

Rich County Sage-Grouse Field Report – January/April 2021

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Background and Purpose

This is the January- April 2021 field report for the research project studying greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) responses to livestock grazing in Rich County, Utah. Livestock grazing occurs on over 80% of the current sage-grouse range. The U.S. Fish and Wildlife Service has stated that, in general, livestock grazing does not constitute a range wide species conservation threat. Given that livestock grazing is a predominate land-use in the sagebrush (*Artemisia* spp.) ecosystem, it has the potential to directly affect sage-grouse habitat quality. Our working hypothesis is that sagebrush rangelands managed using site-specific and adaptive rotational grazing practices can facilitate grass and forb production, creating a green wave that can benefit sage-grouse in terms of increased nesting and brood success. To test this relationship, we are studying radio-marked sage-grouse movements, vital rates, habitat selection and brood success, as well as sampling vegetation from both grazed and un-grazed pastures across the study area to follow growth/regrowth in those pastures.

We will document changes in plant phenology with the use of the 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 these data to track the green-up of the study area, and rate change between the different grazing methods on our study area, as well as within each area between grazed and rested pastures.

This research is important to all public and private rangeland stakeholders. Stakeholders, sage-grouse and other sagebrush species will benefit from researchers defining the direct link between sage-grouse and grazing management, as well as how grazing may influence a continual green-wave through their movements similar to other herbivore migrations.

Study Area

We are conducting the research in Rich County, located in northeastern Utah. The research is a continuation of a long-term study started in 2012. 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). The 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. The DLL has maintained rotational prescribed grazing practices since 1979 as well as implemented sagebrush treatments throughout lower elevation pastures. The 3C is a 146,000 acre consolidation of 29 individual BLM (Bureau of Land Management) and USFS (United States Forest Service) grazing allotments and private lands, producers have begun to implement seasonal rotational grazing in the last few years.

Technicians

In 2021, three technicians have been hired and trained to assist with field work. Celine Rickels (Iowa) began in March 2021, Joelle Ciriacy (Maryland) began in April 2021, and Natalie D'Souza (Illinois) will join us in early May 2021. Joelle and Natalie will be focused on monitoring grouse in the 3C area, while Celine and myself (Codi) will cover DLL. I will also be following birds that leave the study area and assist the technicians with finding birds and doing vegetation surveys.

All technicians have been made aware of the rules and expectations for working on this project in Rich County. The first week after their arrival was spent training them on proper ATV and truck handling, familiarizing 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.

Equipment

We began the 2021 field season with 31 global positioning satellite (GPS) transmitters which were refurbished from previous years and projects. These are back-mounted transmitters. We had 12 very-high frequency (VHF) necklace-style radio-collars left over from previous seasons and we purchased 8 new VHF collars. Our goal is to maintain a sample size of 30 radio-marked sage-grouse on both study areas. As mortalities are found throughout this season, the GPS transmitters and VHF collars will be collected, refurbished, and re-deployed per study protocols.

Lekking and Breeding Status

Lek counts on the 3C area began in mid-March this season. After a mild winter, more leks were checked as the roads became accessible. Final lek count data are not available, however many of the leks on 3C have moved slightly from their historical locations. Otter Creek and Spring Creek leks were the most populated this season, with a max of 18 and 24 males seen on each, respectively.

Trapping

Trapping began on March 20th, well before peak lek counts this year, and ran through April 23rd. During this time we captured and radio-marked 44 birds across the two study areas. On DLL, we deployed 14 GPS transmitters and 10 VHF collars. On 3C, we deployed 17 GPS transmitters and 3 VHF collars. Including birds from previous seasons, we are monitoring 59 female sage-grouse: 19 GPS and 16 VHF on DLL, and 18 GPS and 6 VHF on 3C.

Nesting and Brooding

We have begun to track marked birds full-time since April 26th. We have been using telemetry to scan the study areas from key points across the landscape. We also completed a telemetry flight, courtesy of the Utah Division of Wildlife Resources, and were able to locate eight VHF collars from previous years (5 on DLL and 3 on 3C). 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 weekly locations will continue to be documented until her nest hatches, and those that are not nesting will be checked on once per week. We believe to have found at least five nesting females so far over both areas, and expect to find more over the next few weeks into May.

Mortality

For the 2021 season, three VHF collars have already been retrieved from mortality birds, two from previous seasons and one that was trapped this year. We are searching for a few GPS transmitters that lost signal over the winter.

Movements

So far, most of the radio-marked sage-grouse have remained near their capture leks. A few outliers have moved farther from the leks, most into known nesting areas, while some moved into areas that are not known nesting areas. These birds will likely continue to spread out as they begin to nest. One radio-marked female (ID: TC-21a-158991-F, Figure 1) trapped this year and marked on 3C just west of Randolph has moved off the study area 22 miles north, and is now east of Bear Lake. Another radio marked female (ID: DLL-20a-158840-F, Figure 2) caught on the east side of DLL in 2020 can be seen moving between Wyoming and Utah. This distance is roughly 6-7 miles, and it is interesting to see how often she is crossing over! This could be showing her movements between her breeding and nesting ground, though further investigation of the tracks compared to the time of year would be needed to verify this.

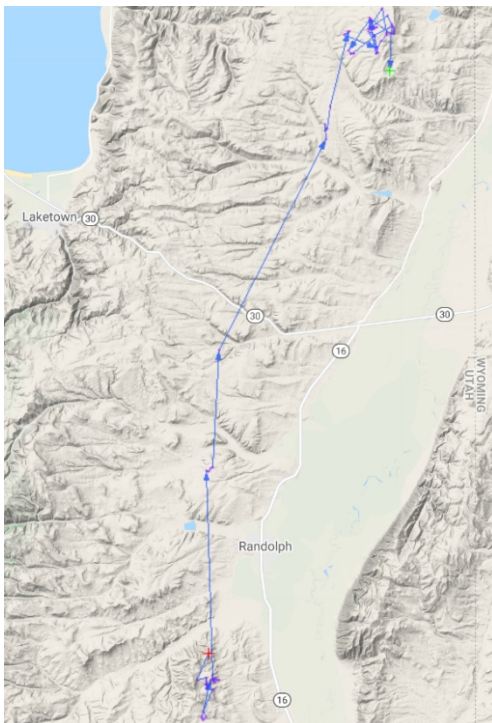


Figure 1. Female TC-21a-158991-F was caught west of Randolph (red marker) on 3/22/21 and made her way north 22 miles, leaving on 3/30/21 (current location is the green marker).

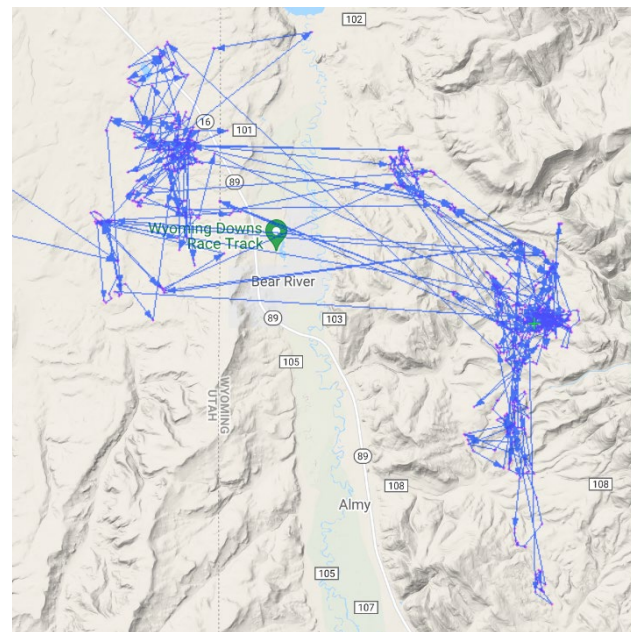


Figure 2. Female DLL-20a-158840-F was caught on the east side of DLL in 2020. Her tracks are seen going between the lek where she was caught to just east of Bear River, WY, near Medicine Butte Mtn.

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 relationships 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.