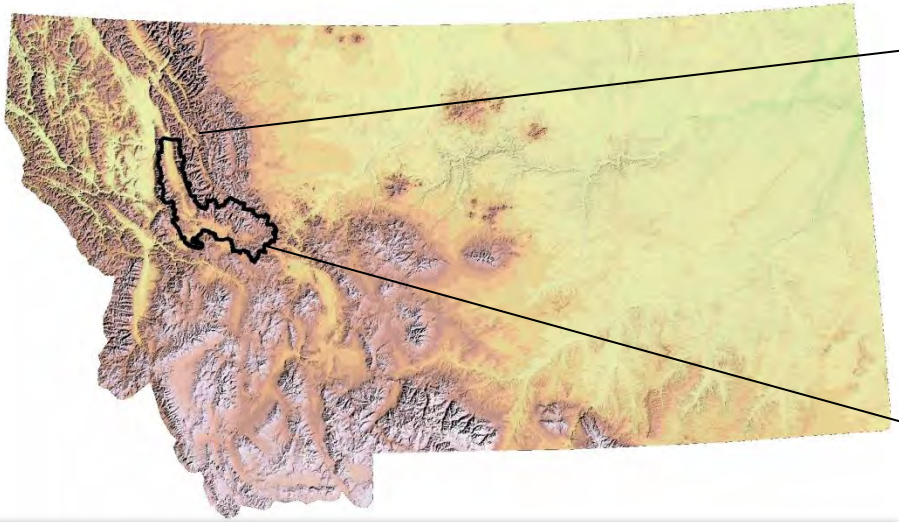
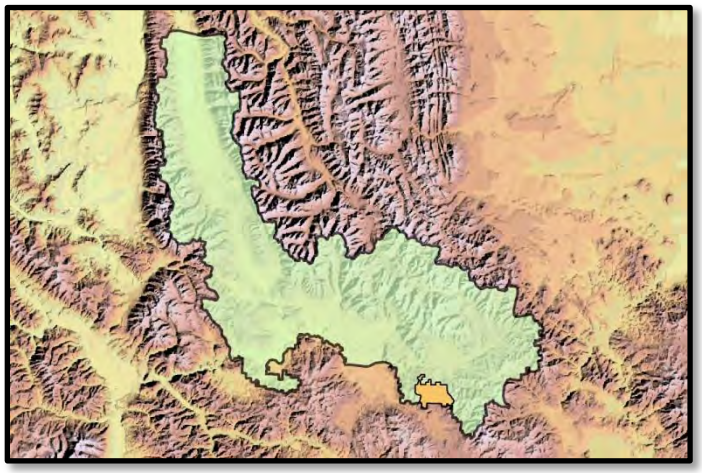
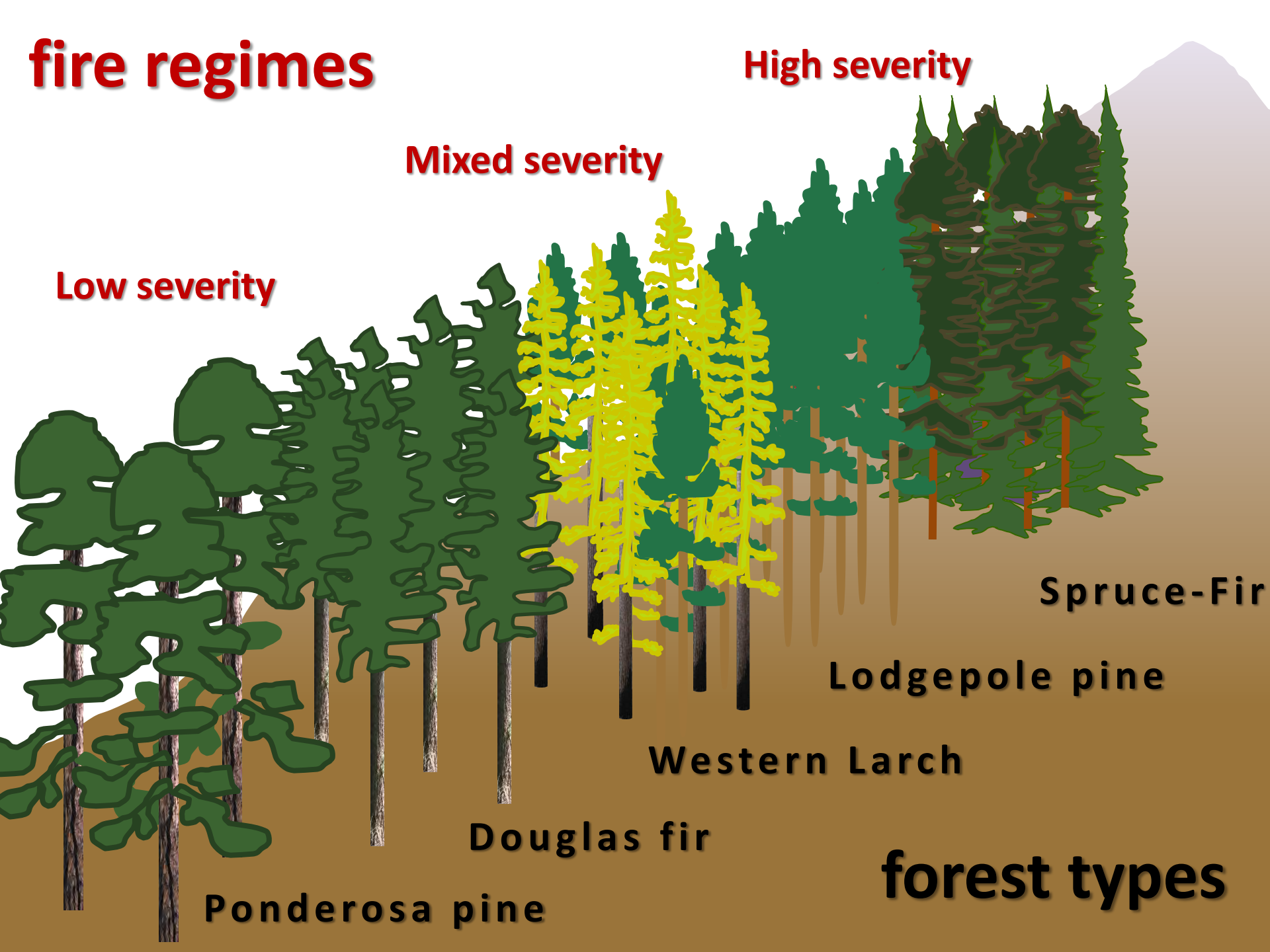
Restoration forestry in the southwestern Crown of the Continent

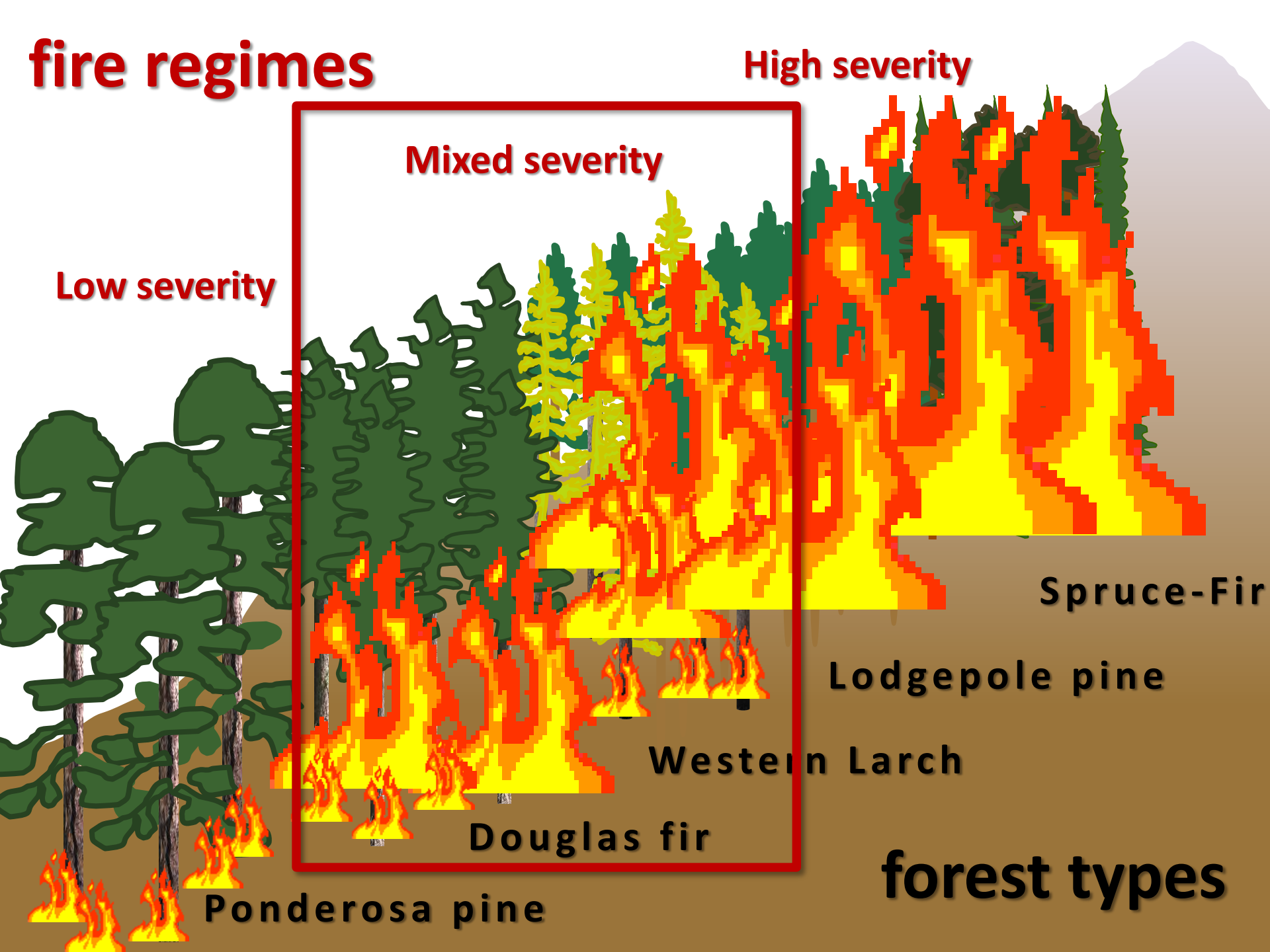
Melanie Parker, Marnie Criley, and Travis Belote

Collaboration in the Southwestern Crown of the Continent






fire regimes
High severity
Mixed severity
Low severity
Spruce-Fir
Lodgepole pine
Western Larch
Douglas fir
Ponderosa pine
forest types


fire regimes
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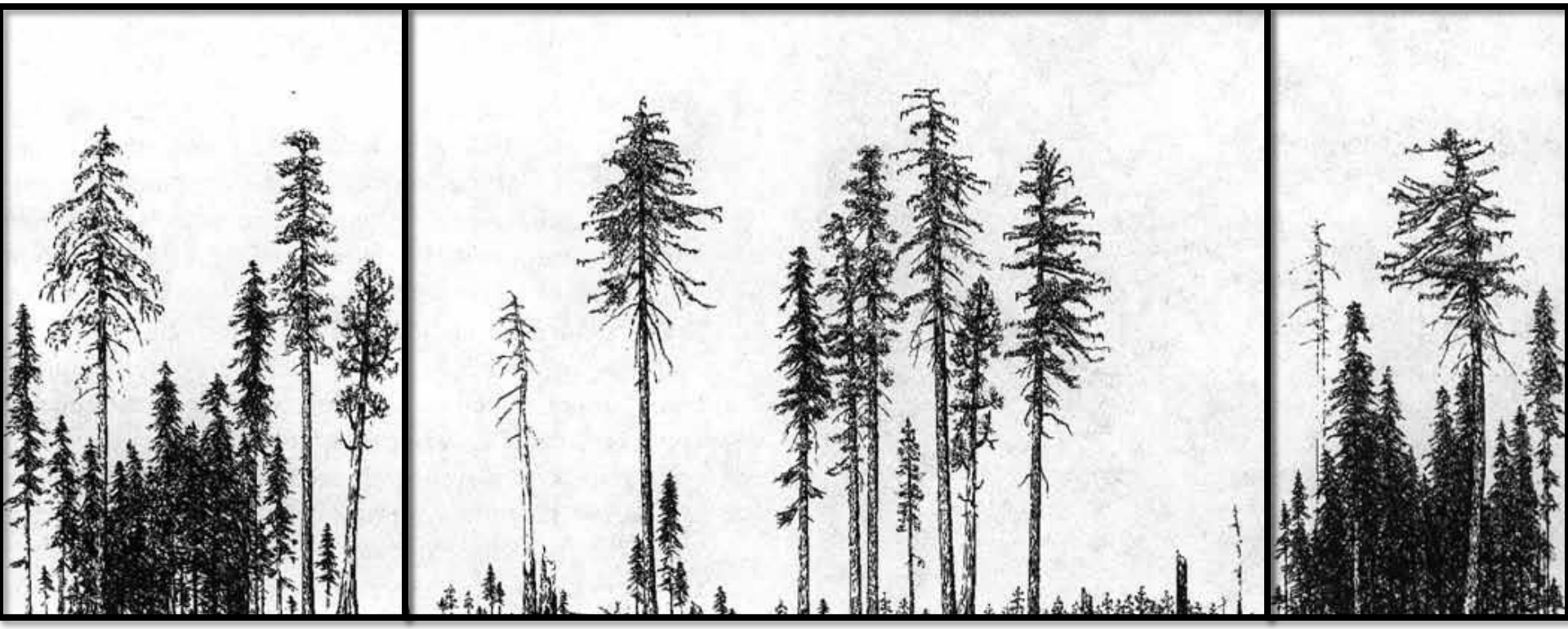
forest types

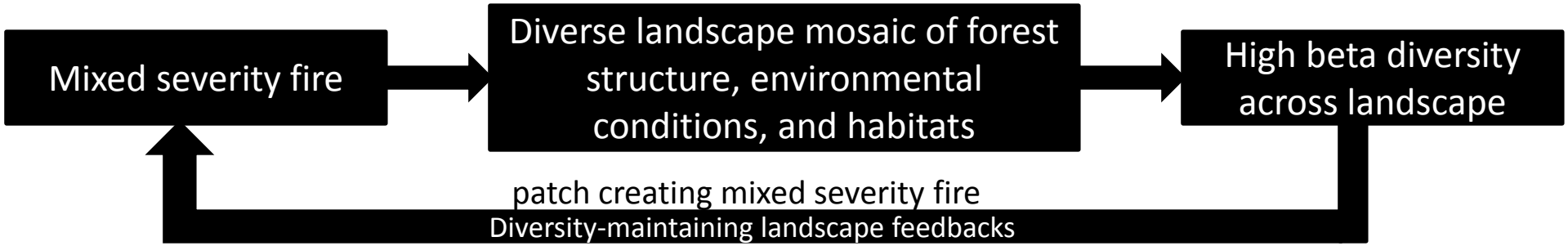
Variability in space and time



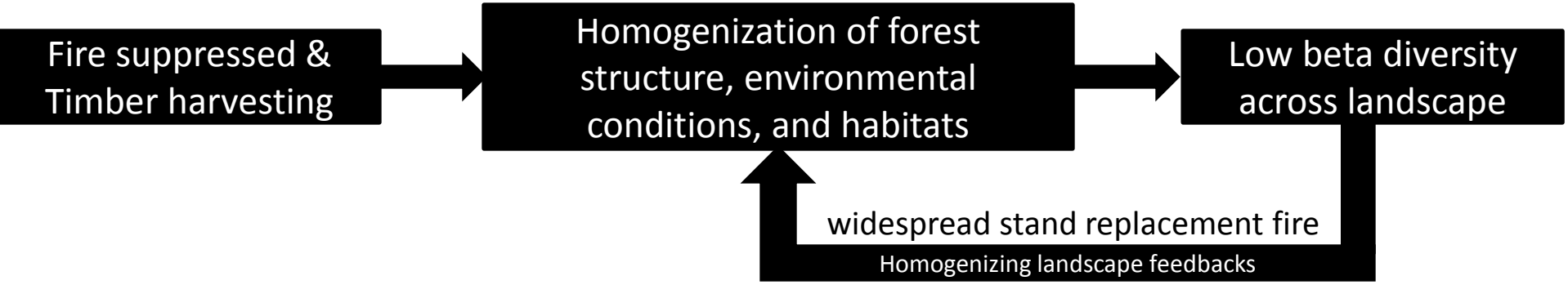
Departure? In need of restoration or management?

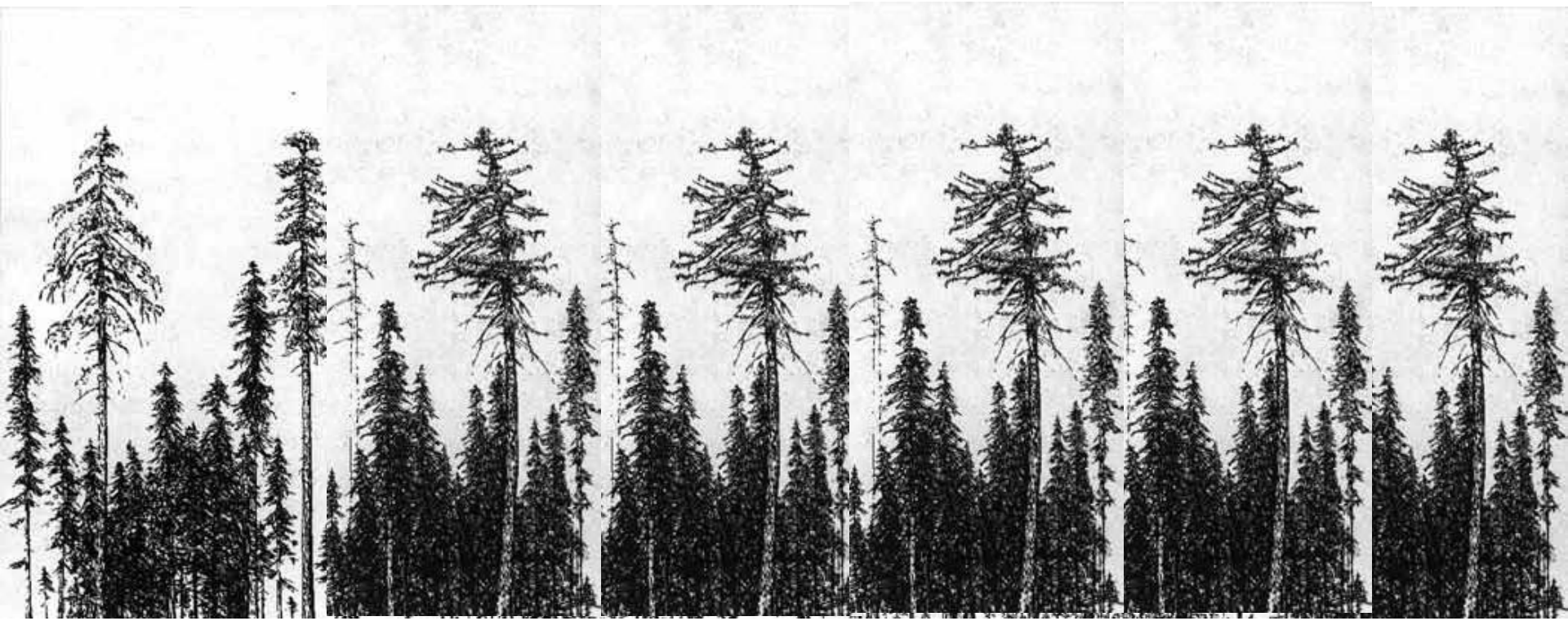
Current departure from historical conditions?

Historical condition

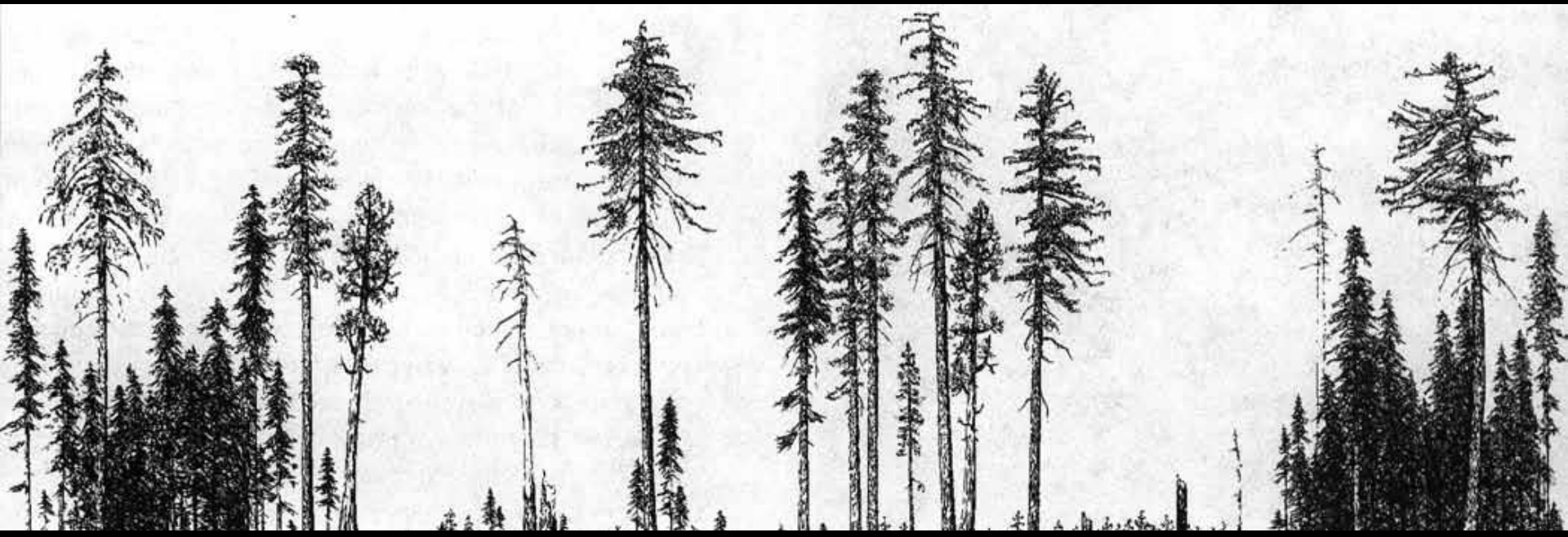


Existing condition + Climate change

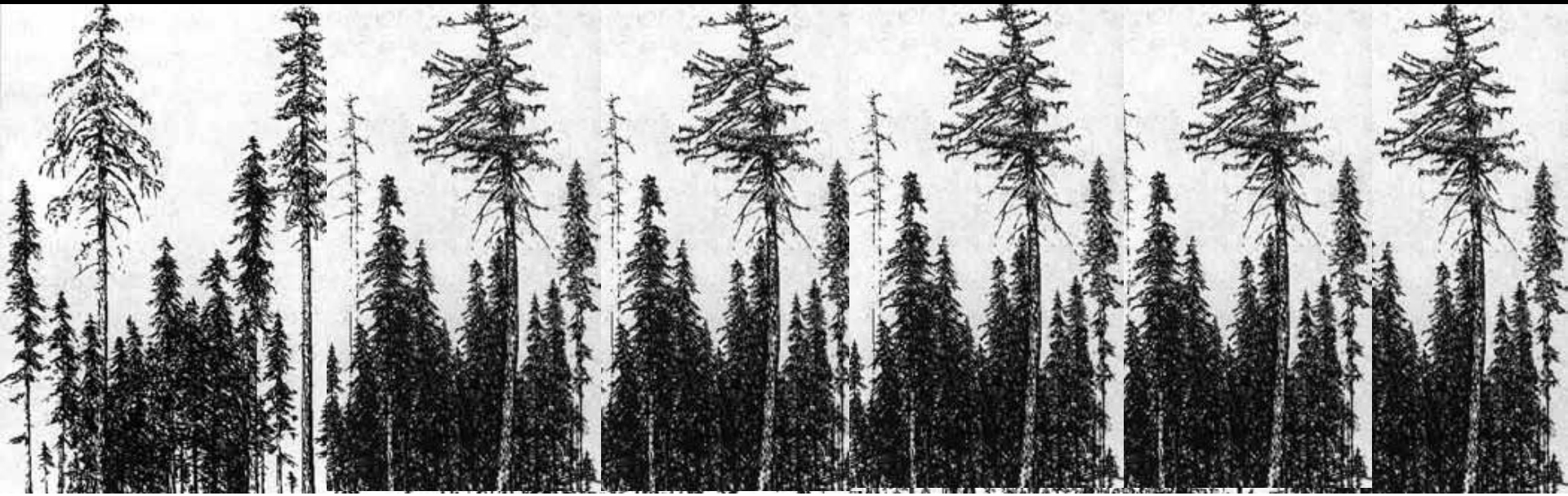




High β-diversity: landscape memory sustains diversity



Low β-diversity: contagious landscape at risk of homogenizing fire

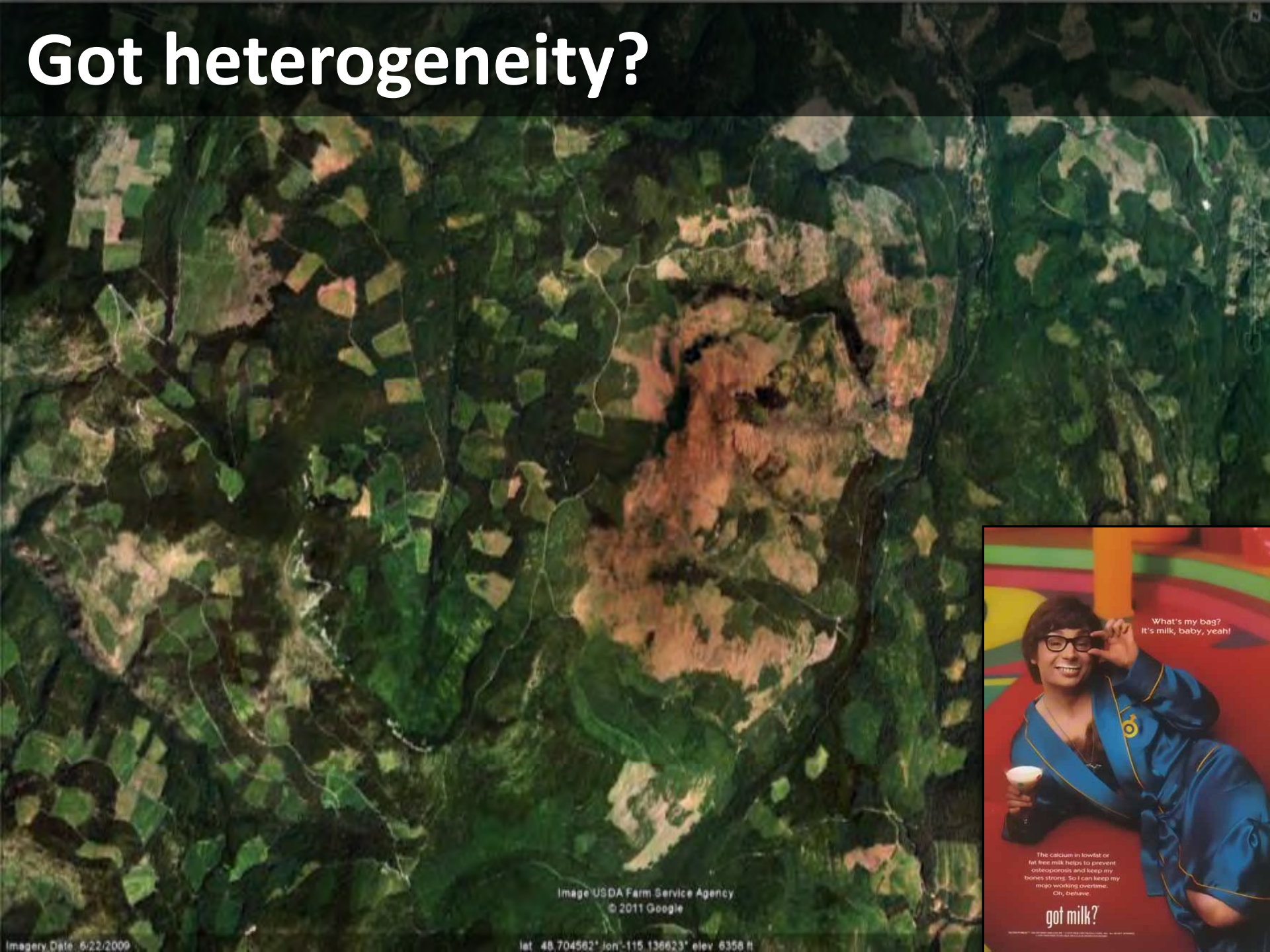


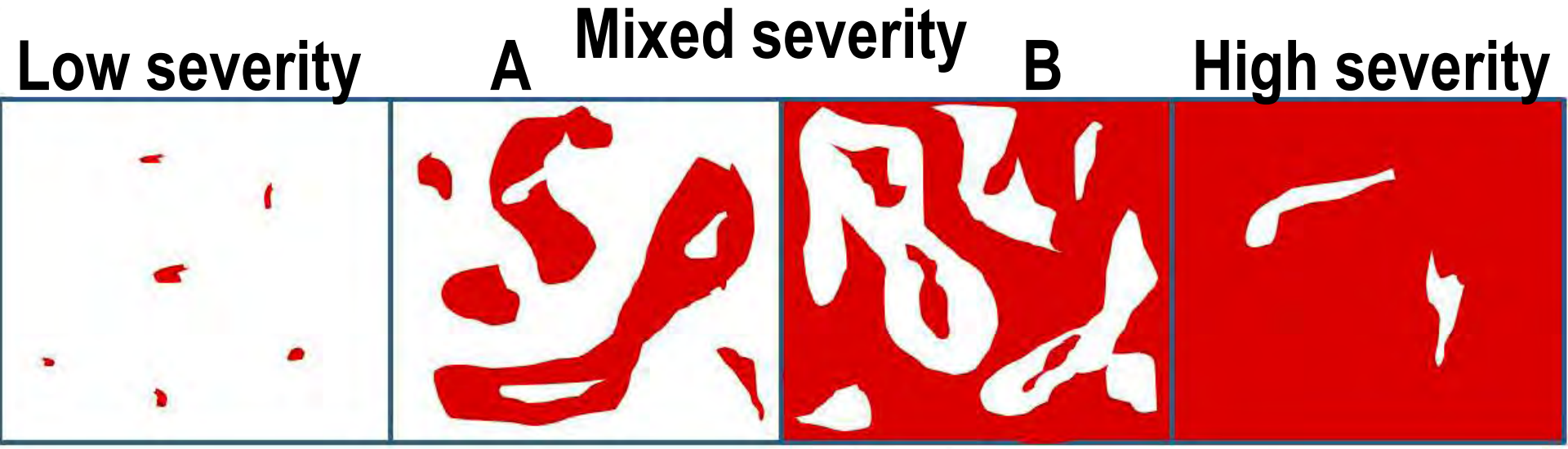
Think beyond stands

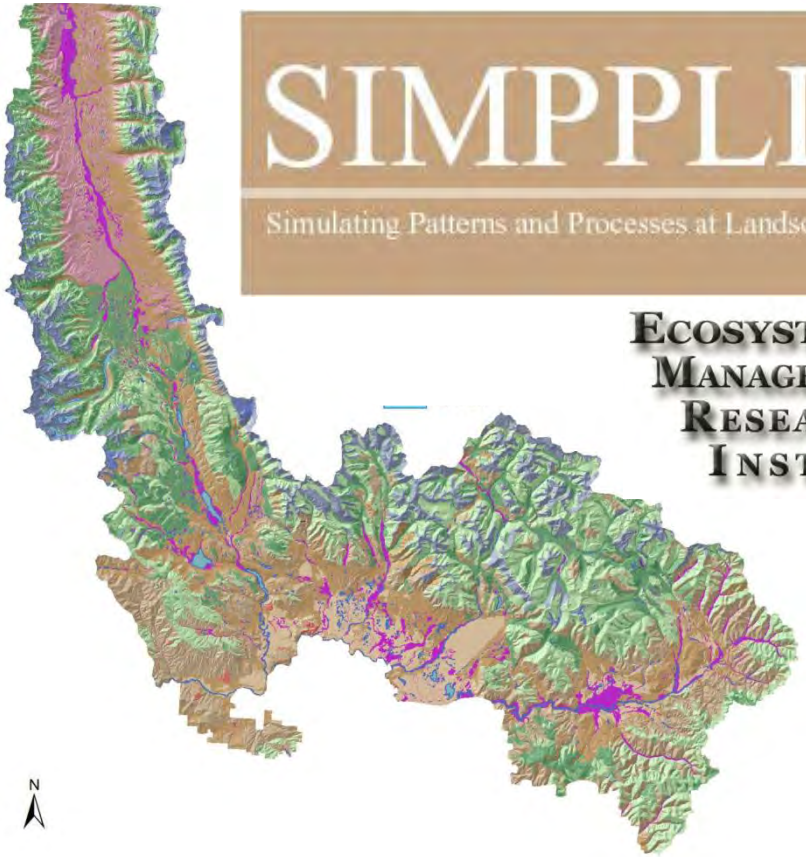
Restoration:

From stand structure to landscape process

Got heterogeneity?







Legend

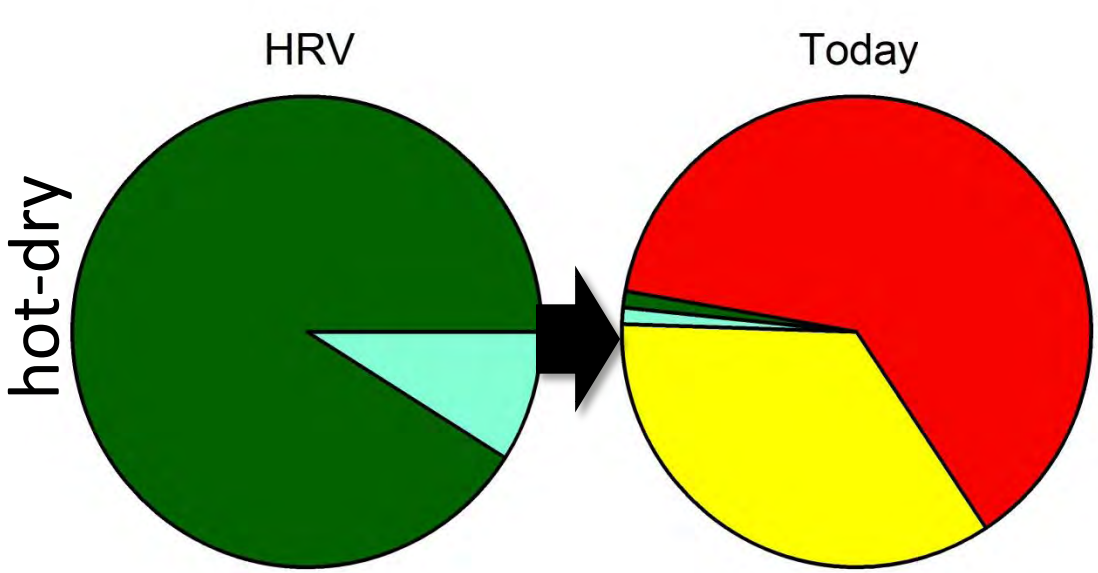
Terrestrial Forest Ecological Sites

- HOT-DRY FOREST
- WARM-DRY FOREST
- WARM-MOIST FOREST
- MOD WARM-DRY FOREST
- MOD WARM-MOIST FOREST
- COOL-DRY FOREST
- COOL-MOIST FOREST
- COLD-DRY FOREST
- COLD-MOIST FOREST

Other Ecological Sites (grouped by system type)

- GRASS-SHRUB
- RIPARIAN-WETLAND
- WATER

We are missing low severity component of mixed severity forests



Low severity
Mixed severity A
Mixed severity B
High severity

Restoration?

From stand structure to landscape pattern & process

Passive

Let fires burn

Active with Rx fire and mechanical

Prepare the landscape to burn?

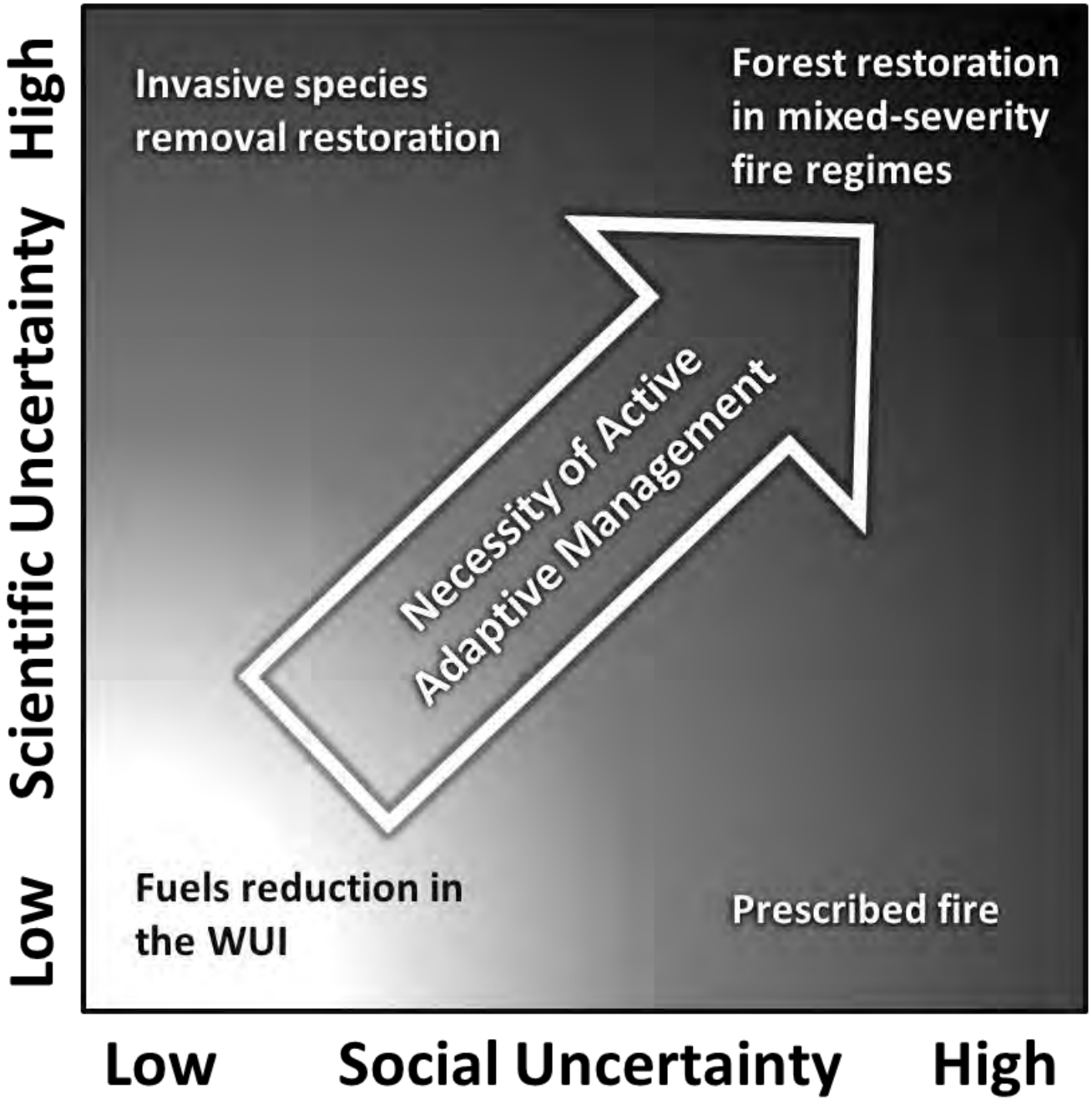
Mimic landscape pattern?

Let fires burn

Use wildland and prescribed fire

Thin and burn to restore the low severity component

Mimicking fire

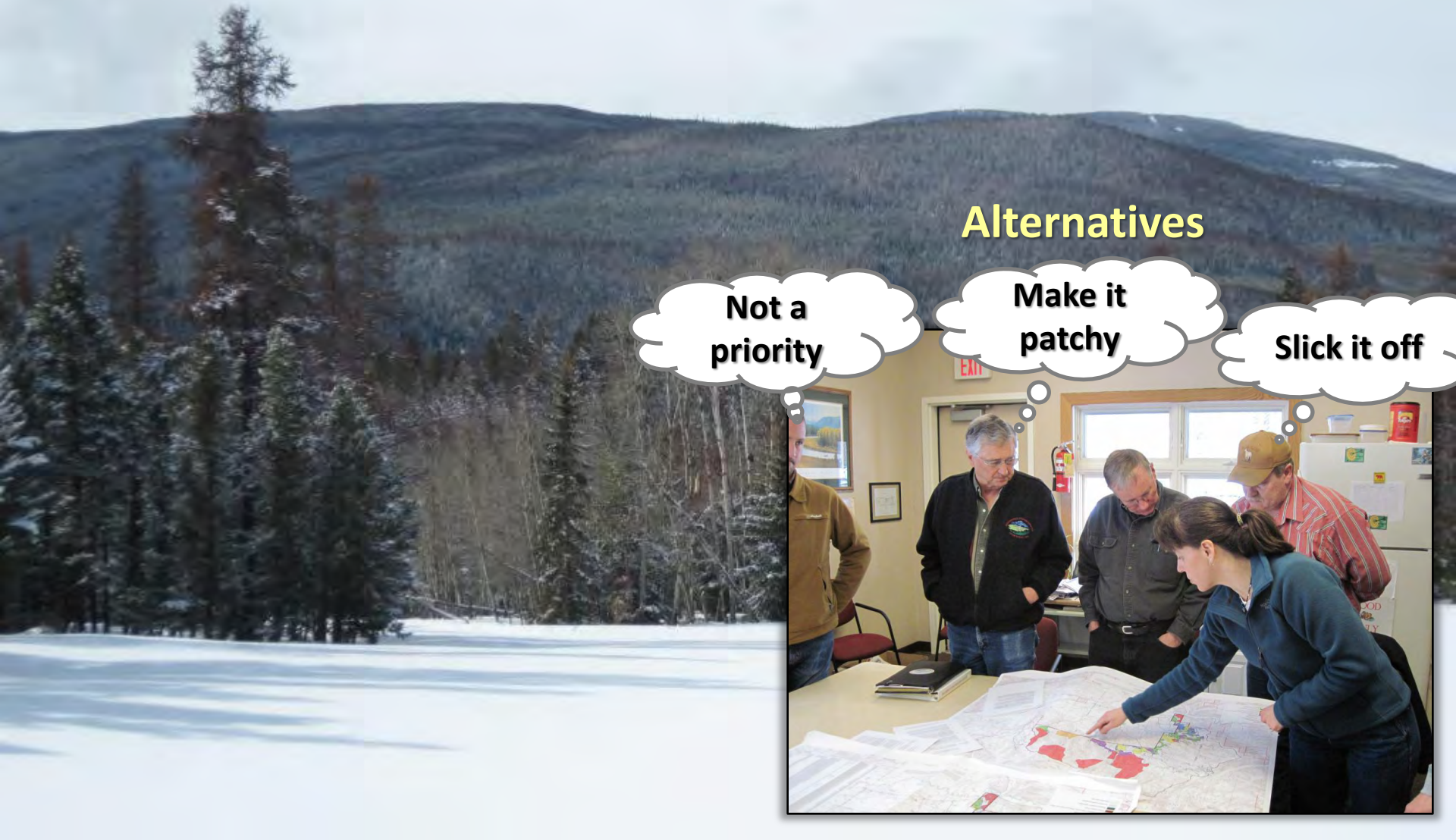


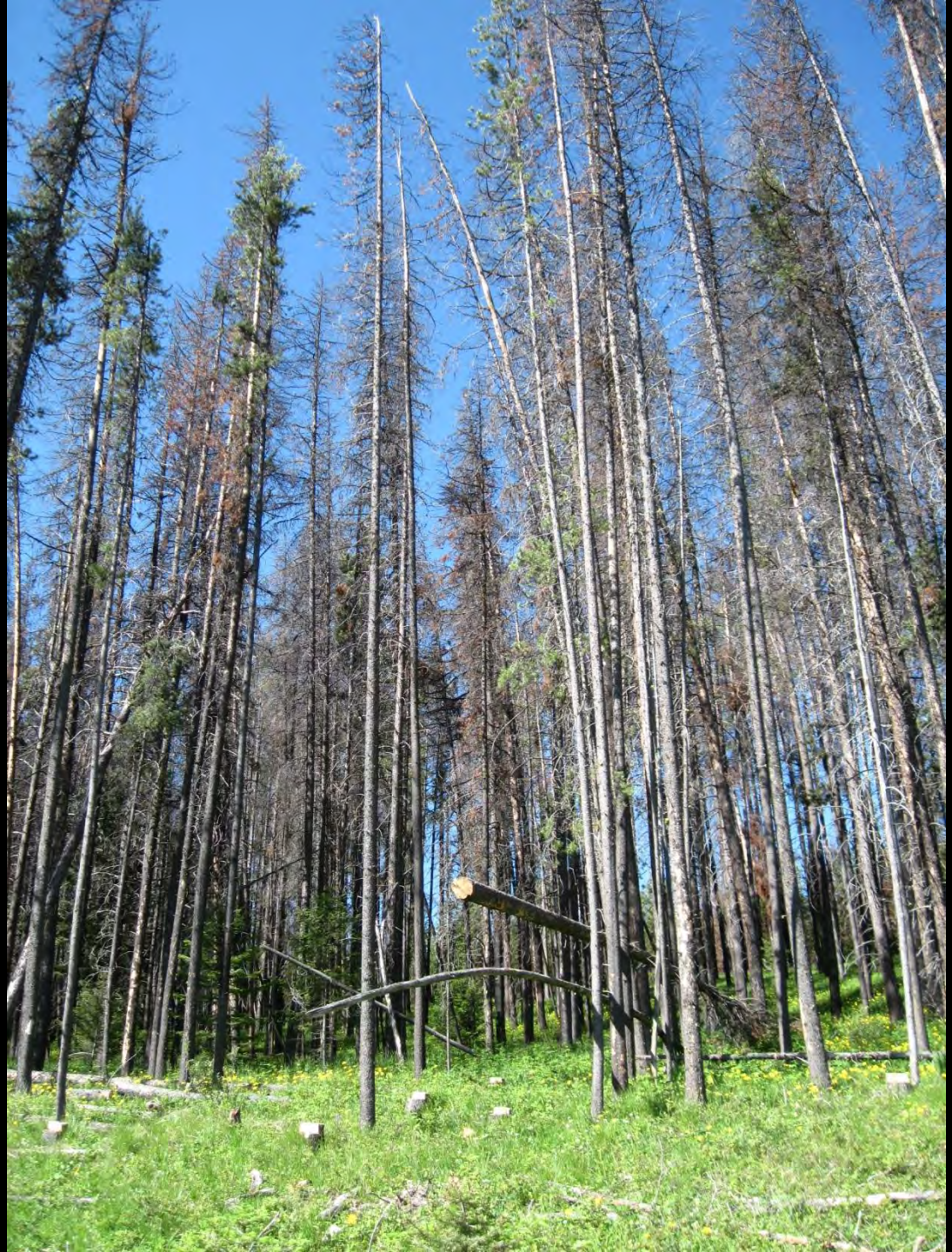
Larson, Belote, Williamson, and Aplet *In review* JOF

Active Collaborative Adaptive Management

Applying alternative approaches - *reflecting diverse perspectives* – to facilitate collaborative learning

Example: Dalton Mountain, Lincoln, Montana
Southwestern Crown of the Continent CFLRP



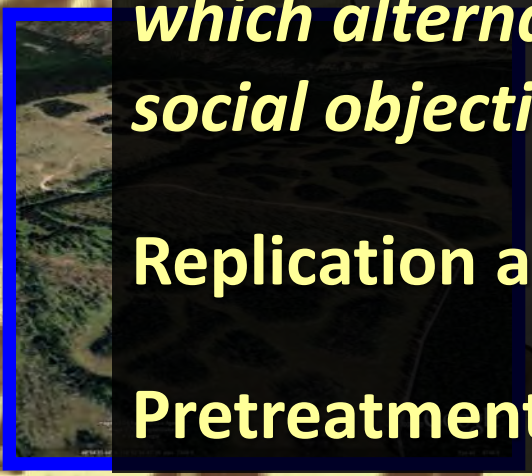


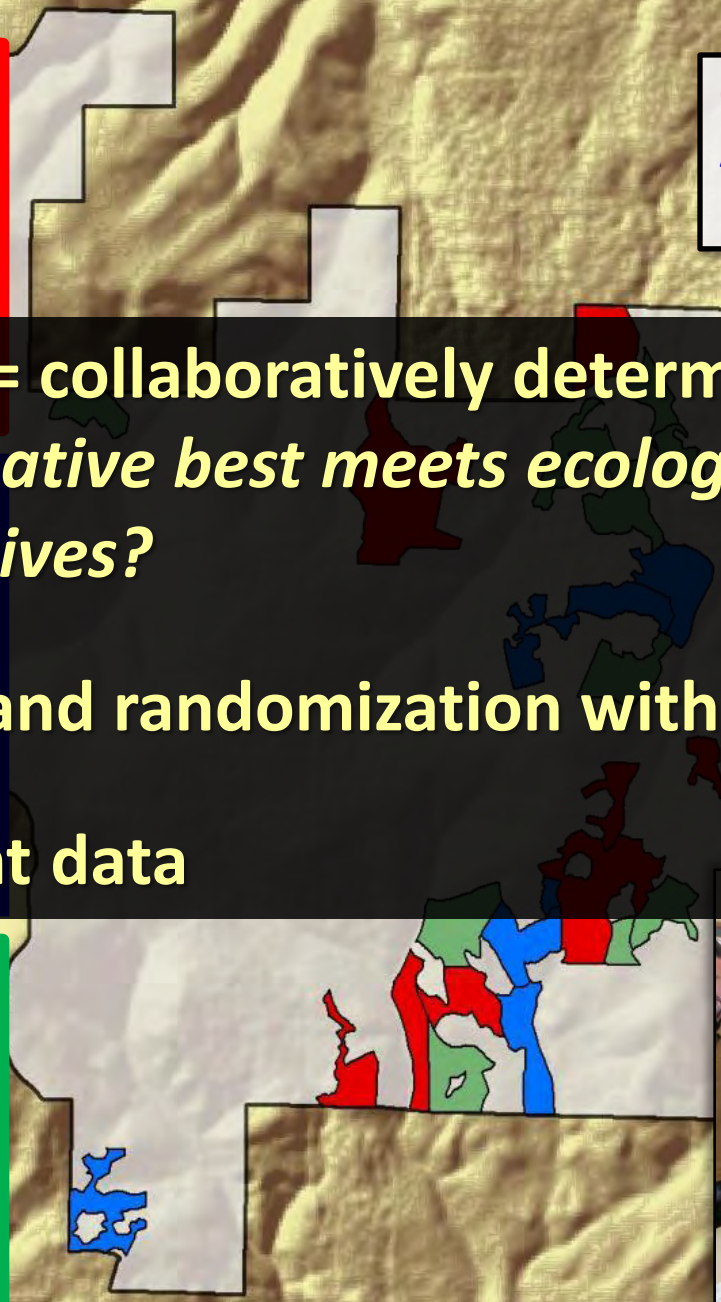
Adaptive management views policies as hypotheses… Most policies are really questions masquerading as answers.

Since policies are questions, then *management actions become treatments in the experimental sense*.

Lance H. Gunderson (2000)

'Ecological resilience – in theory and application' Annual Review of Ecol and Systematics



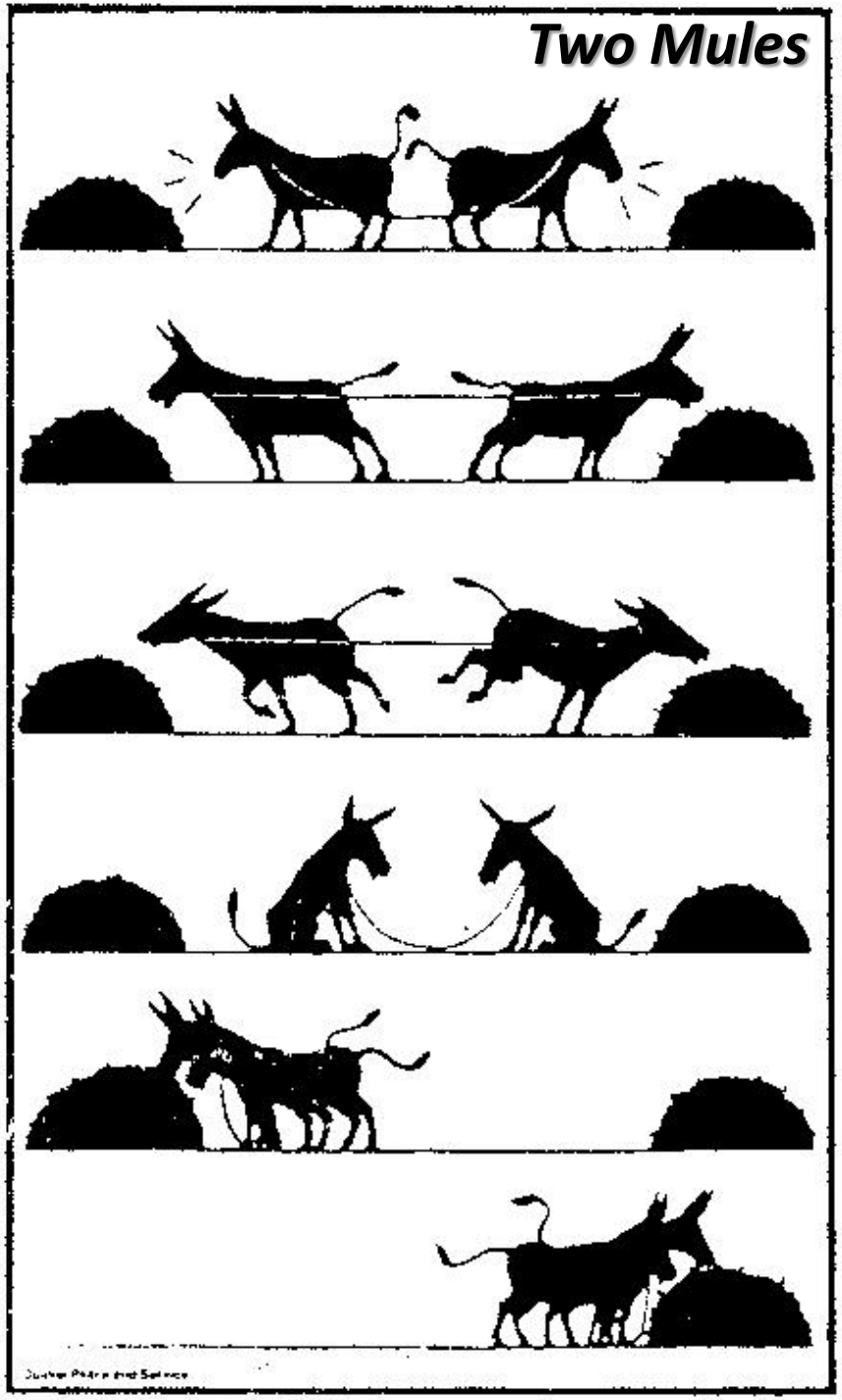


Control
Aggregated Retention
Leave tree regeneration

Treatments = collaboratively determined alternatives: ***which alternative best meets ecological, economic and social objectives?***

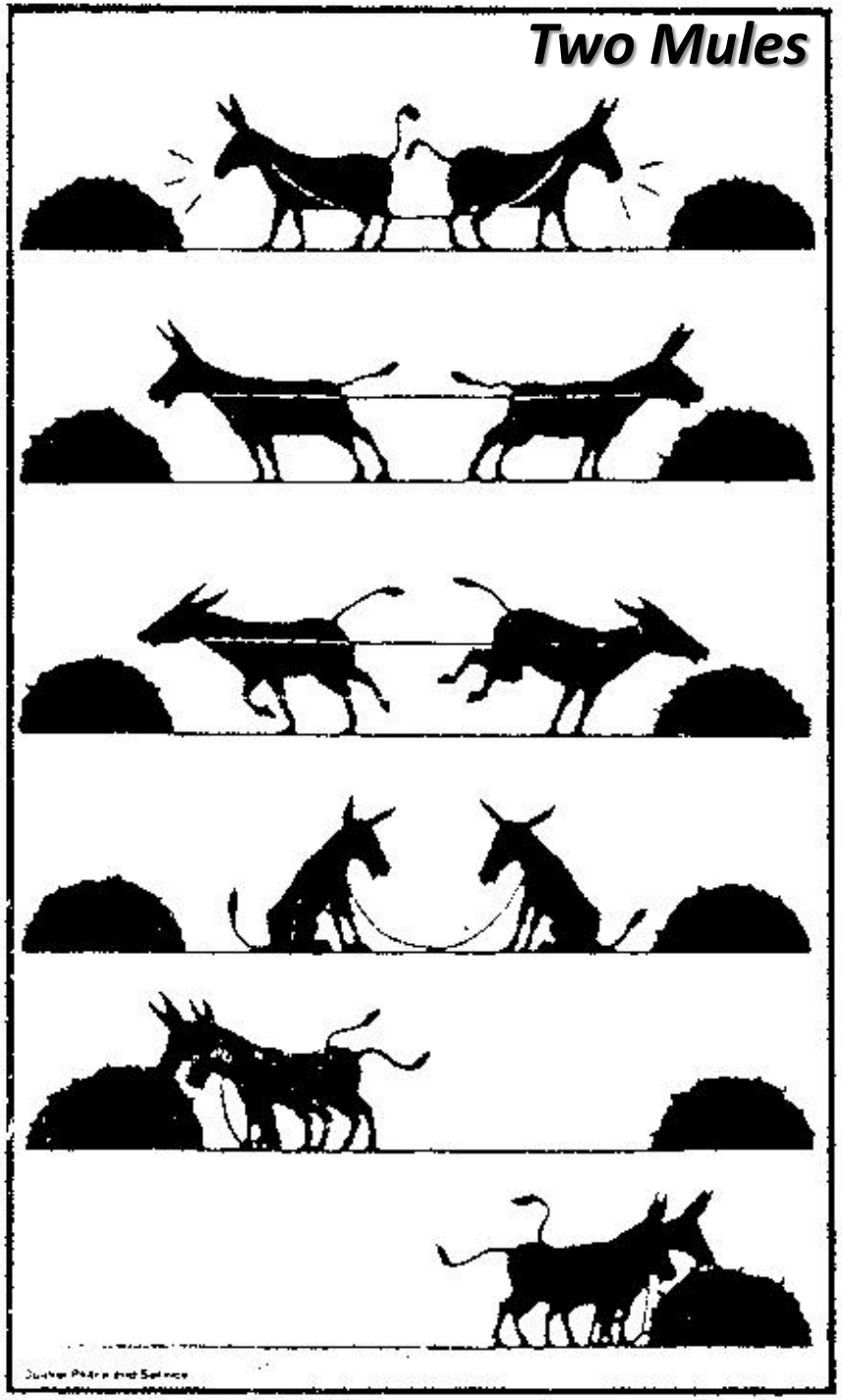
Replication and randomization with controls

Pretreatment data


Two Mules

Take homes

- Landscape perspective essential
- Low severity fire is missing component
- Mimicking fire or preparing for fire?
- Experimental approach sets up *scientific* management while honoring *social* perspectives


Two Mules