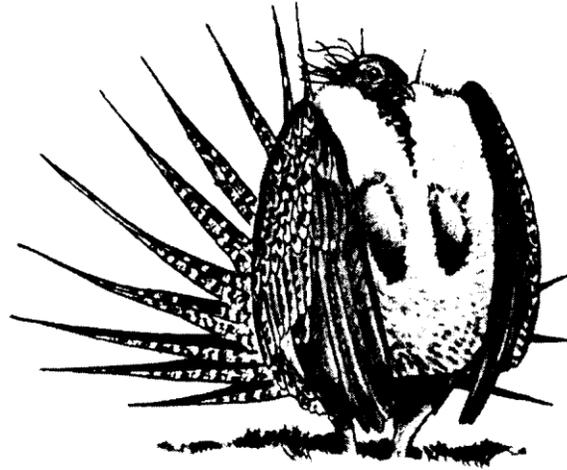


PROGRESS REPORTS: STRAWBERRY VALLEY SAGE GROUSE  
RECOVERY PROJECT  
2010



Presented to:  
The Utah Reclamation Mitigation and Conservation Commission  
Utah Division of Wildlife Resources  
Uinta National Forest

Prepared by:  
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## Progress Report: Strawberry Valley Sage Grouse Recovery Project

Prepared by:

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Prepared for:

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(URMCC)

Reporting Period:

January 2010 through March 2010

### **Resident Population Monitoring:**

#### 2008 Birds

We began this quarter with the original three resident (2 males and 1 female) sage grouse trapped in 2008. During the first three quarters none of these birds died, and during this last quarter all of those birds survived. Therefore, survival of all 2008 resident birds was 100%. Both of the resident male sage grouse were found in Fruitland where they stayed all winter. The female, found in Co-op last quarter, has since traveled to lower Red Creek near highway 208. She remained there all winter.

#### 2009 Birds

We began this quarter with 19 resident (16 males and 3 female) radio-collared sage grouse from the original group (22 males and 3 females) captured in 2009. During this quarter none of these birds died. Since the beginning of the mortality year, six of 22 males (27%) and none of the females died. Therefore, the combined annual survival rate of 2009 resident sage grouse was 76%. Of the 16 males, 13 remained close to the Road Hollow lek in Strawberry

Valley, and three moved to Fruitland. The three female sage grouse moved to Fruitland and remained there all winter with no notable movements.

### Resident Sage Grouse Summary

The total combined 2008 and 2009 annual survival rate of female and male resident sage grouse was 100% (3 of 3) and 76% (19 of 25) respectively. In Idaho and Montana annual survival of sage grouse ranged from 46-54% and 68-85% respectively (Connelly et al. 1994). The majority (64%) of surviving birds spent the winter in Strawberry Valley. The other 36% of radio-collared grouse wintered near Fruitland.

The number of grouse that moved to Fruitland this year is notable because of the lower than average snow depths in and around Strawberry Valley. Prior to translocations, resident birds weren't utilizing the Fruitland area the same way they are now. It might be speculative, but perhaps movements of translocated birds have influenced the number and frequency of migratory movements between the Fruitland area and Strawberry Valley.

### **2007 Translocations:**

#### Diamond Mountain (DM) translocation

We began this quarter with one 2007 DM female still alive. This remaining female moved from Tabby Mountain to the Fruitland area in early winter. Her collar was very weak at the time and has since stopped transmitting. We are no longer monitoring any 2007 DM translocated birds.

#### Box Elder County (BEC) Translocation

We started this quarter with one remaining hen from Box Elder County. We were unable to obtain a location for her from the ground, but we did hear her on a flight. She was located on

private land, east of Currant Creek in Fruitland, which we were unable to access due to private property issues. She died during this quarter, and we have been unable to ascertain a cause of death. So, we are no longer monitoring any 2007 BEC translocated birds.

#### Summary of 2007 Translocated Females:

We began this quarter with two female sage grouse still alive. One of these females died due to unknown cause, and the other female's radio discontinued transmitting due to diminished battery life. These were the last of our 2007 translocated birds. The total annual survival rate of 2007 translocated sage grouse was 20% (1 of 5).

#### **2008 Translocations:**

##### Deseret Land and Livestock (DLL)

We began this quarter with seven female sage grouse still alive. Two of the hens died during this quarter; both died due to canid predation. The total annual survival rate of 2008 translocated sage grouse was 71% (5 of 7). Of the remaining five females, two stayed in Strawberry Valley and three were in the Fruitland/Currant Creek area. Movements of all five hens were limited and local.

#### **SVARM Local Working Group Meetings:**

In February, we attended the SVARM local working group meeting. We provided an update for the group on sage grouse movements, predation, and current and future habitat improvements in Strawberry Valley. We also briefly discussed the future of the project. Our continued involvement in the local working group is crucial to their knowledge of population

dynamics in the valley. The next SVARM meeting was scheduled for April 19, 2010 at which time we will have a field trip to view the lek as a group.

### **New Lek Discovery Efforts:**

We are continually monitoring all of the collared male sage grouse in an effort to locate any new leks in the area. In addition, with help from the UDWR dedicated hunter program, we have scheduled an early morning range ride to look for lekking grouse. We are also looking at other external funds (non-URMCC funds) to determine whether we could afford helicopter flight time to search for more possible leks. UDWR helicopter flights will likely resume in 2011 depending on state budgets. In addition, we are using the assistance of private land owners in the study area to locate new leks. Recently, a land owner in Fruitland contacted us with an early morning sighting of roughly 40 sage grouse he flushed in lower Red Creek. We went out and visited the area with him. Although snow made this area difficult to access, we did find considerable sage grouse signs including tracks and night feces. This specific site did not look like a possible lekking location due to the thick vegetation in the area. However, we will continue to monitor this area and others for any possible new lek locations.

### **Sage Grouse Habitat Improvements:**

We will continue to monitor the sage grouse habitat improvement project performed during the late summer of 2009. We will assess brood rearing and nesting use in this area as well as in Trout Creek. We expect that more hens will remain closer to the lek during this and subsequent years due to the improvement in the forb component and proximity of the treatment

to the largest active lek in the area. We will use radio-collared birds and surveys on foot to assess use of these areas.

### **Winter Habitat Collection:**

Extensive effort was put into studying winter habitat selection of sage grouse this quarter. We sampled 36 locations from Strawberry Valley and Fruitland. The variables measured included shrub and sagebrush canopy cover, shrub height, sage grouse use of the area, predator presence, weather variables, snow depth, aspect, and other variables believed important to sage grouse winter habitat selection.

Collared birds were rarely found alone. Usually they were in large groups. We observed one flock of 61 grouse (males and females). The average winter flock size was 16 grouse. Frequent observations of sage grouse were seen on south facing slopes near rocks or cliffs. The rocks and cliffs near the Strawberry Reservoir narrows were used daily by multiple sage grouse.

Movement during the winter seemed to be limited. However, after the first major snow storm of the season, most of the collared grouse left Strawberry Valley and moved toward Fruitland. Data from this study are now being analyzed in an effort to publish a paper on winter habitat selection.

### **Sage Grouse Survival Manuscript:**

During the last quarter we finished and submitted a manuscript to the Journal of Wildlife Management on sage grouse survival in Strawberry Valley. We modeled all of the data on resident and translocated sage grouse survival from 1998 through 2007. This included data from 477 sage grouse. Our results showed that during this time the most important variable related to

sage grouse survival was predator control. In addition, although not significant, the distance moved from the nearest lek may have played a role in sage grouse survival. We also reported that weather variables related to extreme winter temperatures and snow depths did not affect survival. Also, age and sex were only minimally related to sage grouse survival. When the paper is officially accepted we will include it in our progress report.

### **Ecological Connectivity:**

With the exception of the translocated female found in Orem (that subsequently had to be euthanized due to a dog mauling) and the translocated female found in Mountain Home, Utah on tribal lands, all other recorded movements between other populations have been limited to those reported between Strawberry Valley and Emma Park. We continually monitor areas outside of the study area, via fixed-wing aircraft, to determine whether grouse have moved to other habitats or other proximal or distant sage grouse populations.

Movements this quarter were similar to those in years past with one exception. One female was not located during the entire last quarter. Recently she was found by a UDWR biologist during a fixed-wing flight near Anthro Mountain, southeast of Strawberry Valley. Although we have been unable to obtain a ground location, we hope to be able to identify her this spring and determine whether she is with other resident or translocated birds. Since this discovery, we have made every effort to scan an even greater area for other birds that may have moved to new areas. To date she is the only bird to have recently done so. We have scheduled a fixed-wing flight for the end of April to attempt to locate any other 'missing' grouse.

### **GIS/Remote Sensing:**

There is another graduate student who is currently working on better understanding brood rearing habitat selection throughout the Strawberry Valley area. He is planning to fly the area in late spring/early summer to take high spectral and spatial resolution photographs. He will use these photos in order to determine whether he can use a remote sensing/GIS-based approach to model brood rearing habitat. If his modeling efforts using these data do not produce a viable model, he will include data collected at the micro- and micro-site level via datasheet collected on the ground during the last 10 years. Then he will create a model showing the best suitable and potentially suitable brood rearing habitat in the study area. This may help us determine areas where connectivity and habitat suitability could be improved.

### **Conclusion:**

The combined annual survival rate of all radio-collared sage grouse was 70% (28 of 40). This is higher than average survival rate. Similar populations of monitored sage grouse show highly variable combined (male and female) survival rates of 38-79% (Zablan et al. 2003). This slightly higher than average survival rate in Strawberry Valley should translate into a small increase in the number of strutting males on the leks. The unknown factor continues to be whether we are able to find all strutting males and lek locations.

Currently many older transmitters are starting to shut off due to diminished battery life. Due to these developments, we are making extensive efforts to capture additional resident grouse during the next quarter. We will place radio-collars on adult and juvenile sage grouse of either sex. This is intended to aid us in locating new leks, determining habitat and population connectivity, monitoring use of treated habitats in the area, and locating nesting females to assess reproductive output.

**Literature Cited:**

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## Progress Report: Strawberry Valley Sage Grouse Recovery Project

Prepared by:

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Randy Larsen – Principal Investigator

Prepared for:

Dr. John Rice, Project Coordinator,  
Utah Reclamation, Mitigation, and Conservation Commission  
(URMCC)

Reporting Period:

April 2010 through June 2010

### **Resident Population Monitoring:**

#### 2008 Birds

We began this quarter with the original three resident (2 males and 1 female) sage grouse trapped in 2008. During this last quarter all of those birds survived. Both of the resident male sage grouse were found in Fruitland where they stayed all winter.

The female, found in lower Red Creek near Highway 208 last quarter, has moved to Co-op Creek. She initiated a nest in the Co-op creek area and was later flushed by observers. She returned to the nest the same day. Two days later her nest was depredated.

#### 2009 Birds

We began this new mortality year with 19 resident (16 males and 3 females) radio-collared sage grouse from the original group (22 males and 3 females) captured in 2009. During this quarter one female and three males died.

Both remaining 2009 female sage grouse initiated a nest. The first female initiated a nest in Badger Hollow that was later depredated. The other female initiated a nest in Co-op Creek and should hatch around the first of July.

## 2010 Birds

Efforts to trap resident sage grouse continued this spring. Both four wheeler and back pack generator trapping methods were used. Due to the cold weather and ice, trapping efforts in Strawberry Valley were focused on the recently treated sage brush areas and not the island side of the lek. We successfully captured and placed radio-collars on 10 females and 10 males. During this quarter one female and one male died. It appeared that both died due to canid predation.

Of the nine remaining female sage grouse, seven initiated a nest (78% apparent nest initiation). Two hens abandoned their nests (one in SV and one in Fruitland) during a late May snow storm; those two nests were later depredated. Four other hens had their nests depredated (3 by canids and 1 by raven). One hen has remained on her nest throughout and is expected to hatch any day. Of the six hens that had their nest depredated, 2 attempted to renest. One of those lost her nest to a predator again, while the other is currently still incubating her clutch. In total there have been 9 nesting attempts this year from 9 hens. To date, none have been successful, but we await the outcomes of two nesting hens that should hatch any day.

## Resident summary

During this quarter only two of the 14 hens on air died (14% apparent mortality). Of the males, 4 of 28 males died (14% apparent mortality). Combined apparent mortality during this first quarter of the new mortality year was 14% (6 of 42).

When totaling reproductive estimates of all resident radio-collared females in 2010, we found the following results. First, apparent nest initiation totaled 83% (10 of 12). We also report

two re-nest attempts. Second, apparent nest success, so far, has totaled 0% (0 of 10); the fate of two nests are yet to be determined. Females are still incubating those eggs.

Movements of resident grouse have been normal. We still cannot verify any long-distance movements between this and another population.

### **Lek Counts and Searching for New Leks:**

The high count for the Road Hollow lek in Strawberry Valley was 52. This was a decrease of one bird from last year. UDWR employees continued to count the leks in Fruitland and had a combined high count of 23 males. In addition, due to a lack of man hours they did not attempt to locate the two areas north of the Fruitland leks where they saw strutting males from a fixed-wing flight last year. Next year the Strawberry/Fruitland area is slated for two helicopter flights to search for new leks.

A few attempts were made to locate new lekking areas during the breeding season. These efforts included searches from the ground and from a helicopter. We were unable to locate any new leks from the ground. However, during a DWR sponsored helicopter flight, we spotted strutting male sage grouse in two 'new' locations; one near the narrows and the other directly west of the road hollow lek on the west end of lek island. We observed birds strutting in the narrows a few years ago, but on each of our return attempts to relocate those males, we were unsuccessful. After advising the DWR wildlife manager of the aforementioned new strutting areas, he stated that he had seen birds strutting in those locations before. This was news to us, as he has never told us of any new strutting areas. Upon observing those males we attempted twice to get out to the locations early in the morning to observe those males again, and we were unsuccessful. We will continue to look at these areas and search for new leks in years to come. Again, two flights are budgeted for the spring of 2011. We hope to gain insights from those

flights. In addition, we are working with the USFS employees to gain seasonal access via an ATV to attempt to locate those strutting birds and any new leks not already identified.

### **2008 Translocations:**

#### Deseret Land and Livestock (DLL)

We began this quarter with five 2008 DLL female sage grouse still alive. Two of the hens died during this quarter; both died due to canid predation. Two of the remaining 3 birds have not been located during this quarter by ground or flight. We suspect that their radio-collars are not working due to diminished battery life. We are currently monitoring only one 2008 translocated bird. It is still giving a live signal, but we cannot access it due to the fact that it is on Coleman's property in Fruitland. We expect that after this quarter we will not be monitoring any translocated females.

### **SVARM Local Working Group Meetings:**

In April and June, we attended the SVARM local working group field tour meeting. We provided an update for the group on sage grouse movements, predation, and current and future habitat improvements in Strawberry Valley. We also briefly discussed the future of the project. Our continued involvement in the local working group is critical to their knowledge of population dynamics in the valley.

### **Sage Grouse Habitat Improvements:**

We will continue to monitor the sage grouse habitat improvement project performed during the late summer of 2009. On June 22, 2010 Rick Baxter and Randy Larsen met with the

UDWR and USFS personnel and discussed future habitat improvement projects in the Badger Hollow area. We looked at the past treatments and discussed which techniques might be the best for habitat improvements in the next area. We can report that habitat treatments were heavily utilized as roost sites during trapping this year. Improved areas also proved to be very successful capture sites for male and female sage grouse this year. We caught 11 of the 16 birds in treated areas, including five of our 10 females. In addition we will continue to use radio-collared birds and surveys on foot to assess use of these areas.

### **Ecological Connectivity:**

During this trapping season 1 female from Anthro Mountain that was translocated from Parker Mountain was captured near the lek in Fruitland. She still remains in Fruitland on private land, near the lek. We cannot access her due to private property rights, but she has continually stayed in the same area for more than a month now. We suspect that she nested. We will continue to monitor from the air, and if she moves we plan to locate her off private land.

There is also a question about a radio-collared male, whose frequency was heard on Anthro Mountain. The DWR suspects that it may be a male we captured in Fruitland. We will continue to monitor all movements of collared birds to and from nearby populations by ground and by air.

### **Conclusion:**

According to our records we believe there is only one 2008 translocated hen from DLL still on air. We knew that these radio-collars would begin turning off during the winter and early spring. Because of this, we re-doubled our efforts to capture male and female sage grouse. Nevertheless, heavy snows and private land issues prevented early access to these areas, making

it difficult to capture additional hens. Despite these limiting factors we were successful in capturing 6 males and 10 females, which. In addition, we plan to continue trapping this fall. We anticipate catching more female birds for an increase in monitoring the resident population. This quarter (April – June) and next quarter (July - September) generally represent almost 75% of all given mortalities. Given this information we will be quick to recover all mortality collars to get a better idea of the cause of death.

Progress Report: Strawberry Valley Sage Grouse Recovery Project

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(URMCC)

Reporting Period:

July 2010 through September 2010

**Resident Population Monitoring:**

2008 Birds

We began this quarter with three resident (2 males and 1 female) sage grouse trapped in 2008. During this last quarter all of those birds survived. The female found in Co-op last quarter, remained there all summer long. Her nest was depredated; therefore, she did not raise any chicks to recruitment. Both of the resident male sage grouse were found in Fruitland where they stayed all summer.

2009 Birds

We began this quarter with 15 resident (13 males and 2 females) radio-collared sage grouse from the original group (22 males and 3 females) captured in 2009. During this quarter all of the birds survived.

Both remaining 2009 female sage grouse initiated a nest in Strawberry Valley. The first nested, in Badger Hollow, and that nest was later depredated, likely by ravens (Figure 1). The other female initiated a nest in Co-op Creek, hatched successfully, and raised one chick to recruitment (~ 50 days post hatch).



**Figure 1. Depredated nest in Strawberry Valley. The suspected predators were ravens.**

### 2010 Birds

In the spring of 2010 we successfully captured (Figure 2) and placed radio-collars on 20 sage grouse (10 females and 10 males). Last quarter one female and one male died, with the cause of death unknown. During this quarter all of the remaining 2010 birds (9 female and 9 male)



**Figure 2. Three female grouse captured during a spring trap night in April 2010.**

survived.

Seven of the nine remaining female grouse initiated a nest (78% apparent nest initiation). However, all but one female lost her nest. Two hens abandoned their nests (one in SV and one in Fruitland) during a late May snow storm; those two nests were later depredated (cause unknown). Four other hens had their nests depredated (3 by canids and 1 by raven). Of the six hens that had their nest depredated, two attempted to reneest. One lost her nest to a predator again, while the other hatched four chicks that were all later depredated. In total there were nine nesting attempts this year from nine hens. None of the 2010 hens were successful in raising chicks to recruitment.

Fall trapping began toward the latter part of this quarter. We were successful in placing two additional radio-collars on female sage grouse. Both of these birds were captured in Co-op Creek and have remained there. Trapping will continue until conditions no longer allow.

**Resident Summary:**

During this quarter all 12 of the hens on air survived. In addition, all 24 males also survived. The combined mortality for resident sage grouse during this quarter was 0% (0 of 36). This is not 'normal' given the past 12 years of research in Strawberry Valley. There have been other species of grouse that have exhibited low summer mortality, possibly due to the amount of vegetative cover available (Marks and Marks 1987). We are unsure at this point what may have contributed to no mortalities during this quarter.

When totaling reproductive success of all resident radio-collared females in 2010, we report the following results. First, apparent nest initiation totaled 83% (10 of 12). We also report two reneesting attempts. Second, apparent nest success, totaled 20% (2 of 10). One 2009 bird

successfully hatched her clutch and raised one chick to recruitment age; and one 2010 female successfully hatched her clutch, but did not have any of the chicks survive to recruitment.

Movements of resident grouse have been relatively normal, as none have moved outside the distribution we've documented through this study since 1998. We still cannot verify any long-distance movements between this and another population, besides that which we've already reported between movements of at least translocated birds to other populations.

### **2008 Translocations:**

#### **Deseret Land and Livestock (DLL)**

We began this quarter with two 2008 translocated DLL females still alive. During this quarter the radio collar of one female quit working due to diminished battery life. We are currently monitoring only one living 2008 DLL translocated bird. However, access to this bird is limited, because it remains on or near Coleman's property in Fruitland. We suspect that she initiated a nest due to her limited movements, but because of the issues previously stated we can't verify that information.

### **SVARM Local Working Group Meetings:**

At the end of September, we attended the SVARM local working group field tour. We provided an update for the group on sage grouse movements, predation, and current and future habitat improvements. We will continue to work with and attend such meetings as our continued involvement in the local working group is critical to their knowledge of population dynamics in the valley and is critical to our successful partnerships and relationships with agency and municipal personnel, as well as private landowners.

**Sage Grouse Habitat Improvements:**

We will continue to monitor the sage grouse habitat improvement project performed during the late summer of 2009. We continue to look at the past treatments and discuss which techniques might be the best for habitat improvements in the next area. Habitat treatments were heavily utilized as roost sites during the spring and have proven valuable as capture sites both in the spring and fall. In addition, foot surveys for non radio-collared birds were performed in recently treated areas. During these survey large flocks (>10) of sage grouse were found in the area. We will continue to use radio-collared birds and surveys on foot to assess use of these areas.

**Ecological Connectivity:**

During this trapping season one female from Anthro Mountain that was translocated from Parker Mountain was captured near the lek in Fruitland. She still remains in Fruitland on private land, near the lek. We had very limited access to her due to private property rights, but she has continually stayed in the same general area. We suspect that she nested. We will continue to monitor from the air, and if she moves we plan to locate her off private land.

**Conclusion:**

There is only one 2008 DLL translocated female still on air. We knew that these radio-collars would begin turning off during the winter and early spring. Because of this, we doubled our efforts to capture male and female sage grouse. In addition, we plan to continue trapping through the fall. We anticipate catching more females in order to be able to better

monitor reproductive success amongst the resident population. Historically, this quarter (July – September) and last quarter (April – June) generally represent about 75% of all given mortalities within the mortality year. Interestingly, during this year mortality rates have been very low. We cannot attribute this to predator control, and as of yet do not know why this occurred. Of note is a concurrent study of sage grouse near Vernal on Diamond Mountain, where they experienced only two mortalities of their 30 hen sample from April through the end of September. Perhaps the effects of lower mortality were influenced by landscape-scale factors like the cool/wet spring we had, instead of local-scale factors like predation. This will be noted and we will attempt to further ‘ferret-out’ possible causes.

#### **Lit Cited**

*Marks, J. S., and V. S. Marks. 1987. Influence of Radio Collars on Survival of Sharp-Tailed Grouse. [The Journal of Wildlife Management](#) 51(2): 468-471.*

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(URMCC)

Reporting Period:

October 2010 through December 2010



### **Resident Population Monitoring:**

#### 2008 Birds

We began this quarter with three resident (2 males and 1 female) sage grouse trapped in 2008. We were able to monitor two residents (1 male and 1 female) all quarter. We were unable

to locate the one male toward the end of the quarter, we suspect diminished battery life on the collar. We consistently found the female in the Co-op creek area throughout this quarter. She flocked up with 5 other un-collared birds and remained with them all quarter long. The one remaining resident male sage grouse was located in Fruitland during the last three months.

### 2009 Birds

We began this quarter with 15 resident (13 males and 2 females) radio-collared sage grouse from the original group (22 males and 3 females) captured in 2009. During this quarter, both females survived and one male died. The collar was recovered; however the cause of death is unknown.

Both 2009 females remained in Strawberry Valley near the lek during this quarter. One female was found consistently in a group of 10 to 15 sage grouse. The other female was flocked with one other female sage grouse.

### 2010 Birds

We began this quarter with 18 resident (9 males and 9 females) radio-collared sage grouse from the original group (10 males and 10 females) captured in 2010. During this quarter none of the birds died.

Six of the nine remaining female grouse remained in Strawberry Valley during this quarter. They were all located with other sage grouse flocks ranging from two to eight birds. The other three were consistently located near Fruitland. Due to private property issues we were not able to flush these birds consistently. When we could flush them they were also flocked with other grouse.

### **Resident Summary:**

During this quarter all 12 of the hens on air and the additional five recently collared birds survived. In addition, 22 of the 24 males are still being monitored. The combined mortality for resident sage grouse during this quarter was 2% (1 of 36).

Movements of resident grouse have continued to be relatively normal, as none have moved outside the study area. Typically during this time of year some sage grouse move from Strawberry Valley to Fruitland. These movements will continue to be monitored throughout the next quarter and beyond.



### **2008 Translocations:**

#### Deseret Land and Livestock (DLL)

We began this quarter with one 2008 translocated DLL female still alive. During this quarter the radio collar transmission became very weak. We can still hear her collar but

anticipate the bird to go off air due to diminished battery life in the near future. Access to this bird remains limited due to her location on private land near Fruitland.

### **SVARM Local Working Group Meetings:**

We continue to attend the SVARM local working group meetings. At the last meeting in mid November we provided an update for the group on sage grouse predation, and information of our observations of sage grouse use of recent habitat improvements. We will continue to work with and attend such meetings as our continued involvement in the local working group is critical to their knowledge of population dynamics in the valley and is critical to our successful partnerships and relationships with agency and municipal personnel, as well as private landowners.

### **Sage Grouse Habitat Improvements:**

We will continue to monitor the sage grouse habitat improvement project performed during the late summer of 2009. Habitat treatments remained heavily utilized as roost sites during the fall.

### **2010 Fall trapping efforts**

We continued our trapping efforts throughout the first two months of this quarter. We focused our attention on three locations: Co-op creek, on the recent treatments near the lek, and on Wildcat ridge. We only attempted to capture female sage grouse during this quarter. We were able to locate sage grouse at all three locations however; we were only successful in capturing the birds in Co-op Creek. We placed collars on 5 additional female sage grouse.

**Conclusion:**

There is only one 2008 DLL translocated female still on air and we anticipate that collar will not be transmitting much longer. We knew that these radio-collars would begin turning off during the winter and early spring. Because of this, we re-doubled our efforts to capture male and female sage grouse this year, and we will continue with the same effort starting in the spring. In addition, there is one new development that we believe will increase our ability to capture females early during the breeding season. Brigham Young University purchased a set of tracks for an ATV that we will use early in the spring when foot traffic or normal wheeled ATVs cannot typically access the area due to snow drifts, mud, and difficult environmental conditions. This should improve our ability to both trap females and count the leks early in the season.

The next few months will be the first in several years that we will not have translocated grouse to monitor. This progression on this multi-year project was anticipated, and we look forward to monitoring and studying this population into the future.