

## Greater Sage-grouse Response to Livestock Grazing

### Rich County Sage-grouse Field Report – May 7, 2017

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#### Purpose

Grazing by domestic livestock is the predominant land use across the sagebrush (*Artemisia* spp.) biome and almost all sagebrush areas are managed for livestock grazing. While much work has been done to study greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) ecology, few studies have measured the impact of livestock on sage-grouse vital rates. We are using global positioning system (GPS) harnesses on 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 (Figure 1). Preliminary data of landscape-level grouse response (multi-year lek and brood counts) and vegetation attributes through time (35 years) on this site, suggest that prescribed grazing practices are positively correlated with decreased bare ground, increased herbaceous cover and increased lek and brood counts (Danvir et al. 2005). 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. .

## **Field Preparation**

This year we hired four seasonal technicians. Two stationed in Randolph and house at the BLM facility, are Emie Mcgee and Ramona Bicandi. Emie is from South Carolina and Ramona is from Idaho. The two other technicians, stationed at DLL, are Trenton Heisel and Nick Chaplin. Trenton is from Washington State and Nick is from Michigan. To the fleet of four-wheelers we have we were able to add a Honda Pioneer. This has been a huge help in keep up with the sage-grouse as they move across the landscape. We have also been able to add an additional 15 GPS to our study. This will help us capture cattle/sage-grouse interactions as it is difficult to capture this interaction as sage-grouse occupy a much larger area than any single pasture. A telemetry flight in January, combined with GPS data, found that sage-grouse had occupied the same wintering areas that they did last year despite the deep snow. The GPS transmitters that were deployed last year have proven effective in providing winter locations and have done a much better job at showing movements of individuals as several sage-grouse moved between study sites during the winter.

## **Field Work to Date**

This year has seen a shift in timing because deep snow. This was true for fieldwork as well. We started later than we had anticipated because we could not get around with all the snow. As soon as we could get out to leks we started monitoring and capturing sage-grouse. We started trapping the last week of March and we have been most nights since then. So far in 2017 we have radio-marked 24 birds. We did spend a few nights helping on the Sheeprock sage-grouse translocation project which took us out of our study area. We were able to deploy all of the GPS transmitters including two that we recovered from mortalities over the winter. This last week we recovered two more GPS transmitters from birds that died. These will be reconditioned prior to re-deployment. We will try to redeploy these as soon as possible. The technicians have been great; working long nights trapping, getting up early doing lek counts, monitoring during the day and dealing with a rotating work schedule. To date we have deployed on Deseret 13 GPS, 3 VHF = 14 total and on Three Creeks 13 GPS, 7 VHF = 20 total.

## **Status of Marked Birds**

Eight of our radio-marked birds nested, unfortunately we have already had two nests fail from predation. We anticipate that we will find more nested birds in the next couple of weeks and possibly even birds re-nest if nests fail. This winter was tough on all wildlife including sage-grouse. Male sage-grouse counts at leks have been down this year across both study sites. Since January 2017 we have recovered 14 mortalities. We try to get to a mortality as soon as we pick up the signal but it can still be difficult to determine the cause of mortality. There has been an even mix of avian and mammalian predations as well as several mortalities that we could not determine the cause. Most sage-grouse that were marked stayed near the area that we captured them in; however a few have left the study site, moving out to Round Valley and even up to Garden City UT. We will monitor marked sage-grouse to see how many nest and how many of those nests hatch. We will begin doing vegetation sampling at known sage-grouse locations and at random points on the landscape.

## Landowners and Partners

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. Study Site, Rich County Utah

