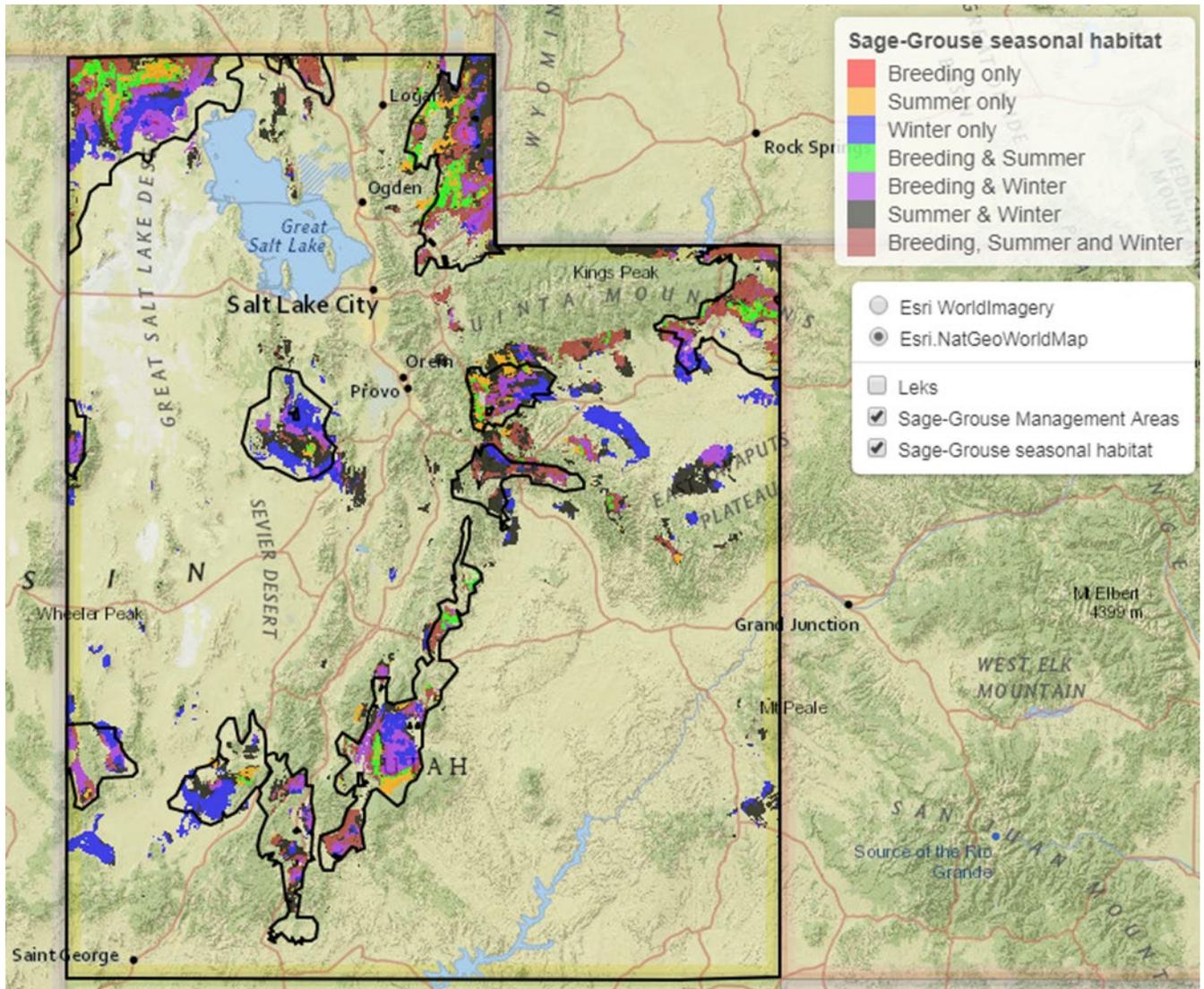


Utah's Adaptive Resources Management Greater Sage-grouse Local Working Groups

2018 Annual Report



March 2019

Utah's Adaptive Resources Management Greater Sage-grouse Local Working Groups



Prepared by

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Photos: The cover photo depicts greater sage-grouse (*Centrocercus urophasianus*) breeding habitats in Utah. This map was prepared using known sage-grouse locations obtained from radio-marked birds and augmented by biologist expert opinion. These maps will be further refined in 2019 using over 1 million new locations obtained from sage-grouse marked with global positioning system transmitters.

The inside cover provides the logos for local working group partners.

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Executive Summary

At no time in the recorded annals of wildlife management, have so many devoted so much to the management and conservation of a single species - the greater sage-grouse (*Centrocercus urophasianus*; sage-grouse). The species is indicative of the health of the sagebrush ecosystem upon which many other species depend. At the core of this national movement were the regional and local working groups. These groups fully engaged local communities, landowners, county and city planners, energy industry environmental organization representatives, and local government officials from throughout the West to interact and dialogue with federal, regional, state sage-grouse conservation decision makers, wildlife managers, and biologists to further advance sage-grouse conservation through science, management and local community involvement.

The State of Utah has a long history and tradition of working with conservation partners like the local working groups to manage wildlife. Utah Code Title 23 establishes and defines the State's legal wildlife management authority within the Utah Division of Wildlife Resources (UDWR). In the case of the greater sage-grouse, and other wildlife populations, significant contributions to the science, management, and conservation of the species have been achieved under state management authority.

In February 2019, the Utah Community-based Conservation Program (CBCP) and its partners hosted the Utah All Lands-All Hands Summit to celebrate and recognize the efforts and history of Utah's wildlife management conservation partners. We invite all interested parties to view the recordings of the recent Utah All Lands-All Hands Summit. These recordings can be accessed at the website link below: <https://utahalllandsallhands.org/>. To access the recordings, click on Session Recordings (on the left navigation bar). Then enter your email address where prompted and click on SUBMIT. You will see a prompt to enter your first name, last name, and organization. Do that and hit SUBMIT again. Now check your email for the link to access the videos. Now you will be able to enter your email again to sign in and you will have access to the videos.

In October 2015, the Bureau of Land Management (BLM) and the U.S. Forest Service (USFS) signed the Record of Decision amending Resource Management and Land Use Plans to incorporate actions to migrate sage-grouse conservation threats on public lands. Immediately after the documents were signed, the U.S. Fish and Wildlife Service (USFWS) validated the unprecedented range wide efforts of federal, state, and private partners to mitigate the identified conservation threats for the greater sage-grouse when the agency determined that the Bi-State and greater sage-grouse populations did not warrant protection under the Endangered Species Act. Also in 2018, the Western Association of Fish and Wildlife Agencies embarked on writing a range-wide sagebrush conservation strategy that focuses on the landscape to preempt a repeat of the sage-grouse saga for the other 350 species of wildlife that call sagebrush habitat home and the communities and people who also depend on this working landscape.

In 2019, the State of Utah published the revised 2013 “Conservation plan for greater sage-grouse in Utah.” The 2019 plan reflects updated conservation policies such as the implementation of the Utah Compensatory Mitigation Program. Each plan iteration has incorporated new information gained from research to better understand sage-grouse ecology and population responses to management. The Utah Plan was completed in accordance with the Utah Comprehensive Wildlife Conservation Strategy, the Utah Local Working Group Plans, range wide conservation strategies and assessments, the Bureau of Land Management (BLM) National Sage-grouse Habitat Conservation Strategy, and the U.S. Fish and Wildlife Service Greater Sage-grouse Conservation Objectives Final Report.

On June 7, 2017, Secretary of Interior Ryan Zinke signed Secretarial Order (SO) 3353 “Greater Sage-grouse Conservation and Cooperation with Western States.” The SO directed the BLM and USFS to improve sage-grouse conservation by increasing communication and collaboration between the states and federal government. The order directed the agencies to review the 2015 plan amendments to address issues identified in SO 3353. The 2019 Utah Plan and the revised BLM and USFS plans seek to protect high-quality habitat, enhance impaired habitat, and restore converted habitat for the portion of the range-wide sage-grouse population inhabiting Utah by eliminating the species conservation threats. These plans have converged around the science accumulated over the past 70 years and thus reflect effort of the local working groups and the ecology of sage-grouse in Utah. This annual report captures some of the activities of Utah’s local working groups.

Status of Utah's Sage-grouse Local Working Groups

As half of Utah's greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) populations occur on private lands, successful conservation depends upon gaining broad support from local communities and private landowners. In 1996, Utah State University Extension, in collaboration with the Utah Division of Wildlife Resources (UDWR), embarked on what is now a 20 plus-year journey to engage those most affected by conservation decisions – the local communities – in a process to balance sage-grouse conservation with economic sustainability. The goal was to provide a process to encourage conservation via incentives, not regulation.

The Utah Community-based Conservation Program (CBCP) began facilitating sage-grouse local working groups (LWGs) throughout Utah (Figure 1). The LWGs developed and implemented “seamless” plans for designated Utah geographic areas that would contribute to the conservation of sage-grouse and other wildlife species and enhance the economic sustainability of local communities. These plans provided the basis of implementation of sage-grouse actions in Utah (Utah Public Lands Policy Coordination Office 2019). The LWG sage-grouse conservation plans, previous annual reports, and meeting minutes can be accessed at www.utahcbcp.org.

Since inception, the CBCP LWG process has been financially supported by UDWR, Utah State University Extension, the Jack H. Berryman Institute, private landowners, public and private natural resources management and wildlife conservation agencies and organizations. This partnership has been key to sustaining the LWG process in Utah. In states, where this level of commitment to the partnership has been lacking, the LWGs process has eroded often denying the communities most affected by conservation policies a voice in decision making. In some cases, the wane in LWG efforts and actions was precipitated by the USFWS' decision not to provide sage-grouse protection under the Endangered Species Act. Utah's LWGs have not been completely impervious to erosion. However, the CBCP remains committed to providing the LWGs and the partners with a strong policy and science communication conduit. We remain committed to our motto “if it's not good for the community, it's not good for wildlife.”

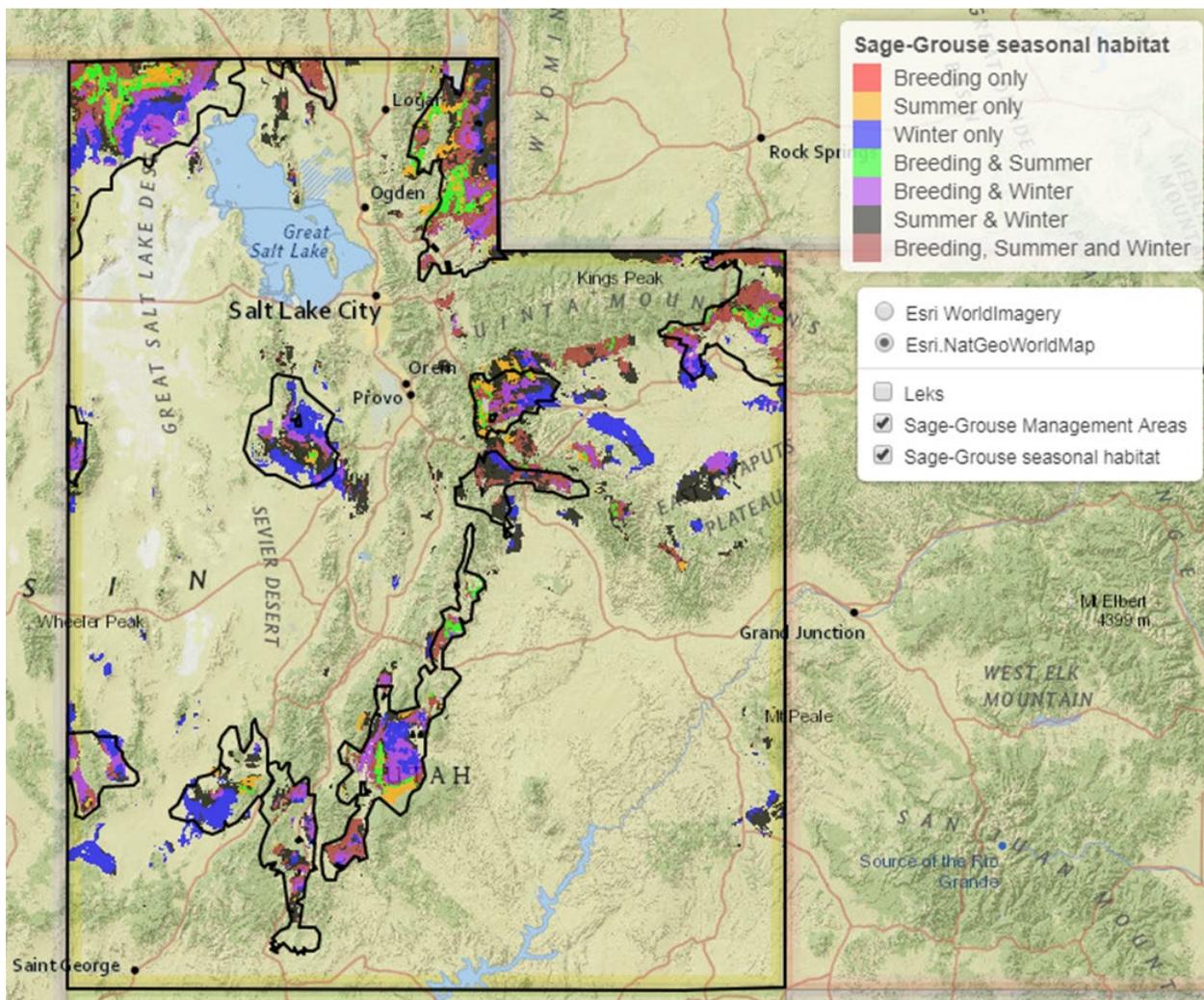


Figure 1. Sage-grouse Management Areas (SGMAs) in Utah. The SGMAs (outlined in black) represent the best opportunity for high-value, focused conservation efforts for the species in Utah (Dahlgren et al. 2016). The map depicts the best available information regarding greater sage-grouse (*Centrocercus urophasianus*) seasonal habitats in Utah. This map was prepared using known sage-grouse locations obtained from radio-marked birds and augmented by biologist expert opinion. These maps will be further refined in 2019 using over 1 million new locations obtained from sage-grouse marked with global positioning system transmitters.

West Box Elder Coordinated Resources Management (CRM) Local Working Group

The Box Elder Adaptive Resource Management (BARM) Local Working Group (LWG) was organized in 2001 by Terry Messmer. In 2011 the West Box Elder Coordinated Resource Management (WBECRM) group was organized and the LWG plan combined into the WBECRM plan. The CRM provides overall direction and guidance for habitat projects within the conservation area and Sage-grouse Management Area (SGMA). The WBECRM established a wildlife subcommittee, which encompasses sage-grouse, as part of the plan. The committee meets throughout the year to address and discuss wildlife and sage-grouse specific issues of concern, management actions, and strategies. The subcommittee reports these to the WBECRM. Danielle Kunzler is the facilitator for the CRM group. David Dahlgren is a member of WBECRM wildlife committee.

Description of Area and General Population Information

The WBECRM encompasses western Box Elder County from the Snowville area west to the UT/NV border and south to the shoreline of the Great Salt Lake. Sage-grouse habitat in this area is broken down into three sub regions, the Grouse Creek, Pilot, and Raft River range. See http://utahcbcp.org/files/uploads/BARMSAGRPlan_Final.pdf for maps and figures.

Although our knowledge of sage-grouse populations in the area is incomplete, research efforts in the area continue to map sage-grouse movements and habitat-use patterns in the Grouse Creek and Raft River Mountains. These research efforts have identified important brooding and winter areas and documented positive sage-grouse responses to management actions in particular the removal of conifer encroachment (Cook et al. 2017 [http://www.utahcbcp.org/localworkinggroups/WestBoxElder-WBECRM/Cook_et_al-2017-Wildlife_Society_Bulletin.pdf] and Sandford et al. 2017 [<https://bioone.org/journals/rangeland-ecology-and-management/volume-70/issue-1/j.rama.2016.09.002/Greater-Sage-Grouse-Resource-Selection-Drives-Reproductive-Fitness-Under-a/10.1016/j.rama.2016.09.002.full>]).

Recent Activities and Accomplishments

The West Box Elder CRM group held regular meetings each quarter of the year. The group has multiple sub-committees, with the Rangeland Committee the most active. Many rangeland-wildlife projects were completed and planned. The Etna area had a significant fire that burned over thousands of acres, some of which was sagebrush and conifer habitats. All partners worked on a rehabilitation plan for the burn area.

Utah State University continues to conduct research on the sage-grouse population in the resource area. The current research is attempting to understand the relationship between vegetation management, especially conifer removal projects, and the local sage-grouse population.

Several gaps in knowledge still exist on how sage-grouse select for, utilize, move and migrate through conifer treatment areas and existing conifer habitat. We will provide preliminary results of on-going research that is being conducted to evaluate the effects of the scale and placement of mechanical conifer removal treatments on sage-grouse habitat utilization, seasonal movement patterns, and vital rates at the landscape scale in the Box Elder SGMA. This research is being conducted by Justin Small, a PhD graduate student working under the guidance of Dr. Terry A. Messmer (Principal Investigator). Completion of this research will provide land managers with new information regarding the scale and placement of mechanical treatments to mitigate the potential effects of anthropogenic disturbances on sage-grouse populations in conifer-encroached areas. Land managers will be able to identify and implement conifer removal and habitat improvement areas more accurately that are critical to one of Utah’s largest sage-grouse populations conservation and sustainability, as well as other sagebrush obligates found in the area.

We are seeking to develop and validate models that evaluate the effects of conifer removal treatments on mitigating resistance to sage-grouse movements and habitat-use in anthropogenic-altered landscapes that are managed by multiple jurisdictions. We are also seeking to validate the effect of mechanical conifer treatments on sage-grouse population stability and growth. Ultimately, completion of this work will provide information regarding the type and amount of potential mitigation credits that could be accrued by a landowner or agency for mechanical conifer removal treatments to offset anthropogenic disturbances in SGMAs. For more information see <https://utahcbcp.org/localworkinggroups/WestBoxElder-WBECRM/2018-Annual-Report-BoxElder.pdf>.

Table 1. Meetings and tours held by West Box Elder Coordinated Resources Management group in 2018.

Meeting and Tours	Date	Location	# attending	Topics
Meeting	February 20, 2018	Park Valley	35	Report on past projects, introductions to new members, an update on the SEA project
Meeting	April 17, 2018	Park Valley	32	Weed management, bird tour, beaver restoration, and water development projects
Meeting	September 18, 2018	Park Valley	12	Reports from projects and committees, report from SEA project, Etna habitat project discussed
Meeting	November 20, 2018	Park Valley	33	Committee presentations. Update on Etna fire and rehab, proposals for several projects

				including WRI projects for 2019
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Upcoming Year Work Plan

The CRM will continue to hold regular meetings. We anticipate the implementation of many projects across the resource area. We especially look forward to monitoring the impact of rehabilitation efforts on the Etna fire. The sub-committees will continue to be actively involved in managing and proposing projects. USU's research project will also continue for another field season as sage-grouse interact with the changing landscape.

Castle Country Adaptive Resources Management (CaCoARM) Local Working Group

The Castle Country Adaptive Resource Management (CaCoARM) Local Working Group (LWG) was organized in 2004 by Terry Messmer. Lorien Belton is the group facilitator.

Description of Area and General Population Information

The CaCoARM area encompasses occupied sage-grouse habitats primarily in Carbon County, with small portions of Utah and Sanpete County. Sage-grouse habitat in this area is naturally fragmented by both geology and topography. Although much of the habitat locally is within the Carbon SGMA boundary, the group also covers the Tavaputs Plateau, which is outside the SGMA. The LWG works with landowners on Tavaputs, watching the sage-grouse population and habitat projects there, in addition to the focus on the birds within the SGMA.

Table 2. Meeting and tours held by Castle Country Adaptive Resources Management Local Working Group in 2018.

Meeting and Tours	Date	Location	# attending	Topics
LWG meeting	January 17, 2018	Price DNR	18	Research updates, federal planning and policies, project reviews
LWG meeting	April 18, 2018	Price DNR	19	Grazing and sage-grouse presentation, local research updates, habitat mapping updates
Field tour	October 9, 2018	Price area private lands	8	Private lands projects for rabbitbrush management
LWG meeting	November 28, 2018	Price DNR	9	Forest service planning, research and mapping updates, Utah state sage-grouse plan updates

Project and Research Highlights

The Castle Country group has strong landowner involvement in both the group and project work. This year, the group focused on the ongoing sage-grouse research in the area, which although not sponsored by the group is of interest due to the connectivity between populations (Emma Park, Tavaputs, etc.) demonstrated by some of the bird movements.

The local impacts of drought are of significant concern to the group, so projects focusing on wet meadow and riparian habitats are of particular interest. The field tour this year, on private land, provided a great opportunity to learn from long-term efforts to manage rangeland for livestock and grouse benefit.

In 2018, Utah State University deployed 5 global positioning system transmitters on female sage-grouse to better determine seasonal habitat-use patterns. This work was funded by the U.S. Forest Service. This information will be used as part of the Utah Habitat Assessment Framework to refine sage-grouse seasonal habitat maps.

Upcoming Year Work Plan

Now that the state and BLM plans are completed, and USFS is close, CaCoARM will work toward updating the local plan in ways that focus local efforts but also align with the larger plans. Implementation of the state plan, in particular, will be a focus. Increasing the involvement of USFS in the group's meetings and projects will be a goal.

Color Country Adaptive Resources Management (CCARM) Local Working Group

The Color Country Adaptive Resource Management (CCARM) Local Working Group (LWG) is facilitated by Nicki Frey. The main purpose of the LWG is to provide a framework of strategies and associated actions that can be implemented to abate threats, address information gaps, and guide monitoring efforts. Strategies developed by CCARM were designed to be specific to the local area while taking into consideration the guidelines at a range wide level.

Description of Area and General Population Information

The Panguitch Sage-grouse Management Area (SGMA) is located in southern Utah, in Kane, Garfield, Paiute, and Wayne Counties, incorporating more than a dozen, often connected leks. Due to the population exchange throughout this Management Area, and its incorporation of the southern-most sage-grouse lek, it is considered an important population for Utah.

This population uses a series of leks throughout the habitat area, with some males visiting more than one lek per season. The population is distributed north-south in a series of linked valleys and benches, and constrained by mountains and canyons. There is a large range in the number of males in attendance among these leks. Movement of sage-grouse from one valley or bench to another among seasons is necessary to meet their seasonal habitat requirements in the highly variable annual weather conditions of this region. Movements among valleys are not present in each group of sage-grouse, and not all used areas are known to managers.

Recent Activities and Accomplishments

The CCARM continues to be active in sage-grouse research, management, and communicating issues with the group. In cooperation with Dr. Nicki Frey, CCARM has been conducting satellite telemetry research in the Panguitch SGMA since 2013. In 2018, this research continued in Buckskin and Bear Valleys, to determine their use of treated habitat within these 2 valleys and neighboring Dog Valley. The preliminary data confirmed travel corridors as well as seasonal habitat use, when combined with data collected in 2017 (Figure 2). The CCARM partnered with the Utah Division of Wildlife Resources (UDWR) and Utah State University (USU) to work with a USU Master's of Natural Resource Student to analyze data from the last 4 years, to determine the resource selection of sage-grouse in the Panguitch SGMA as it pertains to the use of habitat treatments in the area. The research determined that female sage-grouse preferred these treated areas rather than any native habitat, throughout the brood-rearing season, as well as during other times of the year. Males were not as reliant on these treated areas, and used a variety of native shrub habitats throughout the year. The resulting manuscript is available online (Boswell 2017 <https://digitalcommons.usu.edu/gradreports/1192/>).

In addition to data analysis, the partners developed and administered a survey to a random sample of residents within the Panguitch SGMA boundary to determine the level of understanding and awareness residents had regarding sage-grouse distribution and ecology, Watershed Restoration Initiative (WRI) projects , and general land management in their local area. The results are intended to highlight areas of information in which WRI and UDWR need

to focus their outreach, education, and communication. The manuscript is currently being considered for publication within the USU Extension system and will be publically available in 2019.

Upcoming Year Work Plan

In 2018, Dr. Frey recruited Adrian Beers, as a USU PhD student to analyze all the data collected via GPS telemetry from 2015- present. Adrian will analyze the data, with consideration for treated areas, using a method called ‘place-based modeling’. This analysis should shed light on the differing movement patterns we often record from one valley to the next. Our work will continue through 2020 and will result in several publications that will be accessible to our local working group members.

In 2019, we will continue to monitor radio-marked sage-grouse in Alton, Utah, in relation to the activities of Alton Coal Company. To date, we have 3 years of data collected during mining activity. We anticipate beginning an analysis that compares the use of the area by grouse before and after mining began in the area.

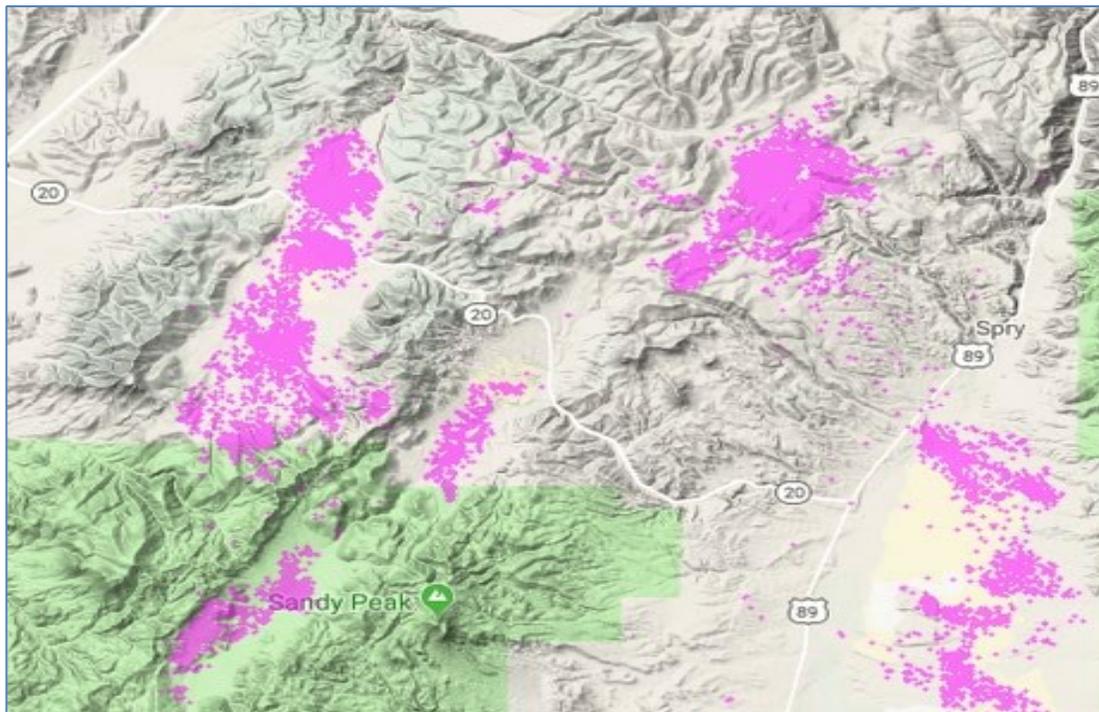


Figure 2. Greater sage-grouse (*Centrocercus urophasianus*) locations in Buckskin, Bear, Dog and upper Panguitch Valleys, Utah, 2017-2018.

East Box Elder County Adaptive Resources Management (EBARM) Local Working Group

The East Box Elder County Adaptive Resources Management (EBARM) Local Working Group (LWG) was formed in November 2015. The LWG group consists of private landowners, state and federal agency personnel, and conservation district members. The group elected C. J. Roberts and Brett Selman as their co-chairs for the group. The first objectives of the group are to learn more about the sage-grouse population in their area, which consists of nearly all private land. This included lek searches, recording wintering grouse, and communicating with landowners for their knowledge. This group is facilitated by Dave Dahlgren.

Description of Area and General Population Information

The East Box Elder area is the Sage-Grouse Management Area that lies west of I-15 and north of I-84. There are only 2 or 3 active known leks in the area with relatively few birds at each lek. Most of the lower elevations had been converted to dry farming at European settlement. Most of the sagebrush habitat is in the higher elevation rangelands. Much of the sagebrush habitat has been fragmented over the years and fire continues to be one of the most significant threats to the sagebrush communities. Cheatgrass invasion following fire is also an extensive issue in the area. The landownership is predominantly private and there is only a small section of Bureau of Land Management property in the northwest portion. The area is unique in that private landowners are numerous and landownership is not generally in large blocks. This creates its own challenges and opportunities.

Recent Activities and Accomplishments

In 2018 the EBARM group did not meet and activities have been limited. There has been up to two GPS radio-marked sage-grouse in the resource area, and data has been collected by USU Extension and shared with the group (Figure 3). Two attempts were made to reach out to the co-chairs of the group this year with no response. Group member, Ernie Perkins, has continued to express interest in keeping the group active; however, other members have not shown interest for a while now.

Upcoming Year Work Plan

The EBARM group is currently in a holding pattern until a broader interest from the group is expressed. Sage-grouse location data will continue to be collected and shared with the group.

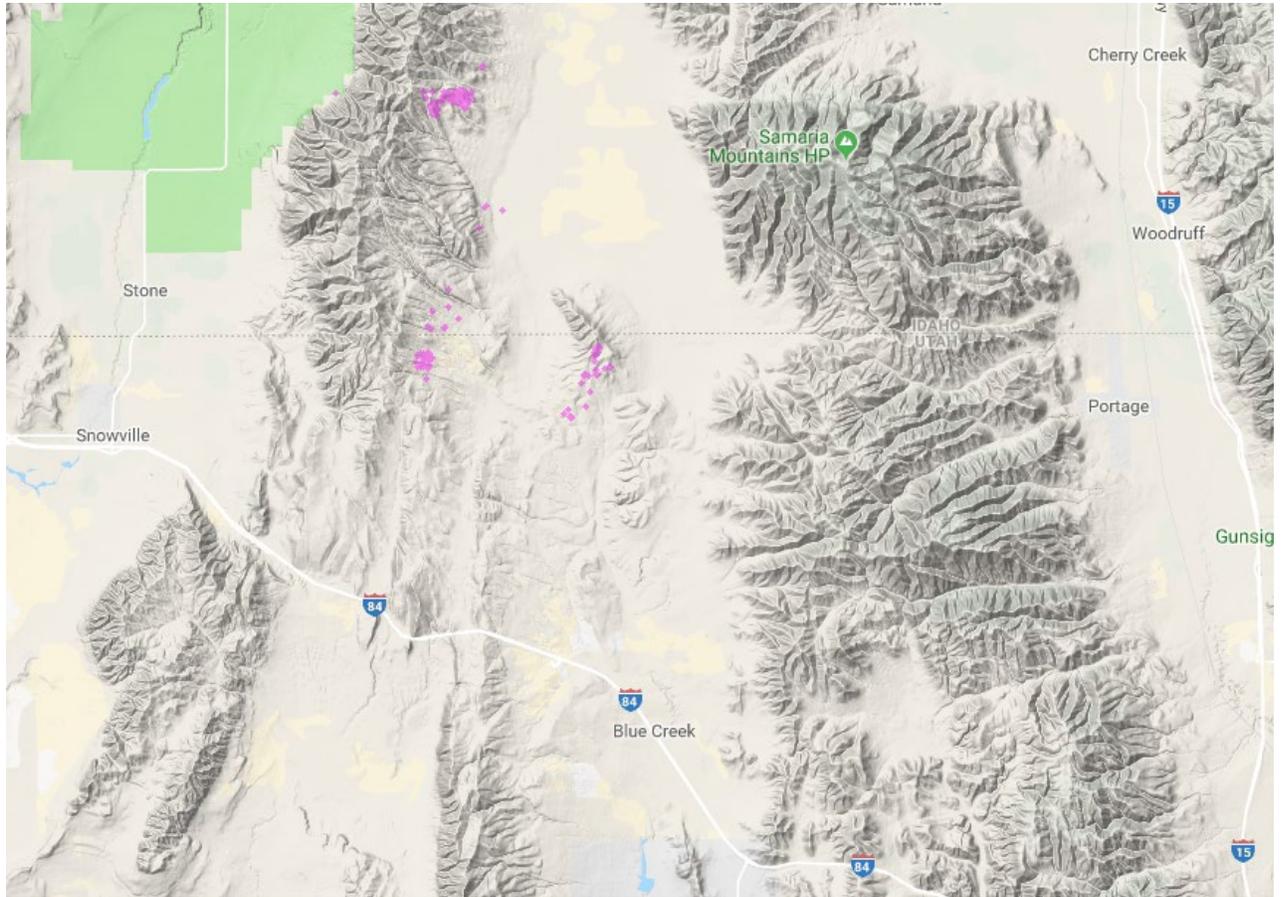


Figure 3. Pink squares represent locations of greater sage-grouse (*Centrocercus urophasianus*), marked with global positioning system radio transmitters, East Box Elder County Adaptive Resources Management Local Working Group, 2016-2018.

Morgan-Summit Adaptive Resources Management (MSARM) Local Working Group

The Morgan-Summit Adaptive Resource Management (MSARM) Local Working Group focuses on the southern half of the Rich-Morgan-Summit Sage-Grouse Management Area (SMGA). This group is facilitated by Lorien Belton.



Description of Area and General Population Information

The LWG area covers Morgan and Summit Counties. The two counties consist largely of privately-owned land, particularly where sage-grouse are found. Sage-grouse habitat in these areas occurs at higher elevations and is usually more mesic (and receives higher precipitation) than some of Utah’s other sage-grouse areas. The sage-grouse populations in the area exhibit highly localized behavior, but are believed to have connections to populations in Rich County and southwestern Wyoming. The most prominent population lives near the Morgan/Summit county line in the vicinity of East Canyon Reservoir.

Huff Creek riparian restoration project visited by MSARM on the summer field tour. Photo courtesy of Lorien Belton.

Table 3. Meetings and tours held by Morgan/Summit Adaptive Resources Management Local Working Group in 2018

Meeting and Tours	Date	Location	# attending	Topics
Regular meeting	February 21, 2018	Coalville	7	Mitigation program update, potential future group focus
Field tour	Aug 27, 2018	Up Chalk Creek and above Henefer	12	Viewing landowner’s land improvement projects, discussing future project opportunities
Regular meeting	November 9, 2018	Coalville	11	State plan updates, Forest Service planning updates, local development proposal, group landowner focus

Project and Research Highlights

Brandon Flack, USU graduate student published his thesis in 2017. This population is one of the most productive in Utah exhibiting high nest initiation rates, hatching rates, and brood success rates despite limited habitat space and small seasonal movements. He also found that transmitter type had no influence on vital rates. Sage-grouse avoided trees and developed areas, especially during the breeding season. This information suggests that a sage-grouse population can occupy areas of limited habitat on an annual basis if seasonal habitat requirements are met. The thesis can be accessed at <https://utahcbcp.org/localworkinggroups/MorganSummit-MSARM/FlackThesis2017.pdf>

The group lost some momentum this year without active research to engage participation. The focus this year has been on finding other ways, particularly beyond sage-grouse-specific habitat conversations, to engage landowners and support projects on private land. The group has had several discussions about how best to do that, including a very successful field tour that connected host landowners to individual resources at several agencies.

Upcoming Year Work Plan

The local USU Extension staff is getting much more engaged and hopes to integrate the LWG into other initiatives locally to assist landowners. In addition, local land trust representatives are hoping to take advantage of the new mitigation program to provide additional opportunities to the many local landowners interested in conservation easements. This upcoming year will hopefully see a realization of some of the goals for broader impact and a wider range of resources activities, such as stream restoration and weed management in coordination with other groups.



MSARM local working group participants looking at the East Canyon area. Photo by Lorien Belton.

Parker Mountain Adaptive Resource Management (PARM) Local Working Group

The Parker Mountain Adaptive Resource Management Plan (PARM) Local Working Group (LWG) was organized in 1997 by Terry Messmer. PARM consists of state and federal agency personnel, representatives from local government, non-profit organizations, academic institutions, private industry, and private individuals. This LWG is currently facilitated by Dave Dahlgren.

Description of Area and General Population Information

The PARM LWG area covers portions of Garfield, Piute, and Wayne Counties that contain occupied sage-grouse habitats. Sage-grouse habitat in this area is well connected and the majority of the sage-grouse can be found on the Awapa and Aquarius plateaus. It is broken down into three sub regions; the Parker, Fish Lake, and Grass Valley. See <http://utahcbcp.org/files/uploads/parm/PARMfml-10-06-web.pdf> for maps and figures. The sage-grouse populations at Wildcat Knoll and Horn Mountain have been included with the Parker Mountain Sage-grouse Management Area. The stakeholders (e.g., U.S. Forest Service [USFS], Emery County, etc.) working on these two populations have joined PARM.

The PARM area has been the most studied population of sage-grouse in Utah going back to 1998 and there have been several publications made available through these research efforts in addition to annual reports. See <http://utahcbcp.org/html/groups/parkermountain> for more information. The Wildcat Knoll and Horn Mountain had two years of research with radio-marked grouse from 2008-2009.

Recent Activities and Accomplishments

The PARM has several issues going on this past year. We conducted our annual lek counts in April, which has occurred for the last decade or more each spring for the group. The major project going on at this time is the Mytoge Mountain conifer removal project, sponsored by Watershed Restoration Initiative and led by the U.S. Forest Service, Loa Ranger District and the Utah Division of Wildlife Resources. Phase I was completed in 2017 and we are currently working on Phase II, with treatment to occur during the winter of 2018-2019. We also received funding to purchase 6 more global positioning systems (GPS) radios to help monitor sage-grouse within the project area. This will add to several radios already deployed in the Phase I area.

Table 4. Meetings and tours held by Parker Mountain Adaptive Resources Management Local Working Group in 2018

Meeting and Tours	Date	Location	# attending	Topics
Lek Counts and Meeting	April 17, 2018	Loa	16	Utah Plan, Parker Lek Counts

Field Tour	July 25, 2018	Loa	13	Mytoge Mountain Conifer Removal Project
County Commission Meeting	August 13, 2018	Junction	12	Formation of a CRM in the area
Meeting	November 7, 2018	Richfield	27	Met with the Six County AOG to discuss the formation of a CRM in the area

Upcoming Year Work Plan

Our winter meeting was postponed due to the federal shutdown. We plan on conducting our annual lek counts. We also plan to deploy the six GPS radios in the Tidwell Slope area of Mytoge Mountain during the 2019 spring lekking season. We will continue to hold our regular meetings, and will likely follow up the Phase II treatments on Mytoge Mountain.

Rich County Coordinated Resource Management (Rich CRM) Local Working Group

The Rich County Coordinated Resource Management (CRM) Local Working Group (LWG) is facilitated by David Dahlgren. The Rich CRM consists of state and federal agency personnel, representatives from local government, non-profit organizations, academic institutions, private industry, and private individuals.

Description of Area and General Population Information

The Rich CRM management area is located in northeastern Utah, and is a significant population center for grouse in three states – Utah, Idaho, and Wyoming. The Sage-grouse Management Area (SGMA) includes Cache, Rich, Weber, Morgan, Summit and Wasatch Counties. The area boundary was determined by consulting with adjacent states, Utah Division of Wildlife Resources (UDWR), and the Morgan-Summit Adaptive Resources Management LWG, and the Rich CRM. It incorporates vegetation types used by sage-grouse, mostly in the Wyoming Basins eco-region.

Recent Activities and Accomplishments

Several projects were proposed and developed for 2018 within Rich County. These projects were addressed in December 2017. We were unable to get a spring/summer meeting put together, however, partners continued to work with each other on projects. We held our fall project meeting on October 25, 2018, and covered several projects proposed for the upcoming year. Our new USU County Extension Agent, Dallen Smith, was able to attend and become part of the group. The most significant accomplishment this year was the approval of the Three Creeks Project by federal agencies. Many associated projects will be completed to assist the transition from the current management to the new regime. Unfortunately, our winter meeting was postponed due to the federal shutdown.

Utah State University (USU), led by Terry Messmer continues to conduct research on the sage-grouse populations in Rich County. He has recruited Hailey Peatross Wayment as a Master student to continue the research project started by Seth Dettenmaier and Wayne Smith. The objectives of the research is to understand how livestock grazing interacts with sage-grouse.

Hailey began deploying global positioning system rump-mounted radio-transmitters on female sage-grouse captured on areas that are grazed by domestic livestock on Deseret Land and Livestock and the Three Creeks Allotment to better describe the range of sage-grouse behavioral responses to the presence of livestock and grazing. We are focusing on female sage-grouse because they drive population levels. We want to know if female sage-grouse brood-rearing habitat-use patterns and vital rates differ under prescribed rotational and season-long grazing practices. If so, the question becomes, can the observed differences be explained by avoidance behavior or differences in vegetation composition and structure that are the result of livestock grazing? Specifically, we want to test the hypothesis that the vegetation important to support sage-grouse broods could be facilitated, enhanced, or prolonged by managing grazing by

domestic livestock. The hypothesis will be validated if radio-marked females that select for pastures where livestock have removed standing residual vegetation creating a “green wave” are more successful than female sage-grouse that select pastures grazed under traditional season-long practices.

Cattle grazing occurs on 87% of occupied sage grouse range, of which 70% is managed by the BLM and USFS. Thus, minor changes in Federal grazing policies can have disproportionate impacts on rural economies. Hailey’s research may suggest a possible working solution to the problem of competing land uses on western ranges. If we can parameterize sage grouse vital rates under different grazing scenarios, this may have implications for grazing policy west-wide. Completion of this project will provide better information regarding sage-grouse vital rates and habitat selection with respect to the presence of cattle and the effects of livestock grazing on the vegetation composition and structure. This science-based information will help to better define the role of livestock grazing as part of the working landscape in species conservation. The results of Hailey’s work will set in motion a process that reevaluates how western sagebrush management lands are managed for multiple benefits. In 2018, radio-marked grouse were monitored on both Three Creeks Area and Deseret Land and Livestock Ranch.

Upcoming Year Work Plan

An exciting development for the upcoming year is adding Dallen Smith as a facilitator for the group. Hopefully, this will help bring energy to the group and help Dallen’s work as the County Extension Agent addressing natural resource issues in the county. Many projects will continue to be implemented to help support the Three Creeks Project. The sage-grouse research project in the county will continue with a new graduate student.

Southwest Desert Adaptive Resource Management (SWARM) Local Working Group

The Southwest Desert Adaptive Resource Management (SWARM) Local Working Group (LWG) consists of community members from Beaver and Iron Counties and is facilitated by Nicki Frey. The LWG meets every other month to discuss issues and concerns with grouse management and conservation in our region. The Governor's Task Force has recommended the development of two Sage-grouse Management Areas (SGMA) in the LWG conservation area; Hamlin Valley and Bald Hills.

Description of Area and General Population Information

The Bald Hills SGMA is located in southwestern Utah, in Beaver and Iron Counties, and is considered a population stronghold for this region of Utah. This population uses a series of leks throughout the habitat area, with males visiting more than one lek per season. Currently, the population is constrained within the SGMA by vegetation fragmentation and human development; however future improvements could connect this population to the Hamlin Valley SGMA to the west, and further north into Beaver County. The primary land uses in this SGMA grazing, agriculture, and swine production; predominant land ownership is Bureau of Land Management (BLM) and private. The BLM manages the Bald Hills for multiple uses including conservation, recreation, energy development, and big game hunting. Residential development is present in Minersville, in the north of the Management Area, where most of the agriculture production also occurs. There is potential for wind energy production as well as current and future power transmission lines.

The Hamlin Valley SGMA is located in southwestern Utah, in Beaver and Iron Counties, on the border of Utah and Nevada and is considered a population stronghold for this region of Utah. Although currently isolated from other habitat areas, habitat restoration could link this population to the Bald Hills SGMA. The primary land use in this SGMA is grazing; predominant land ownership is BLM. The BLM manages Hamlin Valley for multiple uses including wild horse conservation, recreation, and big game hunting. Development is limited to scattered houses, generally in the southern portion of the SGMA.

Recent Activities and Accomplishments

The SWARM continues to be active in conducting research to determine sage grouse response to habitat treatments. They have been supporting Dr. Frey's research since 2015 (Figure 4). In 2018, Dr. Frey recruited Adrian Beers, as a USU PhD student to analyze all the radio-telemetry sage-grouse location data collected from 2015 to present. This student will analyze the data, with consideration for treated areas, using a method called 'place-based modeling'. This analysis should shed light on the differing movement patterns we often record from one valley to the next. Our work will continue through 2020 and will result in several publications that will be accessible to our local working group members. This research is highly valuable to the BLM, which has an valley-wide EA in place to conduct habitat treatments for the next decade.

The SWARM also plays a large role in the Watershed Restoration Initiative (WRI) projects proposed in the Southern region that overlap with occupied sage-grouse habitat. These projects have the option to be vetted through SWARM prior to being submitted to WRI. This improves communication among biologists and ensures that treatments are conducted in a way that promotes the greatest multispecies benefit.

Upcoming Year Work Plan

Dr. Frey and Adrian will continue to analyze and report on sage-grouse habitat use in Hamlin Valley. There has also been brief discussion of repeating the research conducted in the Bald Hills to enable comparison of habitat use pre and post habitat treatment.

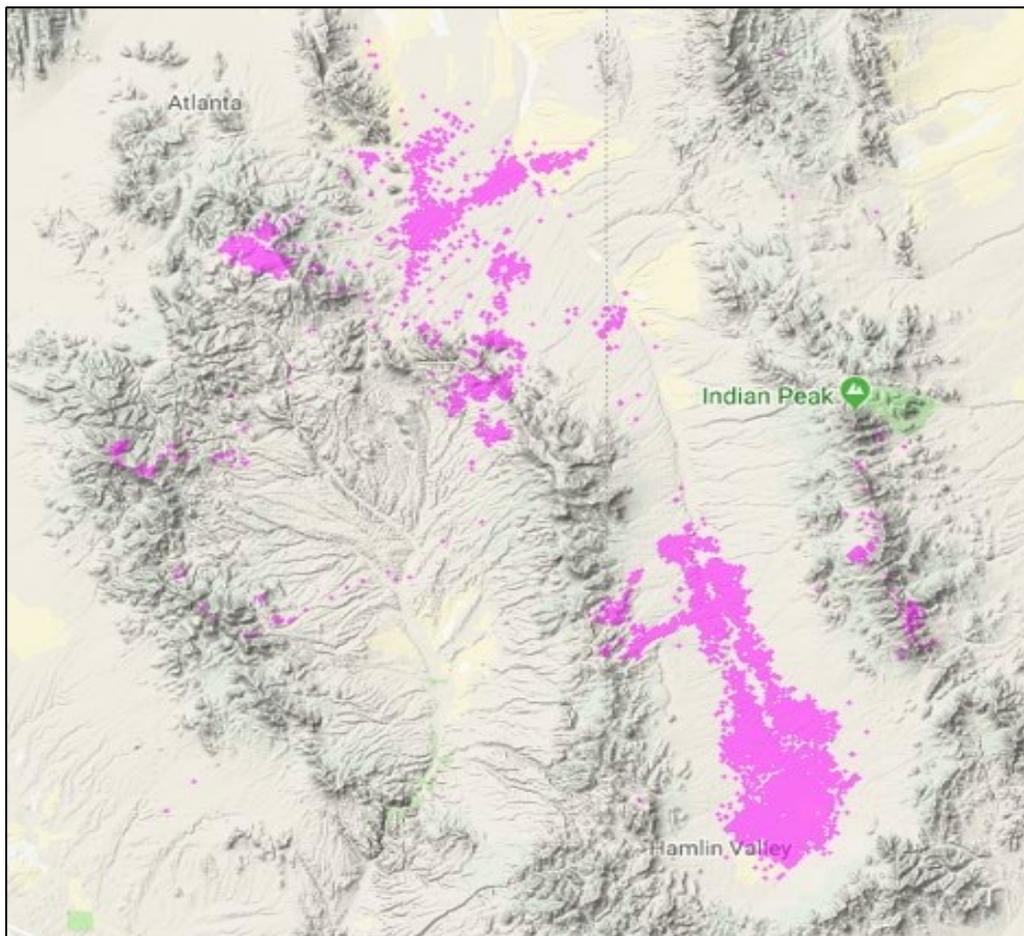


Figure 4. Greater sage-grouse (*Centrocercus urophasianus*) locations in Hamlin Valley Utah, including locations in northern Hamlin Valley Nevada, 2015-2018.

Strawberry Valley Adaptive Resource Management (SVARM) Local Working Group

The Strawberry Valley Adaptive Resource Management (SVARM) Local Working Group (LWG) is facilitated by Lorien Belton.

Description of Area and General Population Information

The LWG conservation area covers Wasatch and Duchesne Counties. There are leks and associated nesting/brood-rearing areas both at high elevations around the Strawberry Reservoir, as well as in the lower-elevation Fruitland area in Duchesne County. The birds winter primarily in Fruitland at lower elevations. Predator control efforts, particularly red fox control, played a large role in helping the sage-grouse population rebound from previous lows. Multiple habitat projects over the course of more than ten years have also helped by providing improved habitat for the population, which appears to be relatively stable at this time.

Table 5. Meetings and tours held by Strawberry Valley Adaptive Resources Management Local Working Group in 2018

Meetings and Tours	Date	Location	# attending	Comments
Spring Meeting	March 7, 2018	Heber	4	Need for renewed researcher and USFS involvement in LWG, round-robin updates
Field Tour	June 6, 2018	Strawberry Reservoir	18	Post fire habitat visits, fire management discussions, project planning, wetland/riparian projects connection to sage-grouse habitat
Meeting	December 18, 2018	Heber	12	Population research and updates. USFS planning alternatives and comment periods, Dollar Ridge post-fire assessment

Project and Research Highlights

Project planning for future Watershed Restoration Initiative (WRI) project proposals continues. Although dramatic threats to the Strawberry Valley sage-grouse are currently a large concern, the local working group continues to stay connected and consider opportunities to help the population. Reengaging the researchers from Brigham Young University (BYU) in the working group was invigorating this year. Global positioning system radio-transmitters were deployed on sage-grouse in the area. Radio-marked birds can now be tracked in almost real time on a website link managed by BYU. The opportunity for watching future habitat project usage is of great interest to the group.

Upcoming Year Work Plan

As usual, members of the LWG continue to plan future habitat projects. Some of the utility of past projects has started to “time-out,” in many cases filling back in with sagebrush. Once the U.S. Forest Service sage-grouse plan amendments have been finalized, SVARM will work to implement both the new state (Utah) and federal (USFS) plans to improve habitat which will hopefully move more quickly.



The Strawberry Valley LWG field tour visited a burn site (top) and riparian project (bottom). Photos courtesy of Lorien Belton.

Uintah Basin Adaptive Resource Management (UBARM) Local Working Group

The Uintah Basin Adaptive Resource Management (UBARM) Local Working Group (LWG) is facilitated by Lorien Belton. It is closely tied to the Uintah Basin Partners for Conservation and Development, often coordinating meeting scheduling between the two groups.

Description of Area and General Population Information

The Uintah Basin LWG covers parts of Duchesne, Uintah, and Daggett counties. A large population with multiple leks inhabits the Diamond Mountain area north of Vernal. This area has mixed landownership, including private, state, and federal lands, and is used primarily for agricultural purposes. The Diamond Mountain population is one of the few populations in Utah that is robust enough to support a limited sport hunt in the fall. Additional sage-grouse populations occur south and west of Vernal in areas including Forest Service land on Anthro Mountain, and BLM land further south. The southern populations in particular are in areas that have been highly impacted by oil and gas development. Some populations also occur farther south into the Book Cliffs. Populations on Seep Ridge, Deadman Bench, Little Mountain, Anthro Mountain, and Diamond Mountain have been the subject of research studies over the course of multiple years.



Uintah Basin UPCD/UBSRM joint field tour looked at wet meadow restoration projects. Photo by Lorien Belton.

Table 6. Meetings and tours held by Uintah Basin Adaptive Resources Management Local Working Group in 2018

Meetings and Tours	Date	Location	# attending	Comments
Meeting	February 13, 2018	Vernal	16	Joint meeting with the WRI/UPCD project presentation
Field Tour	August 14, 2018	Cart Creek Watershed	13	Joint tour with UBPCD: wet meadow restorations
Meeting	December 12, 2018	Vernal	14	Population research updates, federal planning updates (BLM and USFS plan amendment revisions), and state plan updates

Project and Research Highlights

The group continues to value and enjoy the research updates from joint monitoring projects. Many of the local WRI projects are relevant to sage-grouse habitat improvement, so the group members participate actively in the WRI project proposal presentation meeting early in the year, an efficiency to avoid duplicate conversations. The LWG and WRI teams work closely together, and projects are both designed and assessed informally each year based on information from sage-grouse movement data. In addition, the group always participates actively in opportunities to comment on the federal and state planning processes, of which there were many this year.

Upcoming Year Work Plan

The group will continue to have a strong habitat project implementation focus, now that the state of Utah plan and the BLM plans are completed. To the degree possible, projects will be aligned with needs identified through the sage-grouse monitoring data. The group will continue to monitor collared grouse in the area as long as the funds to do so exist.

West Desert Adaptive Resource Management (WDARM) Local Working Group

The West Desert Basin Adaptive Resource Management (WDARM) Local Working Group is facilitated by Lorien Belton. The group covers two areas: Ibadah, on the western border of Utah with Nevada, and the Sheeprock Mountains (in Tooele and Juab counties). Due to concern over population declines in the Sheeprocks, the WDARM group has also become the Technical Committee tasked for overseeing a series of enhanced efforts in the Sheeprocks to reduce threats to sage-grouse and help the population rebound. Since July 2015, WDARM has increased its meeting frequency from three to four times a year to approximately every other month. The group will continue its increased activity until the urgent need for coordination and implementation goes down. Although the majority of the groups’ focus is on the Sheeprocks population area, the group tries to meet once each year in Ibadah.



USGS hydrologists explain water quality and quantity measurement techniques to the sage-grouse group. Photo courtesy of Lorien Belton.

Description of Area and General Population Information

The West Desert Adaptive Resource Management LWG conservation area encompasses sage-grouse habitats in Tooele and Juab counties. The two primary population locations are far apart: one in western Tooele County in the Ibadah region (including the Goshute Tribe’s land), and the other at the eastern side of the two counties, known as the Sheeprocks. These more eastern populations include birds in the Vernon area as well as in the Tintic Mountains. Population trends in the area have declined over the last few years. In 2015, lek counts which rebounded in other part of the state, including Ibadah, did not rebound in the Sheeprocks. Several years of translocations appear to have at least temporarily stabilized the population.

Table 7. Meeting and tours held by West Desert Adaptive Resources Management Local Working Group in 2018

Meetings and Field Tours Type	Date	Location	# attending	Comments
Meeting	March 8, 2018	Tooele	28	BLM planning updates, recreation and sage-grouse research updates, pollinator presentation, field tour planning

Field Tour	May 17, 2018	Tintic Mtn watersheds	11	Hydrology research sites and preliminary information
BLM open Meeting hosted by the LWG	July 18, 2018	Tooele	9	BLM open house meeting content for DEIS comment/info
Meeting	November 5, 2018	Tooele	19	Research updates (sage-grouse populations and translocations, recreation research, hydrology research, BLM/DPG/BYU springs research), planning updates for Utah, BLM, and USFS

Project and Research Highlights

The West Desert group is very active both in meetings and between them. Research conducted by Utah State University regarding the effect of sage-grouse translocations on WDARM sage-grouse populations has continued. Utah’s 2019 Conservation Plan for Greater Sage-grouse reaffirmed the conservation goals of maintaining sage-grouse populations and their habitats in designated sage-grouse management areas (SGMAs). In support of this goal, USU in cooperation with WDARM has completed 3 years of sage-grouse translocations to reverse the recorded long-term population declines in the Sheeprock SGMA. The translocations were conducted as part of an intensive management program, which included habitat and predation management. In 2018, over 60 male sage-grouse were counted on leks and the Utah Division of Wildlife Resources (UDWR) documented a new lek that was named the Fredrickson Pastures lek. Nest initiation rates and success rates were the highest ever reported in this population. In 2018, we recorded 14 of 17 nests successfully hatching. Eight broods survived to the 50-day, post-hatch survey. In 2018, we completed an assessment of off-highway vehicle (OHV) use and recreation users in the Sheeprock SGMA. This survey provided valuable information for application to management of OHV recreational use in the Sheeprock Mountains (Smith et al. 2018). We will be performing translocations in spring of 2019. In 2020, we will continue monitoring marked individuals and mark additional resident grouse.

Research on basic recreation behavior was also conducted this year, with significant input from the working group on survey content and implementation. In addition, predator surveys associated with the sage-grouse research have been conducted. The hydrology study of pinyon juniper removal impacts to groundwater saw its first year of field implementation, with reports to the working group at meetings and on the annual field tour.

Continuing from previous years, multiple informal subgroups of the working group plan habitat treatments, riparian work, and post-fire rehab. Project planning crossed multiple jurisdictional boundaries.

The working group also hosted a BLM open house, unlike others around the state hosted only by BLM, to gather input on the plan amendment revisions from the local community. Several key recommendations came from that meeting which were included as formal public comments to the DEIS.

Upcoming Year Work Plan

The West Desert group will be very active. The group continues to be interested in ongoing research, as well as expanding to understand the complexity of the systems. There will be continued new presentations on applicable research in 2019, as well as the regular focus on project planning, the fourth year of translocations (with support from many local biologists). New personnel changes at many of the interacting agencies will likely be a driving force in additional collaborative projects and research.

References

- Boswell, R. 2017. Seasonal Resource Selection and Habitat Treatment Use by a Fringe Population of Greater Sage-Grouse. All Graduate Plan B and other Reports. 1192.
<https://digitalcommons.usu.edu/gradreports/1192>
- Cook, A.A., T.A. Messmer, and M.R. Guttery. 2017. Greater Sage-grouse Use of Mechanical Conifer Reduction Treatments in Northwest Utah. *Wildlife Society Bulletin* 41:27-33.
- Dahlgren, D.K., T.A. Messmer, B.A. Crabb, R.T. Larsen, T.A. Black, S.N. Frey, E.T. Thacker, R.J. Baxter, and J.D. Robinson. 2016. Seasonal Movements of Greater Sage-grouse Populations in Utah: Implications for Species Conservation. *Wildlife Society Bulletin* DOI: 10.1002/wsb.643
- Flack, M.B. 2017. Ecology of Greater Sage-Grouse Inhabiting the Southern Portion of the Rich-Morgan-Summit Sage-Grouse Management Area. All Graduate Theses and Dissertations. 6899.
<https://digitalcommons.usu.edu/etd/6899>
- Sandford, C.P., M.T. Kohl, T.A. Messmer, D.K. Dahlgren, A. Cook, and B.R. Wing. 2017. Greater Sage-grouse Resource Selection Drives Reproductive Fitness Under a Conifer Removal Strategy. *Rangeland Ecology & Management* 70(1):59-67.
- Smith, J.W., B. Muhlestein, M. Chelak, L. Belton, and T. Messmer. 2018. Sheeprock Mountains visitor use report. Logan, UT: Institute of Outdoor Recreation and Tourism, Department of Environment and Society, Utah State University.
- Utah Division of Wildlife Resources (UDWR). 2009. Utah Greater Sage-Grouse Management Plan. Utah Department of Natural Resources, Division of Wildlife Resources, Publication 09-, Salt Lake City, Utah, USA.
- Utah Division of Wildlife Resources (UDWR). 2002. Strategic management plan for sage-grouse 2002. Utah Department of Natural Resources, Division of Wildlife Resources, Salt Lake City, Utah, <http://www.wildlife.utah.gov/uplandgame/pdf/2002manplan.pdf>.
- United States Fish and Wildlife Service (USFWS). 2010. Endangered and threatened wildlife and plants; 12-month finding for petitions to list the greater sage-grouse (*Centrocercus urophasianus*) as threatened or endangered; proposed rule. *Federal Register* <http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/FR03052010.pdf> accessed 6-132010.
- Utah Plan. 2013. Conservation plan for greater sage-grouse in Utah.
<https://wildlife.utah.gov/uplandgame/sage-grouse/pdf/greater_sage_grouse_plan.pdf>. Salt Lake City, Utah, USA.
- Utah Plan. 2019. Utah Conservation Plan for Greater Sage-grouse.
https://wildlife.utah.gov/sage-grouse/2019_UT_Greater_Sage-grouse_Plan.pdf . Salt Lake City, Utah, USA.