

## **Sheeprock Sage-grouse Management Area Translocation Field Update**

**March – May 2018**

### **Title: Population Dynamics and Seasonal Movements of Translocated and Resident Greater Sage-Grouse of the Sheeprock Sage-grouse Management Area (SGMA)**

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#### **Purpose**

In recent years, 10 of the 11 Utah SGMA's have shown an upward trend in the numbers of males counted on leks. The Sheeprock SGMA has been the notable exception. This SGMA is located in 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) include wildfire, invasive species (annual grasses and forbs), potential loss of riparian or mesic areas, predation, habitat fragmentation, dispersed recreation, and conifer encroachment. To mitigate these threats, WDARM has implemented an aggressive habitat and predation management effort that has been augmented by greater sage-grouse (*Centrocercus urophasianus*) translocations. We are studying how translocated and resident sage-grouse respond to habitat and predation management. To do this we are evaluating if habitat selection and vital rates differ for translocated and resident sage-grouse. We are also studying off-highway vehicle (OHV) use patterns of recreationists in the Sheeprock to learn if current use is impacting sage-grouse habitat-use and are also surveying OHV users to determine their specific recreation needs.

#### **Technicians and Training**

This 2018 field season, four technicians were hired: Sam Lau (Wisconsin), Nathan Redon (Washington), Abby Stone (Connecticut), and Shivani Upadhyayula (India). In addition, Holland Rupp (California), a Utah State University Extension Intern, will be assisting in conducting predator surveys as part of her undergraduate research project. We provide this information for you should you encounter one of the technicians and wonder what they may be doing. The technicians received bird handling, telemetry, vegetation monitoring, OHV and vehicle safety training. To facilitate the sage-grouse artificial insemination experiments, we are collaborating with Dave Dahlgren who is the principal investigator for a study that is evaluating if translocations of birds from Wyoming can restore the North Dakota population. As part of this collaboration, Nathan Redon and Melissa travelled to Wyoming in April to assist in sage-grouse captures and the insemination of female sage-grouse that were translocated to North Dakota.

#### **Translocations, Artificial Insemination, and Trapping**

On March 20, 2018 we translocated 28 sage-grouse (22 females and 6 males) from the Parker Mountain SGMA to the Sheeprock SGMA. On March 24 and April 6, 2018, we translocated 12 sage-grouse (8 females and 4 males) from the Box Elder SGMA to Sheeprock SGMA

The following numbers of birds were released on the three active lek sites\*\*:

Government: 22 birds (7 Males, 15 Females) on March 20th and 24th

McIntyre: 13 birds (3 Males, 10 Females) on March 20th

Benmore: 5 birds (5 Females) on April 6th

We collected feather samples for each bird marked in 2016-2018 and have collected eggshells for nests each year. These samples will provide the genetic material for us to determine the proportional contribution of translocated and resident birds to annual production. This will allow us to evaluate Sheeprock population genetic variation as translocated birds integrate into the resident population in subsequent years following translocations.

\*\*Note: Benmore males' lek locations varied considerably; during the translocations, no males were spotted until the last set of translocations on April 6. Birds were not released unless there were actively lekking individuals.

### **Artificial Insemination**

In conjunction with two other sage-grouse translocation studies—one in North Dakota and the other in California—we began an artificial insemination (AI) experiment in Spring 2017 to assess whether it would lead to increased nest initiation rates for females translocated within the first year of release. We also hope this mitigate the wide movements previously observed in our 2016 translocation. Many of our 2016 translocated females left the study area. The experiment was set up to give the 30 females one of three treatments: AI (artificial insemination from males of the location from which they were translocated), SHAM (receiving a control of the avian semen extender buffer), or control (no treatment).

This year, because our translocations occurred before peak lek attendance, we were not able to obtain any viable semen until our translocations on April 6 in Box Elder. Out of the 30 females translocated, two were artificially inseminated and the rest received either a sham buffer or a control treatment. These observations suggest that viable semen samples may coincide with female peak lek attendance, but further study would be needed to confirm this. To assess the effectiveness of our artificial insemination study, we will combine our results with data from the other two studies yielding a larger sample size.

### **Capturing and Radio-marking Sage-grouse**

Each year, our goal has been trap and radio-mark at least ten resident birds in the Sheeprock population. Because of the historical low population levels, this has proved difficult. Thus far, from 2016 and 2017, we have marked 12 resident birds: 4 males and 8 females.

In 2018, we have marked 6 birds so far: 3 males and 3 females. However, we discovered new lek during the lekking season. This lek is further described below. We subsequently decided to mark a male attending this lek to a GPS transmitter to determine if birds may be moving between leks. Normally, we trap 2 males per year and as many females we can until we reach 8. Trapping has been suspended for the season as the females are initiating nests. We may resume trapping in late June and July to deploy GPS transmitters recovered from mortalities once they are refurbished.

### **Lek Counts**

The good news is that lek counts have been higher this year than the overall count of 33 males in 2017. Last year we counted three known active leks. This year, Government lek had a high count of 32 males, McIntyre had a high count of 7 males, Benmore had a high count of 5 males. A new lek was found this year by an aerial flight utilizing infrared technology. In a lek count performed in early May, 9 males were observed at the lek. The Benmore and McIntyre leks both moved locations several times during the lekking season. In 2017, we observed similar behavior; this could be due to the influence of the translocated birds, which tend to behave differently than our resident birds, and the on-going habitat treatments.

### **Survival**

There have been ten confirmed mortalities in 2018 (Figure 1). Five mortalities were from birds marked in 2017: 3 translocated females, 1 translocated male, and 1 resident male. We have also had five confirmed mortalities from our birds marked in 2018, 3 translocated females, 1 translocated male, and 1 resident male. Two were believed to be mammalian-caused, three caused by avian predators, and five from unknown causes upon discovery of the mortality.

Two intact female grouse carcasses were found and sent to the diagnostics lab to be necropsied. One of these females from 2018 had some internal damage to the cloaca and died from egg binding, and another 2017 female died of a fungal infection in the lungs.

## 2018 Spring Sheeprock SGMA Mortality Locations

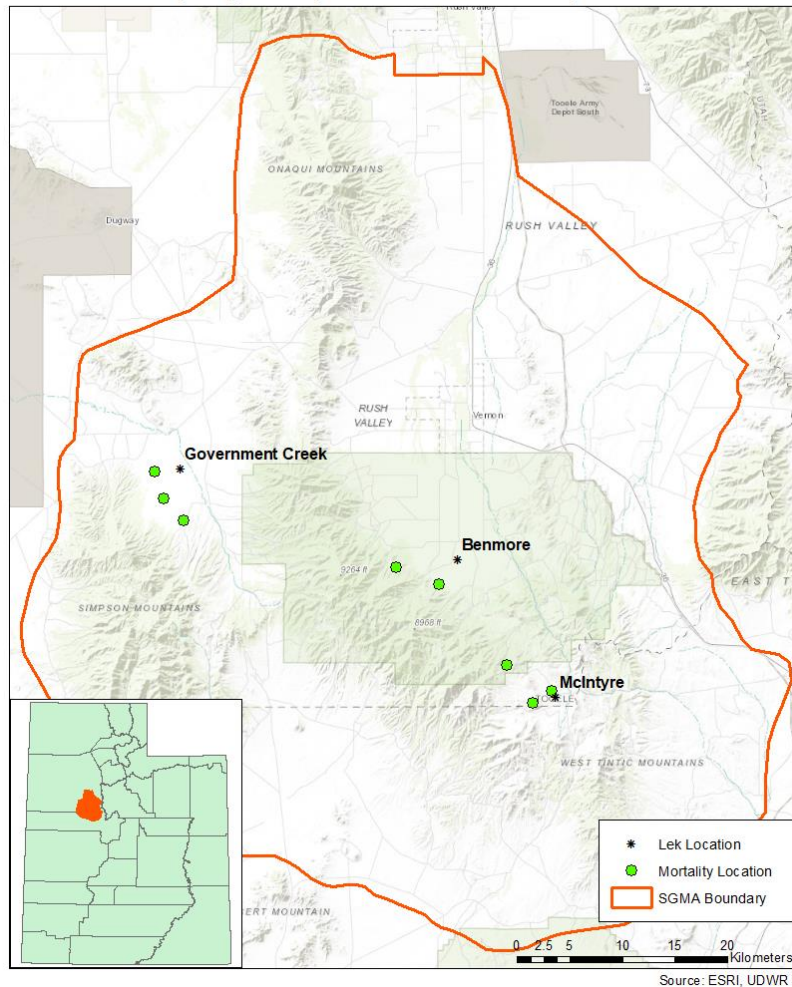


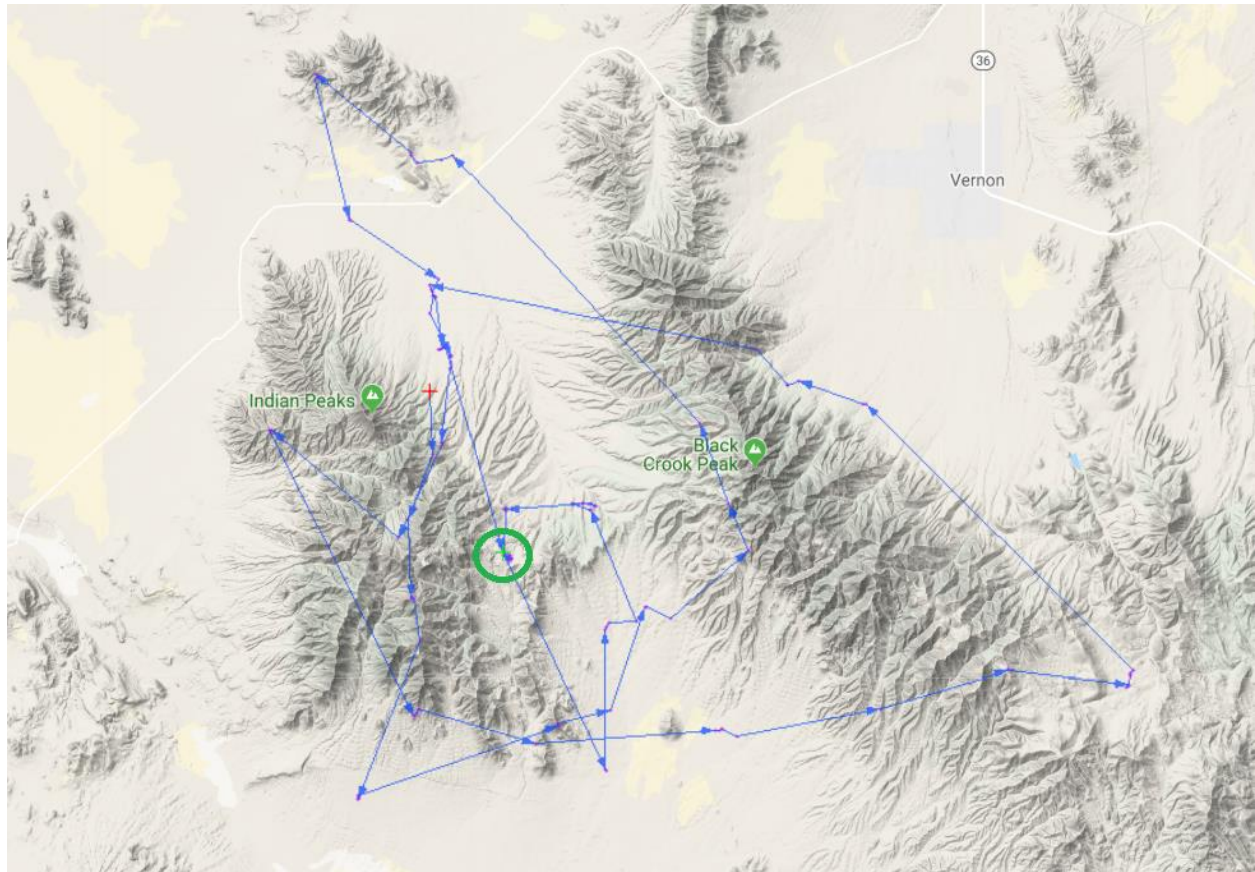
Figure 1. Locations of greater sage-grouse mortalities, Sheeprock SGMA, 2018.

### **Radio-Marked Grouse Movements**

Most of the transmitters for the VHF-marked birds from 2016 have stopped transmitting. Thus we will be unable to document their movements, survival, and nesting effort in 2018. There were six birds that were still alive in the fall of 2017 that could potentially still be alive now; however, we do have two GPS-marked resident females from 2016 that we are collecting data.

The movements for the 2018 translocated birds have been relatively localized as opposed to previous years. None of the birds has made any long distance movements such as one translocated female from 2017 that flew from the release site to Spanish Fork, Utah, a straight-line distance of 54 miles.

Below is a map showing the searching movements of one of our translocated females from this season (Figure 2). She was released into the Government area, tried to fly south towards McIntyre, flew over Benmore, south of Ericson Pass again, north towards Dugway, then decided she would settle in the southwest portion of Government.



**Figure 2.** Movements of a 2018 translocated female equipped with a GPS transmitter. These movements occurred between March 30 and May 13, 2018. The red cross shows where her transmitter started after release, the blue line with small arrows shows the direction of her movements and the green circle shows where she currently resides.

### **Nesting**

More good news! We have thirteen confirmed nests this season, and several others to be confirmed for recently-initiating females. One of the thirteen nests failed due to nest depredation; this was for a 2018-marked yearling resident female. One 2017 resident female initiated in the beginning of April and hatched on May 4. In 2017, our earliest nesting female hatched on May 15. May 4 is three weeks earlier than our other females initiated their nests during this study  
Table 1

Table 1. Nest initiations for translocated and resident greater sage-grouse, by age for 2016-2018, Sheeprock SGMA.

| Year Marked | Number of Females Nesting | Adults vs Yearlings  | Translocated vs Resident |
|-------------|---------------------------|----------------------|--------------------------|
| 2016        | 0                         |                      |                          |
| 2017        | 7                         | 7 Adults             | 6 Trans, 1 Res           |
| 2018        | 6                         | 1 Adult, 5 Yearlings | 5 Trans, 1 Res           |

**Brooding**

We have one brooding female that hatched 6 chicks; she was a resident female caught in 2017 in Government. In 2017, she successfully hatched, but her brood failed three weeks post-hatch. Her brooding locations have been location in West Government Creek in intermittent patches of sagebrush/upland grasses and juniper stands.

**Landowners**

As always, 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 particularly thank Jason Robinson and Avery Cook, UDWR for coordinating the effort through the public review process and the logistics required to complete the translocation. 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, and the US Geological Service for funding, encouragement, and project support.