

# **Bear Lake Sage-grouse Research Project 07-06-2012 Update**

## **Casey J. Cardinal**

### **Introduction-**

Greater sage-grouse (*Centrocercus urophasianus*; hereafter sage-grouse) was designated as a candidate species in March 2010 by the U.S. Fish and Wildlife Service (USFWS) for protection under the Endangered Species Act. In the 12-month finding, the USFWS determined that sage-grouse range wide warranted protection under the ESA but their listing was precluded because of higher conservation priorities.

Sage-grouse occupy sagebrush-steppe (*Artemisia* spp.) and require large expanses of sagebrush habitat. Sage-grouse currently occupy < 60% of the presettlement range, which includes 11 states and 2 Canadian Provinces. Declines in sage-grouse populations have mainly been attributed to habitat loss and degradation of the sagebrush-steppe ecosystem.

The Bear Lake Plateau and Valley (BLPV) sage-grouse population occurs at the edge of the Wyoming Basin in the southeastern subpopulation. Populations of sage-grouse at the edge of the range-wide distribution, such as the BLPV population, often depend on dispersal from connecting leks to sustain the genetic variation of these populations.

Because sage-grouse are capable of migrating considerable distances, the sage-grouse inhabiting my study area are believed to use habitats in three states. Pilot research conducted in 2010 confirmed this belief, but the magnitude and importance of the interchange is uncertain (C.J. Cardinal, unpublished data). Obtaining this information could aid in the conservation of the BLPV sage-grouse population if the seasonal movements include multiple states where they are subjected to the jurisdiction of different state laws and management plans.

### **Purpose and Study Objectives**

My research has been designed to provide managers with more information about the ecology, seasonal movements, and habitat-use patterns of the sage-grouse populations that inhabit the BLPV relative to existing or potential land uses. Migration information is important to delineate population dynamics, identify essential habitats, and determine potential effects of land-use on species conservation.

My research will determine population vital rates (nest success, brood success, and survival), seasonal movement and habitat-use relative to land use and jurisdictional boundaries. This information will provide a basis for cooperation for Idaho, Utah, and Wyoming to jointly manage the population in this area. This research will also define the core use areas of important seasonal and temporal habitats in the Bear Lake Plateau and Valley. This could be important for targeted conservation efforts in the future.

## Study Area-

The Bear Lake Plateau and Valley Study Area consists of over 400,000 acres in Bear Lake County, Idaho, Rich County, Utah, and Lincoln County, Wyoming. The elevation of the study area ranges from 5900-8200 feet. The BLPV is comprised of many different land ownership and management entities. This area is mostly of private land, with some patches of public Forest Service, U.S. Fish and Wildlife, Bureau of Land Management, and state-owned land.

## Radio-Collaring Sage-Grouse

The 2012 snow melt came much earlier this year than the previous year. We were able to get into the study site at the beginning of March to start trapping. The capture distribution from the 2012 trapping season can be found in Table 1. We captured 37 new birds- 13 females and 24 males. In addition, we captured 4 males with dead collars and recollared these as well. With the collars deployed, the season started with 47 cocks and 30 hens on air.

Table 1. Distribution of sage-grouse captured Spring 2012 in the Bear Lake Plateau and Valley.

	<b>Adult</b>	<b>Yearling</b>
Bloomington (2B025) / Paris (2B003)		
Female	1	0
Male	5	4
Eden (2B014 and 2B015)		
Male	5	1
Indian Creek (2B042 and 2B043)		
Female	6	1
Male	3	2
Sheep Creek (2B032)		
Female	4	1
Male	7	1
<b>TOTAL</b>		
<b>Female- 13</b>	11	2
<b>Male- 28</b>	20	8



### **Nesting-**

At the beginning of the season, we started with 30 hens on air. As of July 1<sup>st</sup>, we have a total of 23 hens on air. A total of 19 nests were found during the 2012 spring and summer. Two hens are currently still nesting. Of the 17 completed nests, 7 were successful hatches and 12 were failures. Of the 7 dead hens, 4 were killed on nest, and 3 were killed post- nest failure.

Of the nest failures it appeared that 5 depredations resulted from avian predators, and 7 depredations resulted from mammalian predators.

### **Broods-**

As of June 23<sup>rd</sup>, 6 of the 7 successful nesting hens were still observed to have chicks.

<b>Hen</b>	<b>Chicks Counted</b>	<b>Brood Age</b>
SGF1126	2	39 days
SGF1187	None observed, but acting if brood was alive	39 days
SGF1166	4	38 days
SGF1184	1	34 days
SGF1129	2	31 days
SGF1169	3	30 days
SGF1125	2	9 days

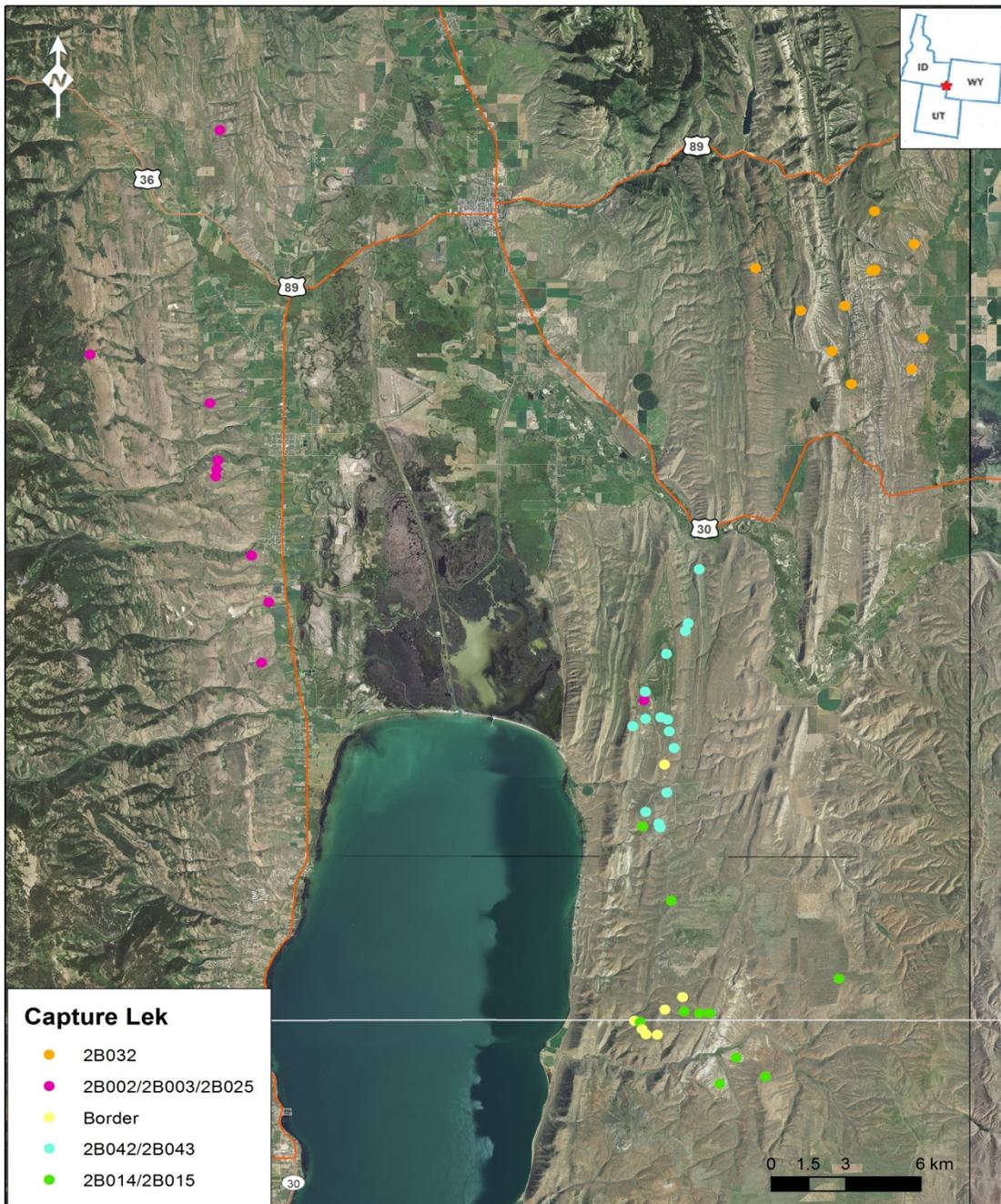
### **Mortalities-**

During 2012, there have been 12 mortalities- 6 from mammalian predators (5 hens, 1 cock), and 6 from avian predators (2 hens, 4 cocks). The majority of the male mortalities happened during April and May when the cocks were in their breeding plumage. The hen mortalities occurred during May and June, and of the 7 hens killed, 4 mortalities occurred on nests. In addition to the mortalities, 3 collars were slipped by males during the spring.

## Movements-

As during previous years, sage-grouse were found to move between states to different leks. This is mostly observed in males and females on the east side of the lake moving between Idaho and Utah. During 2012, sage-grouse were found to cross natural and anthropogenic barriers including Bear Lake, Bear River, highways, and residential areas. This spring, we observed our first sage-grouse to permanently relocate from the west side of the lake to the east side.

## Most Recent Bear Lake Sage-grouse Locations



## **Work Schedule-**

For the remainder of the summer until mid-August, I will continue to locate the birds weekly, and pending funding once a week in the fall as well as once a month in the winter. I will continue to monitor nesting hens and record success or failure. I will finish vegetation measurements for nests and brood locations. Also, I will walk random transects to determine sage-grouse presence or absence in areas. Finally, I will create a habitat fragmentation index to determine if the fragmentation observed constitutes functional habitat loss. I will use remote sensing to look at land use change over the last 30 years and classify habitat and non-habitat in the Bear Lake Plateau and Valley Study Area. These areas will be compared to location and presence/absence data.

My longer term plan is to complete all data input and analysis this fall. I will write and prepare to defend my thesis in the spring.