

Greater Sage-grouse Response to Livestock Grazing

Rich County Sage-grouse Field Report – June 16, 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 and vegetation surveys will be conducted to determine habitat use of sage-grouse. 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. 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, nest success, and brood counts. 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.

Field Work to Date

Lek counts across Rich County will be down likely due to the severe winter. This has also compounded our trapping season. We were only able to capture 26 females in 2017 to add to those that had been radio-marked in previous years. This year peak hen attendance at leks occurred early leading us to think that nesting would start earlier. This was not the case. Last year our last nest was initiated by the end of May. This year we started seeing nests at the end of April and we are still finding new nest initiations - we found five just last week. Thanks to a good water year, we have seen a lot of vegetation growth, which should produce good nesting and brooding habitat. We have begun sampling vegetation on known sage-grouse sites, specifically nest sites and brood sites. We also take samples at random locations on the landscape to be compared against known grouse sites allowing us to determine what specific components of their habitat grouse are selecting for at these critical times in their life cycle.

Status of Marked Birds

After the heavy predation rates on early nest, we were concerned this trend would result in an overall poor hatch rate. However, we now see more broods. We still have few nests on each site that are incubating, and because we are still finding nests the data we provide are preliminary. Nest initiation on Deseret is 43%; on Three Creeks it is 48%.

Table 1. Vital Rates of Marked Sage-grouse, Rich County Utah

2017						
Study Area	# Marked	Mortalities	Nest Initiated	First Initiation	Last Initiation	Re-nested Attempts
Deseret	26	8	11	4/17		3
Three Creeks	27	7	13			1
Study Area	Nests Hatched	First Hatch	Last Hatch	Successful Broods		
Deseret	2	5/18				
Three Creeks	3					