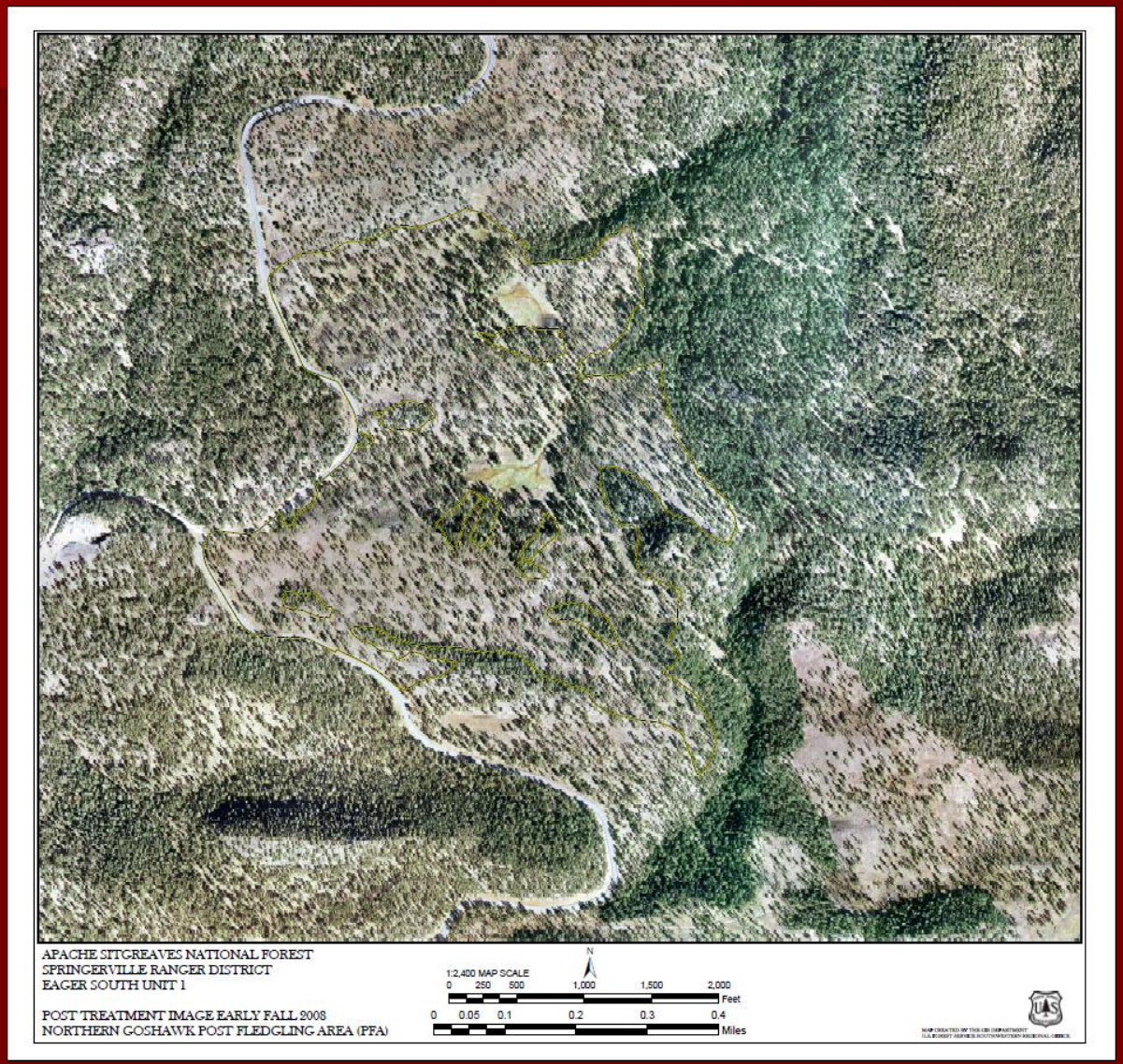
Desired conditions and resiliency

Pre-fire treatment (Fort Apache I.R.)
(one week after Rodeo-Chediski Wildfire)

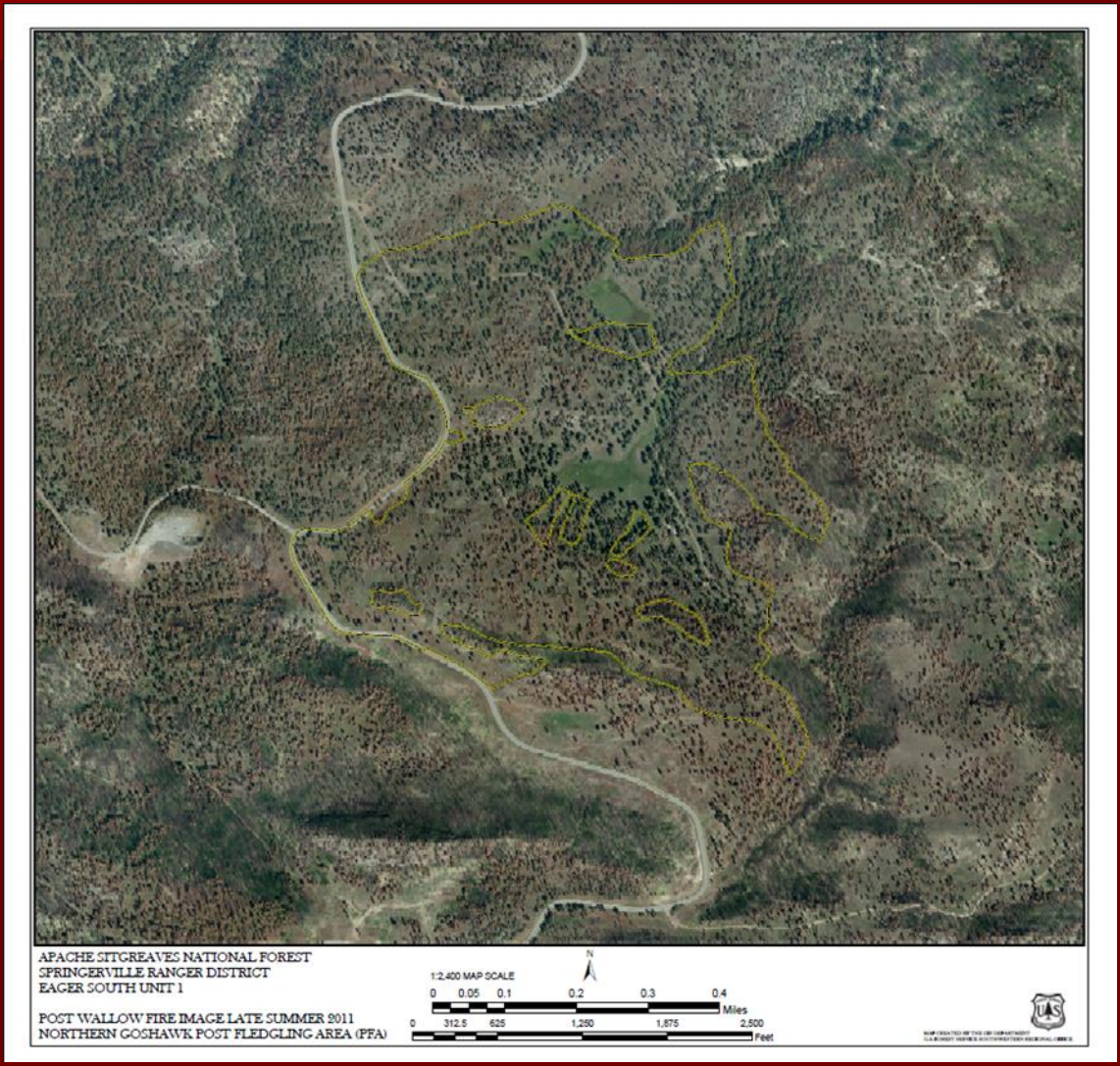
Eagar South Project, example 1:
Pre Treatment



Eagar South Project, example 1:
Post Treatment



Eagar South Project, example 1:
Post Wallow Fire



Eagar South Project, example 2: Pre Treatment

Some References

- Reynolds, R.T., A. Sánchez Meador, J.A. Youtz, T. Nicolet, M.S. Matonis, P.L. Jackson, D. Delorenzo, and A.D. Graves. 2013. Restoring composition and structure in southwestern frequent-fire forests: a science-based framework for improving ecosystem resiliency. RMRS-General Technical Report -310.

- Evans, A. M., R.G. Everett, S.L. Stephens, and J.A. Youtz. 2011. Comprehensive Fuels Treatment Practices Guide for Mixed Conifer Forests: California, Central and Southern Rockies, and the Southwest.

- USDA Forest Service, Southwestern Region. 2013. Desired Conditions for Ecosytem Restoration in the Southwestern Region: Development and Science Basis. Unpublished white paper on file.

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