2020 Seasonal Summary Report

Population Dynamics and Seasonal Movements of Translocated and Resident Greater Sage-grouse of the Sheeprock Sage-grouse Management Area

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Population Dynamics and Seasonal Movements of Translocated and Resident Greater Sage-grouse of the Sheeprock Sage-grouse Management Area

Cooperators

Utah Department of Natural Resources, Watershed Restoration Initiative

Utah Division of Wildlife Resources

Utah Public Lands Policy Coordination Office

US Bureau of Land Management

US Forest Service

US Geological Survey

West Desert Adaptive Resources Management Local Working Group

Utah State University Extension

Jack H. Berryman Institute

Utah Public Lands Initiative

Yamaha Outdoor Access Initiative

Cover photo: Opal pointing a sage-grouse brood of 2 females and 7 chicks (hidden in the sagebrush) in the last brooding survey of the 2020 field season. Photo by M. Chelak

Executive Summary

In 2015, the cooperators identified on the inside cover of this report implemented a multi-year conservation effort to restore declining greater sage-grouse (*Centrocercus urophasianus*; sage-grouse) populations in the 611,129 acres Sheeprock Sage-grouse Management Area (SGMA) located in west-central Utah. This conservation effort included completion of habitat restoration projects developed and funded by the cooperators, predation management, and the spring translocation of radio-marked sage-grouse from the Parker Mountain and West Box Elder SGMAs to the Sheeprock SGMA. From 2016-2019, the cooperators translocated 146 radio-marked sage-grouse that were monitored by researchers from Utah State University (USU). This report is the 2020 seasonal field summary of our monitoring effort. This report will be followed later this year by a final annual report encompassing 2016-2020 data. In addition, Melissa Chelak will complete her PhD dissertation in the late spring/early summer of 2021. The dissertation will be the final project report. All of the field, seasonal, and annual reports can be found on the Utah Community-based Conservation web site under the West Desert Local Working Group tab https://utahcbcp.org/localworkinggroups/WestDesert-WDARM/westdesert.

In 2020, no sage-grouse were translocated to the SGMA. We counted 59 males on 7 leks-- two new leks and a reoccupied lek. This is up from the peak count of 37 males across 4 leks in 2019. We monitored 33 radio-marked sage grouse in spring and summer of 2020 and documented 15 mortalities (45% apparent mortality rate). We monitored 21 females in the nesting season and confirmed 12 nest initiations (57% apparent nest initiation), of which 6 successfully hatched (50% apparent nest success). Three of these broods fledged chicks (50% apparent brood success). In previous years (2016-2019), we estimated 13.5%, 18.2%, 35%, and 54.6% nest initiation proportions (n= 37, 44, 40, and 44); 60%, 100%, 82.4%, and 70.8% apparent nest success (n= 5, 8, 17, and 24); and 66.7%, 37.5%, 61.5%, and 29.4% apparent brood success (n= 3, 8, 8, and 17) respectively.

Introduction

In the years leading up to 2015, 10 of the 11 Utah Sage-grouse Management Areas (SGMA) have shown an upward trends in the numbers of males counted on leks. The Sheeprock SGMA has been the exception. The SGMA is located in west-central Utah and is comprised of 611,129 acres in Tooele and Juab Counties. Key threats to sage-grouse identified by the West Desert Adaptive Resources Management Local Working Group (WDARM) included wildfire, invasive species (annual grasses and forbs), potential loss of riparian or mesic areas, predation, habitat fragmentation, dispersed recreation, and conifer expansion. To mitigate these threats, WDARM and its partners implemented an aggressive habitat and predation management effort that has included translocations to augment the existing sage-grouse population. In 2016, we began documenting how translocated and resident sage-grouse were responding the Sheeprock SGMA conservation actions. In 2018, we began studying off-highway vehicle (OHV) recreation use patterns of to assess if current use was impacting sage-grouse habitat and potentially habitat selection. As part of this effort, we also surveyed OHV users to determine their recreation needs.

Dissertation and Fall Monitoring Plans

We will continue monitoring radio-marked sage-grouse monthly or bi-monthly throughout this late summer, fall, and winter and will complete our final annual report in December 2020 that will summarize data collected from 2016 to present. Melissa will work on her dissertation chapters and send in genetic samples from 2019 and 2020 to the U.S. Geological Survey genetics labs in Ft. Collins, CO to complete the genetic dataset for analysis. We have collected feather samples from resident and translocated sage-grouse throughout the research period as well as egg samples from each nest initiated by residents and translocated birds.

In June 2020, a note we submitted to Western North American Naturalist containing a case report of aspergillosis (a fungal disease in the lungs) in one of our females from 2018 was accepted for publication. Once published in late 2020, we will provide access to the WDARM. An article about the incident was reported in the July 2020 Utah Community-Based Conservation Program newsletter (https://utahcbcp.org/cbcpnewsletters/CommunicatorJuly.pdf).

2020 Field Operations

The 2020 field season was slightly impacted due to COVID-19. Guidance provided by the state of Utah and USU necessitated that we implement additional safety measures to protect our field crews and local communities. We developed a COVID-19 field research mitigation plan that was approved by USU. The technicians we hired this year came from other states and arrived at the research site in the beginning of March 2020. Because the USU field research station is remote, this mitigated the risk contracting the virus from outside sources. We practiced proper hygiene and social distancing while conducting field work and performing routine trips into town for groceries/laundry. The technicians received bird handling, telemetry training, vegetation monitoring, vehicle safety training, and COVID-19 mitigation training. Our field work was completed on 16 July 2020.

OHV Surveys

Because of USU Research Office COVID-19 guidance, we suspended and eventually cancelled all research involving human subjects. Because our OHV recreation surveys necessitated we interview campers in person about their recreation activities we did not collect the OHV survey data for the 2020 field season.

Resident Captures

In 2020 we captured and radio-marked nine resident sage-grouse. The captured birds include two males and seven females. We completed trapping for the 2020 season in mid-April, when females began nesting. Between 2016-2020, we captured and radio-marked 39 resident sage-grouse. The capture lek location for the female and male resident sage-grouse caught in 2020 are listed in Table 1.

Table 1. Capture locations for male and female greater sage-grouse (*Centrocercus urophasianus*) radio-marked in 2020, Sheeprock SGMA, Utah, 2020.

Lek Name	**Number of Males**	**Number of Females**
McIntyre Meadow	0	1
Benmore	0	1
Government Creek	1	2
Fredrickson	1	0
Log Canyon	0	3
McIntyre Divide	0	0
Vernon Little Valley	0	0
Total per sex	**2**	**7**
	Total Captured	**9**

Lek Counts

We discovered two new leks in 2020 in addition to Little Valley lek becoming a reoccupied lek. The new leks include Log Canyon and McIntyre Divide, seen in the Figure 1 below. Peak number of males counted by lek were: Government Creek 11, Benmore 14, Fredrickson 10, McIntyre 8, Little Valley 7, Log Canyon 5, and McIntyre Divide 4. In 2020, we counted 59 males on 7 leks. This is up from a peak of 37 males counted across 4 leks last year. However, last year's lek counts were impacted because of limited access.

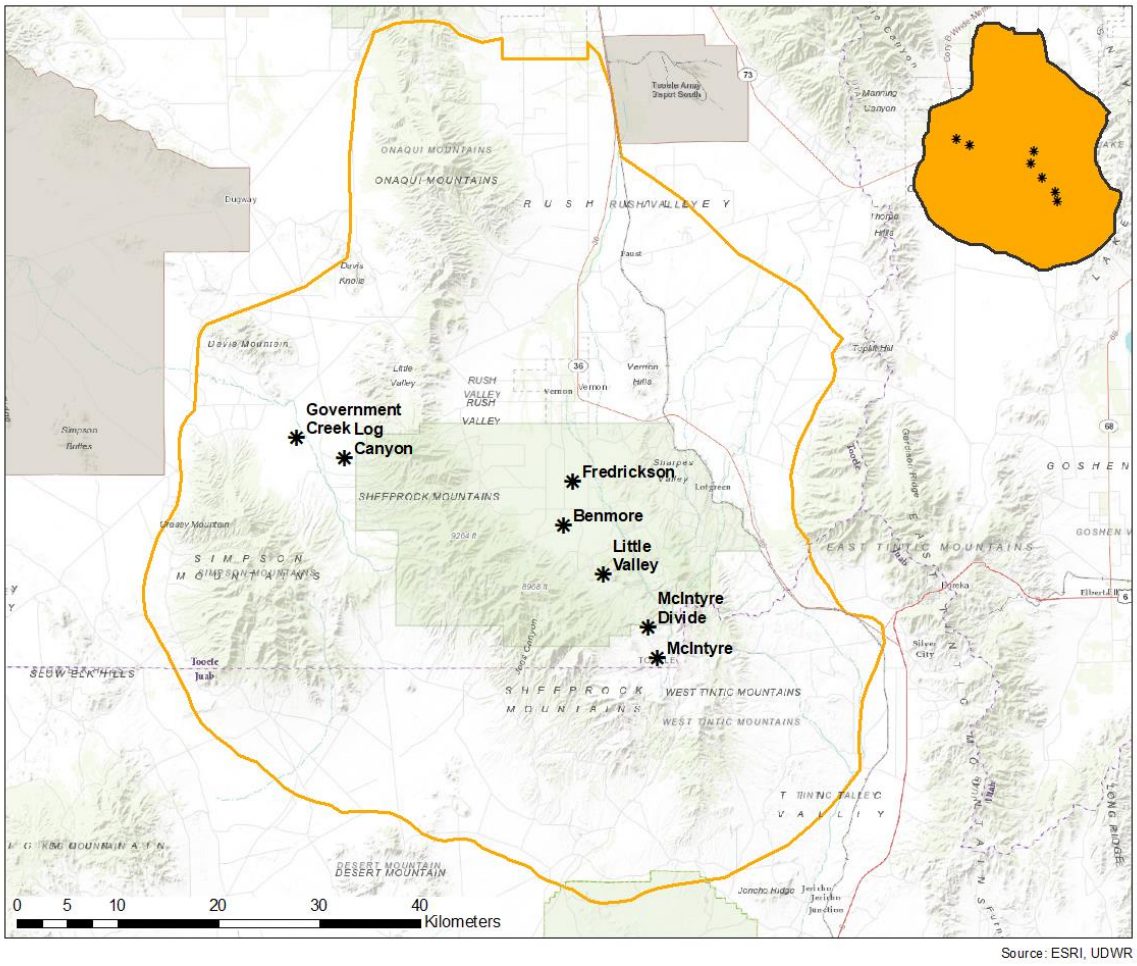

Figure 1. Active greater sage-grouse (*Centrocercus urophasianus*) lek locations, including the two new (Log Canyon and McIntyre Divide) and recently reoccupied (Vernon Little Valley) leks, in the Sheeprock SGMA, Utah, 2020.

Survival

We confirmed 15 mortalities (45%) of the 33 monitored individuals in 2020 (Figure 2). During the field seasons (March-August) in 2016, 2017, 2018, and 2019, we documented 34.2%, 31.5%, 40.4%, and 45.5% (n= 35, 54, 47, and 68 respectively) mortality rates respectively. We documented more mortalities in April than any other month. At twelve of the fatality sites, we could not determine the likely cause of predation due scavenging. At 2 sites we suspected mammalian predation, and 1 site avian predation. We confirmed three mortalities from birds marked in 2018: 2 translocated females and 1 resident females. Eleven mortalities were confirmed from individuals marked in 2019: three from translocated females, 2 from resident females, and six from translocated males. In 2020, one resident female was confirmed as a mortality. (Table 2).

Table 2. Confirmed greater sage-grouse (*Centrocercus urophasianus*) mortalities during 2020 by sex, translocated or resident, and the year marked in the project, Sheeprock SGMA, Utah, 2020.

Year Marked	Number of Mortalities	Males vs Females	Translocated vs Resident
2018	3	3 Female	2 Trans, 1 Res
2019	11	5 Female, 6 Male	9 Trans, 2 Res
2020	1	1 Female	1 Res
Total Mortalities	**15**		

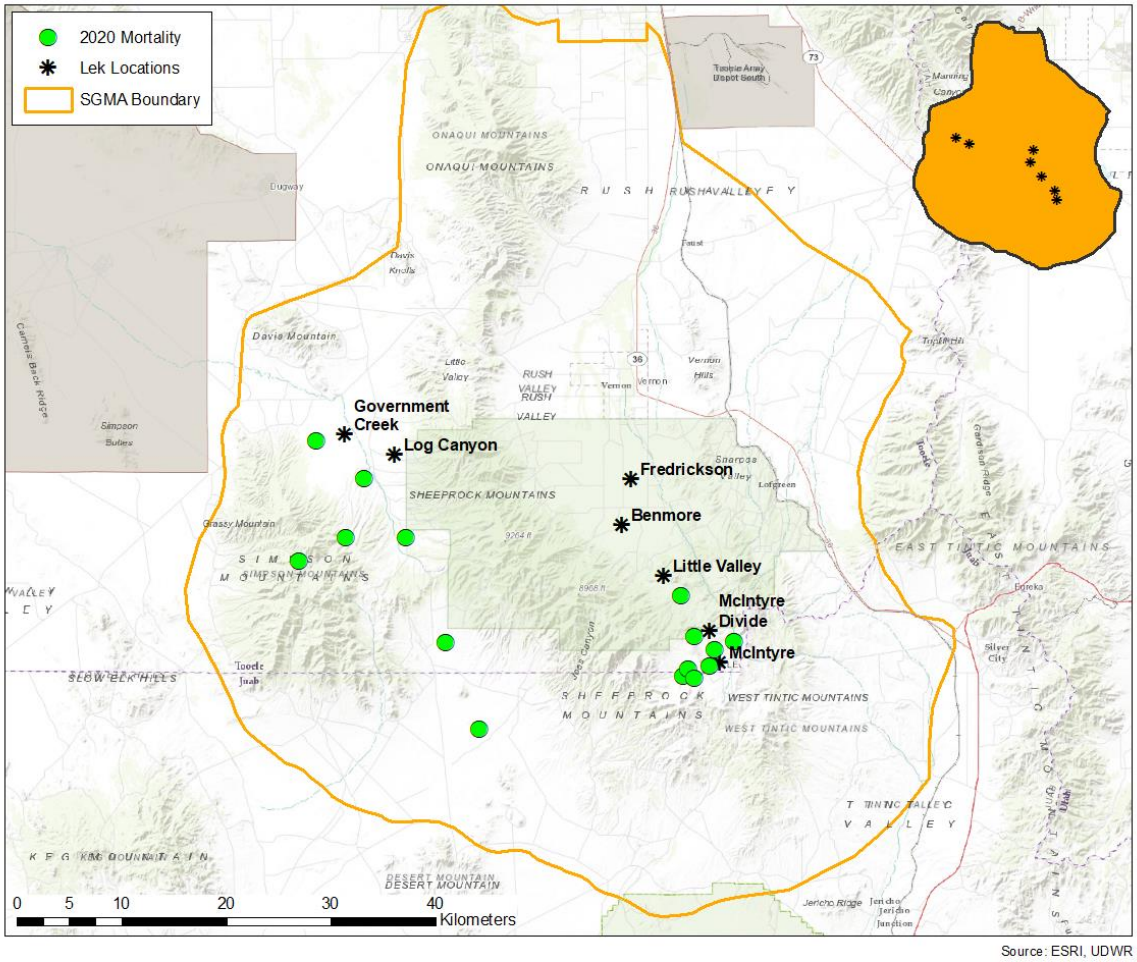

Figure 2. Locations of greater sage-grouse (*Centrocercus urophasianus*) mortalities, Sheeprock SGMA, Utah, 2020.

Radio-Marked Grouse Movements

The movements for sage-grouse translocated in 2019 and other years previous paralleled those of resident birds. We have provided a map depicting movements of a yearling resident female

radio-marked on the Benmore lek in 2020 (Figure 3). Sage-grouse radio-marked on the Benmore lek have typically moved to the mesic pastures south of Vernon in the later portion of the summer. However, this female moved to some western pastures in the valley.

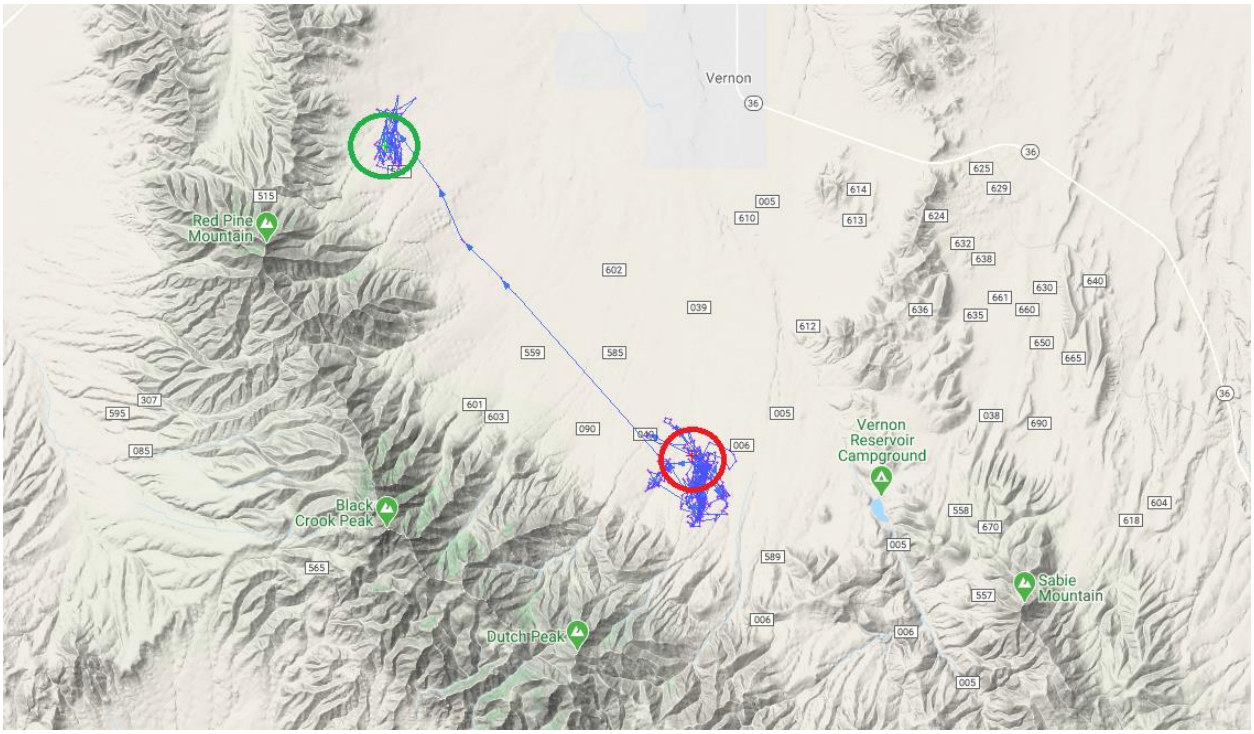

Figure 3. Flight path movements of a yearling resident female greater sage-grouse (*Centrocercus urophasianus*) radio-marked on the Benmore lek in the Sheeprock SGMA in spring 2020, Utah, 2020. The red circle indicates where the female was radio-marked in the SGMA, and the green circle indicates the last location.

Nesting and Brooding

We monitored 21 females in the nesting season. For these, we confirmed 12 nest initiations (57% apparent nest initiation) of which 6 were successful (50% apparent nest success, two females marked in 2019 and four 2020-marked females). The six successful nests hatched at least 32 chicks. Three of these broods successfully fledged 7 chicks to 50 days post-hatch (50% apparent brood success). All successful broods were located in McIntyre. We have included maps to show brooding and nesting locations for the six brooding females as well as the six failed nests.

In previous years (2016-2019), we estimated 13.5%, 18.2%, 35%, and 54.6% nest initiation proportions (n= 37, 44, 40, and 44); 60%, 100%, 82.4%, and 70.8% apparent nest success (n= 5, 8, 17, and 24); and 66.7%, 37.5%, 61.5%, and 29.4% apparent brood success (n= 3, 8, 8, and 17) respectively.

Most females initiated nests between April 11 and April 30 (Table 3). Nest and brooding locations are included in Figures 4-6.

Table 3. Nest initiations for translocated and resident greater sage-grouse (*Centrocercus urophasianus*), by age in 2020, Sheeprock SGMA, Utah, 2020.

Year Marked	Number of Females Nesting	Adults vs Yearlings	Translocated vs Resident
2016	1	1 Adults	1 Res
2017	0	0	0
2018	1	1 Adults	1 Res
2019	4	4 Adults	2 Trans, 2 Res
2020	6	6 Yearlings	6 Res

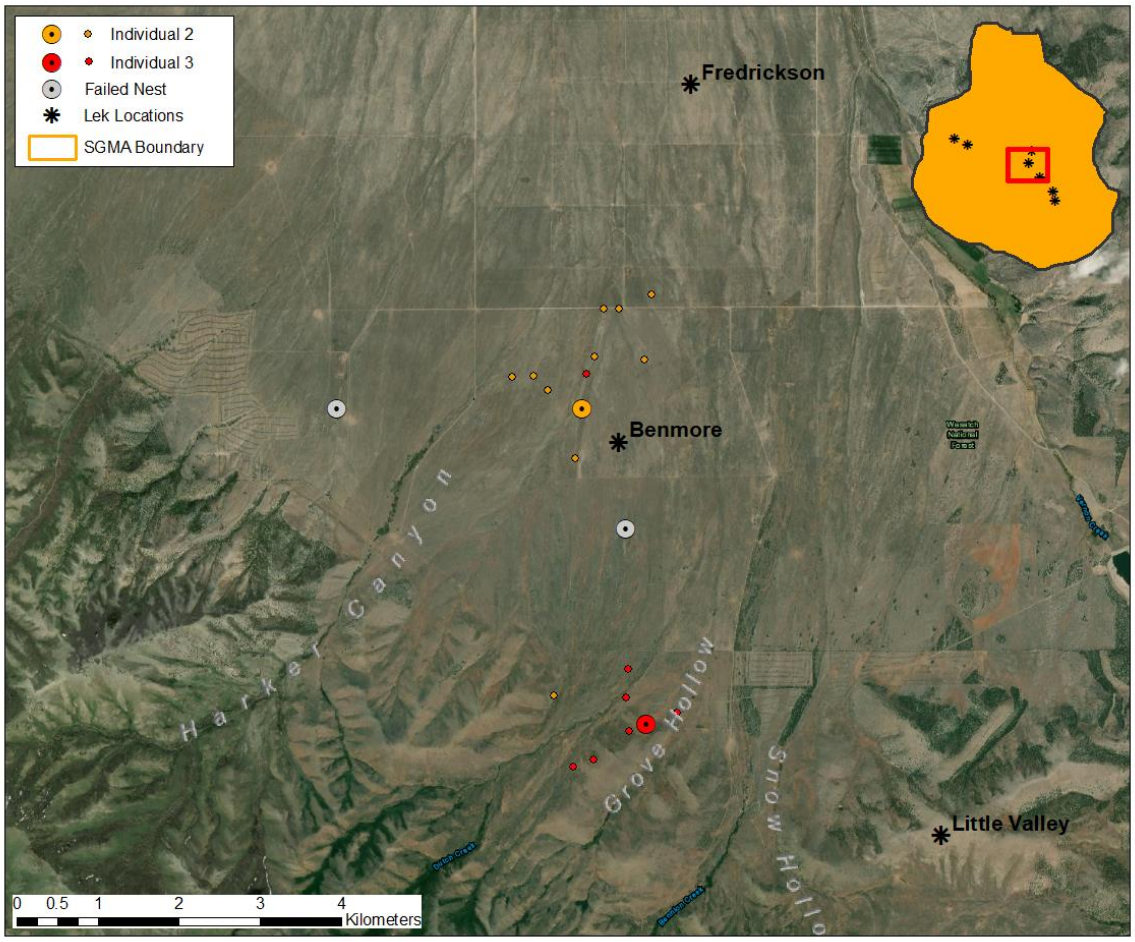

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Figure 4. Nesting and brooding locations for radio-marked greater sage-grouse (*Centrocercus urophasianus*) females located within the Benmore and Fredrickson lek areas, Sheeprock SGMA, Utah, 2020. Each nest and brood point of the same color correspond to the same female.

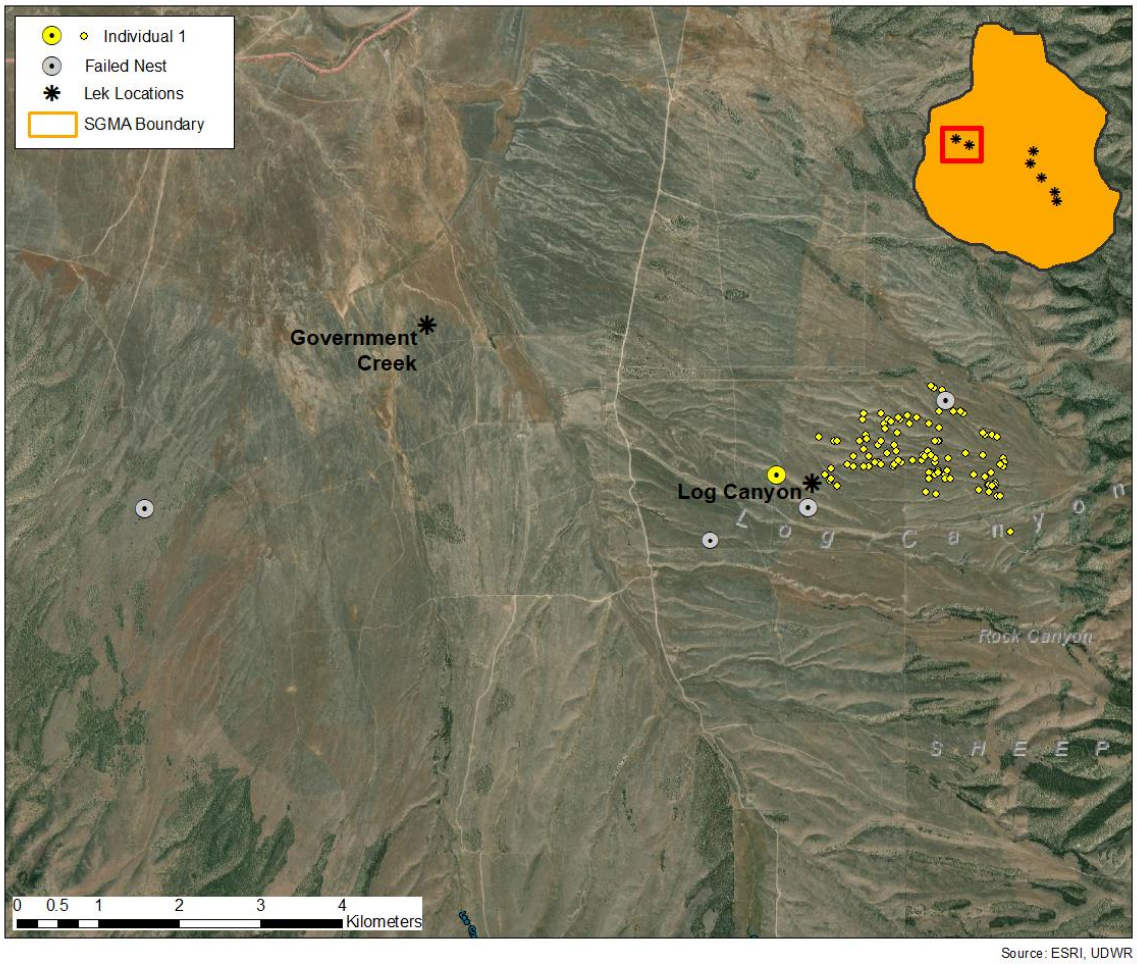

Figure 5. Nesting and brooding locations for radio-marked greater sage-grouse (*Centrocercus urophasianus*) females located within the Government Creek and Log Canyon lek areas, Sheeprock SGMA, Utah, 2020. Each nest and brood point of the same color correspond to the same female.

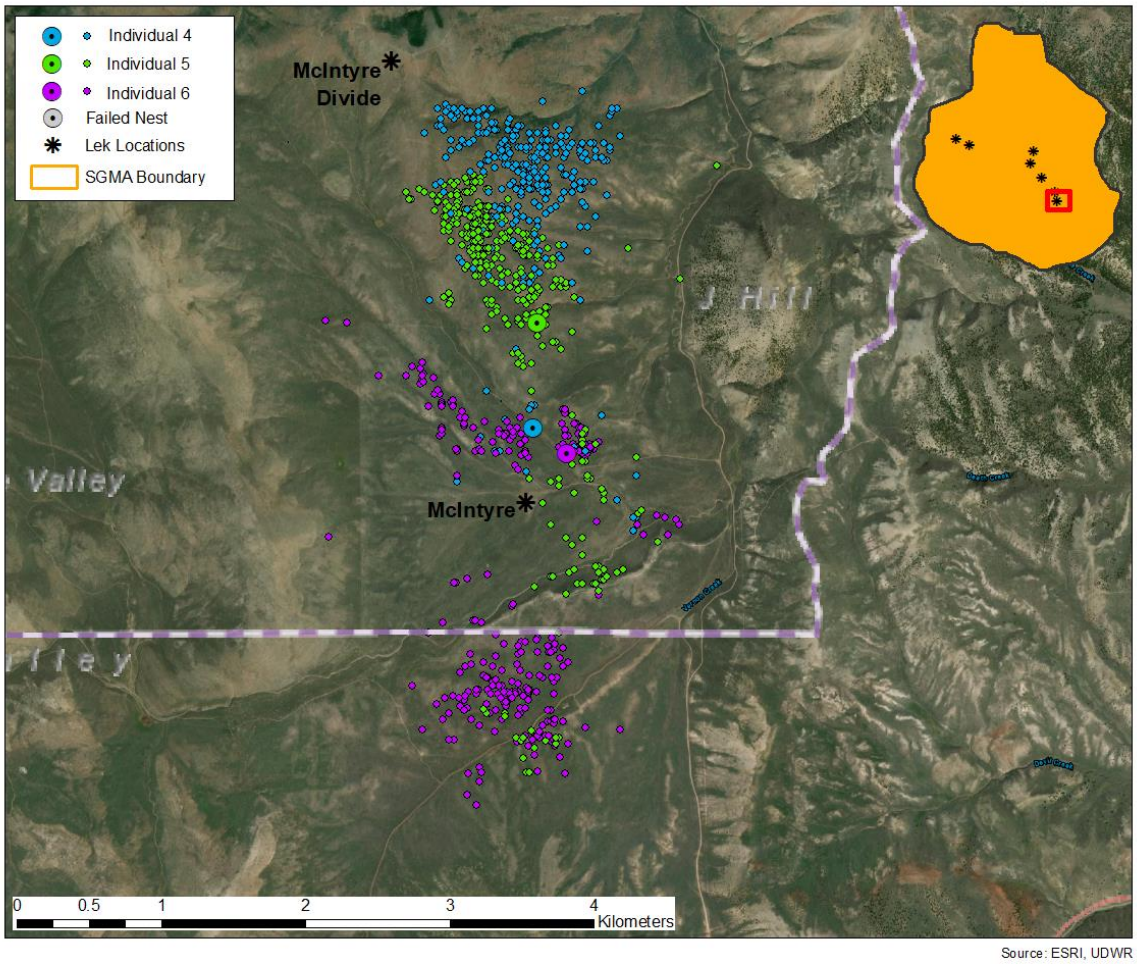

Figure 6. Nesting and brooding locations for radio-marked greater sage-grouse (*Centrocercus urophasianus*) females located within the McIntyre lek area, Sheeprock SGMA, Utah, 2020. Each nest and brood point of the same color correspond to the same female.

Landowners

We thank the landowners who allow us access to their properties to capture and monitor birds. We also are extremely indebted to the dozens of volunteers who have helped with the translocation effort. We also thank the Utah Public Lands Policy Coordination Office, the BLM, the Yamaha Corporation, the West Box Elder CRM, the Parker Mountain and West Desert Adaptive Resources Management Local Working Groups, the Jack H. Berryman Institute, the Quinney Professorship for Wildlife Conflict Management, the UDWR, the Forest Service and the US Geological Survey for funding, encouragement, and project support.