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Postcards from Sage-grouse Summer Camp

By Terry Messmer, Utah State University

Although it was a long time ago when I went to 4-H summer camp, I can still remember the camp counselors making us write short notes, postcards if you will, that they would then send to our parents to let them know we were fine and having a great time. As I thought of that past experience, I realized it shared a lot of similarities with graduate students of mine and other faculty working in the field conducting summer research. However, rather than sending cryptic notes written in crayon, today's summer camp graduate students have the luxury of sending postcards for their field sites (i.e., summer camps) using e-mail. Thus, I ask my students to provide periodic insights via e-mail of how their field research is going that we can also share with our partners.

With the increased interest in greater sage-grouse conservation in concert with the on-going effort of the Utah Governor's Sage-grouse Committee to develop a Utah Sage-grouse Conservation Strategy, I felt it appropriate to share these "Postcards from Sage-grouse Camp." Please remember, these are examples of recent postcards and reflect the efforts of graduate students from Utah State University. Graduate students and faculty from Brigham Young University are also engaged in similar research efforts as we try to collectively unlock the habitat and conservation secrets of sage-grouse in Utah. We encourage you to contact the students featured in this newsletter or visit our website www.utahcbcp.org to learn more about these unique partnerships and the on-going research.

School Kids Also Think Sage-grouse Rock

Photos courtesy of Montessori Community School Class.

Early this spring a class from the Montessori Community School got up very early so that Todd Black could take them out to see sage-grouse on a lek. It sounds like they really enjoyed their early morning field trip. They also raised $200 to support sage-grouse research in Utah. Their letter is below:

"Dear Todd,

Thank you for getting up so early to meet us so we could see the Sage-grouse! We know how hard it is to get up that early. Thank you for giving us this great opportunity!

It was really fun learning about the Sage-grouse. When we first got there some of us didn't know what that popping sound was. As it turns out, the sound was the males' air pouch inflating and deflating really fast! We also learned that the Sage grouse have two different kinds of feces. There is the regular feces and the night feces!

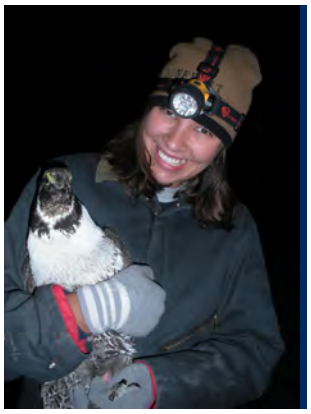
We also learned that the Sage-grouse males can be aggressive toward each other. We found out that the male Sage-grouse are kind of dumb because they go out in the road to try to impress females and then sometimes get hit by cars. It was interesting to learn that the dominant male will mate with all the females on the lek.

They are beautiful birds! We didn't know they could do so many things! It was a great experience to get to watch the Sage-grouse in person. Now we can say we saw Sage-grouse at 6:00 in the morning!

Sincerely,

Upper Elementary Class
Montessori Community School"

Bear Lake Also Has Sage-grouse



Casey Cardinal is pursuing a master's degree in wildlife biology at Utah State University. Her research focuses on identifying important sage-grouse seasonal habitat in Utah, Wyoming, and Idaho as the first step in the development of an interstate conservation plan. Her advisor is Terry Messmer. Casey can be contacted at casey.cardinal@gmail.com.

Hi Everyone,

I am currently in my third and final field season in the Bear Lake Valley and Plateau. My study site consists of land in Bear Lake County, Idaho; Rich County, Utah; and Lincoln County, Wyoming. Over the course of the study I have trapped 161 grouse–100 males and 61 females. During the 2012 spring, I collared 13 females and 28 males, thus starting the season with 47 males and 30 females on air.

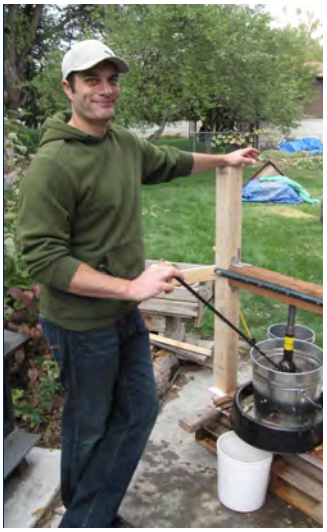
This season has been pretty exciting. I found 18 hens with nests, and seven of these hatched successfully. Six of the successful hens were recently observed with two to four chicks ranging from 10 to 40 days old. This is a great improvement over the 2011 breeding season, where only one hen was observed to have a successful brood. Apart from my collared birds, over 20 unbanded females have been observed with broods during the study. Since the beginning of the season, 12 mortalities have occurred. Mortalities have been attributed to avian predators such as eagles and hawks, or mammalian predators such as coyotes and badgers.

Over the course of the study I have recorded over 2,500 locations for the 161 sage-grouse. During the study, sage-grouse have been found to move frequently between Idaho and Utah, and will also occasionally move into Wyoming. The 2012 season has shown some exciting movements. Sage-grouse have been found to move across anthropogenic barriers, including highways, railways, power transmission lines, and residential areas. They also are moving across many natural barriers, including Bear Lake, Bear River, marshes, and forested areas.

This research is important to fill an information gap on sage-grouse in this area. Very little was known about the sage-grouse in the Bear Lake Valley and Plateau before this project. I hope that the data collected will be used for management cooperation between Idaho, Utah, and Wyoming. With information gained from this study, I will attempt to identify important habitat and provide recommendation to conserve the species.

~Casey

Cows, Sage-grouse, and Conservation



Seth Dettenmaier is pursing PhD degree in wildlife biology at Utah State University. His research is focused on sage-grouse response to different management practices. His advisor is Terry Messmer. Seth can be contacted at seth.dettenamier@aggiemail.usu.edu.

Hello Everyone,

This year starts the first of a 5-year study on greater sage-grouse in Rich County, Utah. With a study area covering nearly 350,000 acres, we work in a variety of different habitats. Large irrigated fields are found in the lower areas that that give way to vast valleys and foothills of sagebrush steppe. The high elevations culminate in mountain sagebrush mixed with towering stands of pine and aspen as they enter the Cache National Forest. This diversity of plant communities helps to provide sage-grouse with the variety of habitats that they require throughout the year.

My research is focused on how sage-grouse populations respond to areas managed under different livestock grazing practices. The two particular practices under study include rotational grazing and season-long grazing. The major difference between these two practices is the length of time that livestock graze a pasture. In a rotational system livestock may graze an area for several weeks whereas season-long practices may graze an area for many months at a time. Vegetation in areas of rotational grazing has more time to recover from livestock grazing pressures. We hypothesize that this increased recovery time will in turn increase the amount of vegetative cover that is available for nesting sage-grouse as well as lead to greater amounts of forbs for sage-grouse chicks. The project therefore aims to identify grazing practices that might be beneficial for both livestock producers and sage-grouse ensuring the persistence of the species while maintaining the way of life for ranchers in the West.

We are still in the first year of data collection so it's difficult to say much about differences in these populations. However, by talking with local resource managers we've learned that 2012 has been hotter and drier than what is typical for the area. This is likely negatively affecting sage-grouse as broods appear to be smaller than those observed in recent years. Mortality across the entire study area is on the order of 10-15%. Some initial modeling has suggested differences in nest success between study sites. Overall nesting success under rotational grazing was calculated at 58% while areas of season-long grazing had a nest success of 31%. These differences could be important to the stability of populations in this area. Once all the field data has been collected for the 2012 field season we will be looking closer at the possible causes of this apparent difference.

With another 4 years of field work planned, we expect to collect enough data to help us gain a greater understanding of sage-grouse populations in Rich County as well as the potential effects of the different grazing systems practiced in the area. Ultimately this research may help provide us with insights regarding the role of maintaining ranching as part of the working landscape in sage-grouse conservation.

~Seth

The Effect of the Human Footprint on Greater Sage-grouse in West Box Elder County

Hello Everyone,

This project is investigating the effects of the human footprint on sage-grouse habitat use and vital rates (year to year survival, nesting rates, brood success, and other metrics of population growth rates). I will be focusing on the greater Park Valley area in the north-west corner of Utah.

To answer questions about the ecology of sage-grouse in the Park Valley area, I will be building an inventory of current and historic land use in the study area, then comparing it to current habitat conditions and sage-grouse habitat use. I will obtain sage-grouse habitat use data and vital rates by tracking radio tagged birds from the spring of 2012 through the fall of 2013. This last spring we were able to capture 44 males. However, we only managed to collar 14 hens. We had no trouble reaching our sample size for males, but had difficulty locating hens due to low numbers of hens on leks and an unusually early spring. We plan to continue trapping during late summer as hens and juvenile grouse congregate, as well as in the spring of 2013 to reach our goal of 80 hens.

Ten of our 14 hens initiated nests, with two re-nests for a total of 12 nests. Six of the 12 broods survived to hatching. Of the six nests that did not make it, four appeared to be due to avian predation (ravens suspected) and two due to mammalian predation. Of the six broods that hatched, three have survived to 50 days. Over the last 4 months we have had five males and one hen mortality; all but one appeared to be due to predation. The birds have also been on the move toward moist and cool areas. In addition to birds in hay fields around Park Valley, we have had two hens and five males move west over the Grouse Creek mountains and head north toward Idaho. Many of the other birds are now residing on top of the Raft River Mountains and the valleys toward Yost.

The ecological knowledge gained, especially knowledge specific to the population in question, will allow management actions to be applied effectively and efficiently to benefit both sage-grouse and economic interests in the area. In doing so, this project will fill knowledge gaps outlined in the Box Elder Greater Sage-grouse Local Conservation Plan. Filling these knowledge gaps is critical for implementing effective management to increase populations of sage-grouse in the management area and negate listing the species. This study will also provide critical information on the effects of past habitat treatments on sage-grouse and inform future planning decisions on the best practices for habitat improvement.

~Avery

Avery Cook is pursuing a master's degree in wildlife biology at Utah State University working under Terry Messmer. His research focuses on determining how greater sage-grouse habitat use in west Box Elder County may be affected by the presence of human made structures on the landscape. Avery can be contacted at aacook@gmail.com.

The Grouse of Utah's Raft River

The first season of sage-grouse research in northwestern Utah's Raft River subunit is in full swing. Many new and exciting things have been learned about this area and also about the birds themselves. This first season has certainly had its challenges with an unfamiliar population of birds and an unfamiliar land of uneven terrain and very-divided ownership. We have met a large portion of the residents in the area, and we have been fortunate to find that most landowners are very supportive and helpful in the cause of sage-grouse conservation. We thank all of these great people for allowing us to track our radio-collared birds across their lands and also for providing us with loads of other useful information about the area.

Precipitation is much lower than normal this year, and the vegetation is very short and dry. Judging by what's left of last year's plant growth, this year's forbs and grasses are half the height of what they should be, and there are many locations where the typical plants just didn't grow this year. The dry conditions have caused the sage-grouse to seek out better locations of suitable forage. We have tracked birds as far as 20 miles from their location of capture. All of our radio-collared sage-grouse have moved to higher elevations or into irrigated hayfields. We have found several of our birds munching on succulent alfalfa in Park Valley and then found several others in the highest meadows of the Raft River and Grouse Creek mountains. Despite the dry conditions, the birds are finding things to eat and ways to survive.

Even in this abnormally dry year, we have seen some reproductive success with the sage-grouse. In addition to our radio-collared birds, we have seen several sage-grouse hens with broods. Most of these hens have two or three chicks, but I did observe one very outstanding hen leading seven healthy chicks. Out of a total of 14 collared hens, 10 are known to have nested. Of these 10 nests, six successfully hatched, while the others were raided by predators. Of the successfully-hatched nests, three hens raised a successful brood of at least 50 days of age. Each of these three broods had a total count of two chicks when we conducted our final flush counts. Survival of our adult radio-collared sage-grouse has been good overall. Of a total 56 birds, three males and one female have died due to predation.

In addition to tracking radio-collared birds, we have been spending a great deal of time conducting vegetation surveys to better understand the relationship of sage-grouse habitat-use and their vital rates. We are conducting these surveys at actual locations where we find the radio-collared birds and also at random sites. With the data we are collecting, we will be able to determine what makes good sage-grouse habitat in the Raft River subunit. The information we gather from this research will bring better understanding to the ecology of this sage-grouse population and will be important in the future management and conservation of sage-grouse in this area.

~Brian

Brian Wing is pursing master's degree in wildlife biology at Utah State University. His research is focused on defining greater sage-grouse seasonal habitat use and vital rates in west Box Elder County. His advisor is Terry Messmer. Brian can be contacted at brian.wing@aggiemail.usu.edu.

The Sage-grouse of Anthro Mountain: Can Translocation Be Used to Grow Grouse in Improved Habitats?

Orrin Duvuvuei is pursuing a master's degree at Utah State University. His research is focused on determining how greater sage-grouse translocation can be used to restore sage-grouse populations to restored habitats. His advisor is Terry Messmer. Orrin can be contacted at orrin.duvuvuei@aggiemail.usu.edu.

Things are going really well on Anthro. The Church Camp Fire almost smoked us off the mountain. I could see the flames for a couple days from the southern end of Anthro but the firefighters have it under control now and we have smoke-free air again.

We still have only had the one male die this entire field season (unknown predator). I looked back through last year's data and saw that a large number of mortalities occurred from August through October so I am curious to see what will happen this fall.

The apparent nest and brood success was good this spring. We had 14 nests initiated and seven successfully hatched. The average clutch size for all nests was 7.4 eggs. Of the seven hens with successful nests, five still have broods. Three of these broods reached 50 days of age this past week. This is the age of independence that I have been using based on Schroeder's paper from 1997. I performed spotlight counts on these three broods and they had one, two, and four chicks. The remaining two broods reached 50 days on 7/10 and 7/17 and I will perform spotlight counts on those as well. These two younger broods had seven and two chicks at their 35 day flush count. I have been conducting vegetation surveys at brood locations and nest sites and, like everywhere, I have noticed fewer and shorter grasses and forbs compared to last year.

I have had incidental sightings of two unmarked sage-grouse hens with broods of three chicks and seven chicks. In addition to the good apparent sage-grouse brood success, I have had sightings of several dusky grouse broods (a species of forest grouse formerly called blue grouse) this year. We usually see a few dusky broods over the course of the field season but we are seeing them on a regular basis.

The radio-collared sage-grouse are making some movements that I have not seen in the previous two years. They are using different ridges and portions of ridges on Anthro that I haven't noticed before. Two of our hens left the mountain entirely. One of these grouse is a translocated hen that has consistently left Anthro mid-summer the past three years. The other hen is a resident that we caught this spring and was last heard to the south of Anthro. I spent a day last week searching the Tavaputs Mountain for these missing grouse. This coming week I will spend time searching around the Whitmore Park and Emma Park areas for these hens. In addition, Brad Crompton has agreed to scan for my missing grouse while he is out tracking his grouse on the Tavaputs.

I hope all is well with you. If you have any questions or would like to know more, do not hesitate to contact me.

~Orrin

The Sage-grouse of Bald Hills

Cheyenne Burnett is pursuing a master's degree at Utah State University. Her research is focusing on defining habitat use patterns and seasonal movements of greater sage-grouse in southwestern Utah. These populations are the southernmost sage-grouse populations in North America. Her advisor is Nicki Frey. Cheyenne can be contacted at cheyburnett@gmail.com.

Hello from Southwestern Utah,

This year has been going very smoothly with the assistance of two full-time field technicians, periodic help from two BLM interns, and other volunteers. This has allowed me to begin analysis, writing, and attending conferences this summer while continuing to collect data for my second field season.

We are currently tracking 36 radio-collared birds (13 hens and 23 males). Approximately 25% of the collared birds are hanging out in a large mixed-sex group in Minersville, UT. These birds are found within and directly adjacent to cultivated alfalfa fields. The alfalfa fields are likely being used because of the access to water and high number of insects. Last year the birds used the same fields, but they were growing corn. One of the hens actually moved her brood about 10 km from Little Horse Valley to hang out with the adults in the agricultural fields, so clearly this habitat is important. Unfortunately, that hen and her two or three chicks were killed when they mowed the fields a couple of weeks ago. This is the first cultivation mortality that I have documented and it is likely because the hen was being vigilant and did not flush to help conceal her chicks.

The majority of radio-collared birds are using similar habitat as last year in the Bald Hills area east of Minersville highway and south of the town of Beaver. This area is recovering from a large fire and the diversity of grasses, flowering plants, and shrubs attract insects. This habitat does not, however, provide a lot of cover. We are finding that these birds are using the shade of Juniper trees during the day, which is very unusual for this species. Most of the birds that we radio-collared at the new Little Horse Valley lek moved either to Minersville or the Bald Hills for the summer. There is one single brood-less hen that remains in Little Horse Valley.

We are currently tracking four hens with broods, which is exciting because we only had one brood this time last year. We are collecting vegetation data from the brood locations as well as other collared bird locations. We have not analyzed this data yet, but it looks like these birds are utilizing marginal sage-grouse habitat throughout the study area. We will be finishing the data collection the end of August and plan on completing the analysis and reporting by the end of this year.

~ Cheyenne

Fences and Sage-grouse in the Hamlin Valley

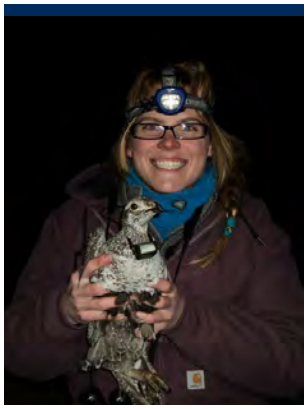
The Hamlin Valley population of sage-grouse, located in Southwestern Utah along the Utah-Nevada border, is turning out to be a tricky bunch of grouse. The population is small and the terrain is rough, but somehow we managed to get around 20 birds collared this year. This year's telemetry data is revealing some really cool information on the movements of the birds. It was originally thought that all the birds might be Utah residents, but now it appears that about ¼ actually move to Nevada post-breeding.

As we all know, this year is much hotter and drier than last year. So far this summer, Hamlin Valley has experienced two fires. The White Rock fire remained mostly in the pinyon-juniper habitats, therefore not impacting the grouse. However, the smaller unnamed fire that was only in Nevada occurred right where a few of my birds were spending the summer. For a few days, the birds remained within 1 mile of the fire and all the extinguishing activities. After the fire was out and the crews gone, they high-tailed it about 2 miles further west and higher elevation. But the good news is, the birds made it out alive.

After the breeding season this year, I wrapped up the collision portion of my study. This study aimed to determine how fences might contribute to mortality of grouse in this fringe population. After walking over 100 miles of fences, repeatedly in all seasons, I found zero sage-grouse collisions. So, that seems to be good news for this small population of grouse, where any loss for any reason would be a big deal. Coming up the rest of the summer into fall, I will be looking at grouse avian predator usage of fences. I will be characterizing fences, habitats, and other features that may increase predator perching which could lead to increased grouse predation. As well as telemetry and characterization of the movements and habitats this population is found in.

The completion of this project will contribute to basic knowledge of the habitat use and distribution of sage-grouse in Hamlin Valley and of populations at the southern-most edge of their range. It also has management implications to state and federal parties if the grouse are found to be crossing into both Utah and Nevada. The fence portion of the study will contribute knowledge to collision rates and collision factors in low-density populations as well as fence design that could reduce mortality. The data collected on raptor/raven usage of fences will contribute knowledge to fence design that increase the likelihood of perching events and provide information leading to management decisions that could reduce predator usage of fences in sage-grouse habitat.

~Heather



Heather McPherron is pursuing a master's degree at Utah State University. Her research is focused on habitat use and distribution of sage-grouse in Hamlin Valley and factors affecting collision rates with fences. Her advisor is Nicki Frey. Heather can be contacted at heather.mcpherron@gmail.com.

Sage-grouse Forage Kochia, and Grouse Creek: A Place Like No Other

Hello All!

I hope everyone is staying cool this summer and that the fires have not negatively affected your personal property structures. There were four new fires out this direction last week, but none of which have affected my collared sage-grouse. This is my third and final field season, and I wanted to provide a summary of recent proceedings.

There are many factors associated with this research, including the impact of green-stripping with the use of forage kochia. As you may recall, with the help of BLM, in late 2010 we created fire breaks that were 300' wide and encompassed 890 acres across Badger Flat. We re-seeded these green-strips with forage kochia, a semi-shrub that keeps a high moisture content and can prevent the spread of wildfire. By July of 2011, the forage kochia began to emerge on Badger Flat (Keg Springs Rd.). Sage-grouse were present on the Badger Flat site from January-May 2012. This year, sage-grouse used the new green-strips as more lekking grounds. In 2011, sage-grouse did not move north until the end of June or early July. However, due to unusually warm weather and an early dry season, most of the sage-grouse moved north by the end of May this year.

Currently, I have 10 hens on air. Of these 10 hens, eight nested in 2012. There was a total of three re-nests (one hen re-nested twice and another hen re-nested once). I had three successful nests, but one brood was predated within the first week. I am still tracking the other two broods, one in Kimball Creek region and one in an area west of Twin Meadows. Similar to the past 2 years, there was a high mortality rate for males. I have had seven mortalities this year, all of which were males. I had 17 males on air throughout the spring.

I am currently still tracking males and females. This information will be used to determine survival statistics and movement patterns. I have also completed hundreds of vegetation plots, which will be used to determine habitat use by sage-grouse across Badger Flat, nest sites, and brood-rearing sites. This summer I am using chemical analysis to determine if sage-grouse are consuming the newly planted forage kochia. I am also analyzing the use of the treated area by sage-grouse and creating models of anthropogenic structures within the Grouse Creek Watershed.

~Stephanie

Stephanie Graham is pursuing a master's degree at Utah State University. She is researching sage-grouse ecology and the effects of green-stripping on sage-grouse in western Box Elder County. Her research focus includes evaluating how greater sage-grouse may use forage kochia as cover and food. Forage kochia has proven its worth in firebreaks. Because of its high protein content and structure biologists are optimistic it could provide an ecological bridge to restore areas that are susceptible to wild fires because of cheatgrass invasions. Her advisor is Terry Messmer. Stephanie can be contacted at stephanie.graham@aggiemail.usu.edu.

Utah's Community-Based Conservation Program
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If it's not good for communities, it's not good for wildlife.

James Taylor is pursuing a master's degree in range ecology and management at Utah State University. His research focuses on restoring sage-grouse habitats using livestock and mechanical methods. His advisor is Terry Messmer. James can be contacted at jmtaylor44@msn.com.

Cows, Sheep, and the Plow: Restoring Sage-grouse Habitat in Northeastern Utah

Dear Utah Partners,

This is a brief summary of the 2012 field season for my project is entitled "Evaluation of Mechanical, Biological, and Chemical Treatments to Restore Sagebrush Steppe in Northeastern Utah."

My research technician and I started field work in early June. We soon discovered that due to low soil moisture levels leading to stunted plants, the measurement and identification of vegetation on my sites was very difficult.

As we did last year, we took vegetation measurements on the 16 plots on Deadman's Bench, 16 plots on Anthro Mountain, and 12 plots on Rock Springs Mesa. Sage-grouse pellet count surveys were collected on Deadman's Bench and Anthro Mountain. We also collected for analysis plant samples from Deadman's Bench. I am currently in the process of getting my plant samples ground for nutrient analysis.

We did note that sage-grouse pellet counts revealed much greater usage of the treatment plots by sage-grouse this year than last, in spite of the much drier conditions and retarded plant growth.

As soon as I obtain lab results for my plant samples, I will continue to outline and develop my thesis so that I can be ready to defend it in November of this year.

I was very encouraged to see that the pellet count numbers had increased significantly, since this indicates to me that the treatments applied to the test plots have been beneficial in increasing sage-grouse usage of the treatment plots.

~James

Utah's Community-Based Conservation Program Mission

Utah's Community-Based Conservation Program is dedicated to promoting natural resource management education and facilitating cooperation between local communities and natural resource management organizations and agencies.

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