

Greater Sage-grouse Responses to Pinyon - Juniper Removal

West Box Elder Sage-Grouse Field Report – March/April 2018

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Background and Purpose

We are documenting greater sage-grouse habitat-use, seasonal movement, and vital rate data relative to pinyon-juniper (conifer) removal projects within the Park Valley area of the Box Elder Sage-grouse Management Area (SGMA). The purpose of the research is to develop a tool that can be used to better predict sage-grouse use and survival relative to the placement of removal projects. We hope that this tool will be used as part of the Utah Department of Natural Resources Compensatory Mitigation Program to enhance mitigation credits accrual for participating landowners. This is the third of four field seasons.

Currently, we have deployed 10 global positioning system (GPS) rump-mounted transmitters on female sage-grouse and with 2 more to be deployed by early May. We had 14 GPS marked females at one point for the 2018 field but have had 4 mortalities to date, which will be detailed in the mortality section below. We also have 5 GPS marked females in the West Grouse Creek area that we will monitor remotely. With the GPS transmitters, data downloads are being gathered every 4 hours on a 24 hour cycle throughout the study period. Most of the GPS transmitters are additionally equipped with a small VHF antenna to aid in recovery of transmitters in the advent they default or left upside down after a mortality occurs.

The transmitters have been deployed on females near juniper treatment areas. The location data collected from transmitters will help us refine conifer removal strategies and placement, and also allow us to develop a tool for managers to use to optimize sage-grouse response to management actions within the SGMA. This larger data set will allow us to research and observe more closely sage-grouse utilization of treatment areas in reflection to overall population fitness at the landscape level. Additionally, we have deployed 15 very high frequency (VHF) necklace-style radio-collars across the study area and to determine if vital rates may differ by type of radio transmitter. Both units weigh about as much as two silver dollars – 22 grams.

New for the 2018 field season, we will be marking up to 55 sage-grouse chicks with small VHF backpacks. These VHF backpacks will be sutured onto the chick's backs and will remain until around the 70 day mark. This will allow us to track the complete life cycle of sage-grouse within the West Box Elder SGMA and obtain the finest scale data possible to observe how individual

sage-grouse chicks are responding to pinyon-juniper treatments across the SGMA. We will continue marking chicks for the 2019 field season as well.

Study Area

The study area is part of the Raft River subunit and was based on the Box Elder Management Area outlined in the 2002 state plan, and is embedded in the Box Elder Sage-grouse Management Area defined in the Utah Plan (2013). The Raft River subunit is located in the northwestern portion of Utah. Geographically, the core of the study area is flanked by the Raft River Range Mountains to the north, the Grouse Creek and Pilot Mountains to the west, by the Great Salt Lake to the southeast and areas of salt flats to the south. Approximately 440,750 ha are encompassed within the study area. Land ownership within the Raft River subunit is a mixture of public and private lands consisting of: Bureau of Land Management, U.S. Forest Service, Utah School and Institutional Trust Lands Administration and private.

Technicians

For the 2017 field season, three technicians were hired: Megan Cardon, Kadie Trossen and Anne Bauer. Megan come from Massachusetts, Kadie from Wisconsin and Anne from California. They have proven to be capable and knowledgeable field technicians. Anne will be covering the Dry Basin to Meadow Springs area, Kadie will cover the Warms Springs and Dove Creek Pass area and Megan will cover the Rosette and Park Valley area. I (Justin) will cover everything outside of their study areas and will help with locating hard to find birds and vegetation surveys. We provide this information for if you should encounter one of the technicians and wonder what the heck they are doing.

All three technicians were trained telemetry work before turned out into individual study areas. Telemetry training up front helps to prevent struggling in the field and learning on the fly; and unnecessary flushing sage-grouse while performing weekly locations. Vegetation identification training also has begun, and will continue throughout the field season when assistance is required.

We also use a rigorous operational protocol for trucks and ATVs for safety purposes and to prevent unnecessary damage to equipment. All technicians are trained on how to properly use 4wd vehicles in field conditions. Also included is a full day on ATV field safety and maintenance. In a controlled field situation, the technicians are train on the following: loading and unloading, hill ascending and descending, rollover angles, approach angles, maneuverability and proper gear selection and speed. The old saying “an ounce of prevention is worth more than a pound of cure” we believe also applies when teaching field technicians to be safe while operating ATVs in rough, remote field conditions.

Equipment

For the 2017 field season, 8 existing mortality recovered GPS transmitters were refurbished and 10 new VHF collars were purchased. Several mortality recovered GPS transmitters will be sent back to the manufacturer to be refurbished due to their multiple season field durations and prevent field malfunctions once re-deployed. The refurbished GPS transmitters and VHF collars will be distributed evenly across the study area or where they are needed to augment the existing radio-marked sage-grouse population. A camping trailer was the only new equipment purchased for the 2018 field season. However, any non-functioning equipment throughout the field season will either be properly repaired or replaced.

Lekking and Breeding Status

For this study season, we have monitored and counted 18 unique leks for the UDWR lek count survey across the study area. Each lek was counted at least 3 times for the lekking season. Currently, males are still strutting on lek sites, but their numbers are dwindling as most females have dispersed in search of nesting habitat. Overall, lek attendance has been lower this season.

Trapping

Trapping for the 2018 field season has been more challenging than the past 2016 and 2017 field seasons. Both male and female lek attendance was noticeable lower than the last two field seasons, which made it difficult to radio mark an ample amount of females from mid-March through April. We have trapped since mid-March until the first weekend in May to get transmitters and collars deployed.

We are still trapping lekking areas to deploy the remaining 2 GPS transmitters and redeploy any transmitters we recovered from mortalities. We are restricting our trapping to areas near the leks to alleviate possible nest disturbance(s). Any GPS transmitters recovered during the field season will be refurbished and redeployed as quickly as possible to ensure we are maximizing their capabilities relative to their cost. If possible, the last few GPS transmitters will be deployed in the Warm Springs and Meadow Springs areas in hopes of documenting bird movements within new juniper removal locations.

Nesting

Currently, about 40% (both GPS and VHF birds) are nesting, with more females initiating nests every week. To date, two nests have been predated across the study area. One definitely showed all the signs of Ravens, with holes being pecked in all 9 eggs. The other nest remained undetermined with no eggs being present. Neither female was killed during both nest predations, fortunately. As like was done last season, to mitigate the potential for ravens using our activities to key in on nesting sage-grouse, we are being careful not to spend extended periods observing nesting females. This caution is warranted because we have observed ravens following us on

several different occasions this season while relocating females; whether they were actual profiling us or just being curious- we are playing it safe.

Nesting has occurred for the 2018 field season similar to the 2017 field season (April 23 vs. 24). Although females are picking nesting sites, in general, much higher on the mountain. Areas were females picked for nest sites last season are already much drier, which shrinks suitable nesting habitat. The first female to nest this season occurred on April 23. She selected a nest site in the Meadow Springs Area north of Dry Basin. We currently have several females initiating nests or nesting within the same area.

Mortality

For this field season, 4 GPS and 4 VHF females have been killed to date. This is a 33% increase from last year's mortalities at this point. Three of the GPS harnessed females showed signs of mammalian predation and one is undetermined. Two of the VHF mortalities showed signs of avian predation, one mammalian predation and one was undetermined.

Grouse Movements

With having decreased wet areas and runoff for the 2018 field season, birds are beginning to spread-out over the landscape now that the lekking season is tapering off and females are starting to initiate nests. Females are moving up slope quicker this season and several are initiating nests in areas where females usually move broods in June. Currently, one VHF female is initiating a nest in Dry Basin, at least 2 females (1 GPS and 1 VHF) are nesting in Warms Springs/ Dove Creek Estates. One VHF and 2 GPS females are initiating nest on top of Muddy Creek Pass, 1 GPS female is nesting north of the Pipeline on northeast side of Table Mountain, and 1 GPS and 1 VHF females are initiating nests east of Park Valley. Of the females we radio-marked, we have located all of them.

One GPS female that was captured in early April 2018 in Dry Basin has decided to travel east across Highway 30 out onto the pipeline. She is currently initiating a nest south of the pipeline scar by Coyote Hill (Figure 1). In addition, the 2 GPS marked females that moved up slope quickly to Muddy Creek Pass (Figure 2 and 3), we can see the exact route they used and movement patterns throughout upslope migration. This information would simply not have been possible with VHF collared birds. Very cool movement data to look at and capture! This type of data is what we want to capture to better understand sage-grouse movements across broad landscapes and interactions with pinyon-juniper treatment areas in the Box Elder SGMA. Below are three images from Movebank of the three GPS females movement location data. As you can tell by the point densities of < 10, they have not been staying put in one location very long. Note: the red plus signs (+) within the images are the initial capture locations.



Figure 1. GPS marked female movements from Dry Basin across Highway 30.

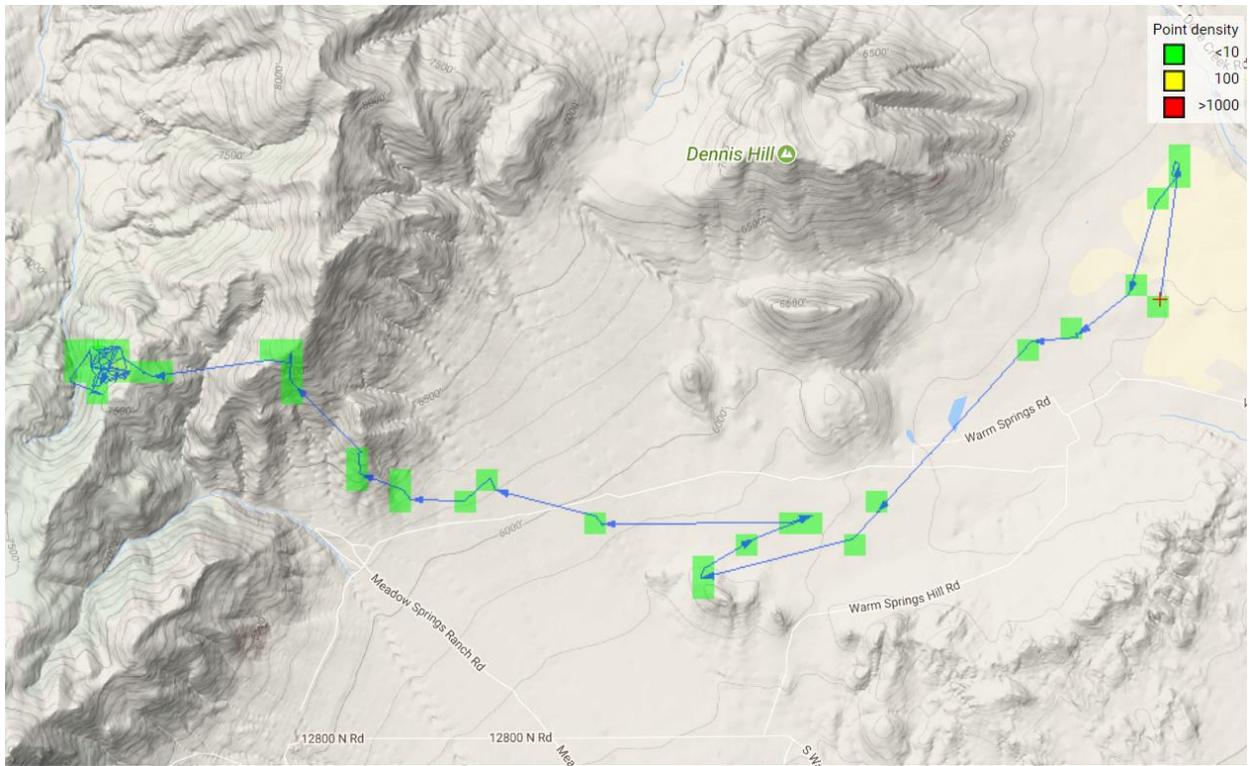


Figure 2. GPS marked female movements from Warm Springs Lek capture point in early April 2018.

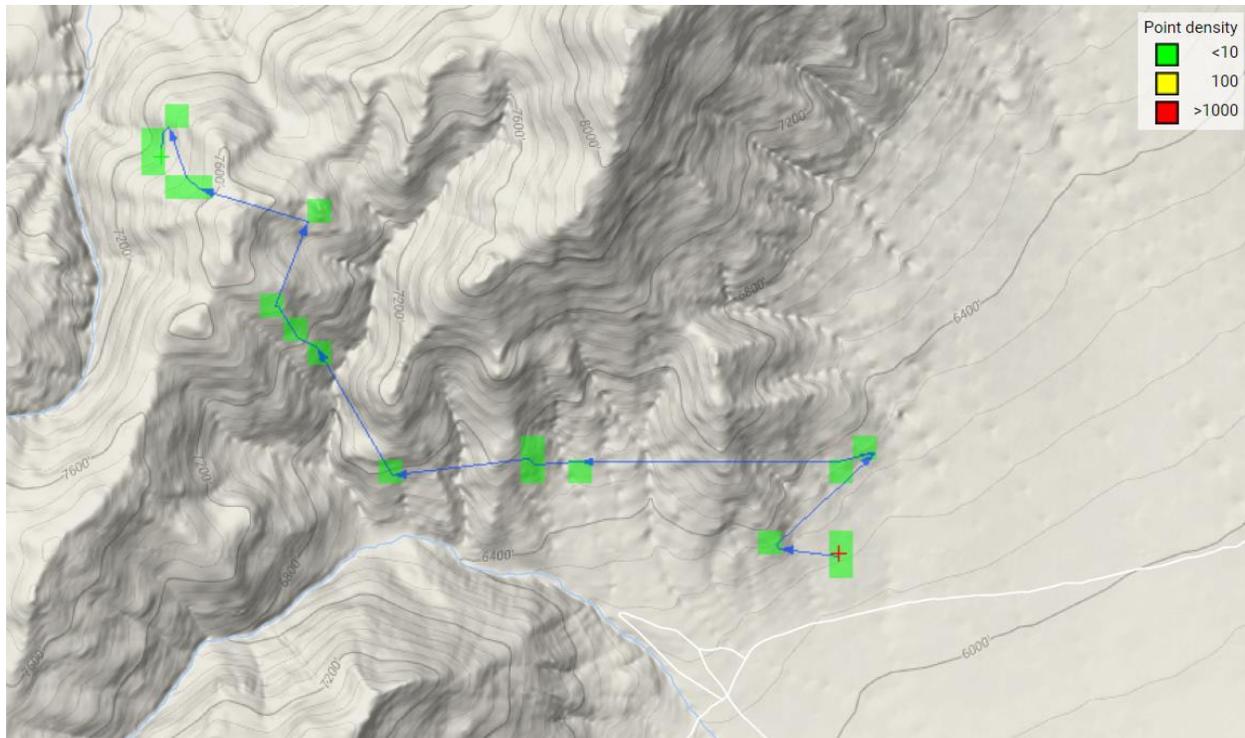


Figure 2. GPS marked female movements from Muddy Creek Lek capture point in early May 2018.

West Box Elder Landowners

We are very appreciative for the amount of cooperation, interest and trust that has been given to my technicians and I for the 2018 field season; be reassured, it is not taken lightly. We are aware that we are guests and my technicians are reminded frequently of the privilege we have. Furthermore, we have really enjoyed getting to know all the different landowners within our study area and learning about their knowledge of the landscape, both past and present.

Without hesitation, please contact us if you want to know anything about what we are observing on your property, or if you just have general questions. If we do not have the answer, we will do our best to find it out for you.