

# Communication Across Boundaries: Sharing Bioregional Knowledge Via Pathways Defined by Administrative Region

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## Introduction

Increases in invasive annual grasses combined with changing fire patterns in the Great Basin are having detrimental effects on sagebrush ecosystems throughout this region. As researchers seek ways to understand these problems and improve ecosystem health and function, communication must improve among scientists, land managers, private landowners and other stakeholders. Sharing bioregionally specific knowledge to inform management activities across multiple agencies can be challenging. Communication networks within government agencies are organized within administratively defined regions that vary widely. Bioregions encompass a mosaic of land ownerships that include multiple agency jurisdictions as well as private land. Individuals conducting science delivery must strive to coordinate the flow of information among various groups with different objectives while maintaining the integrity of that information.

The Sagebrush Steppe Treatment Evaluation Project (SageSTEP) is a long-term collaborative research project evaluating methods of sagebrush community restoration in the Great Basin bioregion. SageSTEP is a collaboration among scientists and managers from five universities, six federal agencies and one non-profit organization in six states in the Great Basin. This poster presents SageSTEP as an example of the geographic challenges of sharing research information within a region where land management, ownership, and interest is compartmentalized in a variety of ways. We use systems modeling to demonstrate our efforts to share science-based information to improve land management and ultimately the health of sagebrush ecosystems in the Great Basin.

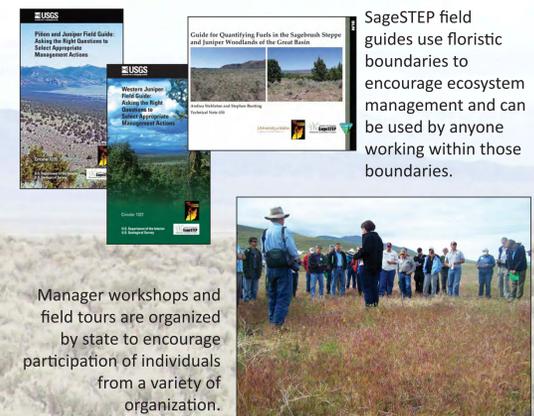
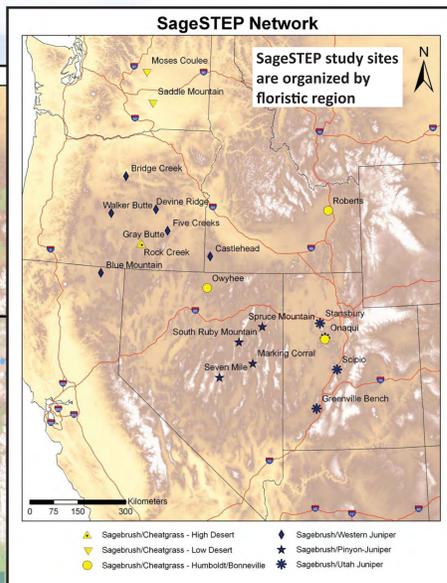
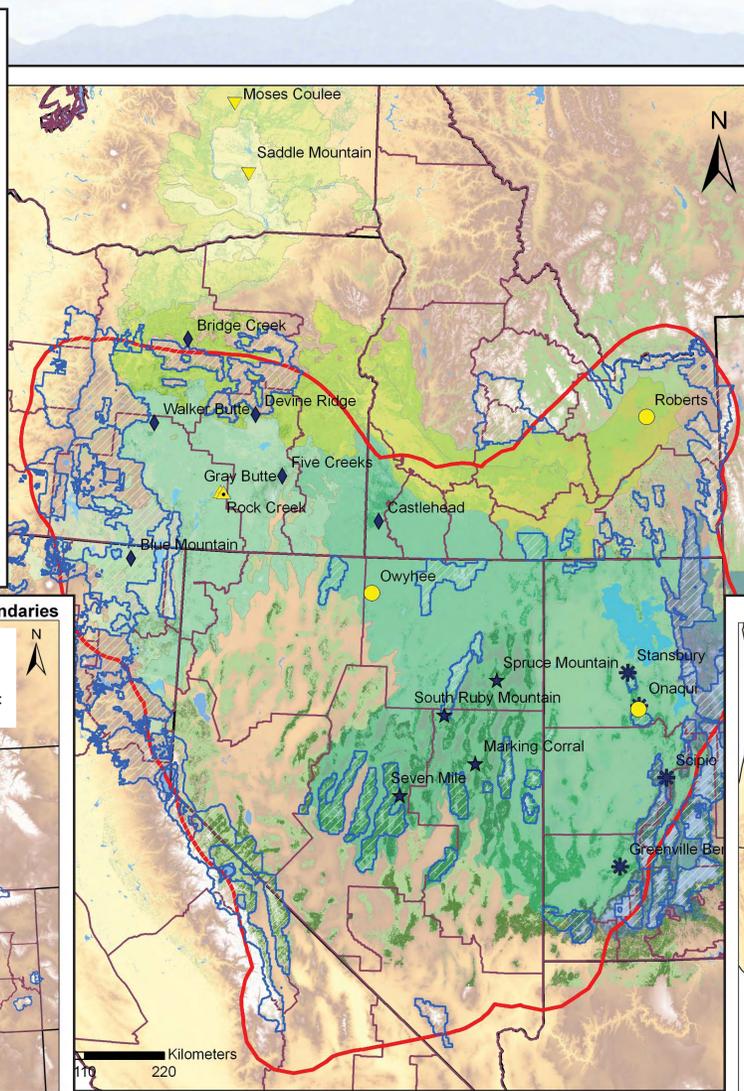
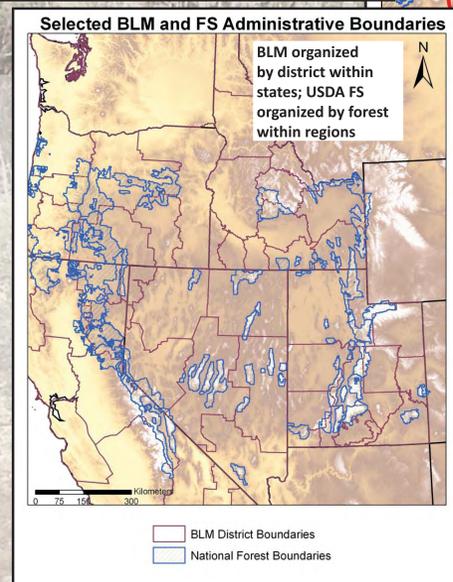
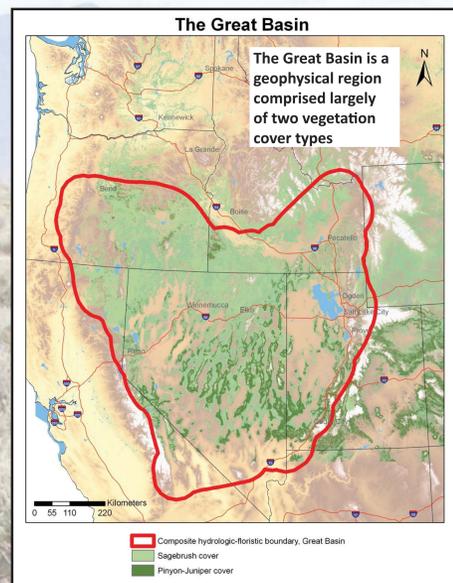
## Discussion

SageSTEP focuses on the Great Basin, but our study employs a biological region that stretches outside the geophysical region. Within the study area, land is divided by various administrative and ownership boundaries (see maps). In addition, collaborating organizations and individuals have a diversity of goals and needs for land management and research. The goal of our outreach program is to effectively communicate research results to improve land management decision-making. In order to work toward effective communication, we can identify leverage points, which Senge (1990) describes as "points where actions and changes in structures can lead to significant, enduring improvements."

We have found that our most effective leverage points involve participatory and interactive methods of communication. Previous research shows that interactive communications, as opposed to unidirectional methods, are more effective for adult problem-centered learning (Toman et al. 2006). Youngblood et al. (2007) found that conferences and technical workshops were valuable science delivery venues because they provide opportunities for networking and interaction. SageSTEP has employed participatory methods in which the end-users of research results (primarily public land managers) are involved throughout the process of developing the research and evaluating outreach products as they are created. We use interactive methods of communication, such as workshops, office visits and field trips, whenever possible to increase participation and effectiveness of information-sharing.

We strive to facilitate collaboration of individuals from a diversity of organizations and locations, bringing together researchers and land managers from various agencies including (but not limited to) the Bureau of Land Management (BLM), USDA Forest Service, USDA Natural Resources Conservation Service (NRCS), state and local organizations, universities throughout the study region, and administrators at the state, regional and national levels. As these individuals share information and work together on common problems, they can look outside of the geographic boundaries that they normally work in. Additionally, Resilience Theory suggests that regular scientist-manager-stakeholder interaction, preferably in the field, tightens "feedbacks" and allows managers to respond more quickly to changes on the ground (Walker and Salt 2006).

Often individuals limit their thinking to the geographic boundaries in which they work or the discipline that they study or the particular resource that they are managing for. Conversely, we constantly encourage holistic, landscape-scale thinking. Wondollock and Yaffee (2000) state that collaborative planning groups create more effective approaches to problems by focusing on a situation in a holistic way, including geographic integration of resource management. Because SageSTEP is a regional collaborative project, one of our science delivery goals is to encourage managers in various organizations to "see the forest and the trees", or in our case the sagebrush and the rangeland—and the wildlife and the hydrologic cycle and the soils and adjacent land—and the way all of these pieces function together.



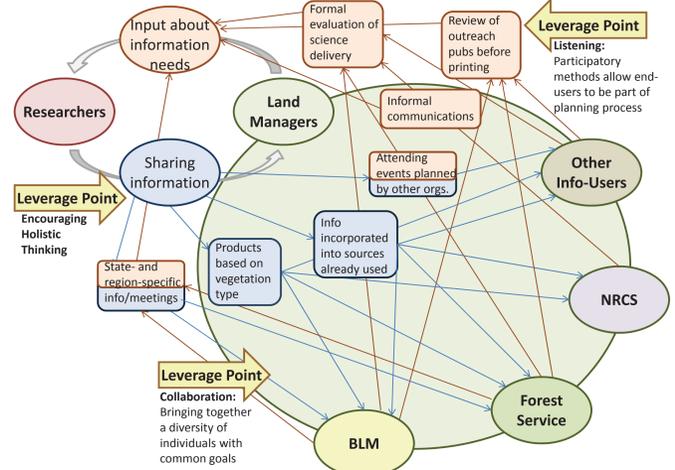
## A Work in Progress

While we have identified several methods for effectively communicating scientific information across a variety of administrative boundaries, the implementation of these activities is ongoing process. Communication is not a finite activity, but a process we continually seek to improve as we collaborate with others to work toward the common goal of improving Great Basin ecosystems. As we enter the long-term monitoring phase of the SageSTEP research, we look forward to continuing to improve our outreach methods to most effectively meet our goals, as well as collaborating with other science delivery programs to maximize our efforts.

- Some potential future activities for SageSTEP science delivery:
- Evaluation of science delivery products and events
    - Online survey of product-users
    - Feedback forms at the end of workshops and meetings
    - Statistical analysis of website usage
    - Informal communications with managers
  - Gaining input from primary audiences about what future outreach products are needed
  - Incorporating research results into information sources already being used managers
    - E.g. fuels treatment supplement for Ecological Site Descriptions (ESDs)
    - Second edition of popular field guides
  - Collaborating with other similar efforts
    - Great Basin Science Delivery Project
  - Continued regular interactions with managers
    - Field tours, office visits and workshops

### Key Leverage Points\*:

- Participatory Processes** - Allowing end-users of research results to be part of the planning process
    - Land managers throughout study region involved in creation of initial project proposal and helped plan and implement study design
    - Researchers and managers meet together regularly to discuss progress of the project
    - Managers review outreach publications before they are printed
  - Collaboration** - Bringing together individuals from a variety of organizations to share ideas, needs, information
    - Local and regional workshops, conference calls, participation in related projects
  - Encouraging a Holistic Perspective**
    - Multidisciplinary presentations and products
    - Collaboration on publications and syntheses
- \*Leverage Points: points where actions and changes in structures can lead to significant, enduring improvements (Senge 1999)



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