

Rich County Sage-Grouse Field Report – January – May 2022

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Background and Purpose

This is the January- May 2022 field report for the research project studying greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) responses to grazing by domestic livestock in Rich County, Utah. Our working hypothesis is that areas managed under rotational grazing practices provide more better sage-grouse habitat throughout the brooding season and in turn translate into increased recruitment. To test this hypothesis, we are studying the seasonal movements, vital rates, habitat selection and brood success of female sage-grouse marked with global positioning system backpack transmitters. We are also sampling vegetation from both grazed and un-grazed pastures across the study area to follow growth/regrowth in those pastures.

We are also recording changes in plant phenology using a Normalized Difference Vegetation Index (NDVI). The NDVI is a satellite-derived index of the photosynthetic biomass, or 'greenness', of an area. We will be using this data to track the green-up of the study area, and to look at how this rate changes between the different grazing methods on either study area, as well as within each area between grazed and rested pastures. Because livestock grazing has been implicated by some groups as one potential factor associated with the sage grouse population declines, this research seeks to uncover how grazing may affect sage-grouse habitats at multiple scales and in turn population vital rates.

Study Area

The study is being completed in Rich County, located in northeastern Utah. This study area includes the southwestern portion of the Wyoming Basin Sage-grouse Management Zone II, and is comprised of two research areas, Deseret Land and Livestock (DLL) and the Three Creeks Allotment (3C). DLL is a 200,000 acre privately owned ranch, of which 160,000 acres are privately owned and 40,000 acres are federal BLM land grazed under allotments. DLL has maintained rotational prescribed grazing practices since 1979 as well as implemented sage brush treatments throughout lower elevation pastures. 3C is a 146,000 acre cooperation of 29 individual BLM and USFS grazing allotments and private lands, who have begun to implement seasonal rotational grazing in the last few years.

Technicians

In 2022, we hired three technicians to assist with field work. Mason Preston (Georgia) and Kate LaMotta (New Jersey) began in April and Isaac Rath (California) began in May. Mason and Isaac will be focused on monitoring grouse in the 3C area, while Kate and Codi will cover DLL. We will also be following birds that leave the study area. The first week after their arrival, the technicians were trained on proper ATV and truck handling, familiarized with each study area, telemetry use and all safety protocols. Safety is our utmost priority and continual trainings and check-ins will be conducted throughout the season.

Radio-transmitters

We began the 2022 field season by deploying 9 GPS PTT transmitters which were refurbished from the 2021 season. As mortalities are collected throughout this season GPS transmitters and VHF collars will be collected, refurbished, and used in future seasons as per protocol.

Lekking and Breeding Status

Lek counts on the 3C area began in mid-March this season. Final lek count data are not available, however many of the leks on 3C have moved slightly from their historical locations. Otter Creek lek and Spring Creek (Figure 1) leks were the most populated this season, with a max of 18 and 24 males seen on each, respectively.

Trapping

We began trapping sage-grouse on April 5th. We captured and radio-collared 9 females sage-grouse across the two study areas. On DLL, 4 GPS transmitters were deployed, and on 3C 5 GPS transmitters. Including birds from previous seasons, 23 birds are currently being monitored: 10 GPS and 4 VHF on DLL, and 8 GPS and 6 VHF on 3C.

Nesting and Brooding

We began tracking marked birds full-time on April 6th. We have been using telemetry to scan the study areas from key points across the landscape. From these scans a more accurate location can be found. Each bird will be located at least twice per week until she is either confirmed nesting or non-nesting. If nesting, twice week locations will continue to be documented until her nest hatches, and those that are not nesting will be checked on once per week.

We have located 15 nests so far this season; eight on DLL and seven on TC. Two nests on DLL have successfully hatched (Figure 2), one hen has five chicks and the other has nine. The remaining six nests were predated. On TC, three nests have failed, two nests are still incubating, and two nests have hatched (one with nine chicks and the other with six).

Table 1. Outlines the nesting and brooding percentages across the study area.

| Table 1. | Nests Initiated | Nesting Rate | Nests Incubating as of May 31 | Nests Hatched as of May 31 | Hatching Rate as of May 31 | Number Broods at end of May 31 |
|-----------------|-----------------|--------------|-------------------------------|----------------------------|----------------------------|--------------------------------|
| DLL | 8 | 57.1% | 0 | 2 | 25% | 2 |
| 3C | 7 | 50% | 2 | 2 | 28.5% | 2 |
| Off Site | 1 | -- | 0 | 0 | 0% | 0 |
| Total | 16 | 53.3% | 2 | 4 | 25% | 4 |

Mortality

Many of the VHF birds across the study area have not been heard or found this season. We are unsure if this is due to the VHF device failing, or if birds have left the site. So far, we have recovered three VHF devices and have had 13 GPS sage-grouse mortalities since the end of the 2021 season.

Rich County Collaborators

We are extremely appreciative of the continued interest, cooperation and investment in this project. I am very grateful to be working with such dedicated individuals in an amazing area, and am looking forward to continuing these relations as well as making more to further my knowledge of this study area and landscape. Please contact us if you have any questions concerning the work we are conducting, have questions regarding our research findings, or if you just have a general question.



Figure 1. Males strutting on the Spring Creek lek on TC.



Photo: Codi Backen

Figure 2. A VHF hen on DLL. Many hens with broods (such as this one) will hunker down when we circle them to count chicks.