

## Rich County Sage-Grouse Field Report – June 2021

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### Background and Purpose

This is the June 2021 field report for the research project studying greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) responses to livestock grazing in Rich County, Utah. 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 ungrazed 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 across the landscape, and rate change between the different grazing methods on our two study areas, 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 Bureau of Land Management land grazed under a federal grazing allotment. 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 and USFS (U.S. Forest Service) grazing allotments and private lands. The 3C consolidation has begun to implement prescribed rotational grazing management.

## Brooding

On the 3C study area, the one surviving brood that we were tracking failed. We are unsure of the cause of the failure. Figure 1 depicts a female's movements with her brood before it failed. The female stayed within a 5-mile area from where she hatched her nest. To monitor survival, we are still tracking all birds who never nested, those who nested and had their nests, and those who hatched their nest and had broods fail.

On DLL, we have six broods we are still monitoring. We will track these birds for 50 days after hatching, continuing through 7/28/2021. Figure 1 is of two-week-old chick, showing their camouflage in sagebush foliage.

Table 1. Nesting and brooding percentages across the study area, 2021.

<b>Table 1.</b>	Nests Initiated	Percent of females monitored that nested	Nests Hatched	Hatching Rate	Number Broods at end of June
DLL	17	77.2%	10	58.8%	6
3C	8	47.7%	2	25%	0
Off Site	4	66.6%	2	50%	1
Total	29	38.7%	14	48.2%	7

## Movements

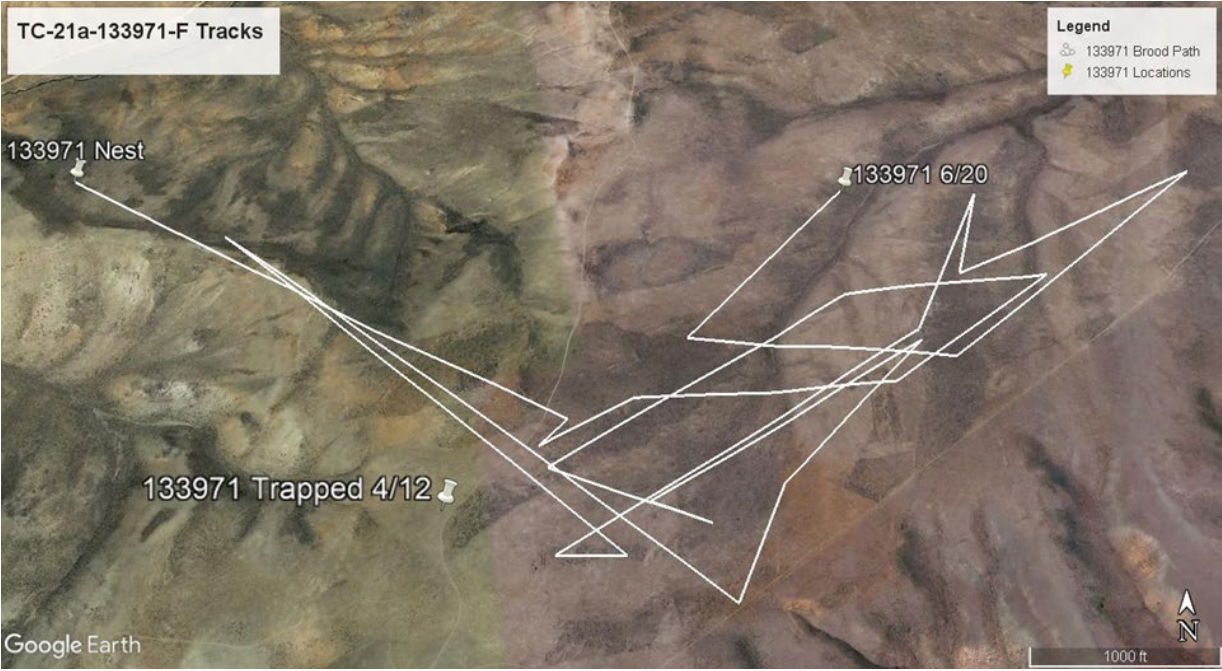
Female grouse with their broods are constantly moving. Figure 2 shows the movements of the 3C brood from the time of hatch to 6/20/021.

## 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.** A two-week old chick under a Wyoming sagebrush. Their feather pattern allows them to blend into their surroundings.



**Figure 2.** Indicates the movements of female sage-grouse number 133971 and her brood. Daily locations are tracked via a GPS harness she was outfitted with when trapped on 4/12/2021. These locations are an indication of where she has traveled, and do not include every point we have for her, but one for each day since her nest hatched (5/28/2021).