



# Applying science to management at landscape-scales: The Southwestern Crown of the Continent

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# Talk organization



- Introduction to the Collaborative Forest Landscape Restoration Program (CFLRP) and the Southwestern Crown of the Continent (SWCC) CFLRP
- Science used in SWCC restoration projects
- Science used in SWCC monitoring program
- Summing it all up: the role of science in building trust





# Goal for collaboration



Find the sweet spot  
where ecology,  
economics, and  
social acceptance  
come together.  
Science informs all three.





The critical importance of collaboratively developing a zone of agreement



## Montana Forest Restoration Committee's Guiding Restoration Principles

- Restore functioning ecosystems by enhancing ecological processes.
- Apply an adaptive management approach.
- Use the appropriate scale of integrated analysis to prioritize and design restoration activities.
- Monitor restoration outcomes.
- Reestablish fire as a natural process on the landscape.
- Consider social constraints and seek public support for reintroducing fire on the landscape.
- Engage community and interested parties in the restoration process.
- Improve terrestrial and aquatic habitat and connectivity.
- Emphasize ecosystem goods and services and sustainable land management.
- Integrate restoration with socioeconomic well-being.





# Talk organization

## Introduction to the Collaborative Forest Landscape Restoration Program (CFLRP) and the Southwestern Crown of the Continent (SWCC) CFLRP





# The Forest Landscape Restoration Act



- **2009**: Congress establishes CFLR program with the Omnibus Public Land Management Act
- Budget for program: \$40 million per year for fiscal years 2009-2019
- Up to \$4 million per year annually for any one project (not to be used for planning costs); funding matched and leveraged by FS and partners.
- Up to 10 projects per year nationally
- **2010**: 10 projects
- **2012**: +13 projects







**The unwritten goal is to do enough work in a selected landscape to have a significant restoration effect.**



# Goals of the CFLR Act

The purpose of the Collaborative Forest Landscape Restoration Program is to encourage the collaborative, science-based ecosystem restoration of priority forest landscapes by:

- encouraging ecological, economic, and social sustainability;
- facilitating the reduction of wildfire management costs by re-establishing natural fire regimes and reducing the risk of uncharacteristic wildfire;
- encouraging utilization of forest restoration by-products to offset treatment costs and to benefit local rural economies; and,
- leveraging local resources with national and private resources.



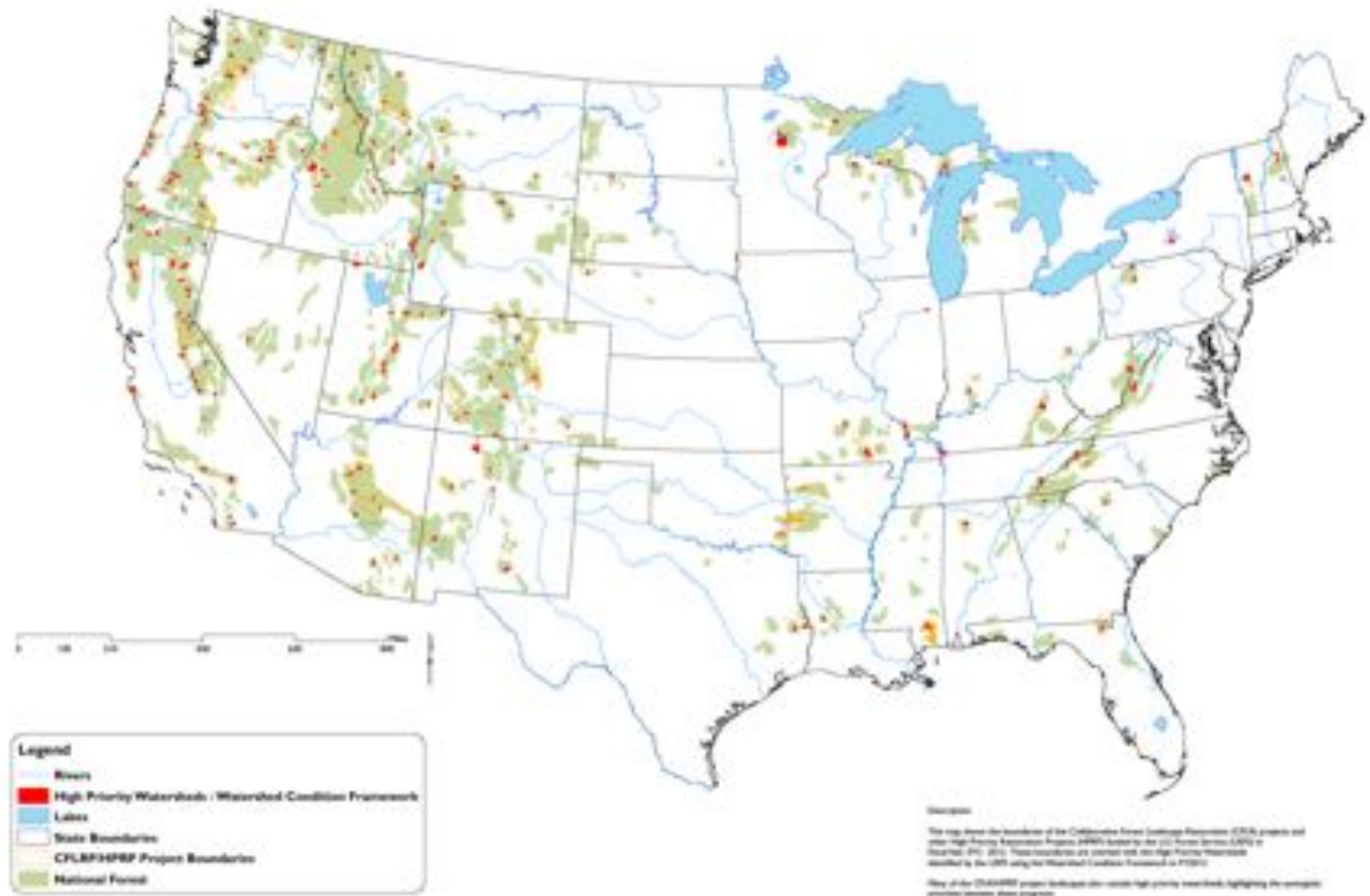




# Location of 23 CFLR projects nationally

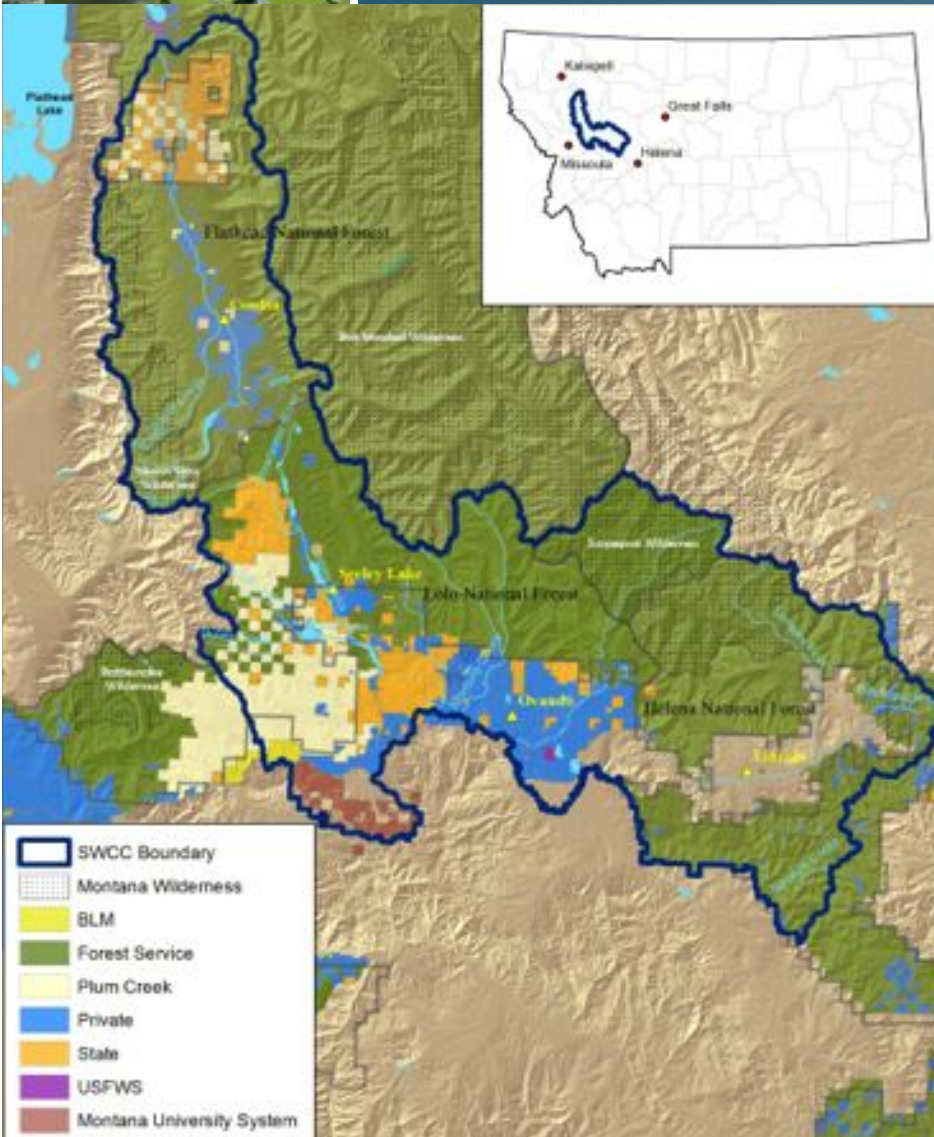


Collaborative Forest Landscape Restoration and High Priority Restoration Project Boundaries  
Overlaid with High Priority Watersheds





## Southwestern Crown of the Continent CFLRP

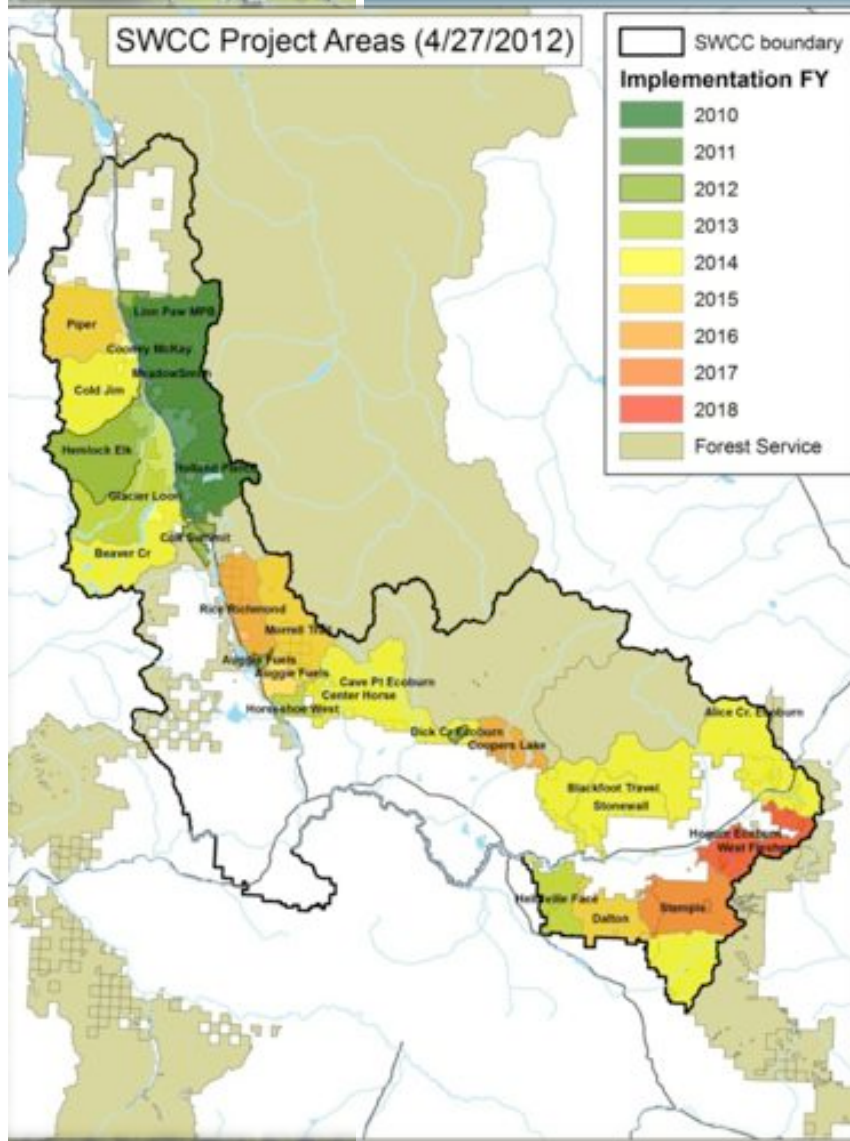


- **Set in three National Forests (Flathead, Lolo, and Helena) across 1.5 million acres**
- **Includes significant acreage from the Montana Legacy Project**
- **Important habitat for grizzly bear, elk, deer, lynx, gray wolf, wolverine, a wide variety of bird species and native trout**
- **Restoration needs: noxious weeds and invasive fish species, old logging roads, mining activities, decades of fire suppression, and climate change**
- **Diversity among/ structure of projects**
- **Foundation for success: Highly functioning local collaboratives on each Forest**



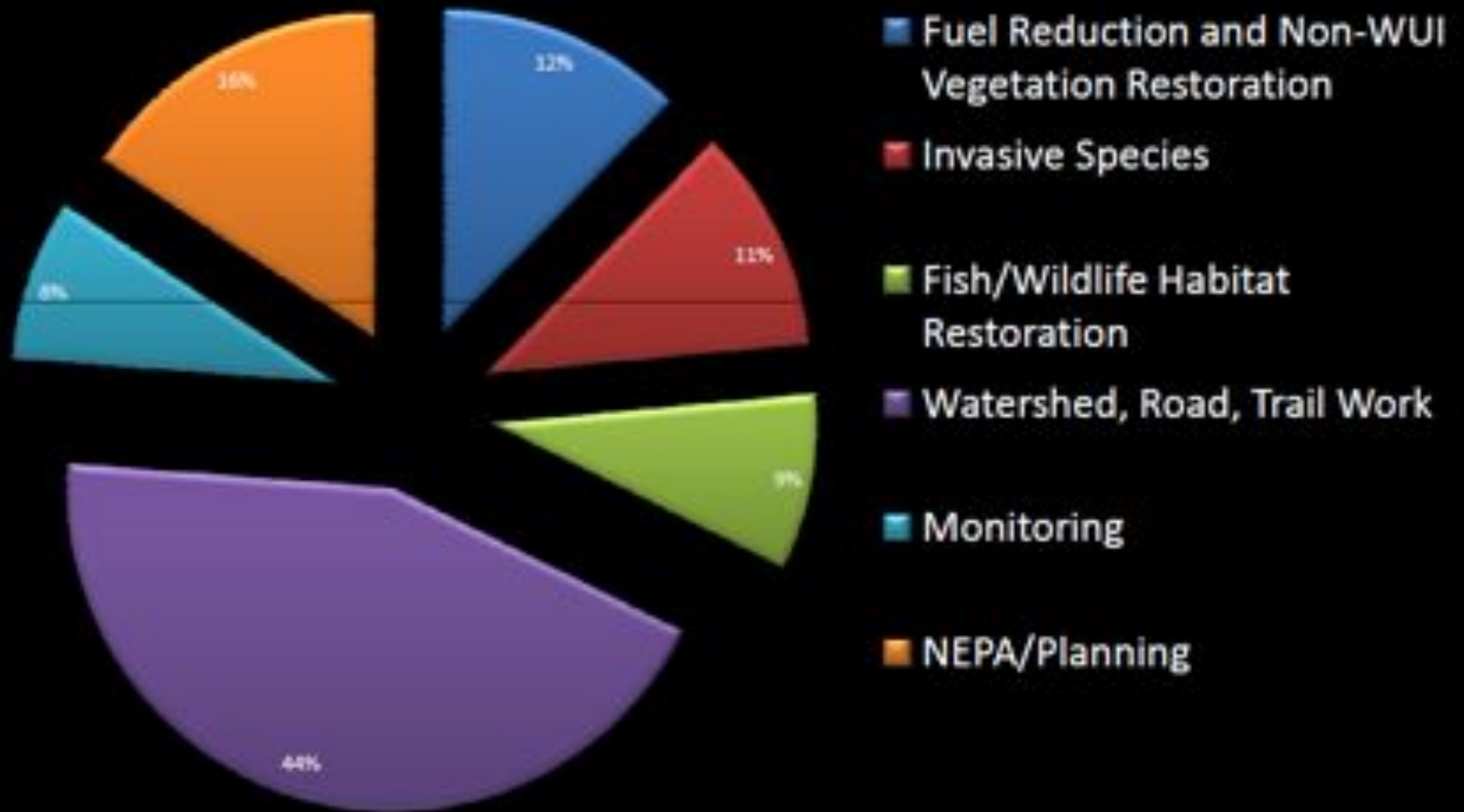


## Landscape Goals by the SWCC





- Create ~170 full and part-time jobs/yr
- Contribute approximately \$9.1 million annually in direct labor income
- Produce up to 189 MMBF of sawlogs and biomass over 10 years.
- Restore 46,000 acres of forest land
- Reduce fire risk on 27,000 acres of high-risk lands within the WUI
- Restore 937 miles of streams
- Mitigate noxious weeds on 81,000 acres
- Reduce distributions of non-native fish species in area lakes
- Improve 280 miles of trails
- Decommission 400 miles of roads

# Total SW Crown Restoration Budget \$91.2M over 10 Years







## Science Used in SWCC Restoration Projects



# Use of long-term lynx radio-collar data to design a restoration project



- Lynx “hotspot” within SWCC (and Montana)
- Population demography and habitat use clearly delineated using large dataset over a decade
- Design of the restoration project to create more suitable habitat for lynx in parts of the forest that they do not use currently
- Monitoring to assess effectiveness of treatment objectives
- Improving connectivity between Ranger Districts

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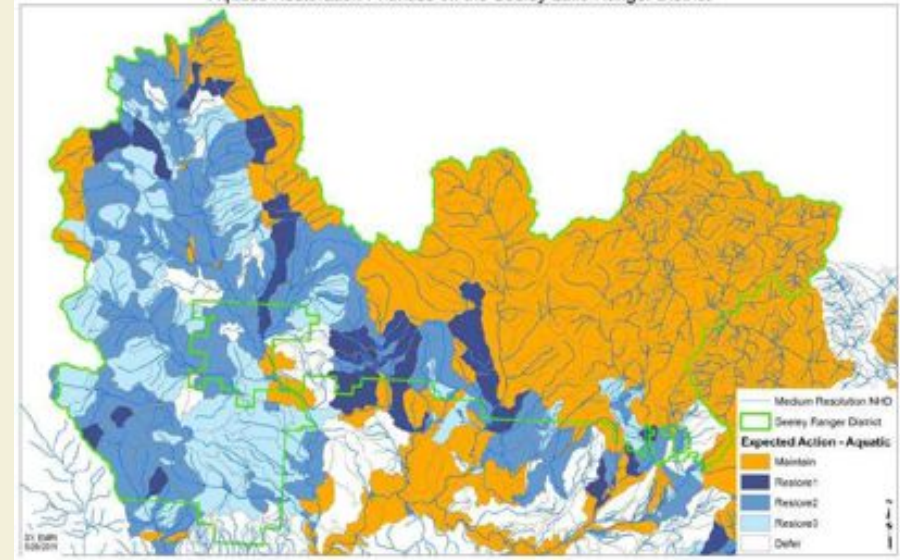


# Prioritization Assessment



- **Coarse filter analysis using fine-scale data by the Ecosystem Management Resource Institute**
- **Helps prioritize areas for treatment by (a) providing a baseline against which change can be evaluated, and (b) highlighting restoration opportunities**
- **Focuses on fire: missed fire cycles, etc.**
- **Many other management considerations regarding when and where work is prioritized.**

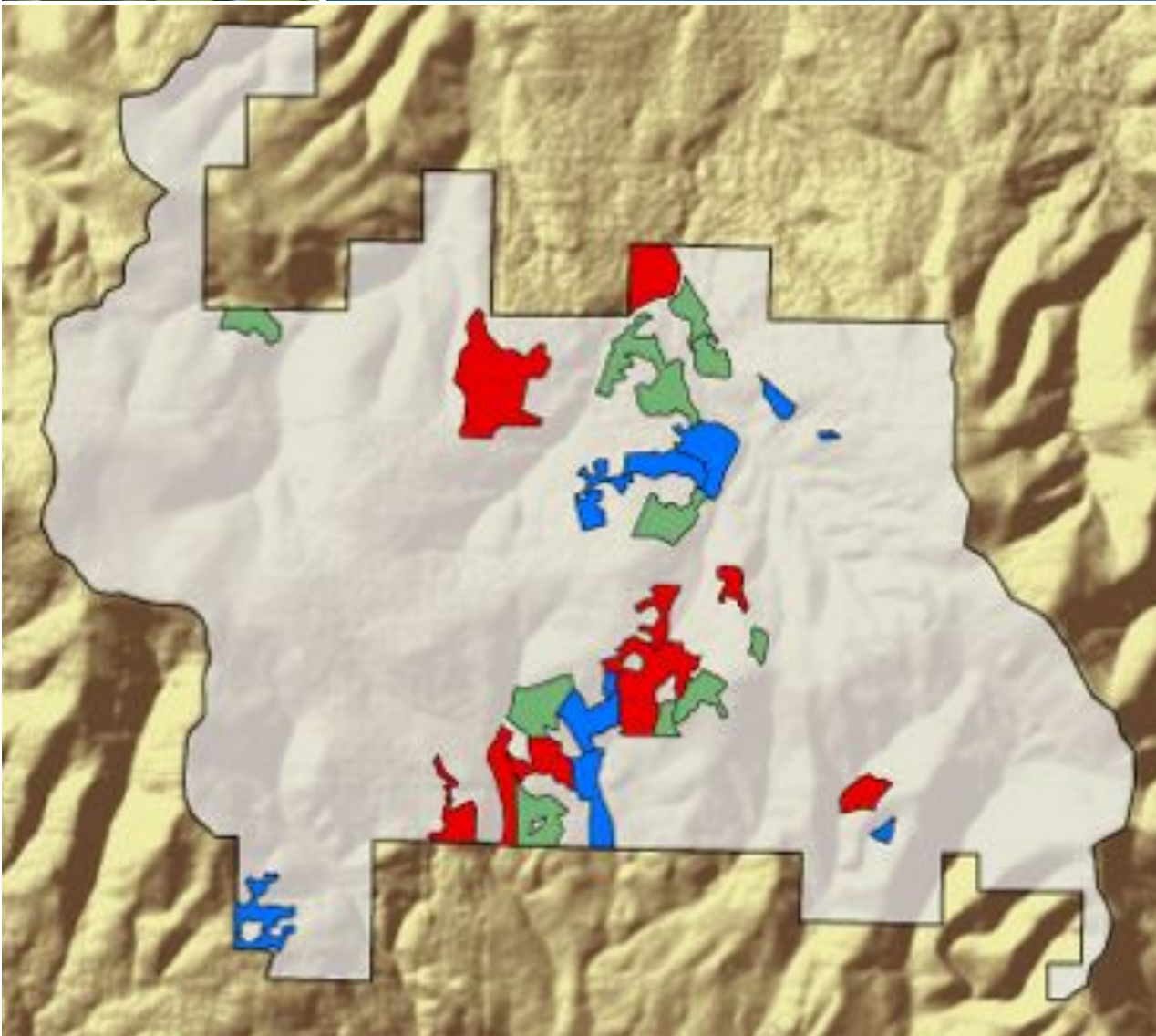
Aquatic Restoration Priorities on the Seeley Lake Ranger District



**Map and analyses by  
Ecosystem Management  
Resource Institute (EMRI)**



# Active adaptive management



- **Active adaptive management accelerates learning**

## Requires:

- **Pre-treatment data**
- **>1 treatment**
- **Untreated controls**
- **Replicated treatments**
  
- **Complexities: wildlife corridors**



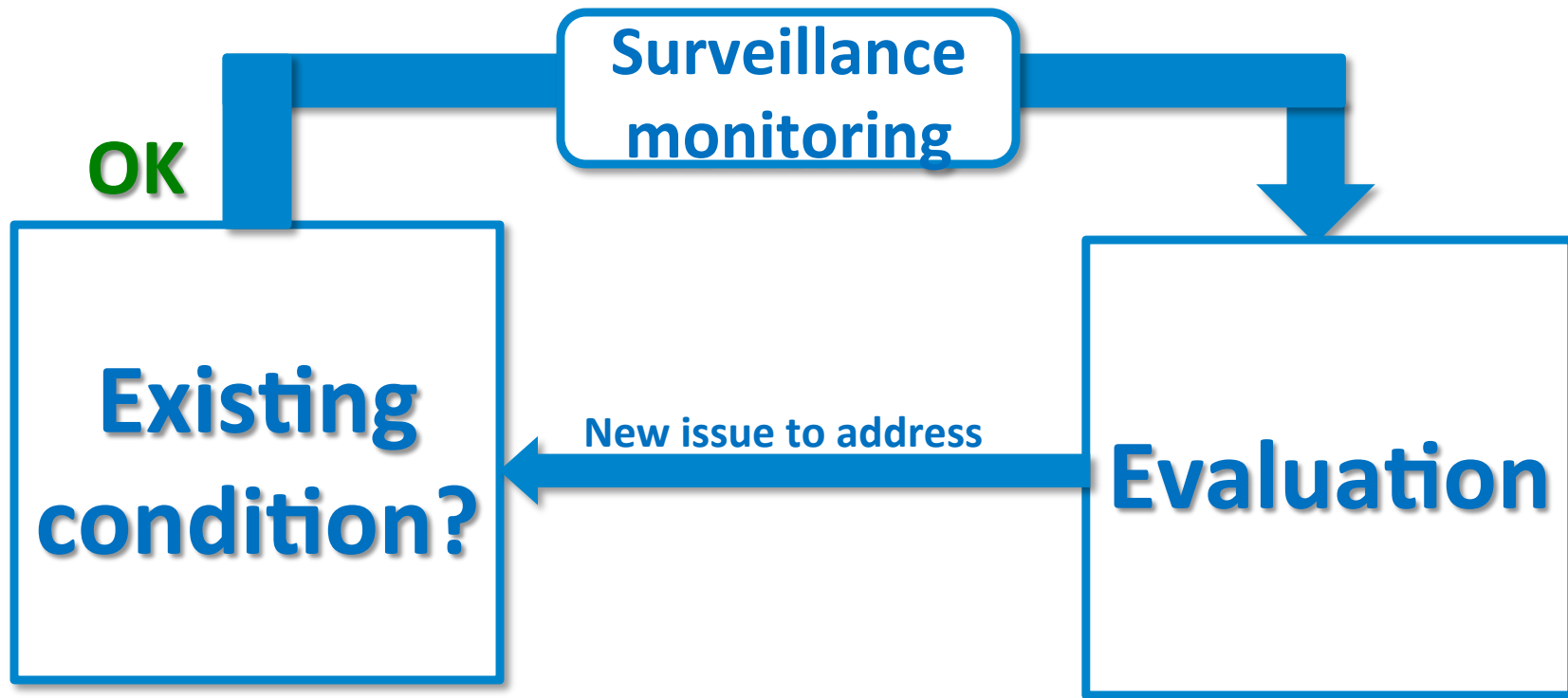


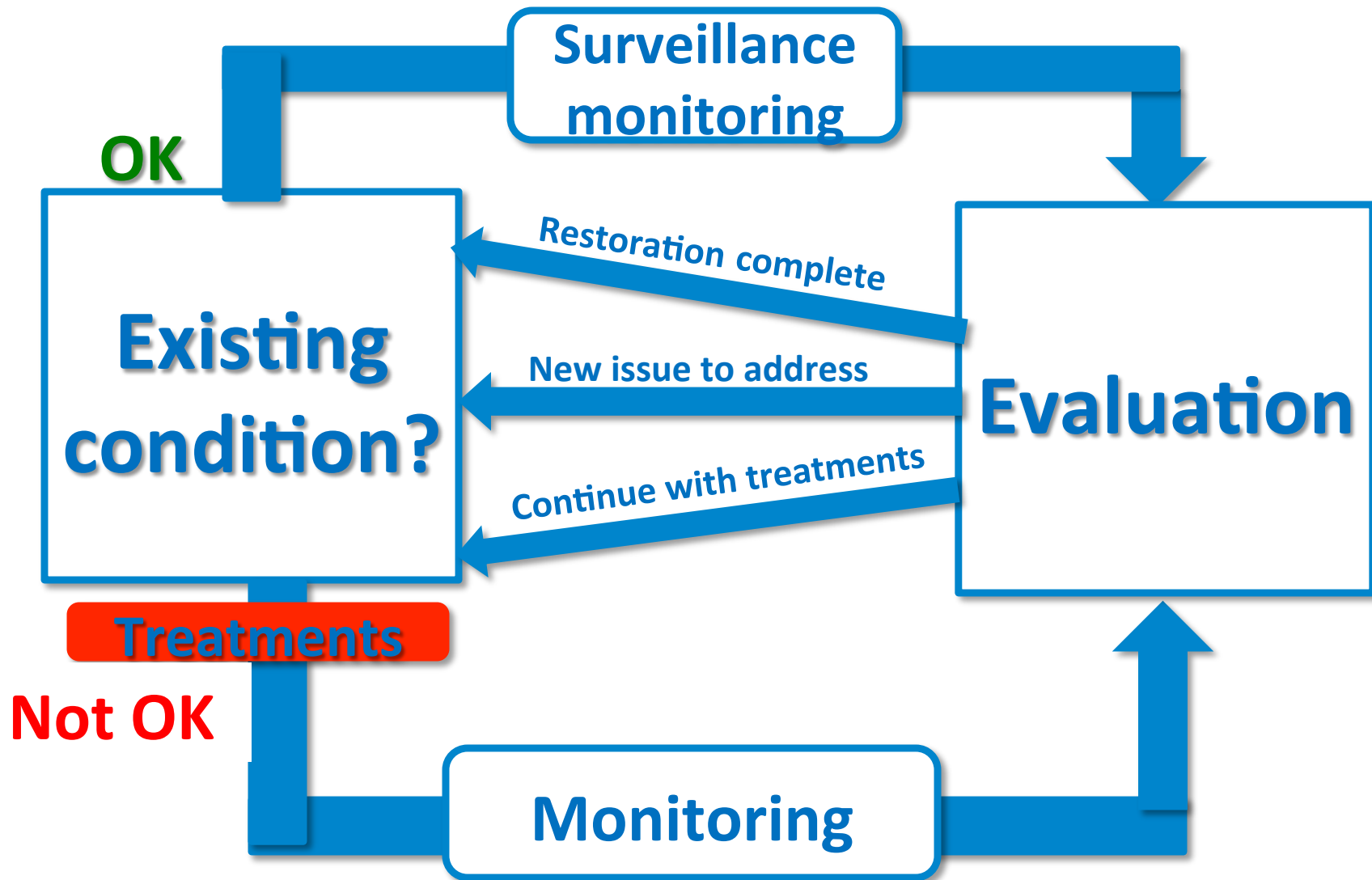
## Science Used in the SWCC Monitoring Program

# Monitoring ?

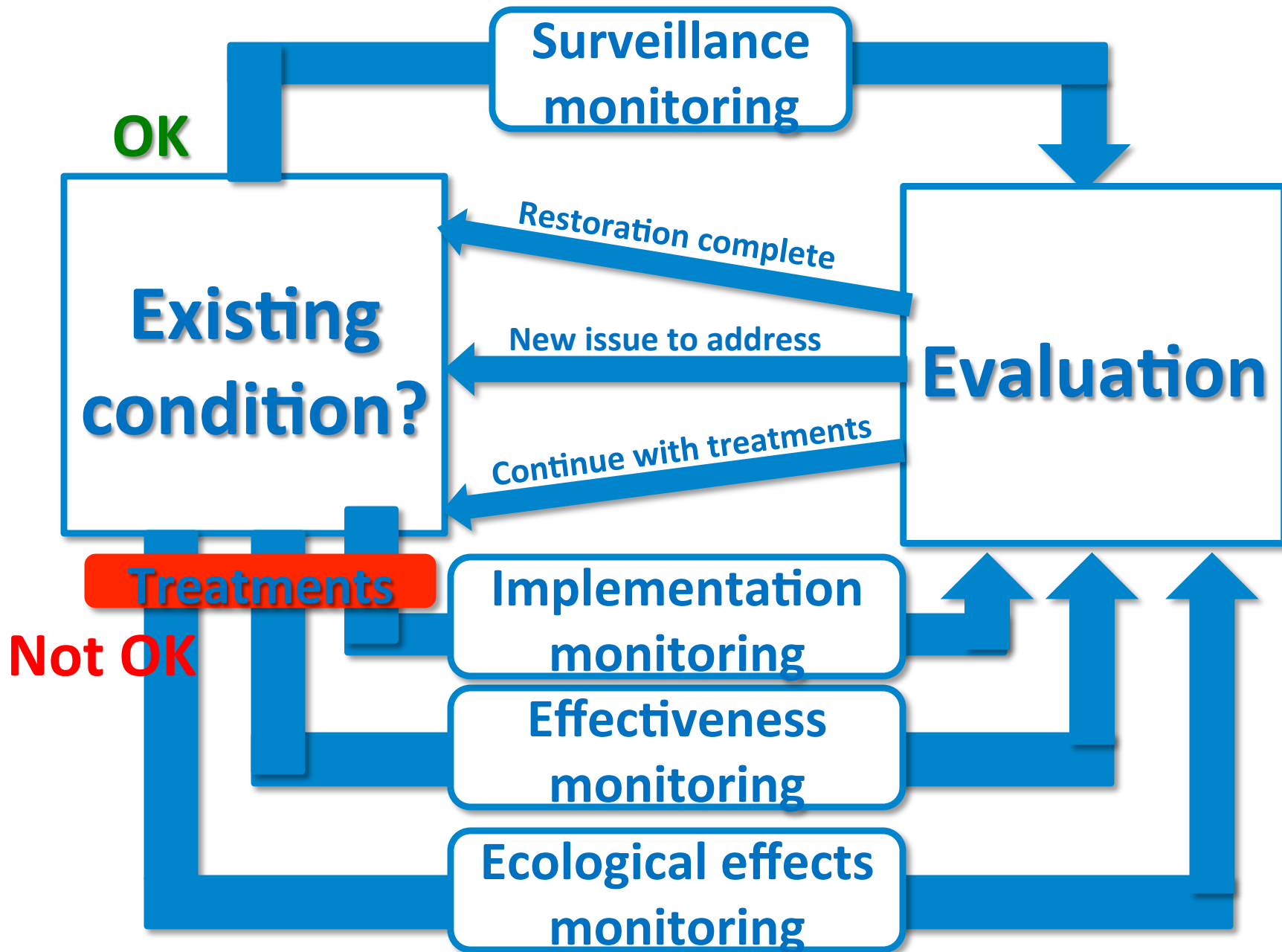




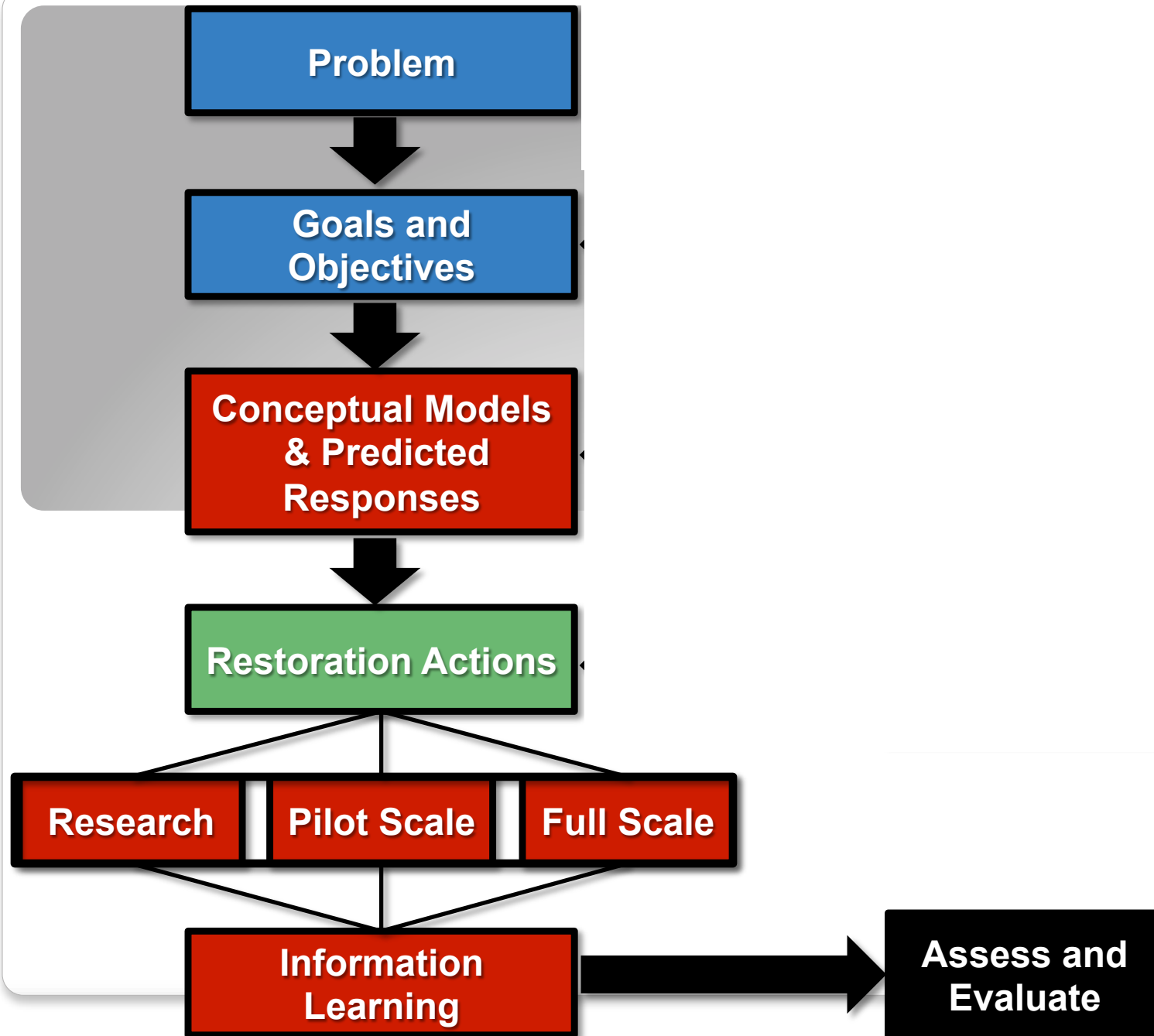








## Other considerations: Monitoring and adaptive management







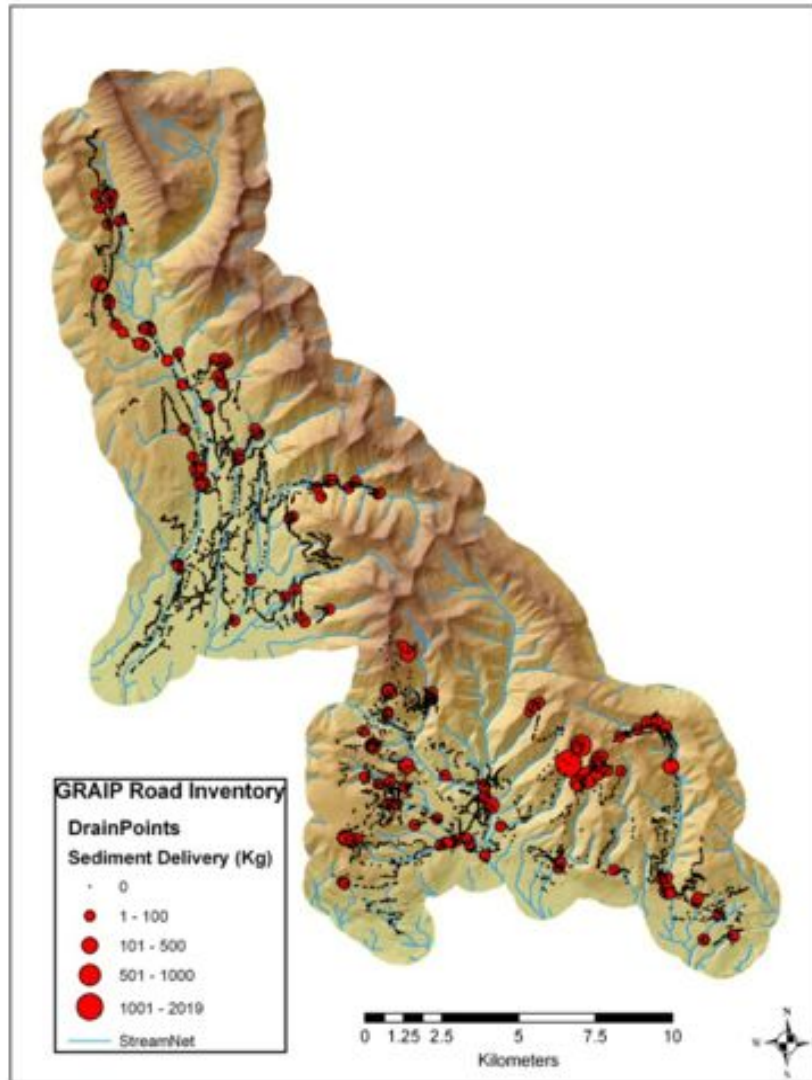
## Socioeconomics






- **Goal:** Reduce the costs of fire management over time, while allowing fire to play more of its historic role in forest disturbance.
- **Science:** Collaborative work by economists to determine if the SWCC vegetative and fuel treatments have expanded the options of SWCC managers to allow fire to play its historic role in forest disturbance.
- **Cost:** \$2,000 annually.
- This project allows substantiation of RCAT, a national indicator.



# Aquatics



- **Goal:** maintain or restore retained forest roads to protect water quality by reducing or preventing sedimentation into lakes and streams
- **Science:** Develop/ test methods to assess impacts of roads on streams, and to evaluate effectiveness of restoration projects after treatments – at watershed scale
- In-stream water quality monitoring coupled with road monitoring
- **Added benefit:** Allows information-based discussion with public on a very polarized subject
- **Our hero:** Great Northern LCC



**Summing it all up:  
The role of science  
in building trust**





# Citizen science: Summary up lessons learned





## What has worked well?

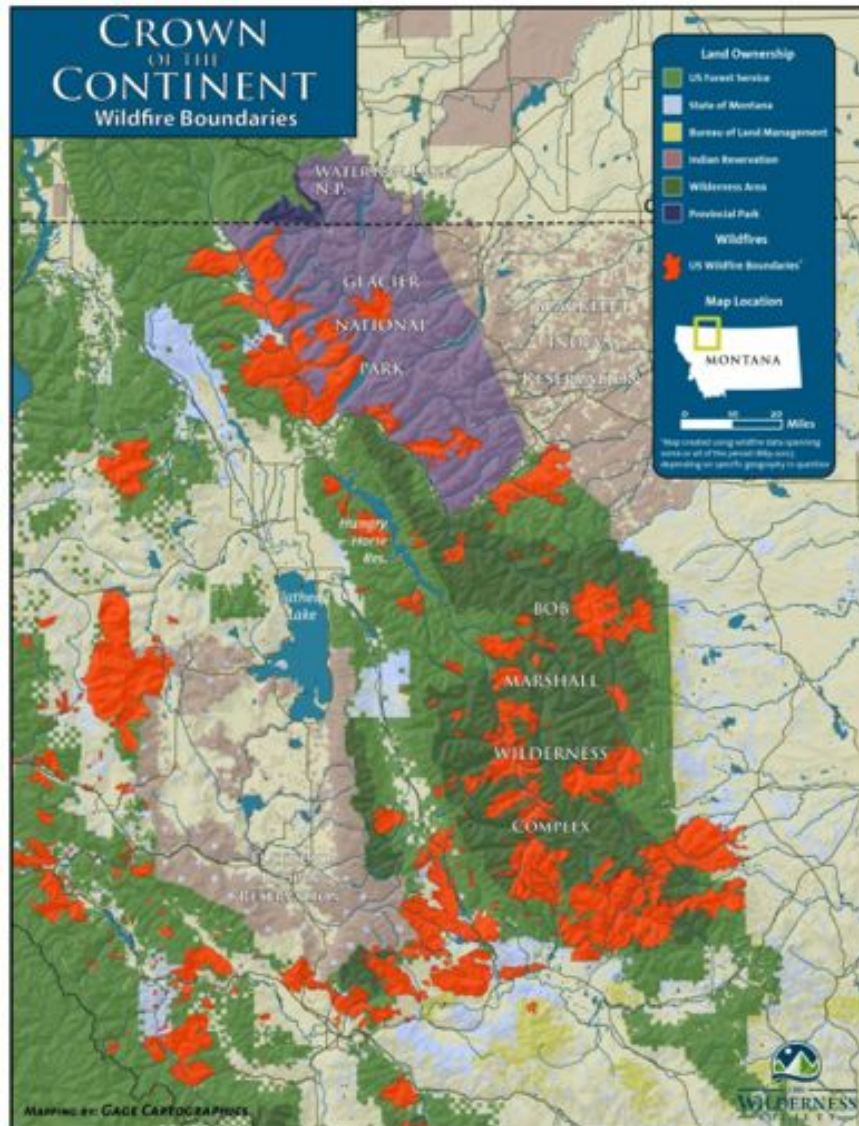


- **Collaboration! TRUST BUILDING!**
- **The establishment of a “think tank” in the Monitoring Committee**
- **Specialized working groups within the Monitoring Committee**
- **Nested monitoring**
- **Cooperation with the University of Montana and citizen science as a way of building trust**
- **Intensive work to integrate monitoring projects with one another**
- **Use of wilderness areas as a reference for restoration projects**





# Missed opportunities?



- **Fire modeling at a landscape scale**
- **Including effectiveness monitoring in the “Purpose and Need” for specific restoration projects across the SWCC**
- **More explicit ecologically-linked definitions of success**
- **This would have required a list of most important datasets, and QA/QC of datasets across the landscape (e.g. road layers)**



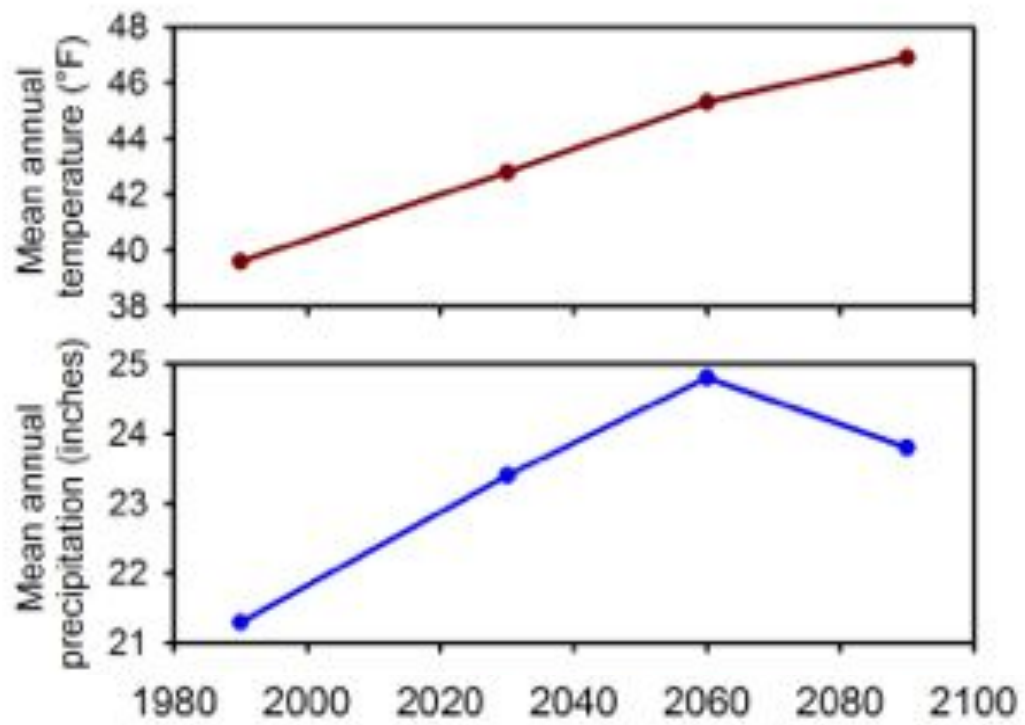


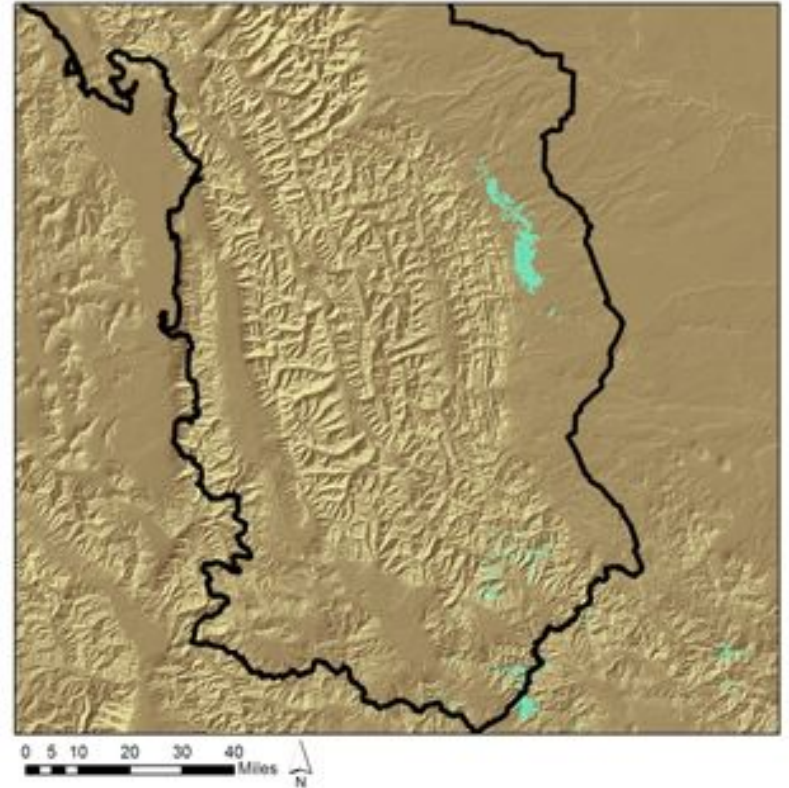
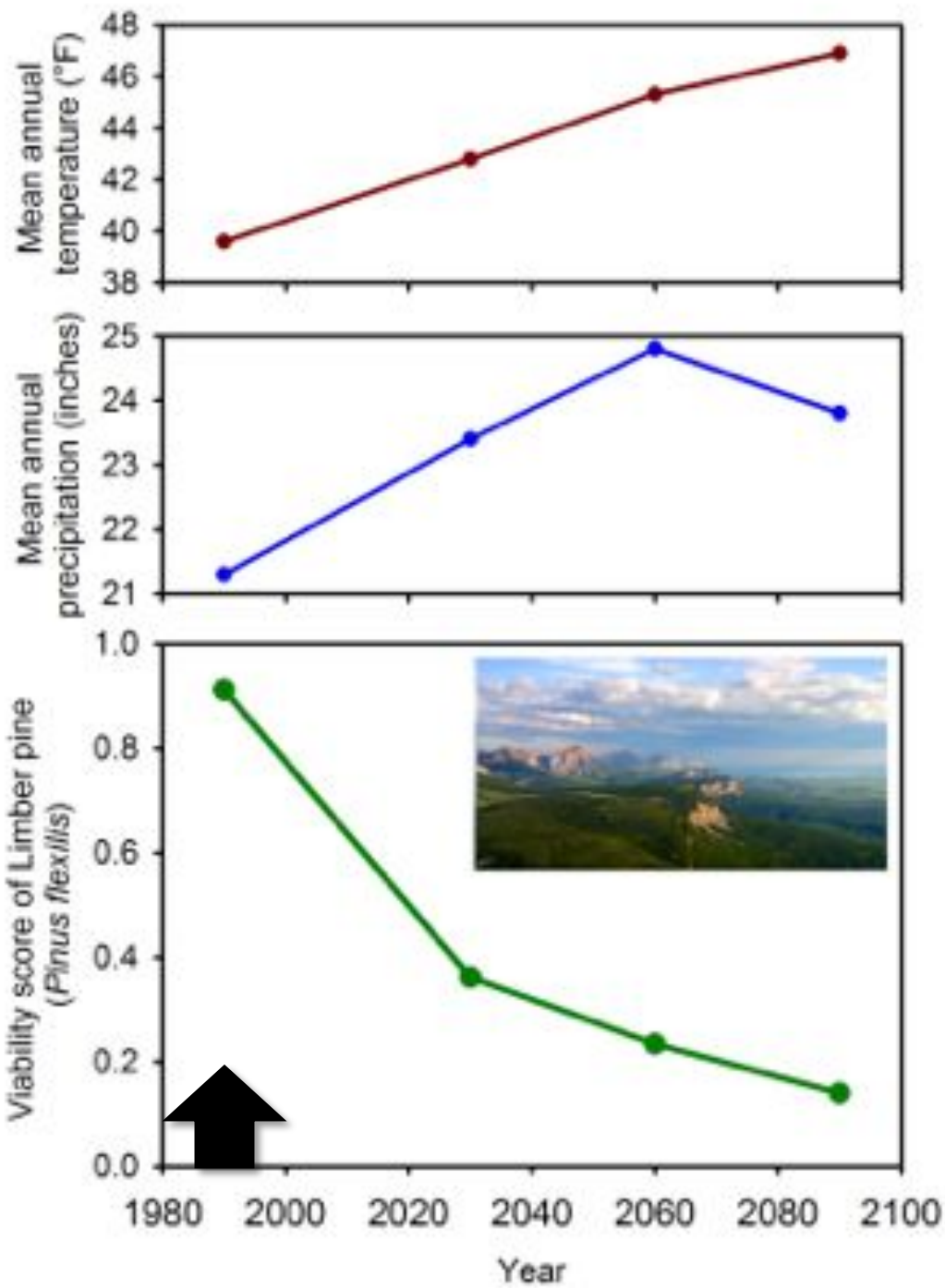
# Important new science, datasets, and tools



- **Crown Managers Partnership: Ecological Health Indicators Database for the Crown of the Continent**
- **U.S. Forest Service Forest Vegetation Simulator (FVS) with climate change scenarios built-in**

Figure 1. Wilderness Study Areas in California for the California Statewide Assessment. Source: Modified from the Statewide Forest Health Assessment (SFHSA) Data Report (2010) and U.S. Forest Service (USFS) Data Report (2010).

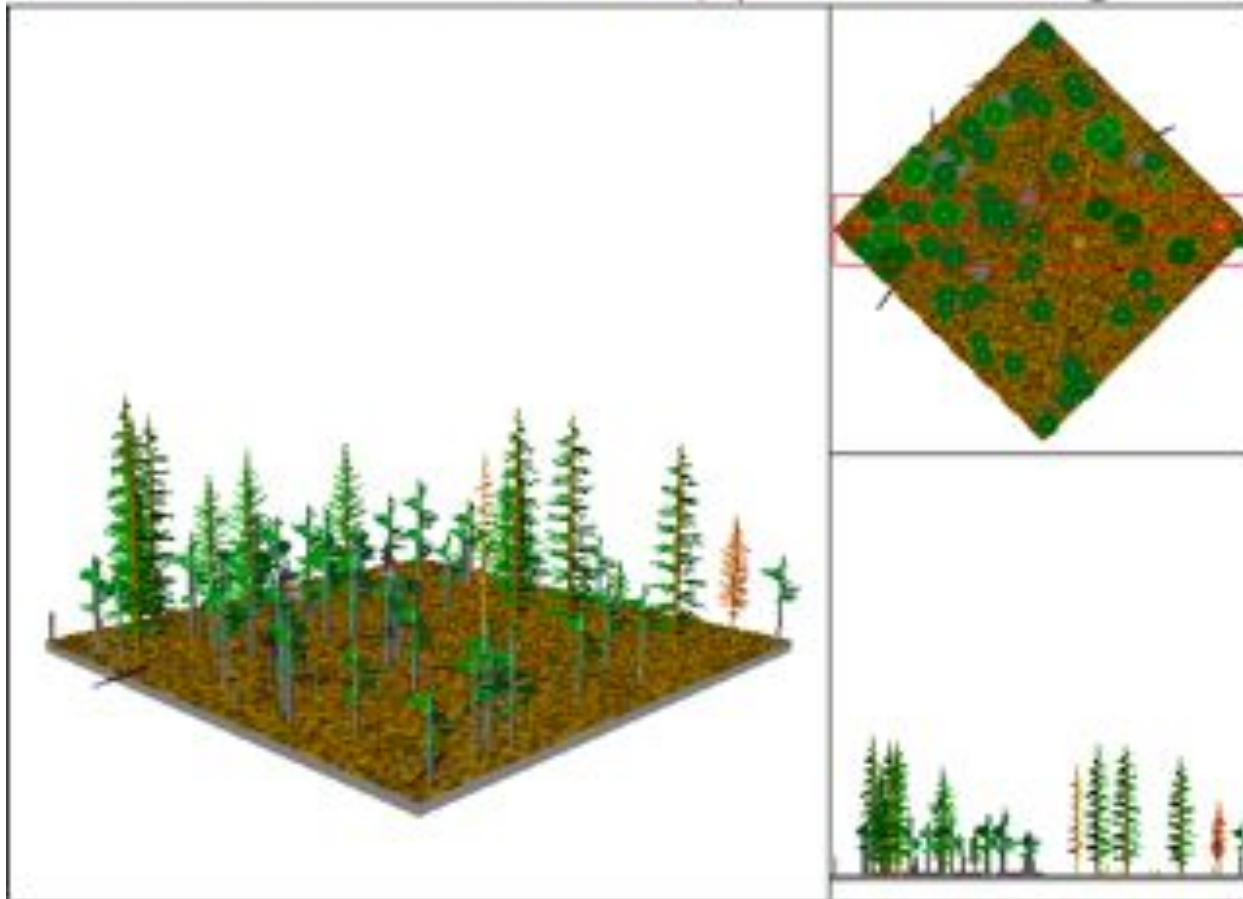






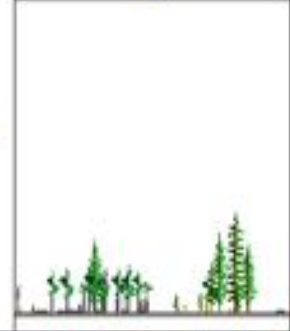
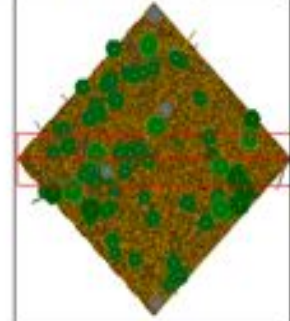
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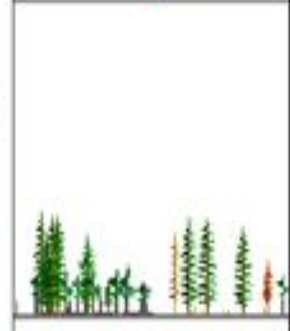
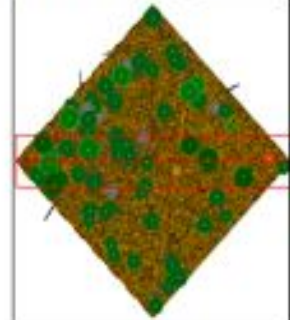
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**No climate change**



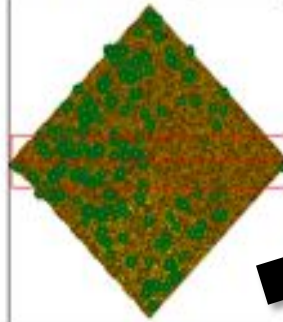
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**With climate change**



Stand=0030200402020404580187 Year=2004 Inventory conditions PIFL187noCCnotrt\_001.svs

**Current conditions**





# Our sincere thanks to our SWCC partners



- U.S. Forest Service: Northern Region; Helena, Lolo, and Flathead National Forests
- Montana Dept. of Natural Resources
- Blackfoot Challenge
- Clearwater Resource Council
- Pyramid Mountain Lumber
- University of Montana
- Missoula Country Rural Initiatives
- Northwest Connections
- The Nature Conservancy
- National Wildlife Federation
- Swan Ecosystem Center
- Rocky Mountain Elk Foundation
- Trust for Public Lands
- Forest Business Network

[www.swcrown.org](http://www.swcrown.org)