Sierra Cascades Dialog, December 2011

Forest Planning: Integrating Science across Landscapes

Joe Stringer

Director of Ecosystem Planning
Forest Service Region 5

Topics

- Forest Plan Revision Strategy
- Assessment
- Science Synthesis
- Timeline

Forest Plan Revision Strategy

REGIONAL & LOCAL

- **Landscape scale**, bio-regional approach
- Cross-Administrative boundaries
- **Forest focus on unique issues**
- **Local** collaboration with Forest planner and specialists
- **Central core planning team** for analysis, writing, EIS and plan development
- Uniform **templates** for plans and EISs (modular housing w/custom colors)

Forest Plan Components

- Desired conditions
- Objectives
- Standards
- Guidelines
- Suitability of lands

Some Planning Concepts

- Our strategy "… guide(s) the collaborative and science-based development…" of forest plans.
- A plan "… provides a framework for integrated resource management and for guiding project and activity decision-making…"
- A plan does not authorize projects or activities or commit the Forest Service to take action, or, regulate uses by the public.
- Plans should not repeat laws, regulations, or program management policies, practices, and procedures that are in the Forest Service Directive System.

Planning Framework

- Assess
- Amend/revise plan
- Implement
- Monitor
- Breathe
- Repeat

- Adaptive and iterative

Assessment

- Report available to all
- Rapid evaluation of existing information , many sources
- Consider existing and possible future conditions and trends

In the Context of the Broader Landscape

Assessment Purpose

- Identify the need to change the existing plan
- Inform the content of the plan

Assessment Topics

- Landscape Level
- Forest Specific

Role of Science

- Use the best available scientific information to inform the planning process

How can the science synthesis fit into the revision process?

- Informs the assessment
- Helps define desired conditions and plan components
- Landscape scale
- Highlights monitoring needs
- Identifies knowledge gaps & uncertainties
- Provides credibility

Timeline

See Handout

Rick Bottoms

Program Manager
Pacific Southwest Research Station
Program Lead for the Science Synthesis

Science Synthesis Prospectus

- What will the science synthesis do?
- What will it not do?
- What is the approach to completing the synthesis?
- Who will lead this effort?
- What are the focal topics and cross-cutting themes that will be featured?

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What will this science synthesis do?

- Generate a white paper similar in format to a General Technical Report with Forest Managers as the target audience
- **Distill important findings from recent scientific studies**
- Consider themes that **cut across traditional disciplines** to help managers address key challenges more holistically
- Provide examples of **applications and references**

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What is the approach to completing the synthesis?

- Approach the effort as a **pre-planning science consistency review** to highlight critical scientific issues that the science team believes would be important to consider in the plan revision process.
- Identify **what is known** as well as **critical gaps in knowledge and uncertainties**

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What the science synthesis will not do

- It will **not be comprehensive**, but it will focus on key challenges such as scaling up from fine-scale studies to landscape-scale processes
- It will **not be exhaustive** in reviewing literature, but it will focus on recent advances in scientific thinking

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Science Synthesis Core Science Team

- Carl Skinner –Science Team Lead

- Brandon Collins
- Carolyn Hunsaker
- John Keane
- Jonathan Long
- Malcolm North
- Pat Winter
- Bill Zielinski

- Other scientists will be brought in as needed to address important topics

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Focal Topics

- Consider various ecosystem elements, goods and services including:
  - Water and aquatic resources
  - Terrestrial wildlife and their habitat
  - Vegetation and associated wood products
  - Socioeconomic values

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Science Synthesis Cross-Cutting Themes (concepts and processes)

- Application of **ecological restoration** and **ecological resilience** in management-relevant terms
- Influence of climate change, fire, air pollution, species invasions, sociodemographic and cultural patterns, and land use changes on ecological goods and services
- Relevant **baselines** for evaluating effects
- Opportunities to answer questions through **adaptive management** initiatives at broad scales
- Strategies to enhance **monitoring** efforts at broad scales

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Sample Question #1

- What new science can help us understand the trade-offs between the potential impacts of forest treatments on forest vegetation, terrestrial and aquatic habitat, and water resources and the potential impacts of wildfire if treatments are *not* implemented?

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Malcolm North

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How can science synthesis contribute to implementing projects "on the ground"?

- A science synthesis ***does not***:
- Tell the Forest Service what to do.
- What general policies should guide its planning.
- Set standards and guides for management to implement projects.

How can science synthesis contribute to implementing projects "on the ground"?

- A science synthesis ***can***:

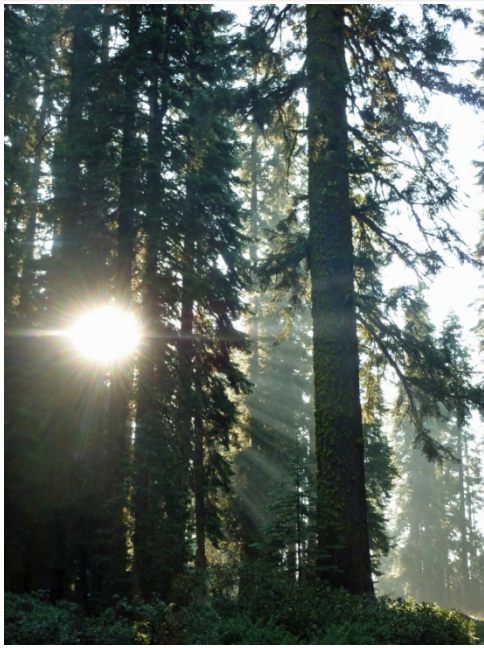
- Provide summaries of relevant research that can inform decision making

- Present recent research advances that may affect future forest management planning

- Summarize information about the ***potential*** ecological, economic and social outcomes of different management actions.

An example using GTR 220

Fuels reduction treatments have been effective for reducing fire intensity, but they do not explicitly address how forest ecosystems could be restored or how to provide wildlife habitat.



Fuels treatments create forest conditions without a natural analog

Example of a fuels treatment that leaves regularly spaced trees and removes all understory and ladder fuels

Versus:

Clumped distribution—tree groups and gaps produced by an active fire regime

An active-fire, mixed-conifer forest with complex structure created by frequent fire in the Yosemite N.P.

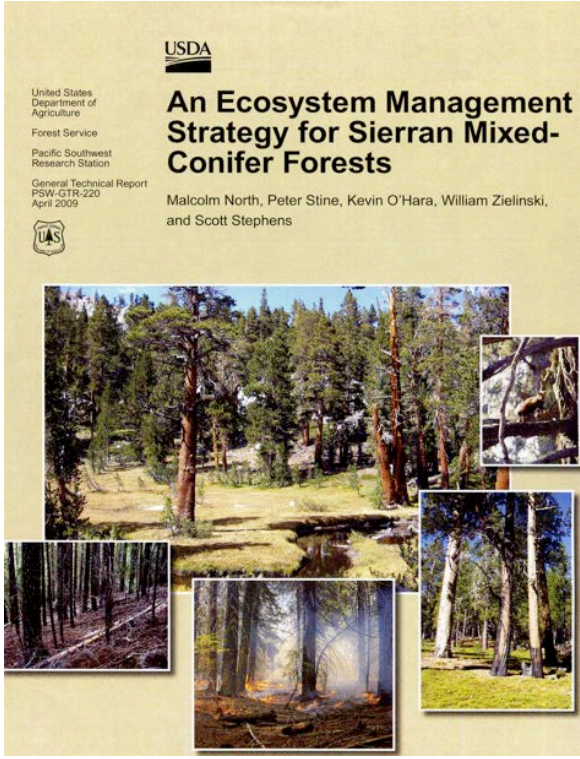
Science synthesis that proposed a new management strategy for Sierran forests

Could creating variable forest conditions meet the objectives of fuels reduction, forest restoration and the provision of wildlife habitat?

Could fire science, forest ecology, & wildlife biology provide complimentary management concepts?

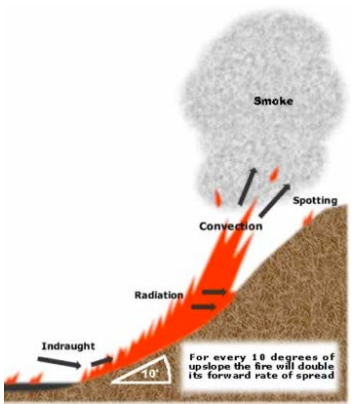
Each discipline's research findings coalesced around the importance of variable forest structure & fuel conditions.

The crux was identifying a science-based but practical silvicultural method for managers to implement that variability



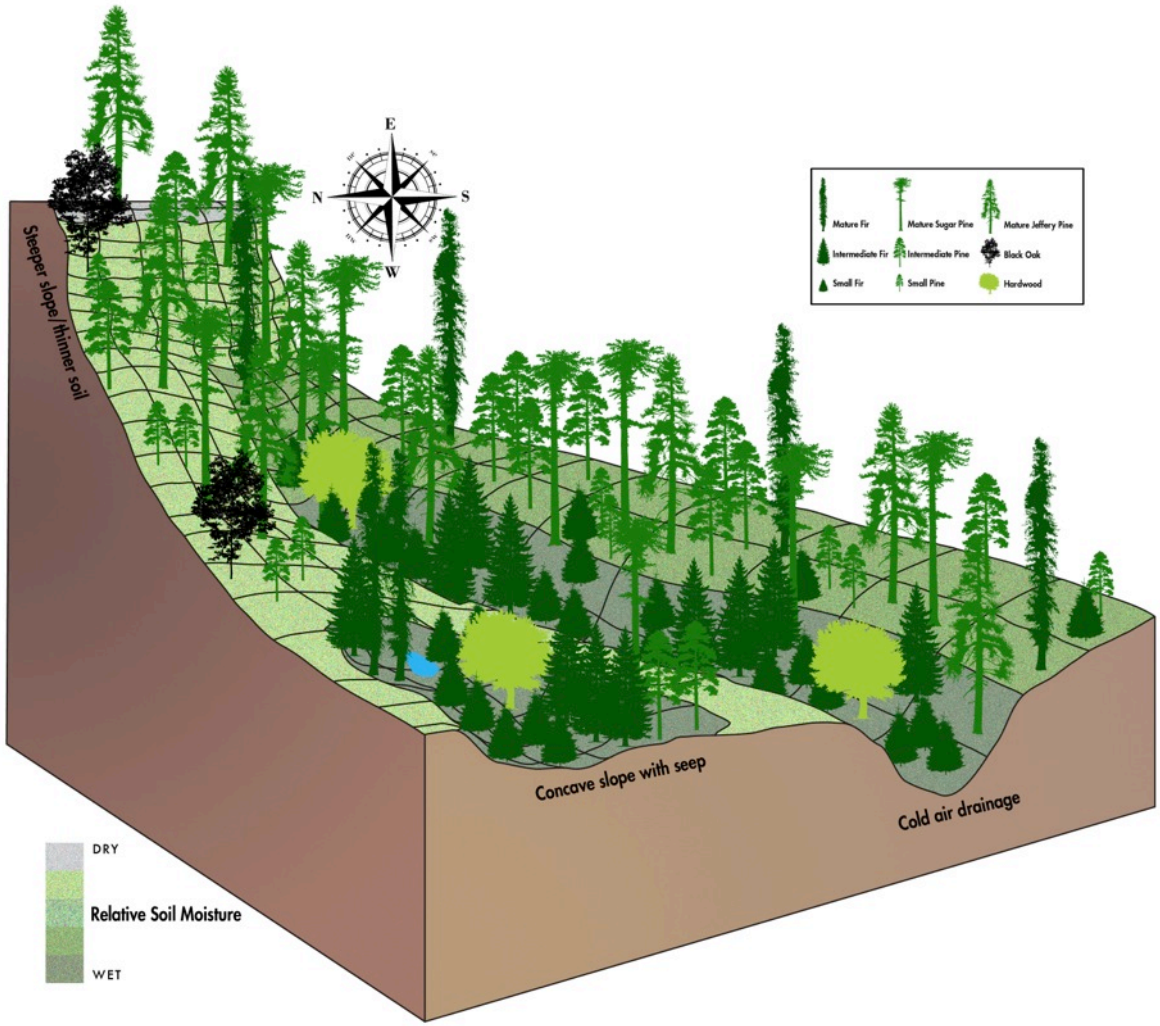
Proposed Strategy: Using Topography

- Historically, fire was probably the most important influence on forest conditions and ecosystem processes.
- Active fire regimes likely produced forest heterogeneity as fire intensity and extent was affected by topography.
- Different fuels reduction and resulting forest structure could be produced using micro- and macro- topography as a guide.



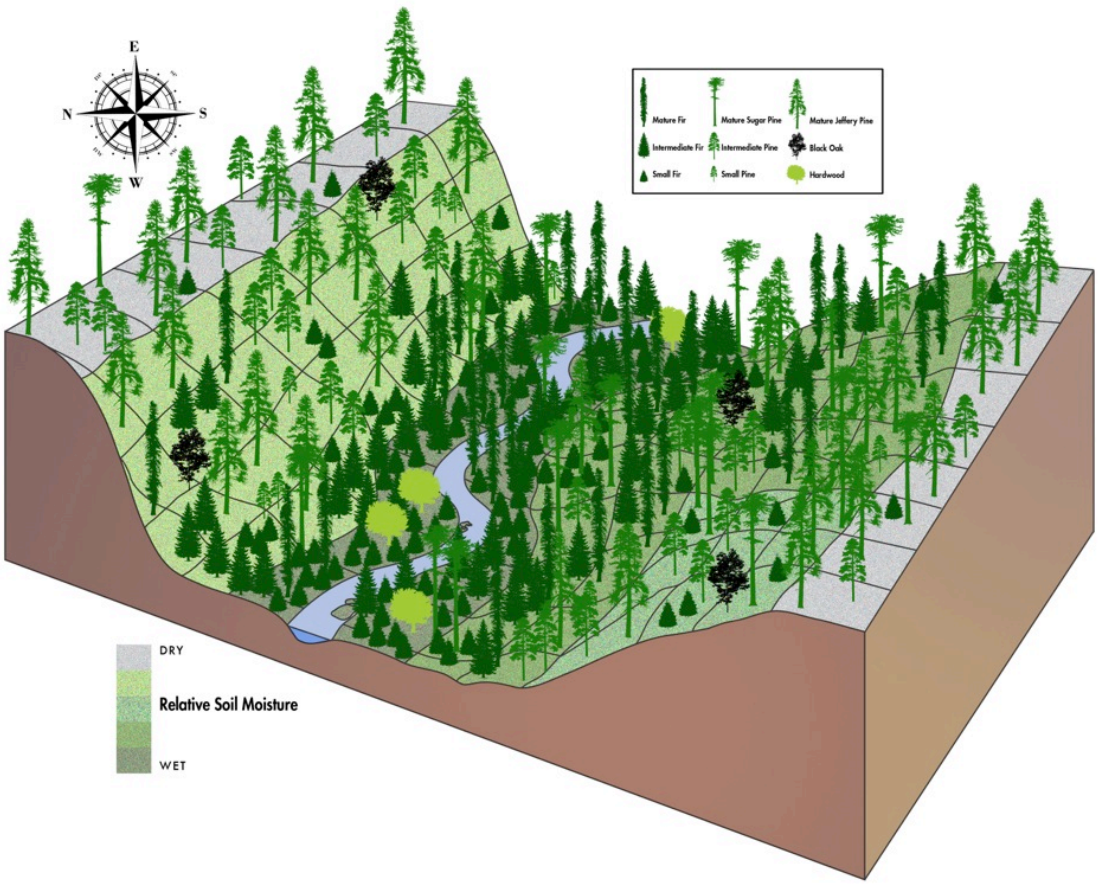
Proposed Strategy: Using Topography

Stand-level schematic of how forest structure and composition would vary by small-scale topography after treatment. Cold air drainages and concave areas would have high stem densities, more fir and hardwoods and could provide threatened and sensitive species habitat. With increasing slope, stem density decreases and species composition becomes dominated by pines



Proposed Strategy: Using Topography

Landscape schematic of variable forest conditions produced by management treatments that vary by topographic factors such as slope, aspect, and slope position. Ridge tops have the lowest stem density and highest percentage of pine in contrast to riparian areas. Mid-slope forest density and composition varies with aspect: density and fir composition increase on more northern aspects and flatter slope angles. Riparian forest provide high canopy cover movement corridors.



The Science/Management Push-me/Pull-you

Management sometimes wonders why science cannot provide relevant information: "Give us specific answers and guidance yet don't be prescriptive or limit manager flexibility."

Science sometimes wonders why management doesn't use the research it produces: "Research results are context specific and cannot be condensed without being compromising."

A new approach to Science Synthesis:

Develop a conceptual model for how the scientific research fits together

Provide an information 'ecosystem'