

Greater Sage-grouse Response to Livestock Grazing

Rich County Sage-grouse Field Report – July 10, 2017

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Purpose

We are using global positioning system (GPS) harnesses on greater sage-grouse in Rich County Utah to monitor sage-grouse response to livestock grazing. The GPS harnesses collect multiple locations per day. These movement data will allow us to see how sage-grouse are affected by infrastructure associated with grazing livestock that could potentially fragment habitat (e.g., fences, roads, water developments). Cattle that graze on the study site are also fitted with GPS collars that collect multiple locations per day. The livestock GPS transmitters are divided between cattle that graze on two sites, within the study area, that have different grazing practices. Our objectives are: 1) Determine if there are differences in sage-grouse vital rates between grazing practices. If so what factors associated with livestock grazing practices may explain these differences? 2) Do sage-grouse seasonal habitat-use patterns differ under prescribed rotational and season-long grazing practices? GPS marked sage-grouse will be monitored remotely to obtain vital rates of the population in the study area. Vegetation surveys will be conducted to determine habitat use of sage-grouse and differences in sage-grouse habitat preferences between grazing practices. Completion of this research will provide land managers a better understand of how different grazing practices effect sage-grouse populations.

Study Area

The study site consists of Deseret Land and Livestock (DLL), a 200,000 acre privately-owned ranch located near Woodruff, Utah. The second study site consists of a 146,000 acre site that encompasses 27 BLM and private allotments that have been grazed by domestic livestock under season-long grazing, this site is called Three Creeks.

Nesting and Brooding

This year we had 22 sage-grouse initiate nests, of those four failed and initiated a second nest. All failed nests were predated by a mix of avian predations and mammalian predations. Eleven nests hatched (42% nest success rate). Nesting began at the end of April and concluded with the last nest hatching on June 25.

Brood hens marked with VHF radios are located 2-3 times per week and brood hens marked with GPS backpacks are found once a week to confirm that the hen still have chicks. Keeping up with

11 broods keeps us busy but luckily broods have not moved too far, with one brood moving just over a mile into a hay field. We have lost one brood so far when the hen was killed, likely by a coyote.

We have conducted vegetation surveys at nests sites and a random location for each nest site. We will continue conducting vegetation surveys at brood locations and random locations for each known location.

Sage-grouse Movements

We have observed significant variation between individuals when it comes to the amount of space a single sage-grouse uses. Often a radio-marked sage-grouse will localize in a small area, a few acres, and then move a significant distance, 1-5 miles, and re-localize. To illustrate this we have mapped three sage-grouse movements. All of these locations began after April 1, 2017 and each grouse has over 400 data points. (Figure 1)

Grouse 1: Captured on Deseret. She has a minimum convex polygon of 6 sq/km. She had two nests within 300 m of each other. Despite them both failing she has stayed in the same area.

Grouse 2: Captured on Three Creeks. She has a minimum convex polygon of 237 sq/km. This year she nested on Deseret. After her nest failed she slowly worked her way northwest, currently hanging out in a sagebrush valley near the Monte Cristo summit.

Grouse 3: Captured on Three Creeks. She has a minimum convex polygon of 34 sq/km. Immediately after she was captured she headed north into the foothills on the eastside of Bear Lake. After her nest failed she moved north again and localized in a small area.

Landowners

We would like to thank all of our contributors; none of this work would be possible without their support. We also would also like to thank the communities of Randolph and Woodruff. We have been pleased how supportive people are when they ask what we are doing. Even when we cold-call a landowner or knock on a stranger's door to ask if we can access property that a marked sage-grouse has gone onto. We especially need to thank Deseret Land and Livestock, they have been a huge help putting us up in their bunkhouse, helping to pay for radio-telemetry flights and giving us access to the ranch. We thank BLM for housing at the Randolph station.

Figure 1, Sage-grouse locations April 1, 2017-July 1, 2017. Rich County UT

