

# Synergistic Monitoring for Adaptive Management Nevada Sagebrush Ecosystems



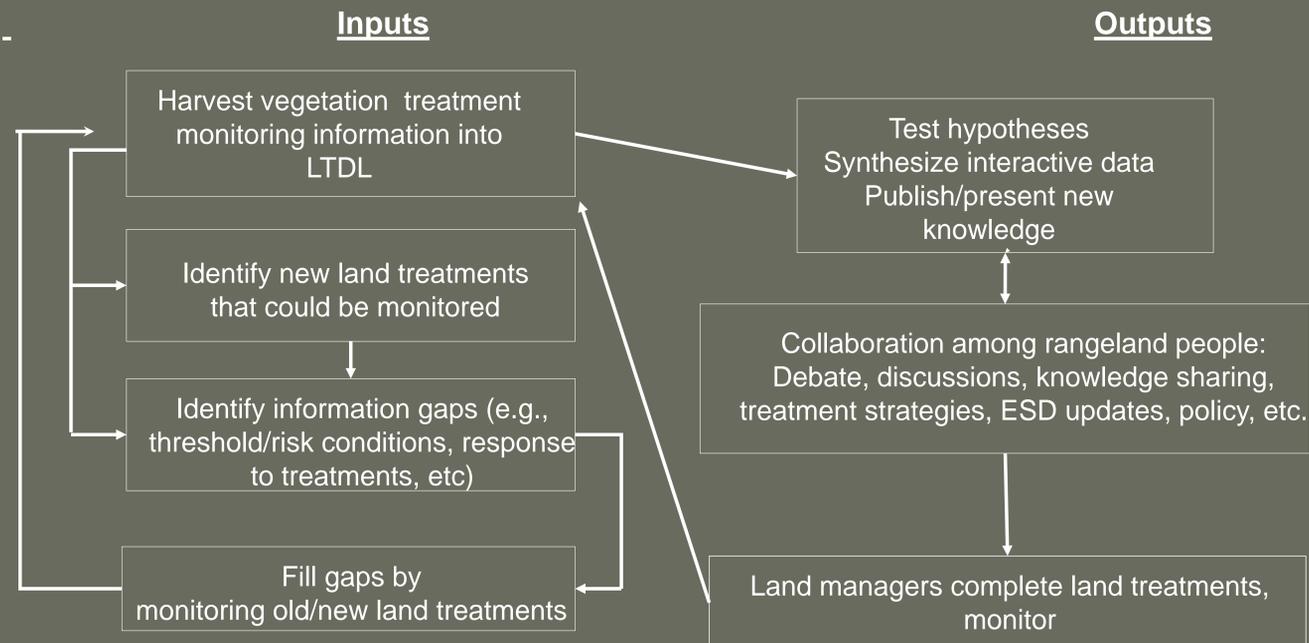
Sherm Swanson, John Swanson, Gary McCuin, Kent McAdoo, Brad Schultz  
University of Nevada Cooperative Extension

## Summary

As range, watershed and wildlife managers realize the magnitude of ecosystem change in the Great Basin, many proactive projects to improve resource sustainability, value and productivity have been implemented or are being planned. These include many types of vegetation manipulation to change species composition or community structure; across a variety of ownerships. Faculty with the University of Nevada Cooperative Extension (UNCE) and Nevada Agricultural Experiment Station (NAES) are collaborating with the United States Geological Survey (USGS) Great Basin Integrated Landscape Monitoring Pilot Project, Nevada Department of Wildlife, Bureau of Land Management, and the Agricultural Research Service to collaboratively learn from these endeavors. Monitoring of vegetation and soil response coupled with land manager efforts should improve our understanding of the consequences of management action and inaction; allow for continued refinement of project implementation tools; and adapt future management actions to changing knowledge, conditions and information. By learning from historic and current management actions, and natural experiments (e.g., wildfire), we can collectively study many more treatments and actions than any scientist or team of scientists could afford to implement as experimental treatments. By building upon the foundation of historic monitoring and pre-project base-line data, we can document long term effects with replicates for statistical analyses. This project coordinates monitoring efforts and pools monitoring data because the sum is more valuable than the individual components. These monitoring data, once collected, analyzed and interpreted will improve our understanding of landscape-level ecological processes and our ability to manage and predict rangeland health and resiliency under a variety of natural disturbance and restoration regimes.

## Focus: Land Treatment Areas

Conifer/Shrub Density Reduction, Noxious/Other Undesired Exotics Reduction, Plantings and Seedings  
Fire, mechanical, chemical, and biological treatments with controls



## Examples of Nevada Landscape Questions

What are some of the warning signs/indicators of impending site transitioning to another state?



State Change  
Photos by Robin Tausch

Which kinds of sagebrush sites are most resistant to disturbance? Least resistant?



Low Sage Site  
7 Years+ since wildfire occurred

Prescribed fire  
Wildfire



Which monitoring/research techniques best detect subtle site changes? And are most time- and cost-effective?



Rapid measurements  
•Photos  
•Shrub dimensions  
•Transect point intersect

Detailed measurements  
•Vegetation  
•Fuels  
•Soils



What are the best approaches to store, synthesize, and share land treatment information? Help rangeland managers, scientists, and others with this information?



GBILM Land Treatment Digital Library

David S. Pilliod and Justin Welty  
Snake River Field Station  
Forest and Rangeland Ecosystem Science Center



What are the management tactics that prevented sites from transitioning to a non-resilient state? Which actions have returned sites back to a state of resiliency?



Left side of fence:  
Winter Grazed  
Right side of fence:  
Grazing excluded since 1948

What is the effect of multiple use management?



Is one treatment enough? What strategies maintain long-term resiliency?



Site Chained in 1968  
Photo Taken September 2007  
(Robin Tausch)

Mowed Fuel Break

