

Rich County Sage-Grouse Field Report – May 2021

Codi Backen, Graduate Research Assistant (codibacken16@gmail.com; 402-305-6402), Justin Small, Post-Doctoral Fellow (jrsmall78@gmail.com; 209-769-8945), and Terry Messmer (terry.messmer@usu.edu; 435-797-3975) Utah State University.

Background and Purpose

This is the May 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 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.

Nesting and Brooding

To date in 2021, we have monitored 24 sage-grouse nests. On DLL there have been a total of 17 nests initiated (Figure 1); 6 were depredated, three by mammals and the other three by corvids (ravens). Of the remaining nests, one has hatched (as of 5/24) and we are monitoring the other 10 to determine their hatch date. We are following three additional females who are not nesting to take weekly locations of their movements.

On the 3C study area, 8 females initiated nests (Figure 2). Six of these nests were depredated before their hatch date, four by corvids and two by mammals, possibly a badger or coyote. The remaining two nests are due to hatch within the next week. There are two female grouse who are showing signs of initiating nests at this time. We are currently tracking six additional females who did not initiate nests to record weekly locations.

We have radio-marked females that have left the study area. Two of these are currently incubating nests and we will keep record of their success once hatched. We have not been able to re-locate 9 radio-marked females across both study areas since trapping. We are to search for these females while tracking other birds.

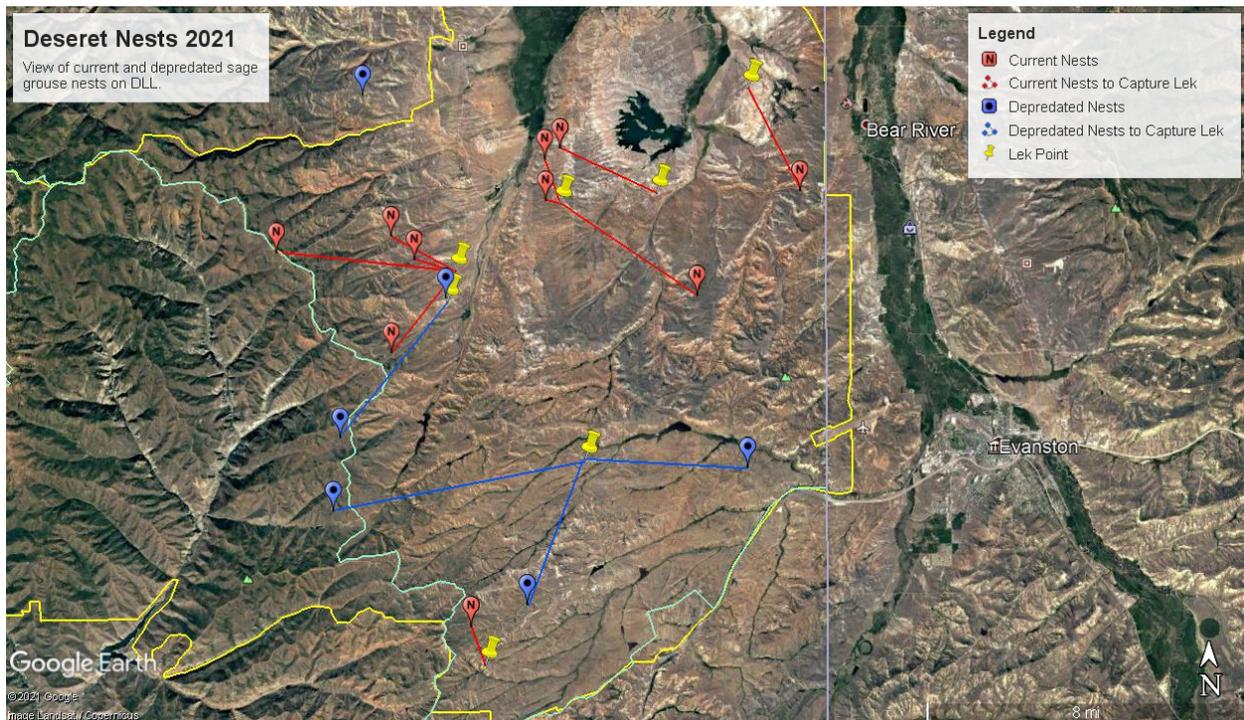


Figure 1. Location of current nests (red pins) and depredated nests (blue pins) in relation to their capture lek (yellow pins) on Deseret Land and Livestock.

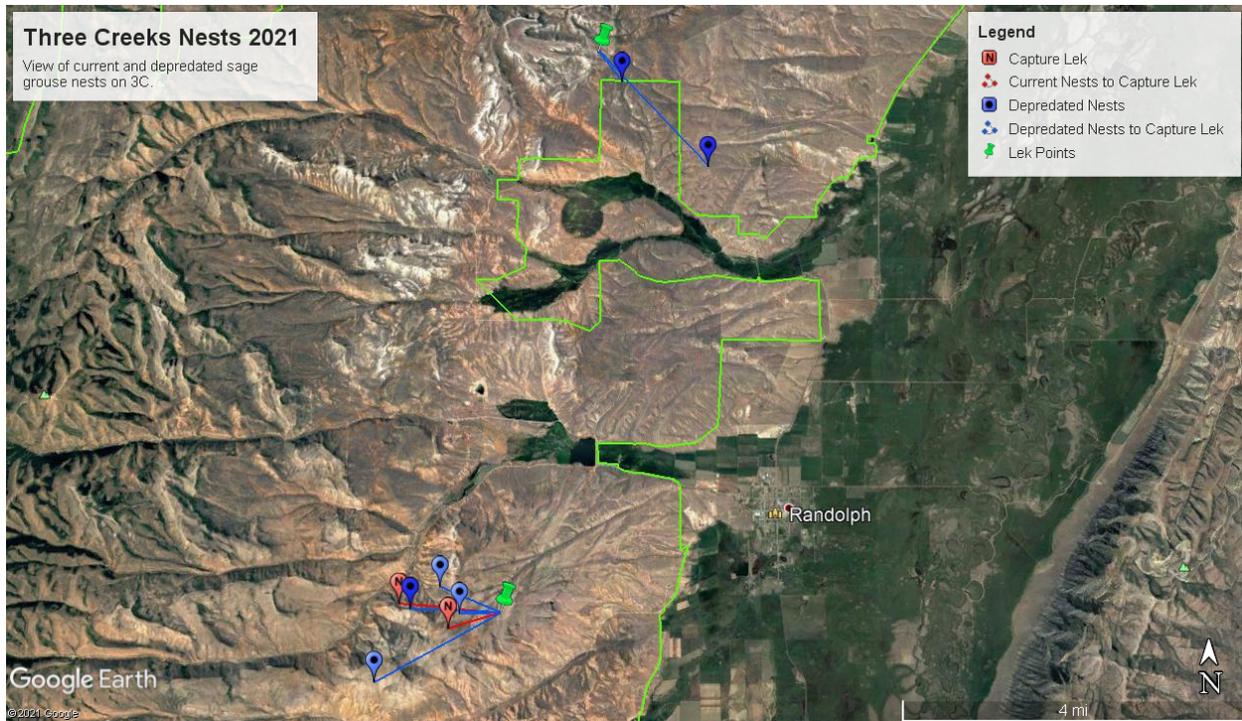


Figure 2. Location of current nests (red pins) and depredated nests (blue pins) in relation to their capture lek (green pins) on the Three Creeks Allotment.

Mortalities

We have recorded 5 mortalities on DLL so far in 2021. Two of those are from birds trapped this this spring, and the remaining three are from previous seasons. Two of these birds were killed by avian predators, likely golden eagles, while the remaining three are unknown. In the 3C study area, we have recorded five mortalities, 2 females radio-marked this season and 3 from previous years. The cause of death is unknown.

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.