Great Basin Landscape Conservation Cooperative (LCC)

2014 Annual Highlights

About the Great Basin LCC

The Great Basin Landscape Conservation Cooperative (LCC) is one of 22 LCCs established to better integrate science and management to address climate change and other landscape scale issues. The Great Basin LCC is a self-directed partnership of federal and state agencies, tribes, non-governmental organizations, universities, industry representatives as well as others involved in natural and cultural resource management and conservation.

What does the Great Basin LCC do?

The Great Basin LCC links and integrates science providers with resource managers and science users; brings additional resources to bear on landscape-scale conservation issues and opportunities; and helps to apply science and facilitate coordination of a wide range of efforts to respond to climate change, invasive species, wildfires, human development and other stressors across the Great Basin. Specific objectives and shared priorities are determined by the partnership itself. The LCC is not intended to replace existing organizations already accomplishing conservation work in the Great Basin, rather, the aim is to facilitate, enhance and inform their work.

Mission

The Great Basin LCC enhances understanding of the effects of changing climate and other natural and human impacts across the region and promotes the coordination of science-based actions to enable human and natural communities to respond and adapt to those conditions.

Goals

- Provide leadership and a framework linking science and management to address shared ecological, climate, and social and economic issues across the basin.
- Focus science and management actions to sustain natural resources in the context of changing environmental conditions.
- Enhance collaboration to integrate science and management among Great Basin LCC partners particularly as related to climate change and other landscape-scale change agents.
- Support the exchange of western and traditional science to further basin conservation priorities and directly benefit tribal issues and circumstances.
- Promote communication and education.

Caravansary at Burning Man 2014

Steering Committee

In order to direct our mission, the Great Basin LCC created a Steering Committee. This group consists of 19 representatives from federal agencies, tribes, state representatives, non-governmental organizations (NGO) and consortium partners from the five-state Great Basin region. The Steering Committee is led by a three-member Executive Committee. In 2014, the Great Basin LCC Steering Committee approved the eight science and TEK projects for funding and supported the development of science and traditional ecological knowledge priorities.

The Great Basin LCC sits between the Rocky and Sierra Nevada Ranges and covers nearly all of Nevada, and parts of Oregon, California, Utah and Idaho. The Basin's 145,000 square miles includes the largest desert in North America and the largest national forest in the lower 48 states.

Great Basin LCC Staff

Linda Kelly
Coordinator, retired

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Dr. Matt Germino
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Linda Kelly has retired after serving as the Coordinator for the Great Basin LCC since its inception. Prior to her service with the Great Basin LCC, Linda acquired a Master's degree in Urban and Regional Planning from the University of Colorado, and has held planning and management positions at multiple agencies including the National Park Service, US Forest Service, Air Force Space Command and BLM Nevada. Linda also served as the Branch Chief for Comprehensive Conservation Planning at the Mountain Prairie Region with USFWS in Lakewood, CO. We thank Linda for her support and service to the Great Basin LCC and we wish her a great retirement.

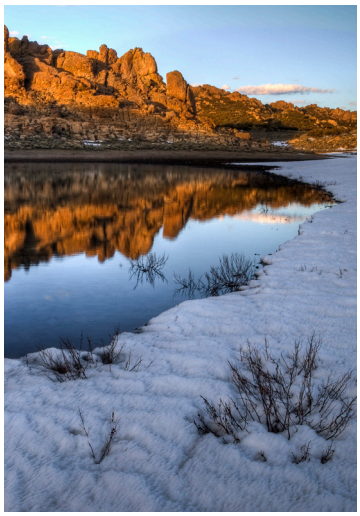
Desert Rock Art

2014 Great Basin LCC Projects

Each year, the Great Basin LCC participates in and funds a variety of conservation projects. We partner with other organizations to support high-priority projects, often leveraging funding in creative ways and accomplishing work that would otherwise not be possible. Projects are intended to spark the interest, deploy action and develop tools and models in order to facilitate successful conservation, management and climate adaptation planning.

2014 Funded Science projects

In 2014, almost $450,000 in funding was made available to support five science projects.



Photos: Brian Beffort

New model will use soil climate and vegetation data to inform management decisions.

This project associates site-measured soil climate and other soil variables, and geospatially-derived site environmental characteristics with perennial herbaceous and cheatgrass cover in treated and untreated Great Basin wooded shrublands.

The project team will:

- Use vegetation and soil data already collected in SageSTEP and tree shredding studies.
- Develop models to indicate potential vegetation response to tree reduction treatments both for current and projected climate conditions for a wide range of sites.
- Develop ranges of key attributes associated with less to more resilient sites.
- Publish a guide on the SageSTEP website on how to use our models and findings as decision support tools.

Project: Using soil climate and geospatial environmental characteristics to determine plant community resilience to fire and fire surrogate treatments. Principal Investigator: Bruce Roundy, Brigham Young University.

Funding: Great Basin LCC: $68,649 Match: $31,779

Model being developed to forecast the effects of climate change on pygmy rabbit populations.

This project quantifies functional landscape connectivity of the pygmy rabbit, a sensitive, sagebrush ecosystem obligate, through integration of landscape genomic data with statistical modeling of habitat quality and connectedness.

The project team will:

- Use models to forecast the distribution and landscape connectivity of this species under various climate change scenarios.
- Identify those critical areas with greatest potential to facilitate distributional shifts in response to climate change.
- Further refine the predictive capabilities of these models.

Project: Landscape connectivity of a sagebrush obligate: functional continuity of a sagebrush obligate.

Principal Investigator: Marjorie Matocq, University of Nevada, Reno

Funding: Great Basin LCC: $92,882 Match: $81,953

Pygmy Rabbit, Idaho

Historic data being used to assess the effects of horse and livestock grazing on sage-grouse populations.

This project takes advantage of historical patterns of grazing by both feral horses and livestock and new data to assess sage-grouse population dynamics and habitats under all combinations of grazing by nonnative ungulates.

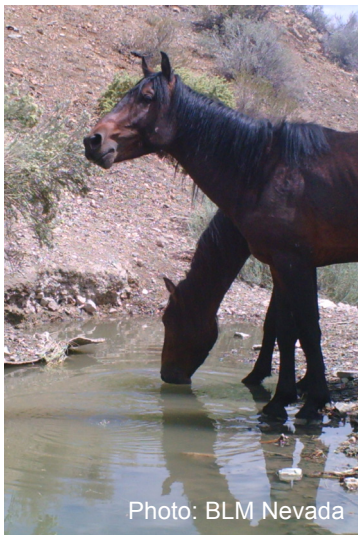
The project team will:

- Use historical sage-grouse data collected from Hart Mountain before and immediately after livestock were removed in the early 1990s, and historical data from Sheldon before the irruption of feral horses in the mid-2000s.
- Add data from Hart Mountain (no nonnative ungulates for 20 years), Sheldon (no livestock but substantial feral horse impacts), and BLM land south of Sheldon NWR (grazed by both feral horses and livestock).

Project: Assessment of Impacts of Feral Horses and Livestock Grazing on Sage-grouse and their Habitats: Long-term trends in sage-grouse Demography and habitats on the Sheldon-Hart Mountain National Wildlife refuge Complex and Adjacent Lands.

Principal Investigator: James Sedinger, University of Nevada, Reno.

Funding: Great Basin LCC: $35,485 Match: $280,000



Wild Horses, Gold Mountain

Management recommendations for sage grouse are being developed based on climate change forecasts.

The goal of this project is to forecast the effect of climate change on the distribution and abundance of big sagebrush in order to inform conservation planning, and sage grouse management in particular, across the Intermountain West. The novelty of the work will be the synthesis of models based on spatial, temporal, and mechanistic relationships between climate and sagebrush cover.

The project will:

- Culminate in a working group meeting, bringing together land managers and researchers to draft management recommendations.
- Take advantage of mechanisms already in place to efficiently disseminate this report to management agencies.

Project: Forecasting changes in sagebrush distribution and abundance under climate change: integration of spatial, temporal, and mechanistic models.

Principal Investigator: Peter Adler, Utah State University.

Funding: Great Basin LCC: $85,000 Match: $42,600

Sage grouse

Cheatgrass die-offs may be mediated by carbohydrates in the soil.

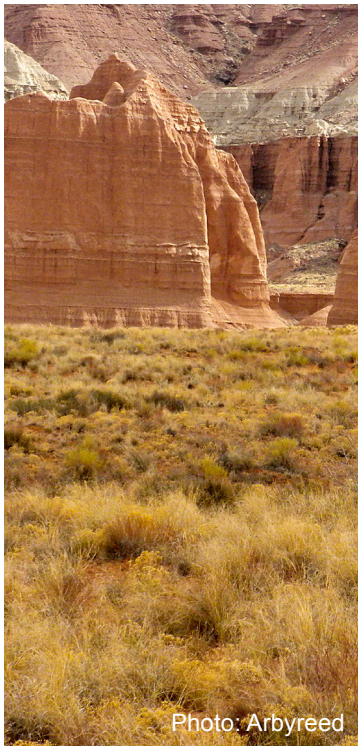
This project proposes to test the hypothesis that soil fungistasis (suppression of fungal pathogens by soil microbes in carbohydrate-limited soil) and its alleviation through natural carbohydrate augmentation (e.g., cheatgrass litter, leakage from cheatgrass roots) are the principal processes mediating patterns of cheatgrass die-off and recovery in die-off-prone areas.

The project team will use laboratory, greenhouse, and field manipulative experiments to examine the effect of soil carbohydrates on cheatgrass disease incidence.

Project: Cheatgrass Stand Failure in the Great Basin: Fungal Pathogens, Carbon Dynamics, and Fungistasis.

Principal Investigator: Susan Meyer, USFS Rocky Mountain Research Station

Funding: Great Basin LCC: $73,208 Match: $123,947



Cheatgrass, Utah

2014 Funded TEK projects

In 2014, almost $100,000 in funding was made available to support three traditional ecological knowledge (TEK) projects.

Researchers plan to use TEK from the Walker River Paiute Tribe to develop best practices for restoration.

The Walker River Paiute Tribe has vast Traditional Ecological Knowledge (TEK) of the local area relating to plants, wildlife, fish and water. Due to the rapid rate of climate change and the impacts it has had on the reservation and gathering areas, the Tribe has not been able to keep up with the changes.

To address these challenges, the project team will:

- Develop a Walker River Vision document which will include TEK of the traditional plants, wildlife, fish and water located on the reservation and traditional hunting/ gathering areas of the Agai Dicutta Numa (Walker River Paiutes) for use in future resource management planning and cultural sustainability.
- Develop a pilot project along the Walker River on the reservation by planting willows and other traditional plants to determine best practices for re-vegetation.

Project: Walker Rive Paiute Tribe TEK project

Principal Investigator: Marlene Begay, Walker River Paiute Tribe

Funding: Great Basin LCC: $50,000 Match: $10,000

Tribal elders provide insight in to the effects of climate change on cultural resources and practices.

Tribes are disproportionately affected by climate change because their economies, traditions, and even identity are heavily reliant on place-based natural resources. Changes in these resources may result in associated shifts and adaptations in tribal cultural traditions. Observations by tribal elders should lead to better understanding of how the nuances and dimensions of tribal culture in the Great Basin are affected by climate change, what contributes to vulnerability to a changing climate, and the adaptive capacity of these communities to ecological shifts.

To address these challenges, the project team will:

- Explore tribal cultural relationships and practices connected to resources and other aspects of nature that are potentially affected by climate change.
- Interview elders with two tribes in the Great Basin in order to learn how a changing environment has affected aspects of tribal culture.

The Paiute Tribe headquarters in Cedar City, UT.

US Department of Agriculture Secretary Tom Vilsack (in the room and seen on right of screen) listened to the Owens Valley Paiute Shoshone band of Indians board of trustees chairman (standing) at the National Congress of American Indians Tribal Nations Legislative Summit in Washington, D.C.

Project: Understanding Native cultural dimensions of climate change in the Great Basin.

Principal Investigator: Phillip Mote, Oregon State University

Funding: Great Basin LCC: $50,000

Tribal youth interview their elders to raise awareness of environmental concerns and TEK.

This pilot project uses a method of naïve interviewing with tribal youths to gather narrative "micro stories" from elders and key tribal members and then answering a series of carefully constructed questions that allow participants to apply context and meaning to their stories. These questions can then be analyzed quantitatively using correlational statistics to identify key themes and patterns across the narrative dataset.

This approach has several advantages including:

- It uses tribal members to gather the data.
- It provides a link between the generations to raise awareness about environmental concerns and TEK.

Project: Using Narrative Stories to Understand Traditional Ecological Knowledge in the Great Basin.

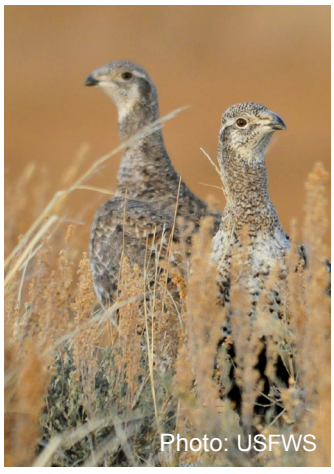
Principal Investigator: Tamara Wall, Desert Research Institute

Funding: Great Basin LCC: $49,531 Match: $2,000

Black Rock Desert, Nevada

2014 Target of Opportunity Projects

From time to time, the Great Basin LCC is able to leverage funding which allow us to target specific research or conservation needs. We call these targets of opportunity. In 2014, the Great Basin supported four targets of opportunity.



Strategic High-resolution Wetland Mapping in Sage-grouse Biologically Significant Areas of Nevada

This effort is a direct result of the Great Basin LCC-led Central Basin & Range Rapid Ecoregional Assessment Challenges and Opportunities Report (draft), which identified a paucity of available wetland and springs data layers for the CBR REA area.

This project will provide wetland mapping at high resolution (1:24,000) for 13 million acres of sage-grouse Biologically Significant Areas (BSAs) within Nevada.

Principal Investigator: Elaine Blok, National Wetlands Inventory

Funding: $320,000 ($250,000 BLM, $70,000 FWS)

Assessment and inventory of the Great Basin Climatological Monitoring Stations for Climate Adaptation

Almost any map showing weather and climate stations for the United States shows a conspicuous lack of data in the Great Basin compared to surrounding states in all directions.

This project will:

- Create an assessment summarizing the state of climate monitoring.
- Identify both areas where observation coverage is acceptable and where there are gaps in monitoring based on present future climates.

Outcomes from this effort will be incorporated into the scenarios for climate change assessment in the Great Basin.

Principal Investigator: Kelly Redmond, Western Regional Climate Center

Funding: $75,000


Photo: BLM Nevada

Great Basin Springs Geospatial Database

This project builds upon the springs and seeps inventory funded by the Desert LCC.

This project will:

- Fill a significant gap in aquatic habitat information for scenario planning.
- Create a publically available geospatial database of approximately 2,000+ known Great Basin springs.
- Create a summary report on the biotic and abiotic conditions of the known springs.

Principal Investigator: Don Sada, Desert Research Institute

Funding: $67,700

Climate Change Adaptation Planning Training for Tribes

This project will conduct two, 3-day workshops on climate change adaptation planning for up to 44 tribal members from the Great Basin.

The trainings will:

- Provide participants with an introduction to the adaptation planning process.
- Deliver templates, resource lists and other material that the tribes can use in developing an adaptation plan.
- Target tribal environmental and natural resource professionals in the Great Basin region (maximum of 22 participants per training).
- Be a mix of presentations, small- and large-group discussions, a field trip and other activities.
- Be led by staff from the Institute for Tribal Environmental Professionals, Great Basin LCC, tribes, and other agencies or organizations.

Principal Investigator: Sue Wotkyns, Institute of Tribal Environmental Professionals

Funding: $90,000

Climate Forums

The Great Basin Climate Forums provide information on climate conditions in the Great Basin and resource management decisions and issues that are affected by climate. The Forums are intended for public and private resource managers and professionals, tribal members and interested organizations. In April 2014, The Great Basin LCC partnered with the California-Nevada Climate Application Project, the Desert Research Institute and the Western Regional Climate Center to offer the seventh in an ongoing series of forums.
http://www.dri.edu/great-basin-climate-forum-series/gbcf-2014

Bureau of Land Management's Central Basin and Range Rapid Ecoregional Assessment (CBR REA)

The Great Basin LCC reviewed the CBR REA and developed a Challenges and Opportunities Report to help identify larger landscape conservation issues and potential solutions that require collaboration across jurisdictions to achieve.

2014 Public Forum

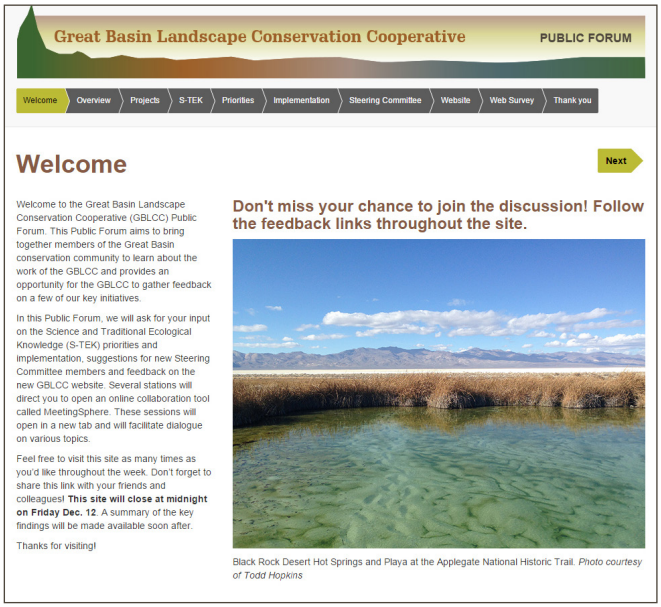
The Great Basin Landscape Conservation Cooperative hosted an online Public Forum from Dec. 8 - 19, 2014. The purpose of the Public Forum was to invite the Great Basin conservation community to:

1. Review, and provide additional suggestions to the Science and Traditional Ecological Knowledge priorities
2. Discuss the management implementation and challenges of these priorities
3. Recommend potential Steering Committee members from non-governmental and private organizations to fill vacant seats
4. Preview the new Great Basin LCC website and provide feedback

The Public Forum began with a kickoff webinar to provide an overview of the Great Basin LCC, introduce the Public Forum and demonstrate the online discussion tools. In addition to the online tools, three call- in sessions provided opportunities for the conservation community to provide their input. The Public Forum site was available for two weeks.

During this time:

- 222 people participated in the Public Forum
- 70 people joined the kickoff webinar
- 78 pieces of feedback were collected
- 3 additional comments submitted via phone
- 2 additional comments submitted via email



2014 Funded Artist-in-Residence program

The Great Basin LCC helped fund and pilot an Artist in Residence program for the Black Rock Desert-High Rock Canyon Emigrant Trails National Conservation Area (NCA) in spring 2014. Artists Judy Hilbish and Stephen Chandler spent two weeks absorbing and experiences the NCA's varied landscapes, creating a work of art in response to this experience and then sharing their vision and techniques with the public during summer 2014. The Artist-in-Residence Program promotes awareness of the exceptional places protected with the BLM's National Landscape Conservation System. The Black Rock Desert-High Rock Canyon-Emigrant Trails NCA contains some of the largest unaltered segments of the historic California trails left in the country, as well as eight designated wildernesses and numerous wilderness study areas.

S-TEK Strategy

For the last two years, the Great Basin LCC has identified short-term science priorities to guide research in the Great Basin. This year, the Great Basin LCC is working with Great Basin stakeholders and tribes to identify science priorities that will guide the Great Basin LCC's work for the next five years.

Science and Traditional Ecological Knowledge (S-TEK) Working Group and Strategic Plan

This collaborative effort incorporates the expertise and input of representatives from federal and state government, tribes, academia and the non-profit sector to identify key science and management priorities through a process that also considers how to address Traditional Ecological Knowledge. The S-TEK working group has compiled science and management needs from research and conservation plans relevant to the Great Basin. The group organized and prioritized the themes using their expertise and input from the Great Basin Public Forum and is considering how the LCC may best contribute to landscape-scale conservation efforts. The resulting strategic plan will guide the LCC's science activities and funding in line with its mission and goals. The Great Basin LCC is in the final phase of developing the S-TEK strategic plan which is expected in early 2015.

Showy Goldeneye

Publications from Great Basin LCC Projects and Staff

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Germino MJ. 2014. Plants in Alpine Environments. In: Monson R, editor. *The Plant Sciences – Ecology and the Environment. Vol. 8.* New York (NY): Springer. p. 327-362.

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