

Executive Summary

The purpose of Sage-grouse Restoration Project (SGRP) is the identification, integration, evaluation, and documentation of effects of 2002 Farm Bill conservation technologies and strategies on sage-grouse and other sagebrush-steppe obligates. To address this need, the SGRP includes a grants-in-aid program to provide funds for the design and implementation of research and demonstration projects that will evaluate and communicate the effectiveness of 2002 Farm Bill conservation practices and technology in restoring or enhancing sage-grouse habitat on private lands.

Information gained will be used to assist private landowners and Natural Resources Conservation Service (NRCS), Soil Conservation Districts, and state wildlife agency field staff in the planning and implementation of habitat projects and practices on private lands to benefit sage-grouse and other sagebrush-steppe obligate species. The projects implemented also will contribute to range-wide sage-grouse conservation efforts. SGRP will provide current information on the role of existing conservation practices and technologies relative to conserving sage-grouse and other sagebrush obligate species. The information gained from the multi-state experiments also will assist local sage-grouse working groups in complying with the conservation plan reporting requirements set forth in the U.S. Fish and Wildlife Service (USFWS) Policy for Evaluation of Conservation Efforts (PECE) When Making Listing Decisions.

Other anticipated benefits of the SGRP are 1.) a web-based project library that will provide NRCS staff, wildlife biologists and managers, and farmers and ranchers with visual information and data regarding the role of conservation practices in increasing their productivity and natural resource conservation and 2.) the identification of private lands conservation planning needs to a much wider research audience while bringing in the best researchers in the field to address field-level technology needs.

Summary of 2005 Activities

The agreement between NRCS and Utah State University (USU) was finalized September 1, 2005. The following activities have been completed to date.

NRCS Workshop

On July 20, 2005 SGRP personnel conducted a workshop in southern Utah designed to provide participants with a better understanding how WHIP and EQIP conservation practices can be used to manage for sage-grouse and achieve landowner production objectives. Attendees included NRCS field staff and biologists, and federal, state and private agency/organization land management personnel and biologists. Participants toured sagebrush treatments and grazing trials implemented on Parker Mountain that were funded through EQIP and WHIP programs. As part of the tour, participants received handouts and reports documenting the positive effects of these treatments on wildlife and range productivity (see Appendices 1-6).

SGRP Guidance Committee and Technical Panel Member Identified

Members of the SGRP Guidance Committee and Technical Review Panel have been identified. These groups are comprised of experts in the field. Guidance Committee members include Sylvia Gillen, Randall Gray, Pete Heard, Jim Mosher, Jack Payne, San Stiver, Billy Teels, and John Wrede. Technical Review Panel members include Chad Boyd, Fee Busby, Jack Connelly, Karen Fullen, Wendell Gilgert, Ed Hackett, Jeremy Maestas, Kent McAdoo, and Dean Mitchell. Biographies for the committee and panel can be found on the SGRP web site.

Partners

During the fall of 2005 SGRP recruited additional partners to assist in our efforts. Our partners list in addition to the U.S. Department of Agriculture; Natural Resources Conservation Service; USU; USU, College of Natural Resources; USU Extension Services, and Jack H. Berryman Institute now includes the Western Governors' Association; Western States Sage and Columbian Sharp-tailed Grouse Technical Committee; North American Grouse Partnership; and Utah Division of Wildlife Resources.

SGRP Publicity

Web Site

A web page was developed specifically for SGRP. The web site address is www.sgrp.usu.edu. The web site contains the SGRP Mission Statement, History, Technical Review Panel, Guidance Committee, Grants-in-Aid, Research Priorities, Proposal Submission, Project Library, Funded Projects, News and Updates, Annual Reports, Publications, Web Links, and Personnel. Using

these links, visitors may learn more about the SGRP personnel and research funded through SGRP.

Grants-in-aid proposals can be submitted on-line. Because the on-line submission form was not available until mid-November, the deadline for proposal submission has been extended from December 31, 2005 to January 31, 2006.

We are in the process of assembling information from projects in Utah that were funded by 2002 Farm Bill monies. This information will be placed under the "Project Library" link and will include project proposals, pictures, and video footage of work conducted. These projects will serve as prototypes and examples of projects SGRP may fund.

News Release

On October 19, 2005 NRCS distributed the SGRP news release (Appendix 7). It was widely distributed and has generated interest from researchers in Utah and neighboring states. The new release was disseminated to representatives of the following groups: livestock associations, Farm Bureaus, Utah Farm Bureau Federation, Utah's congressional delegation, western states NRCS public affairs and state conservationists, western states extension state directors, state media, Western Technical Support Center, national NRCS headquarters, western states' Agricultural Experiment Stations, Western States Technical Committee, SGRP members, Cooperative Conservation, Environmental Defense, and the Utah Partners for Conservation and Development Council. Announcements regarding the program have appeared in partner monthly member magazines and in The Wildlife Society publications.

Future Plans

Assembly of information for the web-based project library will continue. As proposals are submitted, they will be reviewed and rated by the Technical Review Panel and approved by the Guidance Committee. A news release will be issued announcing projects that will be funded through SGRP.

SGRP personnel are beginning to work on the technical note for upland wildlife habitat management for sage-grouse; the job sheets for upland wildlife habitat management, brush management, and prescribed grazing with sage-grouse considerations; and the presentations to train field personnel and education landowners and interested parties.

Appendices

Appendix 1

PARM, Greater-Sage Grouse, and Community-led Conservation

In 1998 public and private partners in south central Utah formed a cooperative partnership called the Parker Mountain Adaptive Resource Management working group (PARM) to address Greater Sage-grouse population declines. Since then, PARM has expanded its focus to also address other local and regional natural resource management concerns. A major emphasis of PARM has been to learn as much about a natural resource problem it can, develop and implement a management action, and then evaluate the effects of that action. In 1999, PARM began monitoring Greater sage-grouse habitat use and reproductive ecology using radio-collared hens. This effort suggested that brood-rearing habitat on Parker Mountain was less than optimal. In 2000 and 2001 PARM treated (using Tebuthiuron, Dixie harrow, and Lawson aerator) areas of dense mountain big sagebrush in brood-rearing habitat using replicated experimental design to determine which treatment would best restore brood-rearing habitat. Pre- and post treatment vegetation data were collected. In addition, sage-grouse use data (pellet counts and flush counts) were collected in 2003 and 2004. The Tebuthiuron treatments yielded the best vegetation and brood rearing response. In 2005 PARM initiated a brood survival study by attaching radios to 1-day-old chicks. This effort was initiated to determine chick early season habitat use and survival. Previous studies that were conducted by just monitoring hens suggested that sage-grouse chick survival on Parker Mountain was poor.

Appendix 2

INTEGRATING WILDLIFE VALUES UNDER THE FARM BILL CONSERVATION PROVISIONS

YEAR, SOURCE OF FUNDING, AND PROJECTS COMPLETED AND PROPOSED ON THE PARKER MOUNTAIN UNDER THE PARKER MOUNTAIN ADAPTIVE RESOURCS MANAGEMENT (PARM) PLAN.

1998 EQIP range \$45,000

Projects: New ponds
 Clay lining of old ponds

We also looked into the possibility of drilling a well and pipeline for troughs.

2000 WHIP \$25,000

Projects: Spike 4 100 ac. plots
 Dixie Harrow 4 100 ac. plots
 Lason aerator 4 100 ac. plots
 Range seeding on Dixie and Lason treatments

2001 Intermountain Joint Venture \$35,000

Projects: Spike treatment 500 ac.
 Fencing portions of several ponds to increase cover for sage-grouse

2004 WHIP \$350,000

Projects: These projects will be done over the course of 10 – 15 years.
 Spike treatment 10,800 ac.
 Dixie harrow 6000 ac.
 Ponds new and refurbish old ones (32)
 Aspen treatment 100 ac.
 Dixie harrow prairie dog habitat

Appendix 3

VEGETATION, SAGE-GROUSE, AND NEOTROPICAL BIRDS RESPONSES TO SELECTIVE CUTTING AND FENCING TO REGENERATE ASPEN

Greater sage-grouse broods have been observed using young, regenerating aspen stands during the mid to late summer. We have observed higher brood of these areas during summers of extreme drought. Aspen stands that are in the early stages of regeneration typically contain a higher forb component when compared to surrounding other areas. Natural regeneration of aspen stands is occurring in some areas while other areas have little or no regeneration.

Although, most sage-grouse biologist believe brood use of aspen stands is probably incidental and not critical to overall production, we contend that regenerated aspen stands may play a major role in sage-grouse recruitment. To test this hypothesis, we propose to manipulate aspen clones on Parker Mountain and monitor vegetation (regeneration rates) and sage-grouse, neo-tropical bird responses.

Study Area-- Parker Mountain (Awapa Plateau) is located in south central Utah. The sagebrush (*Artemisia* spp.) dominated Awapa Plateau increases in elevation east (Fremont River Valley) to west (the eastern rim of Grass Valley) and north (Fishlake Mountains) to the south reaching just over 3000m as it meets the Aquarius Plateau. At ~2700m in elevation aspen (*Populus tremuloides*) clones begin to appear interspersed in sagebrush communities. Clones vary in coverage area, age, height, and density, and increase in coverage with elevation..

Study Design—Areas exhibiting linear stands of aspen extending into the sagebrush communities will be treated in the fall of 2005. Two experimental designs will be used (Table 1, Figure 2). The first (Design A) will test the effect of excluding large ungulates on natural regeneration of aspen. The second (Design B) will test regeneration of cut aspen with various exclusion methods, including fencing, dead log barriers, no barrier, and control. Design A and B will be placed in separate clones. This will prevent compounding the effects of varying treatments within each design.

Design A will include two 1-ha paired plots within an aspen clone. One plot will be fenced using a poly-mesh material. A gap at the bottom will be left to allow sage-grouse entry, but low enough to exclude large ungulates. A paired control plot will not be fenced. Six replicates of this design will be implemented in each area. Stand density, diameter at breast height (dbh), tree height, herbaceous cover, sage-grouse use, and songbird diversity and abundance will be measured pre- and post-treatment.

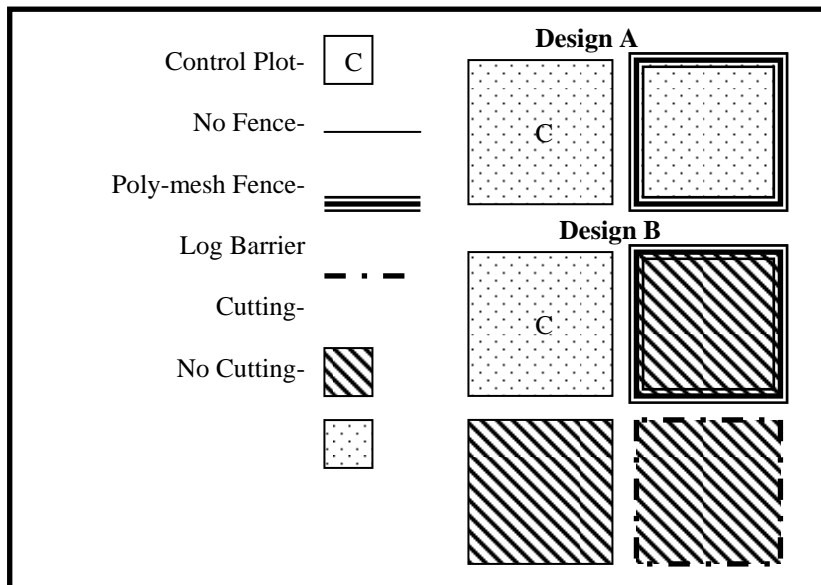
Design B will include four 1-ha plots within an aspen clone. All but one plot will be cut. One cut plot will be fenced using poly-mesh with a bottom gap. One cut plot will be bordered by cut aspen logs. One cut plot will be left with no exclusion method. One uncut plot will be left with no treatment for control. Six replicates of this design will be implemented in each general area. Stand density, dbh, tree height, herbaceous cover, sage-grouse use, and songbird diversity and abundance will be measured pre- and post-treatment. We will monitor sage-grouse use, neo-tropical bird abundance, and the vegetation characteristics of plots in the same general areas

where aspen regeneration (control plots) is naturally occurring for 3 years subsequent to the treatments.

Table 1. General characteristics for each design and overall project.

	total # of ½ acre plots	# of control plots	# of poly-mesh fenced plots	# of log-barrier Plots	# of cut plots with no fence	total # of cut plots	total # of cut acres	total linear ft. of poly-mesh fence
Design A	2	1	1	n/a	n/a	n/a	n/a	624
Design B	4	1	1	1	1	3	1.5	624
5 reps Design A	12	6	6	n/a	n/a	n/a	n/a	3,744
5 reps Design B	24	6	6	6	6	18	9	3,744
2 general areas	72	24	24	12	12	36	18	14,976

Figure 1. Experimental design.



Appendix 4

Parker Mountain Mitigation Banking for the Utah Prairie Dog

The State of Utah School and Institutional Trust Lands Administration (SITLA), in cooperation with USU Extension, Utah Division of Wildlife Resources, and the US Fish and Wildlife Service, decided in 2002 to establish a mitigation bank on Parker Mountain for the Utah Prairie Dog. Establishment of a mitigation bank on a property requires that a perpetual conservation easement be signed and an endowment fund established. The Utah prairie dog, *Cynomys parvidens*, is listed as threatened under the Endangered Species Act. The bank can provide opportunities to mitigate the impacts of authorized activities affecting such species elsewhere, such as Garfield, Iron, Wayne, and Piute Counties, after a Habitat Conservation Plan (HCP) is approved. The primary goal of the bank is to enhance and restore habitat for the Utah prairie dog in the Awapa Plateau Recovery Area in a manner that will contribute to its conservation and ultimate recovery.

The Conservation Banking Agreement is just now being signed for implementation. A “Template” HCP will be completed before December 31, 2005 for all of SITLA’s surface estate in the service area. The agreement will allow SITLA to sell conservation bank credits to third-party purchasers (“Credit Purchasers”) in need of such mitigation, and the use of conservation bank credits by SITLA in connection with development of SITLA’s own lands (oil & gas, housing development, property sales, etc.).

Each prairie dog taken throughout the service area will require a minimum purchase of two credits from the bank. The number of credits at the bank available for sale or use by SITLA is earned by creating habitat and the count of prairie dogs observed in two successive spring counts. If the average of two spring counts exceeds 25 prairie dogs, then SITLA can earn 50 credits. At every threshold of 25 more prairie dogs, 50 additional credits can be earned, up to twice the numbers of credits per acre in the bank site.

In October/November 2002, the Flossie Knoll site was fenced (3 miles) followed by Dixie harrow treatments where sagebrush stands were treated and seeded within the site. Brush piles were burned in 2002 and re-seeded in 2003. Throughout 2003, the site was monitored at random for prairie dog use, none were observed and no prairie dogs were translocated to the site. The site had two new burrows the fall of 2004/spring 2005, but the prairie dogs did not survive the winter. This treatment was paid for using Endangered Species Mitigation Money acquired from a grant through the Utah Department of Agriculture, and from SITLA in-kind labor. The treatment costs are show below for treating approximately 150 acres:

Fence Materials -	\$6,350.62
Fence Labor -	\$7,128.00
Seed Mix -	\$4,127.00
Dixie Harrow/Seed -	\$3,250.00
Archaeology -	\$2,000.00
<u>Burning/Seeding -</u>	<u>\$1,000.00</u>
Total -	\$23,855.62

The seed mix for the treated area is as follows:

Fairway crested wheatgrass -	320 lbs. PLS
Thickspike wheatgrass -	320 lbs. PLS
Western wheatgrass -	240 lbs. PLS
Bluebunch wheatgrass -	240 lbs. PLS
Ladak alfalfa -	320 lbs. PLS
Small burnett -	320 lbs. PLS
Sainfoin -	200 lbs. PLS
Lewis flax -	20 lbs. PLS
<u>Cicer milkvetch -</u>	<u>100 lbs. PLS</u>
Total	2,080 lbs. PLS

2,080 lbs. seed / 150 acres = 13.9 lbs. seed / acre

Pre-treatment vegetation cover was as follows:

Live sagebrush canopy cover – 31.5%

Point Data

Bare ground - 21%

Gravel - 5.3%

Rock - 2%

Litter - 66.7%

Plant Cover - 4.3%

Cryptogams - 0.7%

Total 100%

Future Plans for the mitigation bank sites include continued research at the South Buttes Site, vegetation treatments at all three sites to improve prairie dog habitat, annual dusting of the bank sites for plague, monitoring, signs, and predator control specific to prairie dogs. All future treatments will be paid for using the endowment fund and most of the work will be accomplished by the UDWR.

Appendix 5

Grazing Research and the Utah Prairie Dog

We have been evaluating the effects of various grazing intensities on the vegetation diversity and composition of a site occupied by the Utah prairie dog (*Cynomys parvidens*). This 3-year study has used cattle to achieve low (15-25%), moderate (40-50%), and high (70-80%) forage utilization under a short duration grazing system (2-3 week graze). There are 3 replications of each forage utilization level. Each replication pasture is 20 acres. To evaluate the effect on the vegetation diversity and composition we measured percent cover and height for each plant species using daubenmire and line intersect techniques. These measurements were taken prior to and immediately following cattle grazing and in vegetation exclosures that have been placed in each pasture. Additionally we monitor prairie dog numbers and activity within the pastures by conducting weekly population counts, weekly forage observations, and annual monitoring of burrowing activity. In addition to providing information about the effects of grazing on Utah prairie dogs that can be used for managing the species, our study is providing insights on grazing regimes that could be implemented to maintain and improve rangeland productivity on the Awapa Plateau.

Appendix 6

Increasing Sagebrush Stand Vegetation Diversity to Benefit Wildlife and Livestock

BACKGROUND

Contemporary literature suggests the high plant diversity of grasses and forbs with low overall shrub coverage should favor the Utah prairie dog. These conditions could also be beneficial to sage grouse during brood rearing. Additionally, cattle forage could be increased by a reduction in shrub cover.

Research conducted on small (40 ha) experimental plots on Parker Mountain that were mechanically and chemically treated indicated the vegetation diversity increased not only on the plots but also adjacent areas (edges) where sagebrush stands were not treated. Sage-grouse use of these areas increased dramatically when compared to none treated or control areas. In line with these results, we are proposing to evaluate the effect of removing small patches of sagebrush (1 ac or less) in different configurations on vegetation diversity and Utah prairie dog and Greater sage-grouse habitat use patterns

STUDY AREA

The Parker Mountain Resource Area is located in portions of Garfield, Piute, and Wayne Counties in south central Utah on the Awapa Plateau. The specific area for this experiment is located on Utah School and Institutional Trust Lands Administration (SITLA) property near the junction of Garfield, Piute, and Wayne counties. The area is commonly known as the Tanks (Figure 1). This area is dominated by black sagebrush on the upland sites and mountain big sagebrush and rabbit brush in the swales. Soils on the ridges are Forsey series and the swales are composed of Parkay series (Jaynes 1982). The geology of the study site is characterized by undifferentiated latite and basaltic andesite flows (20-25 million years before present) and andesite breccias (25-30 million years before present) (Jaynes 1982).

There are several Utah prairie dog colonies in the vicinity of the tanks treatment site (within several kilometers). Selection of the site for the pastures was partially based on this fact so that prairie dog response to treatment could be evaluated over the long term.

METHODS

We are proposing to create “resource patches” in several swale formations (drainages) surrounding an established Utah prairie dog colony which shall be referred to as the Tanks colony. The colony currently contains several hundred prairie dogs and is the largest colony located on SITLA lands on Parker Mountain. While the colony is well established, there are hundreds of unoccupied prairie dog mounds located in the surrounding drainages in all directions of the central colony, although there are scattered pockets of prairie dogs within these areas. The shrub component within these unoccupied areas is above that which has been suggested for the Utah prairie dog. We believe that this shrub coverage is limiting prairie dog recolonization of these areas during favorable years. Furthermore, the height of shrubs (particularly rabbit brush and big sage brush) may also be limiting recolonization by acting as a visual obstruction. We are proposing to experimentally test this hypothesis with using patch brush reduction in selected areas that are within dispersal distance of prairie dogs (< 1 mile).

Figure 1 shows the area we are proposing to treat. The existing grazing study being conducted is shown for reference. Five drainages have been highlighted around the central Tank colony which have evidence of past prairie dog activity (mounds). Within of these 4 drainages we will treat the existing brush to reduce cover to < 5% total canopy coverage. We will use the Dixie Harrow to accomplish this. A twice over treatment with the Dixie Harrow up removed up to 95% of shrub coverage. The shrub piles will be removed from the sites. We propose to treat an area of sufficient size so that dispersal by prairie dogs is possible and can be measured.

One acre square and rectangular treatment plots will be randomly placed within the drainages. These plots will be paired with a control plot. The first series of plots will be placed no closed than 100 meters from the existing Tanks colony and replicated every 100 meters distance. Each plot within a series or band will be separated by at least 30 meters (100feet). Subsequently, each drainage will contain 5 sets of treatments and control plots, each series or band separated by at least 100 meters. A total of 40 plots will be treated, 10 plots consisting of 5 bands in each drainage. The experimental locations will be random with the constraints that there must be evidence that the soil is suitable for burrow establishment (i.e. mounds are present), few or preferable no prairie dogs are currently within the site, and the site is within dispersal distance of active mounds.

Prior to treatment the vegetation will be measured in all plots using random daubenmire frames to examine plant species present, average canopy coverage of each species and average height of each species (Daubenmire 1959). Additionally, randomly placed line intercepts will be used to evaluate shrub canopy coverage. The vegetation measurement points will be fixed over time. We will also survey the area for active prairie dog mounds and conduct a complete count of prairie dog numbers within the plots. After treatment, vegetation measurements and prairie dog counts will be conducted annually to assess treatment effect.

To further monitor prairie dog movement and potential recolonization of treated areas, we are considering capturing and radio collaring 30 sub-adult prairie dogs. Sub-adults will be targeted since they are the most likely to disperse. Radio locations of all collared animals will be collected weekly throughout the summer starting in year 3 post treatment. Waiting until year 3 will have allowed the vegetation time to respond. Thirty animals will be collared in year 4 and 5 as well. This research will be closely coordinated with the prairie dog recovery team (RIT) and will require archaeological clearance from SITLA.

ANTICIPATED RESULTS

We anticipate that the vegetation diversity in each treated areas and the adjacent edges will increase. This will result in increased forage for cattle on the site. We further anticipate differential selection of the treated plots by prairie dogs (recolonization) due to increased food resources and decreased visual obstructions. If these hypotheses are correct, additional areas on Parker Mountain could be identified for treatment. The eventual goal for this research is the recovery of the Awapa population of Utah prairie dogs.

NRCS NEWS RELEASE

United States Department of Agriculture - Natural Resources Conservation Service
125 S State St, Salt Lake City, UT 84138 - Phone (801) 524-4557 - www.ut.nrcs.usda.gov

For Immediate Release

Contact: Ron Francis, NRCS (801) 524-4557
Dennis Hinkamp USU (435) 797-1392

NRCS AND USU FORGE SAGE-GROUSE HABITAT RESTORATION AGREEMENT

The 2002 Farm Bill includes the most aggressive private land conservation programs in history—all aimed at a healthy landscape that benefits both people and wildlife. Finding out how well those Farm Bill programs have worked, especially for sensitive wildlife species such as sage-grouse, is the purpose of a cooperative study agreement between the USDA Natural Resources Conservation Service (NRCS) and Utah State University.

The cooperative agreement provides federal funds to establish a Sage-grouse Restoration Project (SGRP). The SGRP will support research in the western U.S. to evaluate the effects of conservation provisions of the 2002 Farm Bill on sage-grouse and other wildlife that depend on sagebrush-steppe ecosystems.

Sylvia Gillen, NRCS State Conservationist, said her agency and USU Extension will take the lead roles in establishing and overseeing the Sage-grouse Restoration Project. “We will be coordinating closely with USU Extension to implement this exciting new research initiative that will ultimately help all our partners do the right thing for sage-grouse,” she said.

“Putting conservation decisions in the hands of rural communities is the best thing for both wildlife and the rural economies,” said Jack Payne, vice president for USU Extension. “This is a great partnership for us because of Extension’s applied research approach and community based faculty.”

According to Terry Messmer, a professor and Extension specialist in the Department of Forest, Range, and Wildlife Science and the project’s principle investigator, the results generated by SGRP will be used to assist NRCS, soil conservation districts, state wildlife agencies, and private landowners in planning and implementing wildlife habitat projects on private lands.

“In addition to reviewing past projects, the SGRP will evaluate multi-state experiments in cooperation with local sage-grouse working groups,” Messmer said “We are hopeful the combined information should help the US Fish and Wildlife Service, state wildlife agencies and other policy makers better evaluate decisions relating to Endangered Species Act determinations.”

Current research indicates sage-grouse are dependent on large expanses of sagebrush, however little information is available regarding the appropriate sagebrush patch sizes needed to sustain a healthy sage-grouse population, he explains. By evaluating these projects, researchers hope to identify the types of treatments that can be implemented to provide optimum sage-grouse habitat and benefit to local communities.

“A major goal of the SGRP,” said Messmer, “is to create greater awareness of private land conservation planning needs among researchers. To help attract the best researchers in this field, we will develop an “SGRP library” that will provide visual information and data regarding the role of NRCS conservation programs that improve productivity and conservation of natural resources.”

Another incentive to local working groups is a grants-in-aid program that will provide funds for design and implementation of research and demonstration projects that highlight the benefits of NRCS conservation practices that improve sage-grouse habitat. These funds can be applied for on-line.

Partners in this project include the USDA Natural Resources Conservation Service, USU Extension, USU College of Natural Resources, the Western Governors’ Association, the Western Association of Fish and Wildlife Agencies Sage and Columbian Sharp-tailed Grouse Technical Committee, the North American Grouse Partnership, Utah Division of Wildlife Resources, and the Jack H. Berryman Institute. The project will offer support to the USU Extension Community-Based Conservation Program and other local working groups throughout the West. The web site address for the program is <http://www.sgrp.usu.edu>.