

**OWYHEE COUNTY RESOLUTION NO. 13-09**

**ADOPTING THE REVISED OWYHEE COUNTY SAGE GROUSE  
MANAGEMENT PLAN DEVELOPED BY THE OWYHEE COUNTY SAGE  
GROUSE LOCAL WORKING GROUP AS AN OWYHEE COUNTY PLAN**

WHEREAS, The Owyhee County Sage Grouse Local Working Group (LWG) is a subcommittee of the Owyhee County Natural Resources Committee (NRC); and

WHEREAS, The NRC reports to and makes recommendations to the Board of County Commissioners; and

WHEREAS, The LWG completed a review and revision of the LWG's Sage Grouse Management Plan and said revision was then reviewed by the NRC; and

WHEREAS, The NRC referred the revised plan to the Board of County Commissioners with the recommendation that it be adopted by the Commission as a County Plan; and

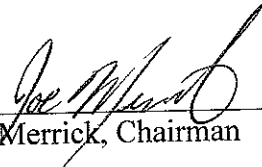
WHEREAS, The Board reviewed the submitted plan and carefully considered the recommendation of the NRC; and

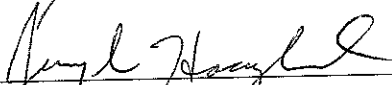
WHEREAS, Exhibit A contains a copy of the revised plan and is hereby made a part of this Resolution; and

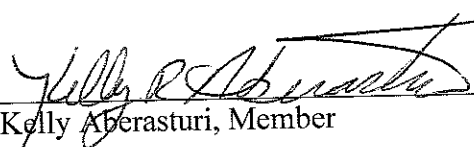
IT IS HEREBY RESOLVED, for good cause shown, that the Owyhee County Board of Commissioners hereby adopt the Revised Owyhee County Sage Grouse Management Plan as the County plan which replaces the 2004 Revision Version of the plan.

**IT IS FURTHER RESOLVED THAT** this Resolution is effective on the date of signatures of the Board.

Dated this 8th day of April 2013.

  
\_\_\_\_\_  
Joe Merrick, Chairman

  
\_\_\_\_\_  
Jerry L. Hoagland, Member

  
\_\_\_\_\_  
Kelly Aberasturi, Member

ATTEST: Charlotte Sherburn, County Clerk

Charlotte Sherburn

DATE: April 8, 2013

**SAGE-GROUSE MANAGEMENT PLAN  
OWYHEE COUNTY, IDAHO**

**ADOPTED JUNE 2000**

**AMENDED AND UPDATED  
2004 & 2013**

**Owyhee County**

**Sage-grouse Local Working Group**

**Release Date – April 8, 2013**

# **SAGE-GROUSE MANAGEMENT PLAN**

## **PURPOSE OF THE PLAN**

The purpose of the Owyhee County Sage Grouse Management Plan is to use local input and knowledge to develop a long-term collaborative management plan providing a framework for Sage-grouse management in conjunction with federal, state and Owyhee County land management plans and actions in Owyhee County. This long-term management plan will provide guidance to resource and land management agencies as well as Owyhee County in dealing with issues that directly or indirectly affect the Goal of the local working group. Although the plan proposes a significant number of action items, the initial emphasis is to provide better information on sage-grouse and sage-grouse habitat in Owyhee County that will permit more informed decisions in the future.

## **GOAL: PRESERVE AND INCREASE SAGE-GROUSE POPULATIONS AND THEIR HABITAT IN OWYHEE COUNTY**

### **GUIDING PRINCIPLES FOR PLAN DEVELOPMENT**

The Idaho Fish and Game Commission is legislatively mandated and authorized to preserve, protect, and perpetuate the state's fish and wildlife resources. The Idaho Department of Fish and Game (IDFG) established the Idaho Sage-grouse Advisory Committee to develop a state plan that addresses concerns for declining sage-grouse populations in the state (2006). The plan called for the establishment of local sage-grouse working groups to develop local plans and to implement programs that maintain, improve, and restore sage-grouse populations and their habitats.

The Owyhee County Natural Resources Committee is charged by the Owyhee County Commission with the development, revision, and implementation of the Owyhee County Natural Resources Plan (Owyhee County 2009). The plan addresses all of the resource values associated with these lands. As issues related to land management arise, the Owyhee County Natural Resource Committee initiates the county process to address those issues.

The Idaho Department of Fish and Game and Owyhee County have a mutual interest concerning declining sage-grouse populations. For this reason, it is in the interest of both parties to work closely and cooperatively in the development of a sage-grouse population stabilization and recovery plan. The Owyhee County Sage-grouse Local Working Group (LWG) was established to build a management plan that would create a process and put into place a framework that would guide management efforts aimed at improving sage-grouse populations and reverse declines in sage-grouse populations.

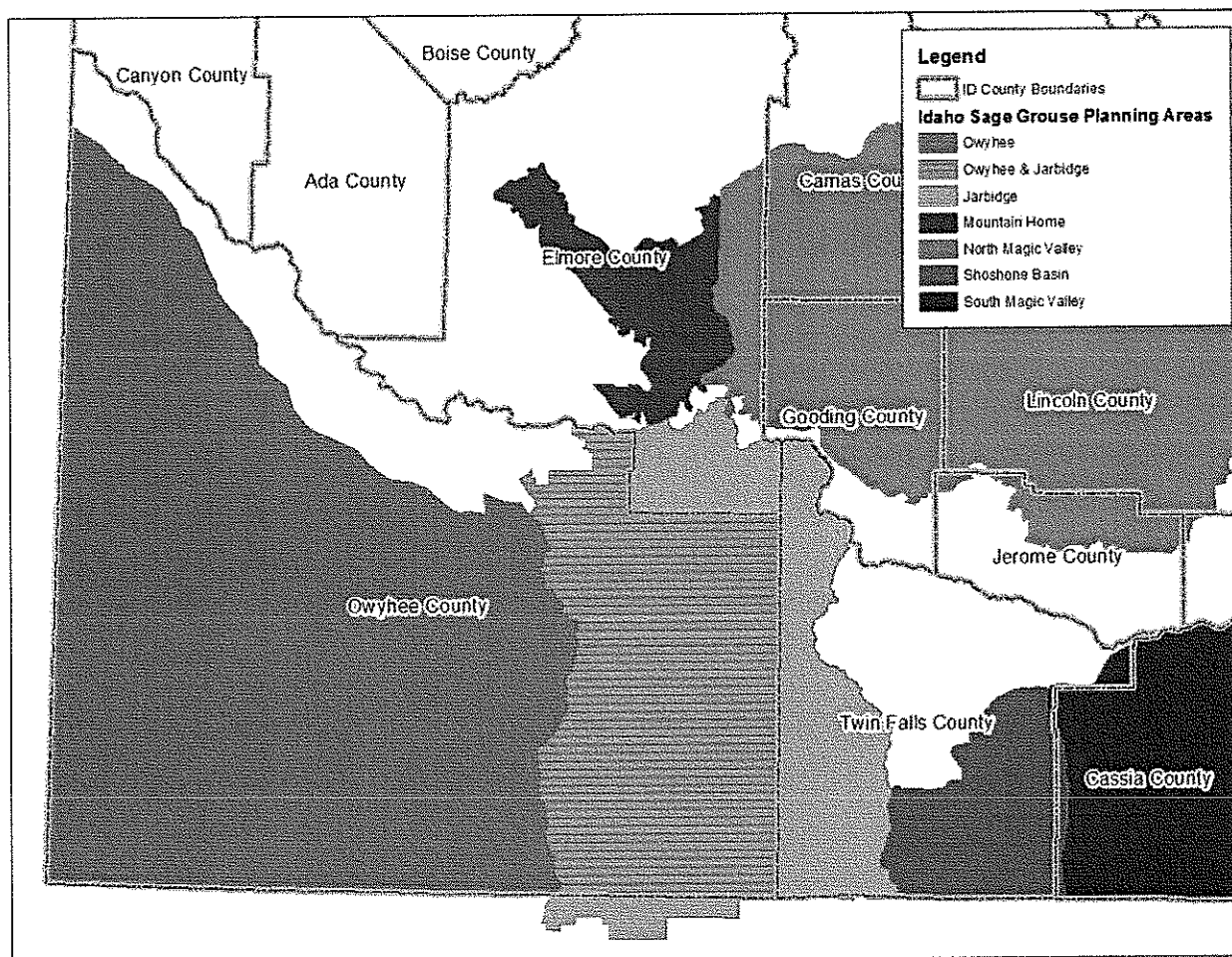
The Owyhee County Sage-grouse LWG desired participation from as diverse a group as possible to ensure a collaborative and cooperative effort from all resource interests. Regular meetings, usually quarterly, are held with as many as forty participants. Representatives have included: US Department of the Interior Bureau of Land Management (BLM), US Fish and Wildlife Service (FWS), IDFG, Owyhee Cattlemen's Association, Idaho Cattleman's Association, Idaho Bird Hunting Society, Owyhee County Natural Resource Committee, Idaho Wildlife Federation, Idaho Wildlife Council, The Nature Conservancy, US Department of Agriculture Natural Resources Conservation Service, Farm Service Administration, Ada County Fish and Game League, Chipmunk Grazing Association, 71 Livestock Association, Rocky Mountain Elk Foundation, Idaho Department of Lands, Southern Idaho Off-Road Association, USDA Wildlife Services, US Air Force, Idaho State Department of Agricultural, and other general public interests.

### **GUIDING PRINCIPLES FOR THE LOCAL WORKING GROUP**

1. Invite and include everyone interested in sage-grouse management in Owyhee County.
2. Respect individual views and make decisions through collaboration and consensus.
3. Develop management plans and actions that are compatible with the objectives and actions contained in the Owyhee County Land Use and Management Plan for Federal and State Lands.
4. Develop management plans and actions that are compatible with the purpose and intent of the 2006 Conservation Plan for Greater Sage-Grouse in Idaho.
5. Implement management actions in ways that meet this Plan's Goal as agreed to by the local working group.
6. The Plan is intended to be a fluid and dynamic plan that may change as new information becomes available.
7. The Plan will be reviewed and updated every 5 years.
8. Funding will be required to accomplish needed actions.

### **MANAGEMENT PLAN DEVELOPMENT**

The area of concern for the Owyhee County Sage-grouse LWG encompasses Owyhee County proper. The portion of the Owyhee County Sage-grouse LWG area east of the Bruneau River is shared with the Jarbidge Sage-grouse LWG (Figure 1). Both working groups will address sage-grouse issues in this area and will communicate ongoing issues and actions with the other. The Owyhee County Sage-grouse LWG compiled an extensive list of issues concerning sage-grouse. This list was narrowed to forty-six issues of greatest importance. These forty-six issues were ranked and consolidated under four sage-grouse management efforts.



**Figure 1.** Sage-grouse Local Working Group Boundaries. Note the area shared by the Owyhee and Jarbidge Sage-grouse Local Working Groups.

Sage-grouse Management Efforts Are Focused on the Following:

1. Sage-grouse Habitat
2. Sage-grouse Research and Monitoring
3. Program Funding
4. Sage-grouse Predators

This plan reflects changes and updates to the management efforts of the LWG since 2004. It follows criteria recommended under the USFWS Policy for the Evaluation of Conservation Efforts when Making Listing Decisions (PECE). The PECE matrix is attached as Appendix B.

## **SAGE-GROUSE POPULATION INFORMATION**

In August 1997, the State of Idaho developed the Idaho Sage Grouse Management Plan to address what were termed “record low populations” and “dramatic downward trends.” The Idaho plan identified 13 local management areas and presented data purported to demonstrate the “dramatic downward trends” for each area including Owyhee County. In response, Owyhee County entered into a MOU with the Idaho Department of Fish and Game in 1998 to develop a sage-grouse management plan. Two years later a plan was completed. Many of the management actions identified in that plan have been implemented, and more are in various stages of completion.

One of the initial actions of the Owyhee County LWG was to examine the existing data and determine where more or better data were needed. The existing population information relied heavily on lek counts, reproductive data obtained from wings counts and, to some extent, hunter success rates and total take data. It became clear that the data purportedly showing population decline was entirely inadequate to quantify populations or trend and that no direct census information was available. The analysis of existing data could not justify a conclusion that populations were in decline or that the data differences over time were not normal fluctuation. For example, predator control activities were extensive and effective during the 1950s and 1960s, and some believe sage-grouse populations were artificially high.

There are four primary sources of information on sage-grouse populations and distribution in Owyhee County: lek counts and surveys, recruitment of young to the fall population, hunter harvest and success, and radio telemetry studies. Each of these data sources has its limitations. However, they are the best available tools to make informed decisions. Hunters provide most of the information about recruitment of young. In 2000, a Sage/Columbian Sharp-tailed Grouse validation was required to specifically identify sage and sharp-tailed grouse hunters for telephone surveys. This has substantially improved hunter take information and data. Sage-grouse population information for Owyhee County is presented in Appendix A.

### **LEK COUNTS AND SURVEYS**

Lek counts census the number of males attending leks along established routes. Lek surveys classify known leks as active, inactive, unknown each year (Autenreith et al. 1982) (Figure 2). The standard lek count procedure is to count each lek four times each season. Historically, some were counted only once or twice; in some years not all leks were counted or no leks were counted. This reflects the remoteness of the sites, the difficulty of overland travel to reach the sites in early spring, and untimely inclement weather. Not only have lek counts been somewhat sporadic, but there have been few surveys to identify when and where birds abandoned a site and moved or shifted to another site. Thus, some counts simply were conducted in the wrong place.

Currently, ten lek routes are surveyed annually along accessible areas of Owyhee County, mainly along State Highway 51, the Owyhee Front, and western Owyhee County near Cow Creek. These lek routes help us identify fluctuations in local populations (Table 1). However, these leks only cover a small portion of the overall sage-grouse habitat that exists in Owyhee County. During the late 1990's the BLM began to conduct aerial surveys (helicopter) throughout Owyhee County to update the sage-grouse lek database developed by IDFG (Appendix A). Because not all lek routes were counted each year and some were not fully counted, the total number of birds counted annually did not provide useful comparative information (Table 1, Figure 3). Although

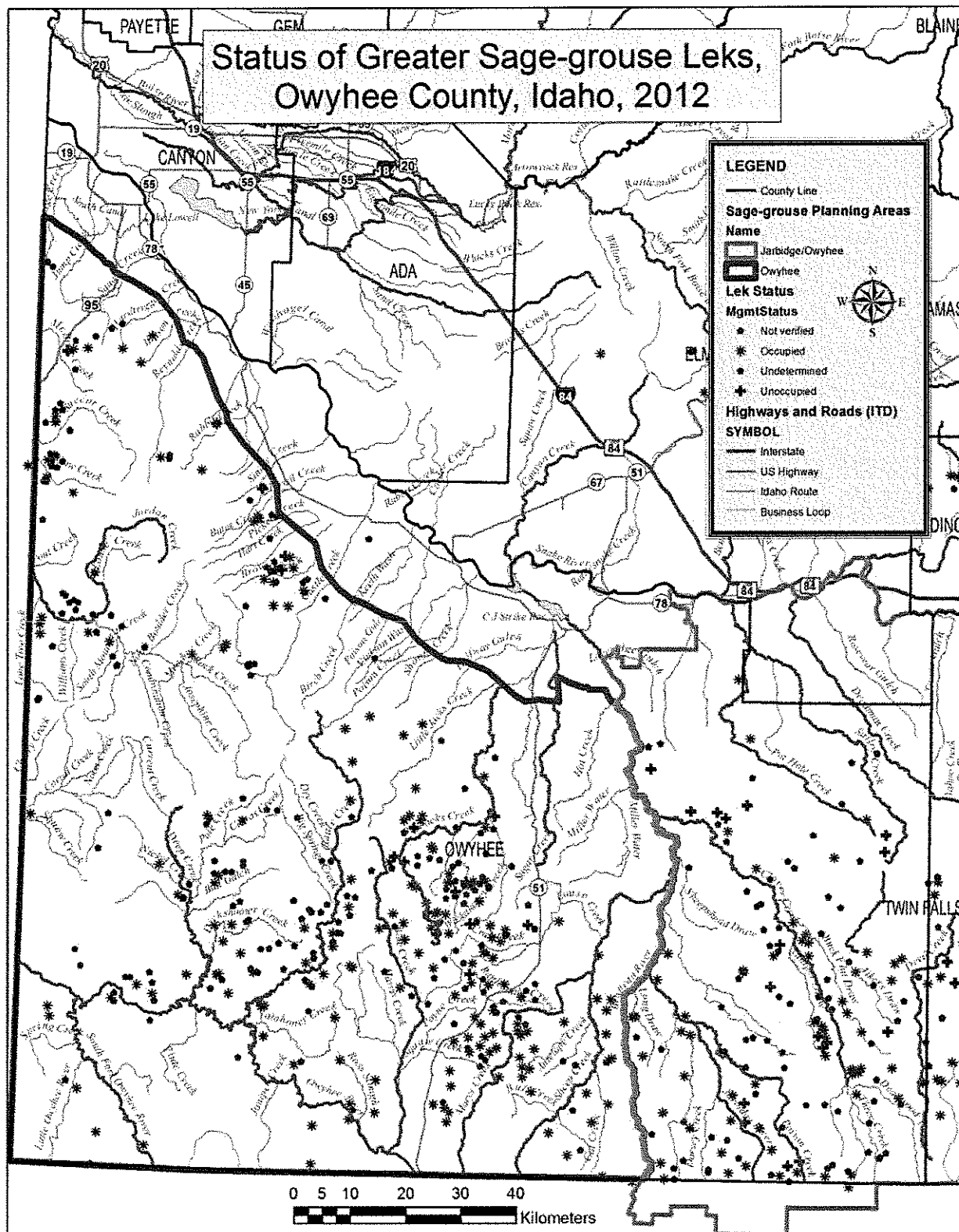
imperfect, the average number of birds counted per lek route provides an indication of potential changes in total population (Figure 4).

The flights have since evolved into annual surveys that cover most of the areas not covered along ground-based surveys. There are two methods used to fly aerial surveys. The transect method is used in areas with high concentrations of sage-grouse leks. The large series of high elevation plateaus running from the Owyhee Mountains to the Jarbidge Mountains known as the Bruneau Escarpment have some of the highest densities of sage-grouse leks across their range. Transects are flown north to south ½ mile apart from eastern most transect to the west. The Bruneau Escarpment has been flown annually since 2006. An examination of ID F&G flight data shows that a given lek may relocate annually and may change by up to 1.5 miles particularly in low sagebrush plant communities. The remainder of Owyhee County is flown from lek to lek. This allows the coverage of very large areas on each morning survey. Data collected from the transect surveys can be used for trend analyses similar to ground based lek routes because the exact same area is flown using the same method annually. Lek-to-lek surveys identify occupancy status, which is useful for land-use planning. Lek count surveys are useful for trends in the population (Figures 3 & 4). However, lek count and harvest data cannot be used to estimate population size, and they require careful examination and cautious interpretation when used to estimate population trend.

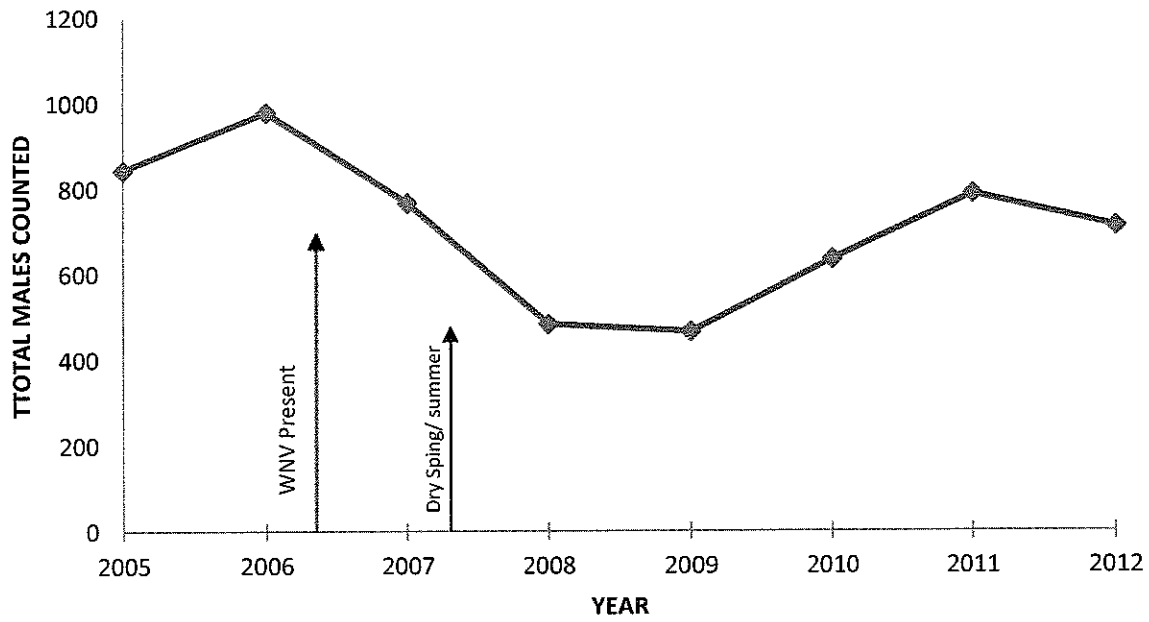
**Table 1.** Owyhee County Sage-grouse Lek Route Trends, 2003-2012 (IDFG 2012b). Number of males/number of leks.

Route	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Big Jack's Creek								87/5	114/5	116/5
Brown's Creek	24/3		28/4	32/4	31/4	9/4	14/4	12/5	30/5	42/5
Cow Creek	62/4			28/1	24/3	31/4	61/4	69/3	52/3	13/3
Oreana	79/4	73/3	93/4	83/3	54/3	55/3	40/4	63/7	74/5	68/5
Wickahoney West <sup>d</sup>	48/1	63/1	99/1	90/1	78/1	41/1	31/1	31/1	41/1	36/1
Rocky Knoll Route <sup>b</sup>			204/6	154/6	93/7	73/5	91/6	153/7	198/7	146/8
Roland Road	90/3	117/3	122/3	77/3	77/3	39/3	44/3	43/3	65/3	59/3
Sheep Creek	46/6	54/6	87/6	120/6	130/6	95/6	95/6	100/6	83/6	81/6
Total	349/20	307/13	633/24	584/24	487/27	343/26	376/28	558/37	657/35	561/36
Mean Males/Lek	17	24	26	24	18	13	13	15	19	16

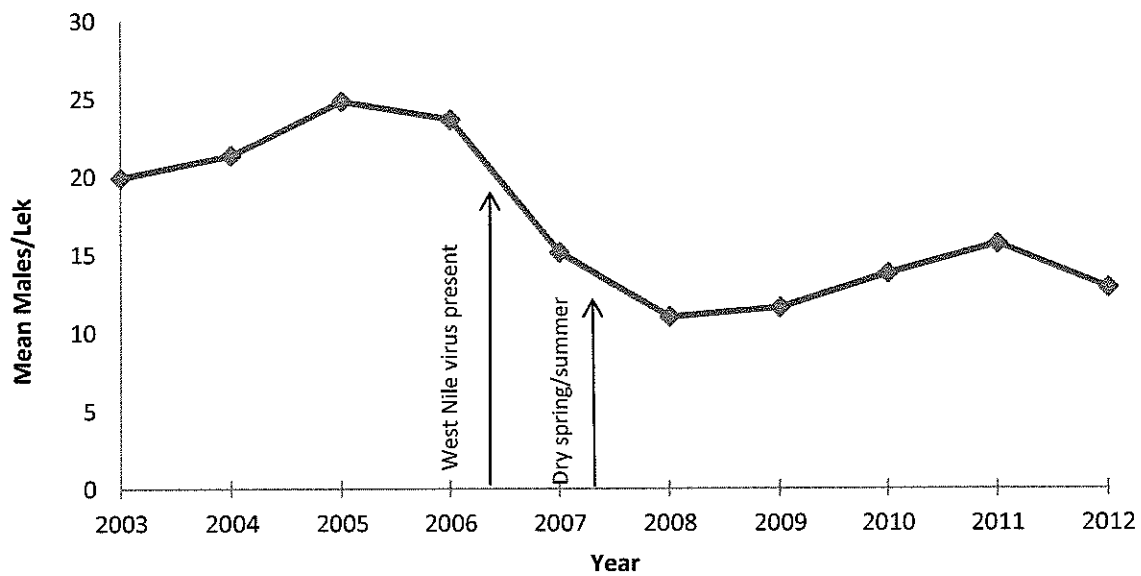




**Figure 2.** Greater Sage-Grouse leks in Owyhee County, ID (IDFG 2012b).



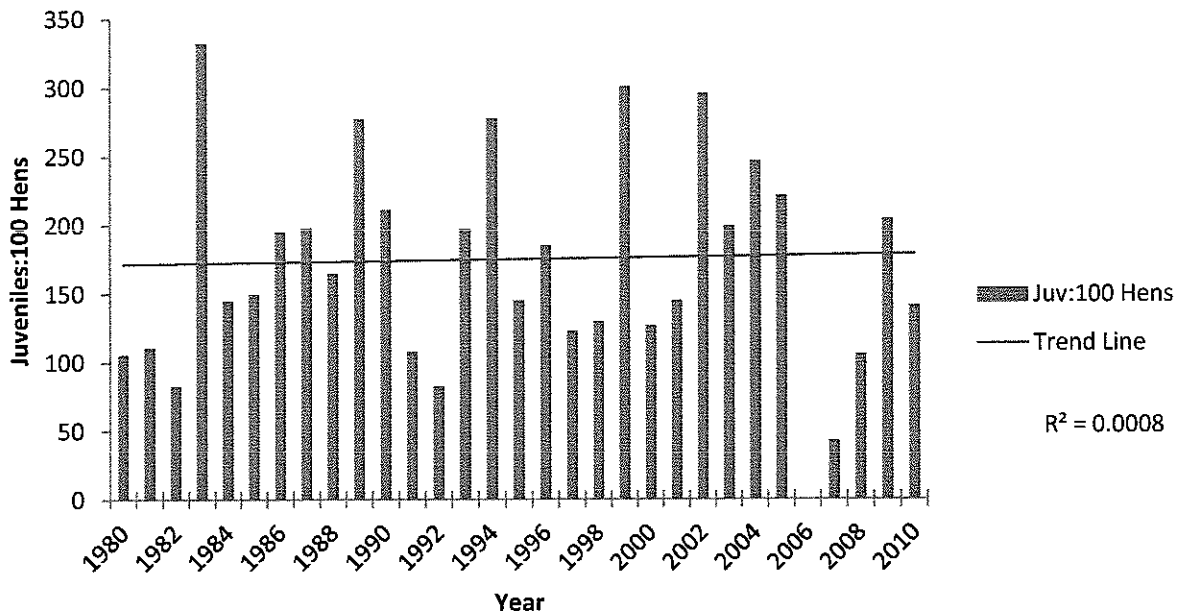
**Figure 3.** Total number of male Greater Sage-Grouse observed while conducting aerial lek surveys along the Bruneau Escarpment in Owyhee County, Idaho, 2005-2012 (IDFG 2012b).



**Figure 4.** Mean number of male Greater Sage-Grouse per lek along 8 lek routes in Owyhee County, Idaho 2003-2012 (IDFG 2012b).

## RECRUITMENT OF YOUNG TO THE FALL POPULATION

Recruitment data are gathered by examining wings from hunter-harvested sage-grouse. Sex and age can be determined from examining wings. Research on sage-grouse population dynamics indicates that the number of juvenile sage-grouse surviving to the fall for each adult hen is a good indicator of population trend (Johnson and Braun 1999). A ratio of 2.25 juveniles per adult hen (or 225 juveniles per 100 adult hens) provides adequate recruitment to maintain or slightly increase a population (Connelly et al. 2000) (Figure 5). Average production between 1980 and 2005 was 151 juveniles per 100 hens. Most wings are collected from hunters in the Battle Creek / Big Springs area and south of Grasmere, areas with generally stable habitats. Productivity estimates are presented for all of Owyhee County west of the Bruneau River because not enough wings are typically collected to determine differences in productivity among different areas in Owyhee County.



**Figure 5.** Hunter harvest of juvenile Greater Sage-Grouse per 100 hens in Owyhee County, ID, 1980-2010 (IDFG 2012a). The ratio of juveniles per 100 hens harvested estimates yearly juvenile production in the population. Production has remained consistent across the years, as depicted by the trend line ( $R^2=0.0008$ ). A ratio of 225 juveniles per 100 hens is believed adequate for a stable to increasing population (Connelly et al. 2000). The hunting season for sage-grouse was closed in 2006.

## HUNTER PARTICIPATION AND SUCCESS

Hunter participation and success do not provide population information except anecdotally. When grouse populations are good, hunters are more successful and vice versa. Many

factors affect hunting activity. Weather, bag limits, status of sage-grouse populations, number of licensed hunters, and human population demographics are all factors that may influence hunter numbers as well as success (Table 2). Hunter success was 1.1 birds per hunter in the 1960's and 1970's and remained virtually unchanged in the 1980's and 1990's at 0.97 (IDFG 2012a).

The average hunting hours per bird has averaged 5.7 over the past 40 years with values of 4.7 in the 1960's, 6.1 in the 1970's, 6.6 in the 1980's and 5.0 in the 1990's. The check stations in Owyhee County have run on a variety of schedules. The number of check stations has declined with the number of sage-grouse hunters. The four check stations operated opening weekend from 1958 to 1962 and again in 1999 are roughly comparable. In the 1960's and 1970's an average of over 900 hunters were checked annually. In 1999, 337 hunters were checked, about a 60% decline. By 2009, only Mud Flat check station was operated during opening weekend. Number of hunters through that check station remained static between 2001 and 2009 (average 100). The season remained the same between 1997 and 2009 (a 23-day season south of the Mud Flat Road with 2 bird bag limit 4 in possession and a 7-day season north of the Mud Flat road with 1 bird bag limit, 2 in bird possession) except for 2006 when both areas were closed due to excessive mortality caused by West Nile virus. Between 2010 and 2012, the season was 7 days, and bag limits across southern Idaho were one bird per day and 2 birds in possession.

## **TELEMETRY STUDIES**

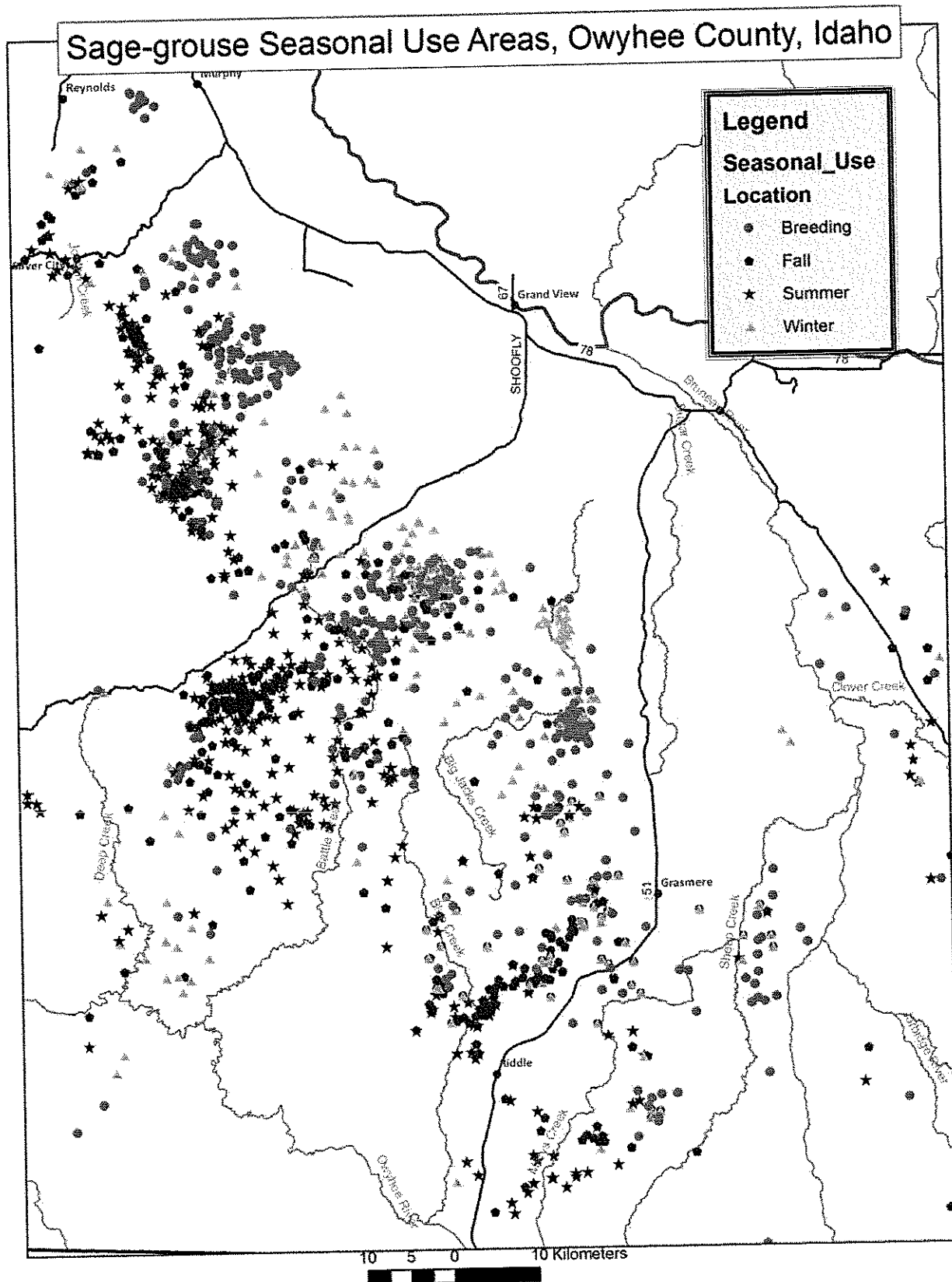
Idaho Department of Fish and Game has been collecting sage-grouse space use data through telemetry studies since the late 1990's in Owyhee County (Figure 6). These data have greatly increased the knowledge of how sage-grouse move across the landscape, how they utilize summer and winter ranges, and how West Nile virus affected populations. The LWG has a much greater understanding of seasonal use areas and important breeding areas for land-use planning because of the telemetry data collected. Movement data allowed assessment of how West Nile virus affected portions of the sage-grouse population during the outbreak in 2006.

## **IMPORTANCE OF DATA GATHERING**

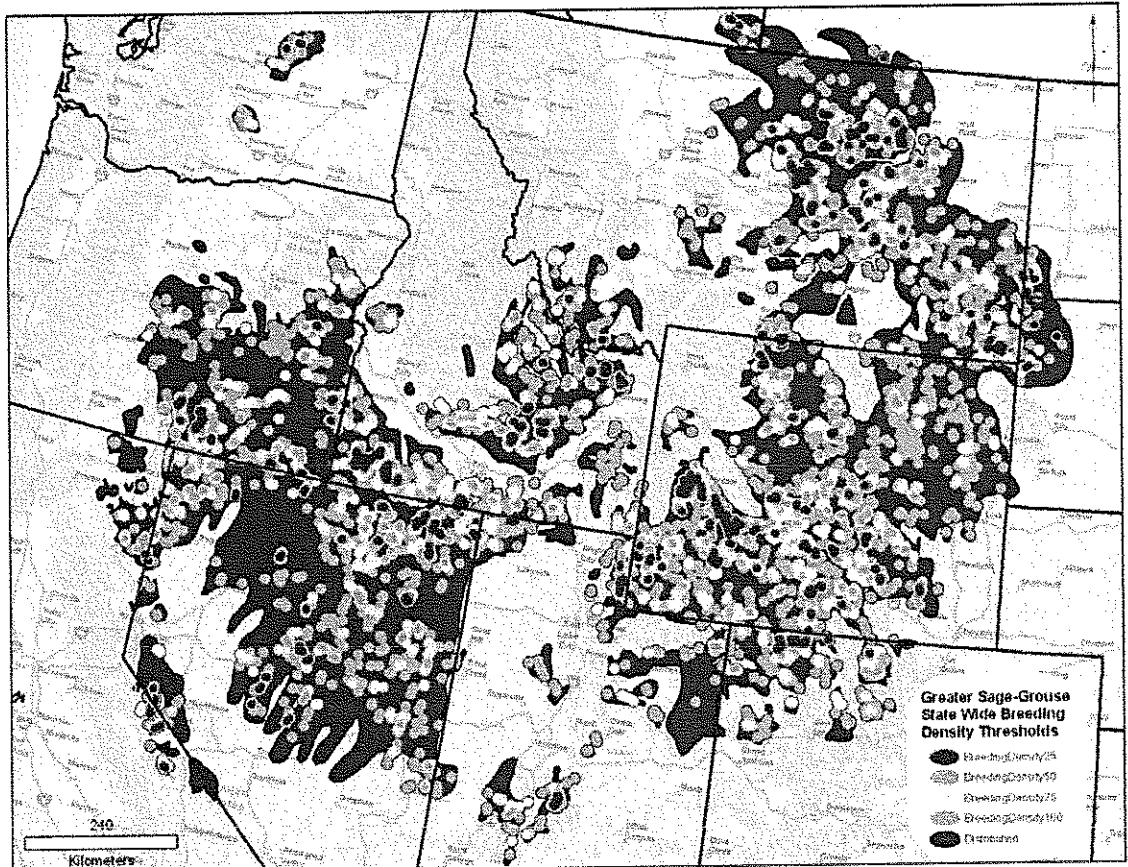
Lek route counts and aerial surveys greatly improved the knowledge of sage-grouse populations in Owyhee County and beyond (Figure 7). Information from hunters through wing analysis and harvest surveys have improved the understanding of chick production and hunter success, and telemetry studies assist in making appropriate resource use decisions. For example, these data sources assisted in making an informed decision regarding the closure of the sage-grouse season in 2006. Continued efforts to collect the best population data through lek route counts and aerial surveys will help make appropriate management decisions for sage-grouse in Owyhee County.

**Table 2.** Greater Sage-Grouse check stations results, Owyhee County, ID 1960-present (IDFG 2012a).

Year	Ck. St.	Days	Bag / Pos	Hunters	Birds	Hours	Hr / Bird	Birds/ Hunter
1960	4	2	2/2s	1,046	981	4,280	4.4	0.9
1961	4	2	2/2s; 2/2p	1,022	761	5,051	6.6	0.7
1962	4	2	2/2s; 2/2p	660	734	3,012	4.1	1.1
1963	3	2	2/2; 3/6	733	1,102	2,915	3.0	1.5
1964	3	2	2/2; 3/6	662	1,019	3,721	3.6	1.5
1965	3	2	2/2; 3/6	857	657	5,365	8.2	0.8
1966	3	2	2/2; 3/6	747	934	4,445	4.8	1.3
1967	3	2	2/2; 3/6	760	1,461	4,524	3.1	1.9
1968	3	2	2/2; 3/6	699	639	4,429	6.9	0.9
1969	3	2	2/2; 3/6	960	2,050	5,340	2.6	2.1
1970	3	2	3/3; 4/8	1,222	1,432	6,349	4.4	1.2
1971	3	2	3/6; 4/8	1,310	1,984	8,741	4.4	1.5
1972	3	2	3/6; 4/8	1,392	1,220	9,653	7.9	0.9
1973	3	2	3/6; 4/8	917	1,024	6,346	6.2	1.1
1974	3	2	2/4; 3/6	752	769	5,055	6.6	1.0
1975	3	2	2/4; 3/6	597	556	3,648	6.6	0.9
1976	3	2	2/4; 3/6	557	435	3,464	8.0	0.8
1977	3	2	2/2	441	326	2,777	8.5	0.7
1978	3	2	2/2	505	412	2,835	6.9	0.8
1979	3	2	2/2	479	558	2,431	4.4	1.2
1980	3	2	2/2	504	441	2,955	6.7	0.9
1981	3	2	2/2	464	606	2,142	3.5	1.3
1982	2	2	2/2	359	236	2,178	9.2	0.7
1983	2	2	1/1	108	37	551	14.9	0.3
1984	2	2	1/1	47	31	160	5.2	0.7
1985	2	2	2/2	161	110	710	6.5	0.7
1986	2	2	2/4	245	330	1,407	4.3	1.3
1987	2	2	2/4	291	315	1,554	4.9	1.1
1988	2	2	2/4	329	284	1,619	5.7	0.9
1989	2	2	2/4	228	222	1,199	5.4	1.0
1990	2	2	3/6	476	883	2,914	3.3	1.9
1991	2	2	3/6	476	498	2,639	5.3	1.1
1992	2	2	3/6	599	412	3,172	7.7	0.7
1993	1	1	3/6	74	58	365	6.3	0.8
1994	1	1	3/6	99	109	414	3.8	1.1
1995	1	1	3/6	71	62	260	4.2	0.9
1996	1	1	1/2; 2/4	44	29	174	6.0	0.7
1997	1	1	1/2; 2/4	34	36	133	3.7	1.0
1998	1	1	1/2; 2/4	23	23	87	3.8	1.0
1999	4	2	1/2; 2/4	337	285	1,699	6.0	0.8
2000	4	2	1/2; 2/4	365	212	1,794	6.7	.08
2001	2	2	1/2; 2/4	150	179	983	5.5	1.2
2002	2	2	1/2; 2/4	285	293	1,468	5.0	1.0
2003	2	2	1/2; 2/4	246	254	1,267	5.0	1.0
2004	2	2	1/2; 2/4	203	192	993	5.1	0.9
2005	2	2	1/2; 2/4	232	308	1,339	5.0	1.3
2006	CLOSED							
2007	2	2	1/2; 2/4	132	109	807.5	7.4	0.8
2008	2	2	1/2; 2/4	137	96	764	7.9	0.8
2009	1	2	1/2; 2/4	119	100	845.5	8.4	0.8
2010	1	2	1/2	62	35	353.5	10.1	0.4
2011	1	2	1/2	45	26	397	8.4	0.3
2012	1	2	1/2	46	43	219	5.1	0.7



**Figure 6.** Greater Sage-Grouse seasonal locations, Owyhee County, ID (IDFG 2012c).



**Figure 7.** Greater Sage-Grouse state-wide breeding density areas represent spatial locations of 25%, 50%, 75%, and 100% of the known breeding population, differentiated by color within each of the 13 States and Provinces (Doherty et al. 2010).

## **SAGE-GROUSE THREATS AND EXISTING CONDITIONS THAT AFFECT OR MAY AFFECT SAGE-GROUSE AND THEIR HABITAT IN OWYHEE COUNTY**

Although there is no conclusive evidence that sage-grouse populations are either threatened or endangered in Owyhee County, there are situations that affect sage-grouse habitat and thus provide opportunity to improve habitat and potentially increase sustainable populations. Overall improvement of sage-grouse populations and their habitat in Owyhee County will contribute to the stability and preservation of the species throughout its range. In Owyhee County, populations increased between 1995 and 2006, dropped substantially following the presence of West Nile virus in 2006 and the driest summer ever recorded during 2007, and has since increased slightly between 2008 and 2012. One positive aspect about the sage-grouse population in the Owyhee County LWG area is that the recent declines were not due to habitat loss. However, the group believes that improving and maintaining habitat where it is feasible will ensure that sage-grouse populations in the area remain strong.

The most important resource effects related to sage-grouse habitat in Owyhee County include: the encroachment of western juniper into sagebrush steppe habitats; the occurrence and past occurrences of wildfire; non-native invasive species including cheatgrass (*Bromus tectorum*), medusahead rye (*Elymus caput-medusae*), and Idaho State listed noxious weeds. Other factors related primarily to wildfire are habitat fragmentation and perennial grasslands occupying sagebrush steppe habitat. Continuous annual growing season grazing by livestock in excess of 40% utilization (including wild horse use in HMAs), may influence short and/or long term sage-grouse habitat. Direct impacts to sage-grouse populations include hunter harvest, predation, and diseases such as West Nile virus (WNV). The placement of energy development and associated infrastructure in and around sage-grouse habitat also may affect sage-grouse populations.

### **WILDFIRES IN SAGEBRUSH HABITAT**

Fire is the greatest single factor responsible for the loss of sage-grouse habitat in southeastern Owyhee County. Most fires in Owyhee County occur in the more arid Wyoming big sagebrush (*Artemisia tridentata wyomingensis*) habitat type. Wildfire size has increased in recent years. Wildfires in the Wyoming big sagebrush type are frequently either preceded by and/or followed by increases in annual grasses, especially cheatgrass. There is very limited opportunity to restore these areas to their former state, and they essentially represent a stable state that will not change without substantial human intervention. The LWG recommends protecting the best habitat before restoring burned habitat.

The increase in fine fuel in the form of cheatgrass has made many areas of Owyhee County more prone to fire and increased fire frequency. Increased fire frequency and fire size has resulted in the loss of shrubs, especially sagebrush. Sagebrush seed is dispersed by wind: 95% of seeds are deposited within 30 feet of the parent plant, which largely precludes natural reseeding of large complete burns.

Areas that have not had wildfire recurrence for 15 to 20 years typically show substantial sagebrush recruitment, especially in natural mountain big sagebrush (*A.t. vaseyana*) communities and at the higher elevation range for Wyoming big sagebrush. In addition, mountain big sagebrush typically re-establishes rather rapidly (Winward 1991), and such habitats may be fully occupied by big sagebrush in 20 to 30 years.



Historically, fire frequency was 100-240 years in Wyoming sagebrush, 70-200 years in mountain big sagebrush, and 325-450 years in low sagebrush (*A. arbuscula*) (Baker 2006). Mountain big sagebrush communities in the Owyhee Mountains had a fire return frequency of 6 to 15 years, which largely prevented juniper encroachment. These intervals have become much longer, allowing establishment of mountain big sagebrush that in turn provided safe sites for juniper establishment and significant encroachment has resulted. Because of increased fine fuel from exotic annual grasses and more human-caused wildfires, fire frequencies are now as little as 5 years in some low-elevation habitats. Management strategies to decrease wildfire in these areas include increased fire suppression efforts, focused protection of key habitat areas during a wildfire, aggressive reseeding of sagebrush and forbs, planting perennial grasses in burned areas where needed, and developing greenstrips (strips of fire-resistant vegetation planted to slow wildfires) and other fuel breaks. Seedings may need to include non-native perennial grasses in areas where the success of seeding native perennial grasses is expected to be low.

### **WESTERN JUNIPER ENCROACHMENT**

Western juniper (*Juniperus* spp.) encroachment is a primary factor influencing loss of sage-grouse habitat in west-central Owyhee County. An estimated 165,138 acres of Federal lands, 26,897 acres of State lands and 69,284 acres of private lands have experienced encroachment (USDI-BLM 2004). One study in southeastern Idaho showed a rate of encroachment of 0.4% to 4.5% per year between 1985 and 2005 (Sankey and Germino 2008). Many higher elevation mesic sagebrush sites such as mountain big sagebrush-Idaho fescue are no longer useful for sage-grouse habitat because of tree encroachment and loss of understory shrubs and herbaceous plants. Photographic records and juniper stand-age patterns clearly demonstrate that western juniper has been extending its range from the fire-safe rim-rocks and rock outcrops into valley slopes and bottoms since about the 1870's (Burkhardt and Tisdale 1976).

Juniper has a high water transpiration rate. Research in Oregon showed that a closed stand of juniper will transpire up to 14" of water annually (Miller and Rose 1999). Dense mature juniper stands intercept water moving through the soil and allow increased evaporation of precipitation. In heavy storm events, the lack of understory in juniper stands results in lower soil intake of moisture due to more rapid and increased runoff. The high transpiration rates further restrict moisture availability for species other than junipers that would naturally occupy the site. Thus mature juniper stands create a condition of lower soil moisture availability and increase competition for moisture. Shrubs, grasses, and forbs are steadily reduced and eventually eliminated from an area when juniper stands invade areas previously dominated by sagebrush and grass. Control of seral juniper stand expansion and removal of existing stands will restore the shrub-grass-forb communities that previously provided good sage-grouse habitat. Reductions of seral stands should provide an additional benefit to sage-grouse and other wildlife by providing increased water flow in streams, springs, and meadows. Restoration will need to include reseeding of sagebrush and native grasses and forbs in many areas.

## **INVASIVE, EXOTIC AND NOXIOUS WEED SPECIES**

Cheatgrass is a prominent invasive species that has established dense stands along the Snake River plain and at medium elevations along the Owyhee Front and areas south of Bruneau. This species provides a fine volatile fuel that burns more frequently and eliminates sagebrush from the site. There are several techniques available to reestablish sagebrush and perennial grasses after cheatgrass dominates a site (Monsen et al. 2004). For example, use of non-native perennial grass species has been suggested as a viable option. Seeding desirable species may prevent cheatgrass from dominating the site and allow sagebrush to re-establish naturally or through rehabilitation efforts. The cost of rehabilitation projects is quite high. Another prominent exotic species becoming established along the Oregon border in Owyhee County is Medusahead rye (*Taeniatherum caput-medusae*). North Africa Grass (*Ventenata dubia*) is another undesirable annual grass that is becoming established in Owyhee County.

Noxious weeds are those plants listed on the Idaho Noxious Weeds list (<http://www.idahoag.us/Categories/PlantsInsects/NoxiousWeeds/indexnoxweedmain.php>). The most threatening noxious weeds in Owyhee County are Leafy spurge (*Euphorbia esula*) and Whitetop (Hoary Cress; *Cardaria draba*) with a number of other listed weeds present in fewer areas and affecting fewer acres.

## **HABITAT FRAGMENTATION AND PERENNIAL GRASSLANDS**

Habitat fragmentation can result from reduced sagebrush cover due to wildfire and from subdivision and development in rural areas. Land use planning policies discourage rural area developments but there is no mechanism to prohibit development on private lands. The rural nature of the area, hot dry summer climate, and condition of road access systems also discourages such development. It is the policy of Owyhee County through their Comprehensive Plan to promote ranching and livestock grazing as a viable sustainable land use, which will preserve open space and recreational access in rural areas (Owyhee County 2010).

Wildfire can result in a change to perennial grassland in two ways. First, the area may be seeded with perennial bunchgrass to avoid invasion by cheatgrass or to maintain soil stability and watershed function. Second, areas not prone to cheatgrass invasion with a prominent understory of perennial grass will naturally recover to perennial grassland. The longevity of perennial grasslands is largely site dependent. In the more arid Wyoming big sagebrush habitat type, seedings may last for many years before significant sagebrush recruitment occurs, and intervention may be necessary to shorten the recovery period.

In the mountain big sagebrush habitat type, sagebrush recovery may be sufficient to provide sage-grouse habitat 10 to 15 years after a fire, depending on site capability and the completeness of combustion. Seeding of sagebrush on these sites is seldom necessary or cost-effective. In mountain big sagebrush sites where fire frequencies have been substantially lengthened from historical occurrences, the increased density of sagebrush both suppresses the understory, provides high fuel levels, and when burned may require seeding to initiate rapid watershed protection. In some cases, these sites may be slow to recover the shrub component and may require intervention seeding to hasten the process. Similarly, sites where seeding of perennials is normally unnecessary, the combustion may be so complete and over a large enough

area, that seeding of sagebrush may be necessary to hasten recovery.

Estimates based on GIS analysis suggest there may be as much as 300,000 acres of perennial grassland in Owyhee County (USDI-BLM 2004). No information is available to determine the relative proportions of native grassland or seedings or the relative condition of these areas as to re-establishment of sagebrush.

### **WEST NILE VIRUS**

West Nile virus (WNV; Flaviviridae, *Flavivirus*) has emerged as a possible major threat to Greater Sage-Grouse and other wild bird populations. It is a mosquito-borne flavivirus that can cause debilitating or fatal neuroinvasive disease (Walker and Naugle 2011). Reduced survival of Greater Sage-Grouse due to WNV has been documented in numerous studies since 2003 (Naugle et al. 2004, 2005; Walker et al. 2004, 2007; Aldridge 2005; Kaczor 2008; Walker 2008). The mosquito *Culex tarsalis* is the major vector of WNV in sagebrush dominated landscapes (Goddard et al. 2002, Naugle et al. 2004, Turell et al. 2005, Doherty 2007) and can travel as much as 18 km to colonize newly available surface water (Reisen et al. 2003). The major ecological factors that regulate WNV are known. However, local outbreaks have been difficult to predict (Walker and Naugle 2011). For example, WNV was first confirmed in Idaho during 2006. Birds tested positive for the virus near Big Springs Ranch, Duck Valley Indian Reservation, and Jordan Valley, OR. The following year, lek counts decreased by 25% near areas with confirmed WNV outbreaks.

Although there does not appear to have been any more WNV related outbreaks in Owyhee County since 2006, it is still a major concern for the overall survival of sage-grouse across their range. Resistance to WNV in wild populations appears to be very low based on high mortality rates during severe WNV outbreaks (Naugle et al. 2004, Clark et al. 2006, Walker et al. 2007). No evidence of resistance to WNV was found in tissue from 363 samples collected during 2003 and 2004 in Wyoming (Naugle et al. 2004, 2005). However, 10.3% of 58 individuals captured in the Powder River Basin of Wyoming tested seropositive suggesting that some individuals are resistant to the disease (Walker et al. 2007). It is unclear whether sage-grouse experience residual effects of WNV infection on productivity and overwinter survival. Based on research conducted on other birds it appears that birds infected with WNV may suffer persistent symptoms that may reduce overall survival and reproduction (Walker and Naugle 2011).

### **INFRASTRUCTURE/ENERGY DEVELOPMENT**

Energy development is rapidly encroaching in the western United States and has emerged as a major issue in conservation of Greater Sage-Grouse and their habitats (Naugle et al. 2011). Sage-grouse populations in Wyoming, Montana, and Alberta have declined following the development of natural gas wells and associated roads and power lines. Currently, natural gas development is not a concern in Owyhee County. However, two major 500-kV transmission lines are proposed to run through a large swath of intact sage-grouse habitat from Wyoming through southern Idaho to Hemmingway Butte (Gateway West) and from Hemmingway Butte to Oregon (Boardman/Hemmingway). The BLM's preferred alternative route for one of the transmission lines, runs through prime sage-grouse habitat south of State Highway 78 in Owyhee County. Twenty-two wind-energy proposals have arisen during recent years throughout Owyhee County (Idaho Division of Building Safety 2011).

Sage-grouse avoid infrastructure developments in Wyoming (Doherty et al. 2008), and both Lesser (*Tympanuchus pallidicinctus*) and Greater Prairie Chickens (*T. cupido*) avoided power lines and highways by at least 100 m in Kansas and Oklahoma (Pruett et al. 2009). Blickley et al. (2012) found that increased noise associated with vehicular traffic near oil and natural gas fields had a detrimental effect on breeding sage-grouse. In a broad-scale study assessing influences of environmental and anthropogenic features on Greater Sage-Grouse, Johnson et al. (2011) found that lek trends increased with distance to nearest communication tower and analogously decreased as the number of towers increased.

New transmission line and wind energy development should be placed outside core sage-grouse areas where possible. Sage-grouse require large, intact sagebrush habitats to maintain populations. The addition of power lines and wind towers and their associated infrastructure development will be detrimental to sage-grouse populations in Owyhee County. Transmission line towers provide both new and alternative nesting substrate for raptors and ravens (Steenhof et al. 1993). Raven numbers on transmission lines will increase over time, as offspring of productive pairs colonize transmission towers (see Table 1 and Figure 3 in Steenhof et al. 1993). Increases will be associated not only with an increase in potential perch sites but also an increase in nesting and roosting opportunities. Radio telemetry studies in southwestern Idaho (Engel and Young 1992) revealed that ravens moved an average of 7 km (about 4.5 miles) and as far as 65 km (about 40 miles) from transmission line roosts in each day. Given that ravens forage several miles from their nests and roosts, sage-grouse nests within 15 miles of new transmission lines will be vulnerable to ravens that roost on transmission lines.

## **PREDATION IMPACTS ON SAGE-GROUSE**

Some studies (Batterson and Morse 1948, Autenreith 1981) have collected data suggesting that Common Ravens (*Corvus corax*) and/or other predators can destroy a large number of sage-grouse nests. Connelly et al. (1991) also noted that ravens and magpies were common predators of sage-grouse in eastern Idaho, but they also documented good nesting success rates of over 50%. More recent studies have identified Common Ravens and American badgers as being the primary nest predators of sage-grouse in northeastern Nevada (Coates and Delehanty 2008). They found that ravens appear to cue in on the movements of grouse to and from nests. Female sage-grouse are able to escape direct predation but are unable to defend nests successfully, especially when confronted with more than one raven. The presence of ravens may inhibit female grouse from leaving their nests to forage. Nest failure is thought to be an important factor in sage-grouse population declines, and nest predation appears to be the primary cause of nest failure for Greater Sage-Grouse.

Habitat is frequently cited as the most critical factor associated with the current status of sage-grouse populations and consideration for maintaining and improving habitat is justified. However, the impacts of predators on sage-grouse also must be considered. Long-term data (Sauer et al. 1997) show that raven numbers have increased about 5% annually in Idaho for over 20 years. Predation rates in Owyhee County have not been fully studied. Predation data should be collected in Owyhee County. If it is determined that predation is biologically important, predator management should be considered in sage-grouse management programs in combination with

habitat restoration programs that may take several years to restore suitable sage-grouse nesting habitat and cover.

## HUNTING

Studies have indicated that hunting is usually not a major factor in the population dynamics of healthy sage-grouse populations (Braun 1998). However, hunting is a factor that can be changed relatively quickly if needed. In addition, localized hunting pressure may have local impact on sage-grouse populations. The permit system for identifying sage-grouse hunters has been valuable in collecting hunter survey data that provide good information about sage-grouse take. Information gained from the wings of harvested birds can be important in determining sage-grouse population dynamics.

The 2006 Conservation Plan for Greater Sage-Grouse in Idaho developed a matrix by which hunting season formats would be determined (Idaho Sage-grouse Advisory Committee 2006). If the last 3-year's average lek counts are below 50% of the 1996-2000 average, if there are not enough data to determine the average, or if there are less than 300 birds in the population, the matrix suggests closing the hunting season. If the last 3-year's average lek counts are between 50 and 150% of the 1996-2000 level, the matrix suggests having a shortened season (7 days, 1 bird/day, 2 bird limit). If the last 3-year's average lek counts are greater than 150% of the 1996-2000 average, conservative seasons may be implemented (23 days 2 birds/day, 4 bird bag limit). Since 1996 the portion of Owyhee County north of the Mud Flat Road has had a shortened season while the area south of the Mud Flat road has had a conservative season. In 2010, all of Owyhee County (west of the Bruneau) went to a shortened season.

## LIVESTOCK GRAZING MANAGEMENT

Since the 1930's, vast grazing management improvement programs have been implemented. Reductions in stocking levels, hundreds of miles of fence and extensive water developments have allowed for intensive control of the timing, frequency, duration and intensity of grazing. Public land statistics reported by the USDI-BLM show that during the 50 years between 1936 and 1986 areas classed as excellent or good condition doubled. During the same time period, poor and fair condition range decreased by 20% (USDI-BLM 1990). From 1981 to 1999, high seral and Potential Natural Community rangeland in the Owyhee Resource Area increased by 25%, mid seral range increased by 34% and low seral range decreased by 24% (USDI-BLM 1999).

The Idaho Sage-grouse Management Plan (1997) states, "*In the 1960s and 1970s, Idaho had large numbers of sage-grouse and extensive livestock grazing. This suggests that healthy Sage-grouse populations and livestock grazing are compatible. In short, livestock grazing that results in rangeland in good ecological condition also provides acceptable sage-grouse nesting, brood rearing and winter habitat.*" Nevertheless, additional improvement is possible.

Improper livestock grazing has been implicated as having an impact on sage-grouse habitat but has not been directly linked to sage-grouse population declines (Braun 1987, Connelly and Braun 1997, Mosley 2001). Livestock grazing can affect sage-grouse habitat in several ways. Excessive grazing can lead to less than ideal habitat conditions, and livestock grazing can affect the amount and height of nesting cover that in turn allows higher rates of nest predation (Gregg et

al. 1994). Improper grazing in riparian areas could result in negative impacts to the hydrology, causing premature drying and reduced forb productivity critical to sage-grouse requirements during the late brood-rearing season. However, there is no information suggesting that grazing is negatively affecting overall sage-grouse populations in Owyhee County.

The Bureau of Land Management (BLM) Idaho Standards and Guidelines (ISG) address eight standards including watersheds, riparian systems, native plant communities, rangeland seedings and Threatened / Endangered / sensitive species habitat. If there is a deficiency in one or more of these standards, grazing management is reviewed and changes in grazing management are implemented to correct the deficiency. Thus, evaluations of grazing management across the county are ongoing. Current literature is used to guide changes to facilitate proper grazing, while providing for sage-grouse habitat requirements.

Meadows, springs, creeks, and other riparian areas in landscapes dominated by sagebrush are important late brood rearing habitat. Irrigated forage crops on private lands also provide large areas of high quality mid and late season brood rearing habitat. Studies have shown that managed livestock grazing can enhance late season brood rearing habitat. Proper grazing management increases the availability of succulent meadow vegetation and reduces tall cover, which sage-grouse avoid when feeding in meadow areas (Neel 1980, Evans 1985, Klebenow 1985).

## **MITIGATION**

New infrastructure, construction, urban development, and agricultural expansion should be sited to avoid important sage-grouse habitat whenever possible. These types of projects should include best management practices to minimize sage-grouse impacts and restore affected areas, such as timing construction to minimize disturbance and re-vegetating of disturbed lands.

Measures to mitigate impacts at off-site locations also should be employed to offset unavoidable alteration and losses of sage-grouse habitat caused by these projects. Off-site mitigation should focus on acquiring, restoring, or improving habitat within or adjacent to occupied habitats and ideally should be designed to complement local sage-grouse conservation priorities.

## **RECOMMENDED ACTIONS, OBJECTIVES AND ACCOMPLISHMENTS**

All actions listed below will respect private property rights, are subject to funding being available, and will be conducted in coordination with all agencies and adjoining counties and states to the greatest extent possible. Acquiring funds for identified actions is a key function of the Owyhee Sage-grouse Local Working Group.

### **SAGE-GROUSE HABITAT INVENTORY ACTION PLAN**

The sage-grouse habitat action plan began in 2000 and is evaluated annually.

- A. Map locations of all known active and historical sage-grouse leks in Owyhee County by the end of 2001.** This will be accomplished by aerial and ground surveys, monitoring

radio-marked sage-grouse, review of historical lek data and interviews with local resource users (Lead: Idaho Department of Fish and Game (IDFG))

a. **Accomplishments:**

- i. Initial map completed 2001
- ii. Lek location and count data updated annually by 1 June
- iii. Geospatial data is managed by the Idaho Department of Fish and Game

**B. Identify and map sage-grouse breeding (nesting and early brood) habitat associated with active leks by the end of 2004.** Sage-grouse populations will be analyzed as to whether they are migratory or non-migratory. This will be accomplished using radio telemetry data or other techniques for each population. A physical inventory of the associated breeding habitat will then be accomplished on the ground by a wildlife biologist with the assistance of the local livestock operator and other interested parties. (Lead: Appropriate land management agency or private landowner with assistance of IDFG) (Initiated in 1999 and Ongoing).

a. **Accomplishments**

- i. Map of seasonal use areas available
- ii. All populations of sage-grouse in Owyhee County are considered migratory
- iii. Geospatial data is managed by the Idaho Department of Fish and Game

**C. Identify and map known sage-grouse wintering habitat by the end of 2001.** This will be accomplished by radio telemetry data, aerial and ground surveys, and input from local resource users. (Lead: Appropriate land management agency or private landowner with assistance of IDFG) (Initiated in 1999 and Ongoing).

a. **Accomplishments**

- i. Map of seasonal use areas available
- ii. Geospatial data is managed by the Idaho Department of Fish and Game

**D. Perform a qualitative assessment of the sage-grouse breeding (nesting and early brood) habitat associated with active leks.** An interdisciplinary team, including a wildlife biologist, will determine the quality of the breeding habitat. Factors such as soil type, moisture regime, vegetation and grazing systems should be analyzed (Lead: Appropriate land management agency or private landowner with assistance of IDFG. The Owyhee Natural Resource Committee (NRC) will assist with work on private land.) (Substantially completed and Ongoing).

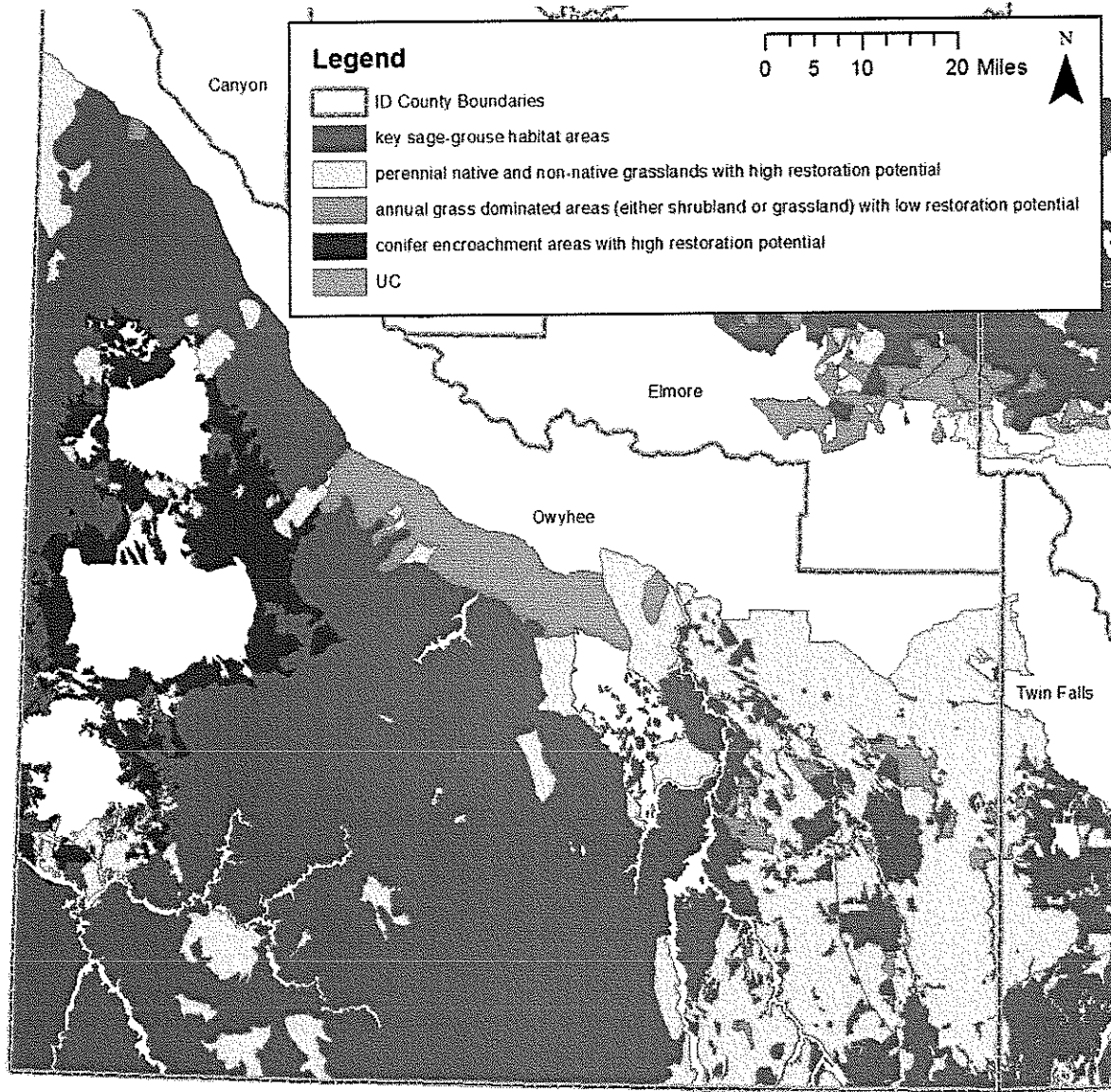
a. **Accomplishments**

- i. Map of sage-grouse stronghold areas available
- ii. Map of important seasonal use areas within LWG area available
- iii. Geospatial data is managed by the Idaho Department of Fish and Game

**E. Map undesirable disturbance and habitat.** Map crested wheatgrass seedings, fires, juniper encroachment, sagebrush removal or overabundance and other undesirable habitat. (Lead: BLM). (Initial mapping completed in 2001 and Ongoing) (Figure 8).

a. **Accomplishments**

- i. Initial map completed in 2004
- ii. Map updated annually to reflect changes in habitat (insideidaho.org)



**Figure 8.** Sage-grouse habitat planning map (USDI-BLM 2011).



## SAGE-GROUSE HABITAT IMPROVEMENT ACTION PLAN

- A. **Grazing Management.** Sage-grouse habitat condition will be assessed through quantitative assessments conducted in accordance with the SAGE-GROUSE HABITAT INVENTORY ACTION PLAN (Paragraph D) on state and private land. Sage-grouse habitat conditions on lands managed by the Bureau of Land Management will be assessed through the Idaho Standards for Rangeland Health and Guidelines for Livestock Grazing Management. Standard 8 addresses threatened and endangered plants and animals and sensitive animals including sage-grouse. If the assessment concludes, relative to sage-grouse, that the standard is not being met due to livestock grazing, the Local Working Group will establish an interdisciplinary review (ID) team at the request of an affected party. The ID team will normally consist of a wildlife biologist, range scientist, livestock management specialist, livestock operator(s) and other affected interests who wish to participate. The ID team structure may be modified by agreement of the affected interests if specific participants are not reasonably available. Upon review of all quantitative data and other available information and following a site visit, the ID team will make grazing management recommendations to the Local Working Group. This team will consider both short and long-term benefits to sage-grouse and impact on other potentially affected species. The team may recommend additional sage-grouse habitat improvement actions based on quantitative assessments and other pertinent data. All grazing management recommendations will be developed on a site-specific basis with full consultation, cooperation and coordination with all affected landowners, management agency(s), permittee(s), lessee(s) and other affected interests. (Lead: Appropriate land management agency or private landowner). (Initiated in 1999 and Ongoing)
- B. **Develop maps that identify sage-grouse habitat for high priority protection from wildfire.** Using current information, provide maps to the fire management staff of all groups that fight fires in Owyhee County outlining critical sage-grouse habitat in the county. See Figure 2. (Lead: BLM).
- a. **Accomplishments**
- i. Habitat Planning Map developed and updated annually (insideidaho.org). (Figure 7).
- C. **Fire Rehabilitation.** The sites of all future wildfires in high priority sage-grouse habitat identified in Section C will, regardless of potential for natural recovery, be reseeded with sagebrush and, when needed, grasses and forbs best adapted to the site to hasten recovery of the habitat. (Lead: Appropriate land management agency or private landowner). (The action has been carried out since 2000 and is ongoing).
- a. **Accomplishments (project name, acres treated, and year)**
- i. Flint Creek, 500 acres - 2002
- ii. Bluebird Mine, 10 acres - 2003
- iii. Chubby Spain/Cow Creek Restoration, 2,182 acres – 2006
- iv. Little South Fire ESR, 961 acres – 2007
- v. Maggie Fire ESR, 791 acres – 2008
- vi. Murphy Fire ESR, 7,041 acres – 2008
- vii. Crowbar Fire ESR, 28,874 acres – 2010

- viii. Turn Fire ESR, 415 acres – 2010
- ix. Big Hill Fire ESR, 63,100 acres – 2011
- x. East Rock Fire ESR, 600 acres – 2012
- xi. Mustang Fire ESR, 3,311 acres – 2012
- xii. Tindall Fire ESR, 2,597 acres – 2012
- xiii. Jacks Fire ESR, 14,570 acres - 2012

**D. Sagebrush Restoration.** Implement sagebrush restoration projects in historical sage-grouse habitat where historical fires have removed sagebrush cover. A minimum of 1,000 acres of combined federal, state, and private lands shall be targeted for restoration annually with seed mixtures that are best for sage-grouse and adapted to the site. (Lead: Appropriate land management agency or private landowner)

**a. Accomplishments**

- i. Flint Creek - 2010
- ii. Crab Creek Meadows Restoration, 640 acres - 2006
- iii. Jacks Creek Basin Brood Rearing Wet Meadow Restoration, 2,560 acres - 2012

**E. Juniper Encroachment.** Using the maps created by the Habitat Inventory Action Plan, identify existing and potential loss of sage-grouse habitat due to juniper encroachment. The areas of greatest benefit to sage-grouse will be prioritized so that juniper control activities can be scheduled. Suitable methods of juniper eradication such as prescribed burning, chemical control, woodland harvest, chaining, and other mechanical means should be evaluated and employed where appropriate. Treat and eradicate juniper on a minimum of 500 acres of state land (IDL Plan) and 12,000 acres of federal land (Owyhee RMP) annually to enhance sage-grouse habitat by restoring healthy sagebrush-grassland communities. (Lead: Appropriate land management agency/authority).

**a. Accomplishments**

- i. Upper Castle Creek – 2008-2012 – 17,466 acres
- ii. Areas in the Trout Springs and Pole Creek areas have been identified for treatment by the BLM. Priorities for treatment of federal lands have been established to ensure treatment efficiency and efficacy.

**F. Juniper Treatment on Private Land.** Funding will be identified to develop a 50/50 cost share program to assist private landowners in the reduction or eradication of seral juniper stands on their lands. (Lead: Owyhee LWG) (January 2005 and will be ongoing). These projects were demonstrations near leks affecting 5,000 acres as of 2012. This work is continuing through the Sage-Grouse Initiative (See “Program Funding Action Plan”).

**a. Accomplishments**

- i. Bull Basin – 400 acres
- ii. Nickel Creek – 316 acres
- iii. Josephine Creek – 210 acres
- iv. Boulder Creek – Ongoing
- v. Star Ranch – Ongoing
- vi. Pete Ranch – Ongoing
- vii. Wilson Pasture – Ongoing

- G. **Juniper Treatment Grazing Policy.** Initiate discussions with the BLM to review and seek change of the livestock grazing policy for prescribed burn programs that prohibits fall grazing use after a burn program has been completed. (Lead: Owyhee LWG) (Initiated January 2005 and ongoing).
- H. **Forage Reserve Program.** Seek sponsors to develop a forage reserve program to provide off site grazing opportunity when livestock are displaced during juniper treatment programs. (Lead: Owyhee LWG; ongoing).
- I. **Invasive Species and Noxious Weeds.** Seek additional funding to support the activities of the Jordan Valley Cooperative Weed Management Area, which is conducting a variety of weed control and/or eradication programs throughout the Owyhee River Watershed. Encourage the development of additional CWMA's in other areas of the County and seek additional funding as needed to support those programs. (Lead: Owyhee LWG)
  - a. **Accomplishments**
    - i. Whitetop Control with Jordan Valley Cooperative Weed Management Area, 5,000 acres - 2006
    - ii. Tolgate/Reynolds Creek Medusahead Control and Restoration, 50 acres - 2006
    - iii. Plateau Herbicide Treatment of Cheatgrass on Saylor Creek Bombing Range, 16,000 acres - 2005 to 2012
- J. **Development.** The LWG will provide comment and utilize other means as available to supports the policies of the Owyhee County Comprehensive Plan and Owyhee County Land Use Plan for Federal and State Lands to promote economically viable and sustainable ranching operations in order to discourage conversion of rangeland to rural/remote recreational home development. (Lead: Owyhee LWG; ongoing).
- a. **Accomplishments**
  - i. Post-Murphy Fire Sage-grouse Investigation - 2010
- K. **Habitat Fragmentation –** The LWG, in cooperation with Federal, State, and Private partners, will attempt to minimize and/or mitigate habitat fragmentation associated with infrastructure developments (roads, fences, etc.).
  - a. **Accomplishments**
    - i. Marked at least 27 miles of fence near leks to decrease sage-grouse mortality due to fence collisions.

## **PREDATOR ACTION PLAN**

- A. Using radio-telemetry tracking of sage-grouse, determine the effect of predation on sage-grouse (Lead: IDFG). This action item cannot be accomplished with the current level of telemetry studies and is tabled until funding is sufficient to conduct more extensive studies.
  - a. **Information**
    - i. Study in northern Nevada used video monitoring of sage-grouse nests to determine nest predators. They found that ravens and badgers were the

- primary nest predators in their study (Coates and Delehanty 2008).
    - ii. Chapter 16 of “Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats” (Knick and Connelly 2011) discusses predation on Greater Sage-Grouse. It suggests that predator control may be warranted when supplementing small populations with new birds and/or providing short-term relief for a population sink (highly fragmented areas). Recent research suggests that controlling predators has little effect on nest success and survival in areas with high quality habitat (Hagen 2011).
- B. Perform artificial nest studies in selected parts of Owyhee County to compare artificial nest fate in different types of habitat. Use established techniques to reduce potential biases and to identify species of predators involved. (Lead: Wildlife Services and IDFG). Complete initial research by the end of 2002 and continue as needed.
  - a. **Information**
    - i. Study completed in 2004 (Lowe et al. 2004). If predators are found to be an important biological factor in some areas, reduce numbers of those predators in those areas. Document whether control improves sage-grouse survival or nesting success by comparing treated area to areas with no predator control. (Lead: Wildlife Services for removal and IDFG for monitoring). (No project areas yet identified, ongoing)
    - ii. Hagen (2011) indicated that predator control should only be used when supplementing small populations and/or in areas with population sinks (highly fragmented habitat). Hagen (2011) also suggested that predator control did not improve nest success or survival in areas with high quality habitat.

## HUNTING ACTION PLAN

- A. Review harvest data collected annually, and if the information indicates a need to change hunting season parameters, recommend hunting regulation changes in March of the following year to the Idaho Fish and Game Commission Lead: Owyhee LWG and IDFG (Initiated in 2000 and continuing annually).
  - a. **Accomplishments**
    - i. Harvest matrix developed in the 2006 Statewide Management Plan for Sage-grouse in Idaho that helps guide harvest regulations.
    - ii. Wing envelopes are sent to random holders of the sage/sharp-tailed grouse permit holders to increase sample. In addition, IDFG places 15 wing barrels across Owyhee County to collect wings for production information.
- B. Maintain needed check stations and wing barrels. (Lead: IDFG) (Ongoing)
  - a. **Accomplishments**
    - i. 1-2 Check Stations operated annually between 2004 and present
    - ii. 15 wing barrels placed in moderate to high hunting areas across Owyhee County
- C. Use a telephone survey of permit holders to estimate sage-grouse harvest in each county.

(Lead: IDFG) (Ongoing)

**a. Accomplishments**

- i. Random holders of the sage and sharp-tailed grouse validation are contacted annually to determine harvest rates/success.

D. Band sage-grouse in selected areas to help estimate harvest rates in those areas. (Lead: IDFG)

**a. Accomplishments**

- i. This action item is ongoing and providing some data for population take percentages in areas where banding is occurring.

E. Re-evaluate this Hunting Action Plan annually. (Lead: IDFG) (Continuing annually)

### **SAGE-GROUSE RESEARCH AND MONITORING ACTION PLAN**

A. Provide a reliable estimate of the distribution and populations of sage-grouse in Owyhee County

**a. Accomplishments**

- i. Ongoing – data available annually through IDFG.

B. Coordinate efforts by IDFG, BLM, USAF and others to systematically survey (fly or by other means) and/or otherwise identify through landowner surveys all active leks and historical leks in the county by the end of the spring 2004 breeding season. (Lead: IDFG, LWG and University of Idaho)

**a. Accomplishments**

- i. All of Owyhee County has been surveyed for active/occupied leks since 2004. Attempts are made to survey as many leks as possible from the ground and the air annually.
- ii. Leks along the Bruneau Escarpment are surveyed annually and population trends developed.

C. Determine which sage-grouse populations are non-migratory and migratory. (Lead: IDFG). (Four areas completed or in progress, two areas proposed, program is ongoing)

**a. Accomplishments**

- i. All sage-grouse in Owyhee County are considered migratory based on telemetry data from 1999-2012.

D. Initiate radio-telemetry studies to determine causes of sage-grouse chick mortality by 2002. (Lead: IDFG). This action item cannot be accomplished with the current level of telemetry studies and is tabled until funding is sufficient to conduct more extensive studies.

**a. Accomplishments**

- i. Chick survival study conducted in eastern Idaho between 1999 and 2002 (IDFG Completion Report 2006).
- ii. Chick Survival study conducted in south central Oregon and north central Nevada (Gregg 2006).

- E. Investigate the impact of different weather on variation in sage-grouse populations in Owyhee County. (Lead: IDFG) (ongoing).
- F. Investigate the impact of West Nile virus on sage-grouse populations in Owyhee County (Lead: IDFG) (ongoing).
  - a. **Accomplishments**
    - i. IDFG initiated a telemetry study in 2007. Blood samples and throat swabs were obtained from all captured birds, and tested for the presence of WNV and/or WNV antibodies. Birds were followed twice monthly during WNV season to assess survival.
    - ii. Three reports completed (2007, 2008, and 2012).
- G. Encourage research on the impacts of human physical disturbance on sage-grouse. (Lead: Owyhee County Natural Resource Committee). (ongoing).
- H. Investigate the impacts of energy and infrastructure development on sage-grouse in Owyhee County.
  - a. **Accomplishments**
    - i. BLM and IDFG have increased efforts to identify all active leks within the proposed transmission line corridor.

#### **PROGRAM FUNDING ACTION PLAN**

- A. Obtain funding for juniper eradication projects as specified under the Habitat Improvement Action Plan beginning immediately. (Lead: Fundraising Subcommittee). (Ongoing).
- B. Obtain funding for fire rehabilitation projects as specified under the Habitat Improvement Action Plan beginning immediately. (Lead: Fundraising Subcommittee). (Ongoing).
- C. Obtain funding for sagebrush restoration projects as specified under the Habitat Improvement Action Plan beginning immediately. (Lead: Fundraising Subcommittee). (Ongoing).
  - a. **Accomplishments**
    - i. Completed 2004
- D. Habitat restoration is the best use of federal and state dollars and we should focus our efforts on this rather than predator control and basic telemetry studies. However, it is important to keep predator control as a tool in our toolbox in the future.
- E. Point landowners to Sage Grouse Initiative (SGI) funding which is available through the Natural Resources Conservation Service. Identify areas where SGI funding will have the greatest effect.
  - a. **Accomplishments**
    - i. 2010 - 6 contracts affecting 978 acres
    - ii. 2011 - 7 contracts affecting 2,347 acres
    - iii. 2012 - 8 contracts affecting 2,780 acres

## REFERENCES:

- Aldridge, C. L. 2005. Identifying habitats for persistence of Greater Sage-Grouse (*Centrocercus urophasianus*) in Alberta, Canada. Ph.D. dissertation, University of Alberta, Edmonton, AB.
- Autenrieth, R. E. 1981. Sage-Grouse Management in Idaho. Wildlife Bulletin No. 9, Idaho Department of Fish and Game W-125-R and W-160-R, 238 pp.
- Autenrieth, R. E., W. Molini, and C. E. Braun. 1982. Sage grouse management practices. Western States Sage Grouse Committee Technical Bulletin 1. Twin Falls, ID.
- Batterson, W. M. and W. B. Morse. 1948. Oregon sage grouse. Oregon fauna, Series Number 1, Oregon Game Commission, Portland.
- Baker, W. L. 2006. Fire and restoration of sagebrush ecosystems. Wildlife Society Bulletin 34:177-185.
- Blickley, J. L., D. Blackwood, and G. L. Patricelli. 2012. Experimental evidence for the effects of chronic anthropogenic noise on abundance of Greater Sage-Grouse at leks. Conservation Biology 26:461-471.
- Braun, C. E. 1987. Current issues in sage-grouse management. Proceedings of the Western Association of Fish and Wildlife Agencies 67:134-144.
- Braun, C. E. 1998. Sage grouse declines in western North America: what are the problems? Proceedings of the Western Association of State Fish and Wildlife Agencies 67:134-144.
- Burkhardt, J. W. and E. W. Tisdale. 1976. Causes of juniper invasion in southern Idaho. Ecology 57:472-484.
- Clark, L., J. Hall, R. McClean, M. Dunbar, K. Klenk, R. Bowman, and C. A. Smeraski. 2006. Susceptibility of Greater Sage-Grouse to experimental infection with West Nile virus. Journal of Wildlife Diseases 42:14-22.
- Coates, P. S. and D. J. Delehanty. 2008. Effects of Environmental Factors on Incubation Patterns of Greater Sage-Grouse. Condor 110: 627-638.
- Connelly, J. W., and C. E. Braun. 1997. Long-term changes in sage-grouse (*Centrocercus urophasianus*) populations in western North America. Wildlife Biology 3(3/4):123-128.
- Connelly, J. W., M. A. Schroder, A. R. Sands, and C. E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Society Bulletin 28: 967-985.
- Connelly, J.W., W.L. Wakkinen, A.D. Apa, and K.P. Reese. 1991. Sage grouse use of nest sites in southeastern Idaho. Journal of Wildlife Management 55:521-524.

- Doherty, M. K. 2007. Mosquito populations in the Powder River Basin, Wyoming: a comparison of natural, agricultural and effluent coal-bed natural gas aquatic habitats. M.S. thesis, Montana State University, Bozeman, MT.
- Doherty, K. E., D. E. Naugle, B. L. Walker, and J. M. Graham. 2008. Greater Sage-Grouse winter habitat selection and energy development. *Journal of Wildlife Management* 72:187-195.
- Doherty, K. E., J. D. Tack, J. S. Evans, and D. E. Naugle. 2010. Mapping breeding densities of Greater Sage-Grouse: A tool for range-wide conservation planning. Prepared for the Bureau of Land Management.
- Engel, K.A. and L.S. Young. 1992. Movements and habitat use by common ravens from roost sites in southwestern Idaho. *Journal of Wildlife Management* 56: 596-602.
- Evans, C. C. 1985. The relationship of cattle grazing to sage grouse use of meadow habitat on the Sheldon National Wildlife Refuge. Thesis, University of Nevada, Reno.
- Goddard, L. B., A. E. Roth, W. K. Reisen, and T. W. Scott. 2002. Vector competence of California mosquitos for West Nile virus. *Emerging Infectious Diseases* 8:1385-1391.
- Gregg, M. A., J. A. Crawford, M. S. Drut, and A. K. Delong. 1994. Vegetational cover and predation of sage grouse nests in Oregon. *Journal of Wildlife Management* 58:162-166.
- Gregg, M. A., M. R. Dunbar, and J. A. Crawford. 2006. Use of implanted radio transmitters to estimate survival of Greater Sage-Grouse chicks. *Journal of Wildlife Management* 71:646-651.
- Hagen, C. A. 2011. Predation on Greater Sage-Grouse: facts, process, and effects. *in* S. T. Knick, and J. W. Connelly, editors. *Greater Sage-Grouse: ecology and conservation of a landscape species and their habitats*. Studies in Avian Biology series (vol. 38), University of California Press, Berkeley, CA.
- Idaho Department of Fish and Game (IDFG). 2012a. Check station data. Unpublished Data.
- \_\_\_\_\_. 2012b. Sage-grouse lek data. Unpublished Data.
- \_\_\_\_\_. 2012c. Sage-grouse bio-telemetry data. Unpublished Data.
- Idaho Division of Building Safety. 2011. Planned and Current Wind Project Spreadsheet. 9 March 2011. Retrieved from:  
[http://www.energy.idaho.gov/renewableenergy/d/idaho\\_wind\\_projects\\_march.pdf](http://www.energy.idaho.gov/renewableenergy/d/idaho_wind_projects_march.pdf)
- Idaho Sage-grouse Advisory Committee. 2006. Conservation plan for the Greater Sage-Grouse in Idaho.
- Johnson, K. H., and C. E. Braun. 1999. Viability and conservation of an exploited sage grouse population. *Conservation Biology* 13:77-84.



- Johnson, D. H., M. J. Holloran, J. W. Connelly, S. E. Hanser, C. L. Amundson, and S. E. Knick. 2011. Influences of environmental and anthropogenic features on Greater Sage-Grouse populations, 1997-2007. Pages 407-450 in S. T. Knick and J. W. Connelly, editors. Greater Sage-Grouse ecology: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology (vol. 38), University of California Press, Berkeley, CA.
- Kaczor, N. W. 2008. Nesting and brood-rearing success and resource selection of Greater Sage-Grouse in northwestern South Dakota. M. S. thesis, South Dakota State University, Brookings, SD.
- Klebenow, D. A. 1985. Habitat management for sage grouse in Nevada. The World Pheasant Association Journal 10:34-46.
- Knick, S. T. and J. W. Connelly, editors. 2011. Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology Series (vol 38), University of California Press, Berkeley, CA.
- Lowe, B. S., D. D. Musil, and J. W. Connelly. 2004. Predator abundance as it relates to sage-grouse productivity and survival. Idaho Department of Fish and Game completion report.
- Miller, R.F., and J.A. Rose. 1999. Fire history and western juniper encroachment in sagebrush steppe. Journal of Range Management 52:550-559.
- Monsen, S. B., R. Stevens, and N. L. Shaw. 2004. Restoring western ranges and wildlands. US Department of Agriculture, Forest Service, Rocky Mountain Research Station, General Technical Report RMRS-GTR-136-vol 1. Pages 253-256.
- Mosley, J. C. 2001. Influence of livestock grazing on sage-grouse habitat. Montana State University Extension Service Report, Bozeman.
- Naugle, D. E., C. L. Aldridge, B. L. Walker, T. E. Cornish, B. J. Moynahan, K. Brown, G. D. Johnson, E. T. Schmidtman, R. T. Mayer, C. Y. Kato, M. R. Matchett, T. J. Christiansen, W. E. Cook, T. Creekmore, R. D. Falise, E. T. Rinkes, and M. S. Boyce. 2004. West Nile virus: pending crisis for Greater Sage-Grouse. Ecology Letters 7:704-713.
- Naugle, D. E., C. L. Aldridge, B. L. Walker, K. E. Doherty, M. R. Matchett, J. McIntosh, T. E. Cornish, and M. S. Boyce. 2005. West Nile virus and Sage-Grouse: what more have we learned? Wildlife Society Bulletin 33:616-623.
- Naugle, D. E., K. E. Doherty, B. L. Walker, M. J. Holloran, and H. E. Copeland. 2011. Energy development and Greater Sage-Grouse. Pages 489-503 in S. T. Knick and J. W. Connelly, editors. Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats. Studies in Avian Biology (vol 38), University of California Press, Berkeley, CA.
- Neel, L. A. 1980. Sage grouse response to grazing management in Nevada. M.S. Thesis, Univ. of Nevada, Reno.

- Owyhee County. 2009. Owyhee County natural resources plan. Owyhee County, ID. Revised 13 April 2009.
- Owyhee County. 2010. Owyhee County comprehensive plan. Owyhee County, ID. Revised 9 August 2010
- Pruett, C. L., M. A. Patten, and D. H. Wolfe. 2009. Avoidance behavior by prairie grouse: implications for development of wind energy. *Conservation Biology* 23:1253–1259.
- Reisen, W. K., Y. Fang, and V. M. Martinez. 2007. Is nonviremic transmission of West Nile virus by *Culex* mosquitos (Diptera: Culicidae) nonviremic? *Journal of Medical Entomology* 44:299-302.
- Sankey, T. T. and M. J. Germino. 2008. Assessment of juniper encroachment with the use of satellite imagery and geospatial data. *Rangeland Ecology & Management* 61: 412-418.
- Sauer, J. R., J.E. Hines, G. Gough, I. Thomas, and B.G. Peterjohn. 1997. The North American breeding bird survey results and analysis. Version 96.4. Patuxent Wildlife Research Center, Laurel, MD.
- Steenhof, K., M.N. Kochert and J.A. Roppe. 1993. Nesting by raptors and common ravens on electrical transmission line towers. *Journal of Wildlife Management* 57: 271-281.
- Turrell, M. J., D. J. Dohm, M. R. Sardelis, M. L. O’Guinn, T. G. Andreadis, and J. A. Blow. 2005. An update on the potential of North American mosquitos (Diptera: Culicidae) to transmit West Nile virus. *Journal of Entomology* 42:57-62.
- USDI-Bureau of Land Management. 1990. State of the Public Rangelands 1990. The Range of our Vision.
- \_\_\_\_\_. 1999. Owyhee Resource Management Plan and Final Environmental Impact Statement.
- \_\_\_\_\_. 2004. GIS analysis of the sage-grouse habitat planning Map. Unpublished data. Idaho BLM state office.
- \_\_\_\_\_. 2011. Greater Sage-Grouse habitat 2011. Unpublished GIS Dataset. [www.insideidaho.org](http://www.insideidaho.org)
- Walker, B. L. 2008. Greater Sage-Grouse response to coal-bed natural gas development and West Nile virus in the Powder River Basin, Montana and Wyoming, USA. Ph.D. dissertation, University of Montana, Missoula, MT.
- Walker, B. L. and D E. Naugle. 2011. West Nile virus ecology in sagebrush habitat and impacts on Greater Sage-Grouse populations pages 127-141 in S. T. Knick and J. W. Connelly, editors; Greater Sage-Grouse: ecology and conservation of a landscape species and its habitats, *Studies in Avian Biology* 38, University of California Press, Berkley, CA.

Walker, B. L., D. E. Naugle, K. E. Doherty, and T. E. Cornish. 2004. From the field: outbreak of West Nile virus in Greater Sage-Grouse and guidelines for monitoring, handling, and submitting dead birds. *Wildlife Society Bulletin* 32:1000-1006.

Walker, B. L., D. E. Naugle, K. E. Doherty, and T. E. Cornish. 2007. West Nile virus and Greater Sage-Grouse: estimating infection rate in a wild bird population. *Avian Diseases* 51:691-696.

Winward, A. 1991. Management in the sagebrush steppe, Special Report 880. Agricultural Experiment Station Oregon State University in cooperation with Agricultural Research Service, U.S. Department of Agriculture. Corvallis, OR

**APPENDIX – A**

**Table A. Owyhee County Lek Count Data 1996-2012 (IDFG 2012b).**

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20001	Unoccupied	2012	0			0							0		0	0	0	0	
20002	Unknown	2009				1		0						0	0		0	0	0
20003	Unoccupied	2012	0	0	0	0	0	0	0	0	0	0	4	1	7	2	0	0	
20004	Unknown	2010			0				3								0	0	0
20005	Unknown	2010			0	0	0	0			0		0	0	0	4	4		
20006	Unoccupied	2010			0			0					0	0	0	0	0	0	0
20007	Occupied	2010			8	8						0	0	0	0	0	0	0	0
20008	Unoccupied	2012	0		0	0		0	0	0	0	0	4	4	5	0	0		0
20009	Unknown	2012	0	0	0		0		0					0	2	2	0	4	0
20010	Unknown	1992																	
20011	Occupied	2009				6													
20012	Occupied	2011		12		8													
20013	Occupied	2010			10	22													
20014	Occupied	2010			0	5													
20015	Unoccupied	2011		0	0		0	0	0		0				0			0	
20016	Unoccupied	2012	0					0			0		0		0	0	0	0	0
20017	Unknown	2007						0											
20018	Occupied	2010			12			26	20				0		1	4	3	9	5
20018a	Unknown	2007						0							0	0	0		
20019	Unknown	2010			0			0	0										
20020	Unknown	2010			0						0								0
20021	Occupied	2012	7	8	10	13	27	30	46		32		23	19	26	23	24	4	29

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	
2O022	Occupied	2011		7	3			22	22											
2O023	Unknown	2010			0		0	0	5											
2O024	Occupied	2010			19	10		0	0							20				
2O025	Occupied	2010			3			7	0							1				
2O026	Not verified	2007						0												
2O027	Not verified	2007						0	0											
2O028	Occupied	2011		3		6														
2O033	Unknown	2012	0		0		0	0		2										
2O034	Occupied	2012	0		3			8		1										
2O035	Unknown	2010			0			4												
2O037	Occupied	2010			2	0	3													
2O038	Occupied	2008					23													
2O050	Unknown	2007						0												
2O053	Unknown	2007						0												
2O055	Unknown	2007						0												
2O059	Unknown	2011						0			0	0	3	2	5					
2O062	Unoccupied	2012	0		0	0	0		0	0	0	1	0	2	0	3	4	4	6	6
2O063	Unknown	2011						0		0			8	4		0	0	0		
2O064	Unknown	2012	0					0						0				0	0	0
2O065	Occupied	2010			5	12														
2O066	Occupied	2008					11	28	0											
2O067	Unknown	2006							0											
2O068	Unknown	2012	0					0			0				0					
2O069	Unknown	2012	0		0			4		3								4		
2O070	Unknown	2010			0	1	0	0	0									0		
2O071	Occupied	2010			4	12														
2O072	Not verified	2004									0									

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	
2O073	Not verified	2011		0	0			0												
2O074	Unknown	2011		0	0				0											
2O075	Unknown	2010			0								0	0						
2O076	Occupied	2010			5															
2O077	Unoccupied	2012	0	0		0	0	0	0	3					0			0	0	0
2O078	Unknown	2010			0				0											
2O079	Not verified	2010			0				0						0					
2O080	Occupied	2012	3	7	1	1	2	1	5	5			1		0	0	0	0	0	0
2O081	Occupied	2011		3	4			0	0											
2O082	Unknown	2010			0				0											
2O083	Occupied	2012	11						0											
2O085	Unoccupied	2012	0	0	0	0	0	0	0	0					0			8	9	
2O086	Unknown	2006							0											
2O087	Unknown	2012	0					0												
2O088	Unknown	1987																		
2O089	Occupied	2012	3	4	0	6	6	17	16	17			25	17	12	7	0	0	0	0
2O090	Unoccupied	2010			0	0	0	0	0	0					0	0		0	0	0
2O091	Unknown	2011		0	0			0												
2O092	Unknown	2011		0	0				0								0			
2O094	Unknown	2010			0			0	0											
2O095	Occupied	2012	0	7				5		0							7			
2O096	Unknown	2007						0												
2O098	Unknown	2012	0						1											
2O099	Occupied	2012	17				0	0	0											
2O100	Unknown	2012	0					0												
2O101	Occupied	2012	4	0	2	7	2	7	24	6	6		0	0	9	11	6	2		
2O101b	Occupied	2012	1	0	6		6	10	12	6										

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20102	Unoccupied	2010			0	0	0	0	0	15	0		5	5	4	30		19	
20103	Occupied	2012	1	5	9	4	8	15	18	24	15		16	0	6	4	4	0	
20104	Unknown	2012	0		0				0		0				0				
20105	Unoccupied	2010			0	0	0	0	0	0	0				13		22	0	
20106	Occupied	2012	2	4	2	7	5	3	22	26	12			11	13		15		
20107	Occupied	2012	2																
20108	Unknown	2012	0				0	0		21									
20109	Unknown	2012	0					20											
20110	Unknown	2010			0			0											
20111	Occupied	2012	11	14	19	19	0		19	7	8	8			20	27	19		0
20112	Unknown	2010			0			12											
20113	Occupied	2010			2	7		15											
20114	Occupied	2010			5	4													
20115	Unknown	2007						9	0										
20116	Occupied	2010			6	8	30	31	50								20		
20117	Occupied	2010			0	0	6	16	20										
20118	Occupied	2009				2	3	6	4								24		
20119	Unknown	2007						2											
20120	Unknown	2007						0	0										
20121	Occupied	2008					6		10										
20122	Unknown	2012	0					0			0		0						
20123	Unknown	2010			0			0	0										
20124	Unknown	2012	1	0		0	0	0											
20125	Occupied	2009				8	17	23	45										
20126	Occupied	2010			15	17													
20127	Occupied	2010			3	6													
20128	Unknown	2012	0		0	0	0		0	2	0	0	0	0	2	6	5	6	4

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20129	Unknown	2012	0		0	0	0		2	0	2	2	5	4	5	0	0	1	2
20130	Unoccupied	2012	0		0	0						0	0	0	0	0	0	0	0
20131	Unknown	2011		0		0	0	0	3										
20133	Not verified	2010			0				0										
20134	Unknown	2010			0			0	5		0								
20135	Unoccupied	2012	0		0	0	0	0	0	0		0	0	0	0	0		0	
20136	Occupied	2011		15	15	12	26	29		8									
20137	Occupied	2012	0	0	1	2	10	26	23	30	8	26	12	14	18	16			
20137a	Unknown	2004									32				0				
20137b	Unknown	2004									9				0				
20138	Unoccupied	2012	0		0	0	0	0	0				0		0			0	0
20139	Unknown	2012	0		0		0	9		15									
20140	Unknown	2007						0							1	0	7		0
20141	Occupied	2012	0	0	0	2	0	0	0		6	18	13	20	23	12	12		
20142	Unknown	2012	0					0		6									
20143	Occupied	2012	5	0	2	0	7	18	24				10	3		0	4	6	11
20144	Unknown	2010			0						0			0		0	0	3	4
20145	Occupied	2012	22	0	22	19	25	33	10	32	24		6	21	22	15	12	13	14
20146	Unknown	2011		0	0			16			0		0	7	6	14	14	11	
20147	Unknown	1999														0		2	
20148	Occupied	2012	14		0				10	14	28		12	28	33	42	42	12	
20149	Unknown	2010			0	0		0			0		0	6	8	10	8	5	
20150	Occupied	2011		0	6	7	15	7		19									
20151	Occupied	2012	6	0	3	3	8			13								3	
20152	Occupied	2012	0	11	0						0							6	
20153	Occupied	2010			12	3													
20154	Unoccupied	2010			0	0	0	0	0	0	0							3	



Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20155	Unknown	2004									0		0				20		
20156	Unknown	2011		0	0			0						11	13		14		
20157	Not verified	2012	0		0			0		1									
20158	Unknown	2010			0			0	0		0		11			23			
20159	Occupied	2010			10	5													
20160	Unknown	2006							0								24		
20161	Unknown	2008					0	0	14										
20162	Unknown	2010			0		0			0	0		7	9	12				
20163	Unknown	2010			0		0							7					
20164	Unknown	2008					0				0		5	6	10				
20165	Occupied	2011		4	2	4	9	9			8		7	8	9	7			
20166	Unoccupied	2012	0		0	0			0	0	0	0		0					
20167	Unknown	2012	0		0	0		0	0	0	1	6		2	20				
20168	Unknown	2008					0	0	10										
20169	Unknown	2011		0	0				10										
20170	Unknown	2011		0										15					
20171	Occupied	2012	1	0	0	0	2	5	6		12	16	8	20					
20172	Occupied	2012	13		22	24	31	41	28	28	20	27							
20173	Not verified	2012	0		0	0		0	0	0									
20174	Occupied	2012	0	0	0	0	4	10	35										
20175	Occupied	2012	35	32	15	5	12	1	34										
20176	Unknown	2012	0	0	0				4										
20177	Occupied	2011		5				25											
20178	Unknown	2010			0		0	5	6										
20179	Occupied	2011		3			10	8	9										
20180	Occupied	2010			8			12									5		
20183	Unknown	2011		0												5			

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20189	Unoccupied	2012	1	1	0	0	0	15	23	4		11	5	0	0	0	0	2	
20190	Unoccupied	2012	0	0	0	0	0	0	0	0		0	0						
20191	Unknown	2010			0											5			
20192	Unknown	2012	0				0												
20193	Unknown	2010			0		0										3		
20196	Occupied	2012	23	16	11	8	4	16	27	22		15	10	20	24	9	12	10	
20197	Occupied	2012	37	34	32	19	17	19	29	33	25	23	26	21	16	32	12	10	10
20198	Unoccupied	2012	1	1	0	0	0			7						2	3		
20199	Unknown	2008					0									0	0		
20200	Unknown	2012	0				0			0						7	11		
20201	Occupied	2010			11		0			9						0	4		
20202	Unknown	2008					0								4				
20203	Unknown	2008					0												
20204	Unknown	2012	0				0												
20205	Unknown	2008					0										8	3	4
20206	Occupied	2012	10	12	16	15	18	33	42	64	57	55	21		14		8		
20207	Occupied	2012	9		8														
20211	Occupied	2012	39	44	52	42	51	54	59	37	19	20	0	12	12	11			
20212	Unknown	2012	0		0		0					10							
20213	Unknown	2012	0		0		0					10							
20214	Unknown	2012	0		0		0					12							
20215	Occupied	2012	8		0		28					75							
20216	Unknown	2012	0		0		0					5							
20217	Unknown	2010			0		0					50							
20218	Unknown	2012	0		0		0					5							
20219	Occupied	2010			0		10					50							
20220	Occupied	2010			42		0				26	10							

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20221	Unknown	2012	0		0		0					30							
20222	Not verified	2010			0							0							
20223	Not verified	2012	0		0							0							
20225	Not verified	2012	0		0							0							
20226	Not verified	2012	0		0							0							
20227	Occupied	2011		0	9		0												
20228	Occupied	2012	41	35	51			16											
20230	Occupied	2012	0	3				0						20					
20231	Unknown	2007						0											
20232	Unknown	2012	0					0											
20233	Not verified	2003										0							
20234	Occupied	2012	64	58	9		0		6			0			1				
20238	Occupied	2012	18	14	14	2	0	4							1				
20240	Occupied	2011		32															
20242	Occupied	2012	10	30	17	6	7	17	25	15									
20243	Occupied	2012	0	3	0			0											
20245	Not verified	2012	0	0	0			0											
20246	Occupied	2012	0	3	0	0			6										
20247	Occupied	2011		54															
20249	Unknown	2012	0		0			0											
20250	Occupied	2012	11	11	5	5	8	19	25	14					5				
20251	Occupied	2012	26	32	20	16	12	28	30	30					30				
20252	Occupied	2012	20	11	22	25	31	45	46	80					17		5		
20254	Occupied	2012	42	46	26	29	21	31	36	57	41	24	17	21	15	21	15		
20255	Unknown	2011		1				0									4		
20257	Unknown	1998															2		
20259	Occupied	2012	8	9	8	9	8	16	16	15	19	21	22	32	21	17	15		

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20260	Occupied	2011		15					18										
20261	Occupied	2012	0		6			31											
20262	Not verified	2011		0				0											
20263	Not verified	2011		0				0											
20264	Occupied	2012	10	19	12			30											
20265	Unknown	2011		0				0											
20272	Not verified	2011		0	0							0							
20274	Not verified	2011		0	0							0							
20275	Not verified	2011		0	0							0							
20278	Unknown	2010			0												3		
20279	Unknown	2012	0	0	0												0		
20280	Unknown	2012	0	0	0														
20281	Unknown	2012	0	0	0														
20283	Unknown	2012	0																
20284	Unknown	2010			0														
20285	Occupied	2012	3			12	11	10	28			27		18	27	29	20	19	15
20285a	Occupied	2012	13	13	23	12	13					19		6	21	22	19	22	27
20288	Occupied	2012	14	5	0									22	21		25		
20289	Unknown	2011		0												0	0	0	
20289a	Unknown	2000													9		13		
20290	Occupied	2012	2	7	0														
20292	Unknown	1994																	
20293	Unknown	2008					0												
20294	Occupied	2012	13	27	17	5	8												
20298	Unknown	2012	0				0												
20300	Unknown	2012	0				0												
20301	Unknown	2012	0				0												

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	
20302	Unknown	2012	0				0													
20303	Unknown	2012	0				0													
20306	Occupied	2012	9		39		18							30						
20307	Unknown	2008					0													
20308	Unknown	2009				0	0					20								
20309	Unknown	2007						0												
20310	Occupied	2012	70	76	80			23												
20311	Unknown	2012	0		0															
20312	Occupied	2012	10	26				0												
20313	Unknown	2007						0												
20316	Occupied	2012	0		0		2					21								
20317	Occupied	2012	51		31		19				30	26								
20318	Occupied	2012	0		0		19					100								
20319	Unknown	2012	0		0		0					10								
20320	Occupied	2012	78		49		28					200								
20321	Occupied	2012	0		15		0					30								
20322	Unknown	2012	0		0		0					15								
20323	Not verified	2012	0		0							0								
20325	Unknown	2012	0		0		0					75								
20326	Not verified	2012	0		0							0								
20327	Unknown	2012	0		0		0					50								
20328	Not verified	2012	0		0							0								
20329	Unknown	2012	0		0		0					12								
20330	Unknown	2012	0		0		0					10								
20331	Unknown	2012	0		0		0					20								
20332	Unknown	2010			0		0				2	150								
20333	Unknown	2012	0		0		0					50								

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20334	Unknown	2012	0		0		0					10							
20335	Occupied	2012	49		0	2						10							
20336	Not verified	2012	0		0							0							
20337	Unknown	2012	0		0		0					12							
20338	Unknown	2012	0		0		0					10							
20339	Unknown	2012	0		0		0					5							
20340	Occupied	2012	0		0	18						3							
20343	Unknown	2008					0								5	3		6	6
20344	Unknown	2012	0				0												
20345	Unknown	2004									0								
20345a	Unknown	2004									0								
20346	Unknown	2010			0					19									
20348	Not verified	2004																	
20349	Occupied	2012	0	0	0	2		8	13										
20350	Not verified	2012	0	0	0		0	0							0				
20351	Occupied	2012	17	0	22	16	12	33	43	72					0				
20352	Occupied	2012	0		0	3	2	7	14										
20353	Unoccupied	2007						0			0								
20354	Unknown	2012	0	0	0		0	0							0		2		
20355	Unknown	2011		0				0		70	0								
20356	Occupied	2012	6	3	0	5		14									12		
20358	Not verified	2010			0			0											
20361	Unknown	2012	0					0											
20362	Not verified	2000													0				
20363	Not verified	2000													0				
20364	Unknown	2010			0												15		
20365	Unknown	2012	0	0	0												4		

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20366	Unknown	2012	0	0	0	0		39		2							2		
20367	Occupied	2012	62	91	81	48	32	37	75	89	55	72	54	42	34	32	23	24	28
20368	Occupied	2012	2	0	2	0	0	39	4	3									
20370	Not verified	2012	0	0	0			0							0				
20372	Unknown	2012	0		0														
20374	Unknown	2012	0													0	0		
20376	Occupied	2012	36	41	31	31	41	78	102	99	63	48	25	24	19	19	26	31	27
20376a	Unknown	2005								9									
20377	Unknown	2004									0								
20379	Unknown	2009				0	0					75							
20380	Unknown	2003										0					18		
20383	Unknown	2012	0														7		
20384	Occupied	2010			0	12	0	33	50			20					12		
20385	Unknown	2012	0	0															
20392	Occupied	2012	0	0	0	0	2	3	5	2	1	2	17	5	15	9			
20393	Occupied	2012	9	8	17	12	9	17	14	0	0	0	0	4	8	6			
20401	Unknown	2010			0														
20403	Not verified	2007						0											0
20404	Not verified	2007						0											
20405	Unknown	2011		0		1	0	0	3										
20406	Unknown	2012	0	0	0			0											
20407	Occupied	2012	12	14	20	33	14	30	50	68									0
20408	Occupied	2012	0	1	2			0											
20410	Occupied	2011		6		5	0	0	34	20									
20412	Occupied	2011		13	0														
20413	Unknown	2011		0	0														
20414	Not verified	2012	0	0	0			0											

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20415	Unoccupied	2012	0	0	0	0	0	80											
20416	Not verified	2012	0	0	0			0											
20418	Occupied	2011		9	0		0				5	30							
20419	Not verified	2003					0					0							
20420	Unknown	2008					0					10							
20421	Unknown	2011		0	0		0					5							
20422	Not verified	2011		0	0							0							0
20423	Unknown	2008					0					200							
20424	Unknown	2011		0	0		1					100							
20425	Not verified	2011		0	0							0							
20426	Unknown	2011		0	0		0					10							
20428	Unknown	2012	0		0		0					100					10		
20430	Unknown	2012	0		0														
20431	Not verified	2011		0	0							0							0
20435	Occupied	2011		21	13		0			21									
20436	Unknown	2011		0	0														
20437	Unknown	2011		0	0														
20439	Unknown	2010			0												0		
20441	Unknown	2012	0														0		
20442	Unknown	2012	0		0														
20442a	Unknown	2005								7	7								
20446	Occupied	2011		15								0							
20449	Not verified	2011		0				0											
20450	Not verified	2012	0				0										0		
20451	Unknown	2012	1	0	0						4			3	3				
20452	Occupied	2012	5	6	6	9					11				6				
20453	Unoccupied	2012	0	0	0	0	0			10	23				4				



Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	
			0	0	0	0	9	0	0	19	27	25			16	4				
20454	Unknown	2012	0	0	0	0			19	27	25			16	4					
20455	Unknown	2011		0	0															
20456	Unknown	2011		0	0										4					
20459	Occupied	2012	0		0		9													
20462	Not verified	2007						0												
20463	Unknown	2011		0			0													
20464	Unknown	2007						0												
20465	Unknown	2010			0			12												
20466	Occupied	2012	5	8	12	6		43												
20467	Unknown	2012	0		0			2												
20470	Not verified	2012	0	0	0			0												
20471	Occupied	2012	0		2			0												
20472	Unknown	2011		0	0			0												
20473	Not verified	2012	0	0	0			0												
20475	Occupied	2012	9	7	2			0												
20477	Unknown	2011		0				0									2		7	
20478	Occupied	2012	4	6	8	4	7	5	9	22					1					
20479	Occupied	2012	62	75	61	35	28	35	26	53					28					0
20482	Unknown	2012	0		0		0													
20483	Unknown	2012	0		0	0				30								0		
20487	Unknown	1998																		
20488	Unknown	2010			0		1													
20489	Unknown	2012	0		0		0									0				
20489a	Unknown	2009				0	0					14								
20489b	Unknown	2008					0													
20489c	Unknown	2008					0							0				3	5	6
20489d	Unknown	2008					0							8	4	3	3	5	5	6

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	
2O490	Unknown	2007						0												
2O493	Unknown	2012	0	0			0								0	0		6		
2O498	Occupied	2012	0		0		3													
2O501	Unknown	2012	1				0							8	0	7		5		
2O502	Unknown	2008					0								0	0	2	1		
2O503	Unknown	2012	0	0	0										0		7			
2O504	Occupied	2010			14															
2O505	Occupied	2012	28	40	26	21	29	35	61	64	43	54	33	53	43	29	16	13	23	
2O506	Unknown	2012	0	0												1	0	1		
2O507	Occupied	2012	0		10												13	30		
2O508	Unoccupied	2012	0	0	0	0	0	0	0	1	7	11	2	26		18	14			
2O509	Unoccupied	2012	0	0	0	0	0	0		38		30								
2O512	Not verified	2012	1	0	0			0				0								
2O514	Unknown	2012	0		0															
2O515	Occupied	2012	0	32	39	42	25	22				24		26	41	48	51	38		
2O520	Occupied	2012	0	3	4	0	0	0				0		0	0	0	0	5	3	
2O521	Unknown	2012	0											0						
2O523	Occupied	2012	60	76	48	26	0	43			56	62								
2O524	Occupied	2012	2	3	0	1				3				2	2		4	7		
2O526	Unknown	2012	0							0	0			10	22					
2O527	Occupied	2012	14	14	0									11	7					
2O537	Unknown	2010			0			0												
2O539	Occupied	2011		5				1		8							2			
2O541	Occupied	2012	0			11	19		6					11						
2O542	Occupied	2012	23	26	24	22	19	31	19	14	8	6	0	3	22	6	2			
2O544	Occupied	2012	12	6	31	18	19	29	38	38	25	24	24	20	20	19				
2O545	Occupied	2012	2	5	21	6	4	5	10	3	0	0	0	0	5	1				

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20546	Unknown	2008					0												
20547	Not verified	2012	0				0								0				
20548	Occupied	2012	0	54												9			
20553	Unknown	2008					0												
20554	Unknown	2008					0						22						
20555	Unknown	2008					0												
20556	Unknown	2008					0												
20557	Occupied	2010			32											30			
20559	Occupied	2012	83	45	40	37	60				64	150							
20560	Unknown	2012	0	0	0			0											
20561	Occupied	2011		28	1							0							
20562	Unknown	2011		0	0														
20563	Occupied	2012	0	0	0	5		0				0							
20564	Not verified	2012	0		0			0			0								
20567	Unknown	2011		0	0		0					10							
20569	Unknown	2010			0		0					30							
20570	Unknown	2010			0		0				7	0							
20571	Unknown	1984																	
20573	Unoccupied	2007						0	0	0	0	0	0	0	0	0	0	0	2
20574	Unknown	2005								1	0								
20577	Unknown	2012	0				0												
20578	Occupied	2012	4		46		28							20					
20579	Unknown	2008					0												
20581	Occupied	2012	39	27	42	28	30	34	24	20	33	21			35		7		
20582	Occupied	2012	3		0	0	4	0	17			100							
20583	Unknown	2012	2	0	0			0			0								
20584	Occupied	2012	41	59	28	5	0	19	44		1								

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
2O585	Unknown	2012	0	0	0														
2O586	Unoccupied	2012	0	0	0	0	0	0			36								
2O587	Unknown	2012	0	0	0			0											
2O588	Unknown	2010			0			0											
2O589	Unoccupied	2012	0	0	0	0	0	0	2		0	15							
2O590	Not verified	2012	0	0	0			0				0							
2O591	Not verified	2012	0	0	0			0				0							
2O592	Occupied	2012	9	20	2			0			0	0							
2O594	Unknown	2012	0	0	0			0			0								
2O595	Occupied	2012	28	0	0			0											
2O596	Occupied	2012	3	0	5	0	14	18	10	12		100							
2O598	Not verified	2012	1	0	0			0				0							
2O599	Unoccupied	2012	0	0	0	0	0	0			0	10							
2O600	Occupied	2012	29	7	20			0			0	0							
2O601	Not verified	2011		0	0						0	0							
2O602	Unknown	2012	0	0	0	0		0		4	0	0							
2O603	Unoccupied	2012	0	0	0	0	0	0	10	2	0	27							
2O604	Occupied	2012	2	2	2	4	5	5	13		0					1			
2O606	Unknown	2012	0		0			0								2			
2O607	Not verified	2012	0		0			0			0	0							
2O608	Unknown	2003										0							
2O616	Unknown	2007						0						6					
2O617	Occupied	2012	43	58	6	14		24						37					
2O618	Occupied	2012	4	9	11			10	8	12	14			40					
2O619	Occupied	2010			17		0							17					
2O620	Unknown	2008					0							24					
2O621	Unknown	2012	0	0	0									7					

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20622	Unknown	2012	0		0	0			2					14					
20623	Unknown	2012	0											7					
20624	Occupied	2012	0		0	7								9					
20625	Unknown	2012	0						0					47					
20626	Occupied	2012	0		2									18					
20627	Occupied	2012	98		0		30				30			22					
20628	Occupied	2012	5		0									11					
20629	Unknown	2012	0	0												18	14		
20630	Unknown	2012	0	0	0			0											12
20631	Occupied	2011		18															
20632	Unknown	2012	0	0	0					17									
20641	Occupied	2012	2							13									
20642	Occupied	2012	50	41	40		0			6									
20643	Occupied	2012	0	0	6	0			22	24									
20644	Occupied	2011		6	0	0	0				12								
20645	Occupied	2011		9	12		0				8								
20646	Occupied	2011		0	29		14				50								
20647	Occupied	2012	32	35	10	0	27				16								
20648	Occupied	2011		8	6	0	0				9								
20649	Occupied	2010			9		0				15								
20650	Occupied	2011		7	0		0				9								
20651	Occupied	2011		7	0		3				9								
20652	Unknown	2011		0	0		0				3								
20653	Occupied	2012	45		27		9				15								
20654	Unknown	2012	1		0		0				10								
20655	Occupied	2012	0		22		3				10								
20656	Occupied	2011		45	41		0				60								

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20657	Unknown	2009				0	0				17								
20658	Occupied	2011		24	6		0				6								
20659	Occupied	2011		13	10		0	26			33								
20660	Occupied	2011		8	6		0				7								
20662	Unoccupied	2012	0	0	0	0	0	0	11		35								
20663	Unoccupied	2012	0	0	0	0	0				10								
20664	Occupied	2012	19	14	8	8	9	15	23										
20665	Occupied	2012	0	2	2	0			6										
20666	Occupied	2012	0	6	0	3			16										
20667	Occupied	2012	45	66	35	47	40	60	75	40									
20668	Occupied	2012	34	49	21	52	39	61	100										
20669	Occupied	2012	28	25	3	0	0	4	18	2									
20670	Unknown	2012	0	0	0	0		5	5	2									
20671	Occupied	2012	19	23	0	19		24	50	50									
20672	Occupied	2012	10	6	11	0		8	15	5									
20673	Occupied	2012	0	41	0	0	34	45	73										
20674	Occupied	2012	2	3	2	5	4	5	8	11									
20675	Occupied	2012	5	0	9	13	3	35	47	49									
20676	Occupied	2011		10			10	9	25	18									
20677	Occupied	2012	0		0	0	7	11	12	12									
20678	Occupied	2012	4	38	35		33	27	92	38									
20679	Occupied	2012	23	10	13	9	3	8	18	12									
20680	Unoccupied	2012	0	0	0	0	0	15	25										
20681	Occupied	2011		0		10		13	10	31									
20682	Occupied	2012	0	0	0	0	3	7	11	15									
20683	Occupied	2012	0	0	0	3	2	8	30										
20684	Unknown	2012	0	0	0	0		10	5	29									

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996
20685	Occupied	2012	4	20	21	10	7	22	22										
20686	Occupied	2012	42	29	30	0	22	4	17	18									
20688	Unknown	2012	0	0	0			0	18										
20690	Unknown	2011		0						58									
20691	Occupied	2011		19						18									
20692	Unknown	2012	0		0		1			10									
20693	Unknown	2005								33									
20694	Occupied	2011		5						20									
20695	Occupied	2012	5	5	4	5	7			14									
20696	Occupied	2012	16		0	11	13			42									
20697	Occupied	2012	4	1	4	0	0	2											
20698	Occupied	2012	0	0	3			7											
20701	Occupied	2012	1	31	45	28		34											
20705	Occupied	2012	7	8	6	11	12												
20711	Occupied	2012	0		0		2												
20712	Occupied	2012	2	0	5	4	11												
20713	Occupied	2012	40	37	30	26	12												
20715	Occupied	2012	0	0	0	5													
20716	Occupied	2012	21	21	25	13													
20717	Occupied	2009				5													
20718	Occupied	2012	0				11												
20801	Occupied	2009				1	6	14		32									
20802	Occupied	2009				10	16	18	4	15									
20803	Occupied	2009				16	5	10		14									
20804	Unknown	2009				1	0	0	0	5									
20805	Occupied	2009				6	7	4	4	22									
20806	Occupied	2009				2	3	8	13	16									

Lek ID	Management Status	Year Last Obs	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	
20807	Occupied	2009				7	3	5	17	8										
20808	Occupied	2009				6	1	3		6										
20809	Unknown	2009				1	0	1		2										
20810	Occupied	2009				21	16	33	25	11										
20811	Occupied	2009				10	18	23												
20812	Occupied	2009				16	9	8												
20813	Occupied	2009				0	3													
20814	Occupied	2012	6	10	8															
20815	Occupied	2012	18	20	19															
20818	Occupied	2012	19	27	40															
20819	Occupied	2011		7	0	5	14													
20820	Occupied	2011		46																
20821	Occupied	2011		23																
20822	Occupied	2011		5																
20823	Occupied	2011		10																
20824	Occupied	2011		15																
20830	Occupied	2010			10															
20831	Occupied	2012	12		15															
20832	Occupied	2012	19	7	3															
20833	Occupied	2012	9																	
20834	Occupied	2012	11																	



APPENDIX - B

Owyhee County LWG Sage-grouse Management Plan – PECE Matrix

Listing Factor / Threats or Conditions	Lead for Accomplishing Conservation Measures	How Threat or Condition Will Be Addressed	Funding Source(s)	Completion or Planned Implementation Date	Authorities Processes Required
Wildfire Management	BLM Field Office(s)	Sites with high priority sage grouse habitat will be re-seeded with sagebrush and as necessary with grass/forb mixtures	Budgeted BLM Emergency Fire Management Funds.	Initiate 2001. Ongoing as wildfires occur.	NEPA – EA for fire rehab plans
	BLM Field Office(s)	Fire rehab seedings have occurred regularly since 2001. Rehab projects: Rough Diamonds 2001, Trimbley 2002, Big Cow 2003	Budgeted BLM Emergency Fire Management Funds.	Hand seed, 26 ac Aerial seed, 51,954 ac Ground drill, 8,671 ac Plantings 103,000	NEPA – EA for fire rehab plans completed
	BLM Field Office(s)	Develop maps based on vegetation type, lek sites, telemetry data and survey data to identify high priority sage grouse habitat areas for wildfire management under BLM protocols for sage grouse habitat.	Budgeted. BLM Emergency Fire Management Funds.	Initiate 2001. Ongoing updates new information is available.	No authority or process constraints.
	IDFG	Lek surveys will identify new lek sites used to update maps of known high priority sage grouse habitat	IDFG, BLM, LWG / State OSC and USAF	Initiated in 2001. Ongoing.	No authority or process constraints.
	IDFG	Telemetry studies conducted in various areas will identify seasonal use areas and is used to refine maps of known high priority sage grouse habitat.	IDFG, BLM LWG / State OSC and USAF.	Initiated in 1999. Ongoing. **	No authority or process constraints.
	U of I and Owyhee LWG	Conduct Landowner survey to document current local sage grouse and predator	\$13,000 LWG / State OSC.	Initiated June 2004 completion Fall 2004	No authority or process constraints.

		characteristics and changes over time. Data used to update & improve maps of known high priority sage grouse habitat			
	Private Landowners	Seek cooperation of private landowners and obtain funding to provide financial assistance with fire rehab seedings where needed on private lands.	OCS and FWS funding	Kershner Fire 800 ac Completed 2003 Bluebucket Mine Fire 100 ac in process	Landowner cooperation

\*\* Sheep Cr., Grasmere/Riddle Project – initiated 1999, completed Fall 2004, Cost \$120,000.  
 Cow Creek, Project – Initiated in 2000, Completed Fall 2004, Cost \$75,000.  
 Castle Cr. / Bates Cr. Project, Initiated in 2001. Completed Fall 2004. Cost: \$50,000  
 Big Springs Project. Initiated in 2003. Completed in 2005, Cost: \$25,000.  
 Proposed - Big and Little Jacks Creek and Dickshooter ridge. Start both in 2005, both completed in 2007, Each project \$15,000 annually.  
 West Nile Virus project – started summer 2007 – Ongoing – Total cost: \$30,000.00. Annual Reports completed 2007-2012

<b>Listing Factor / Threats or Conditions</b>	<b>Lead for Accomplishing Conservation Measures</b>	<b>How Threat or Condition Will Be Addressed</b>	<b>Funding Source(s)</b>	<b>Completion or Planned Implementation Date</b>	<b>Authorities Processes Required</b>
<b>Utilization Hunting</b>	IDFG	Change the bag limit to one bird per day and reduce the hunting season to 7 days in the northern part of Owyhee County.	None Required.	Completed	Idaho Fish and Game Commission approved.
	Local Working Group	Seek legislation to allow Habitat Improvement Program (HIP) funds to be used for sage grouse habitat improvement projects.	None Required.	Completed	Legislative action completed.
	Owyhee LWG	Recommend to Idaho Fish and Game Commission that a free permit system be implemented to identify sage grouse hunters and improve information gained	None Required.	Completed	Legislative and Idaho Fish and Game Commission action completed

		from hunter surveys.	None Required.		
IDFG		Recommend addition and continuation of check stations and wing barrels.		Initiated in 2000. Increased wing barrels and check stations ongoing.	No authority or process constraints.
IDFG		Implement telephone survey of known sage grouse hunters to obtain better harvest data.	Idaho Fish and Game	Initiated in 2000 and ongoing.	No authority or process constraints.
Owyhee LWG		Support and participate in BLM route designation efforts to keep ATVs and other vehicles on established roads and trails and avoid off road cross country travel. (Applies also to habitat fragmentation plan)	None required for LWG actions Budgeted w/BLM	Initiated in 2004 and Ongoing.	No authority or process constraints

Listing Factor / Threats or Conditions	Lead for Accomplishing Conservation Measures	How Threat or Condition Will Be Addressed	Funding Source(s)	Completion or Planned Implementation Date	Authorities Processes Required
Habitat Fragmentation & Perennial Grassland	See <u>Wildfire Management and Western juniper encroachment</u>  Owyhee LWG	All of the actions proposed under <u>Wildfire Management and Western juniper encroachment</u> are proposed in part to avoid habitat fragmentation and/or prevent the establishment of perennial grassland.  The LWG will provide comment and utilize other means as available to support the policies of the Owyhee County in their Comprehensive Plan and Owyhee County Land Use Plan for Federal and State Lands to promote economically viable and sustainable ranching operations in order to discourage conversion of rangeland to rural / remote recreational home development.	See <u>Wildfire Management and Western juniper encroachment</u>  None Required	See <u>Wildfire Management and Western juniper encroachment</u>  Initiated 2004 Ongoing	See <u>Wildfire Management and Western juniper encroachment</u>  Case by case issues are governed by the Planning and Zoning Commission.
	BLM Field Office(s). State Department of Lands. Owyhee LWG.	Implement sagebrush restoration in historical sage grouse habitat where historical fires have removed sagebrush creating perennial grasslands and fragmenting habitat. Target 1000 acres annually for combined Federal, State and Private lands.	Costs depend on annual acreage. Estimated \$10 to \$15 per acre.  LWG / State OSC.	The first project is planned for 2005. Ongoing.	NEPA – EA on Federal lands. Concurrence of IDL or private landowner on non-federal lands..

Listing Factor / Threats or Conditions	Lead for Accomplishing Conservation Measures	How Threat or Condition Will Be Addressed	Funding Source(s)	Completion or Planned Implementation Date	Authorities Processes Required
Livestock Grazing	BLM Field Office(s)	The Bureau of Land Management (BLM) Idaho Standards and Guidelines (ISG) implementation schedule will have assessments and decisions completed on all grazing allotments by 2007. The ISG addresses eight standards including Watersheds, Riparian systems, Native plant communities, Rangeland seedings and Threatened/Endangered/Sensitive species habitat. Where there is believed to be a deficiency for one or more of these standards, including sage grouse habitat, grazing management is reviewed and proper grazing management implemented to correct the deficiency.	ISG Administration Budgeted – BLM. ISG implementation projects funded through Dedicated Range Improvement Funds and BLM budgeted-funds.	(NOTE:ISG decisions UPDATED INFORMATION REQUESTED FROM BLM. THIS SECTION WILL BE UPDATED WHEN INFORMATION IS RECEIVED.	Environmental Assessments for each ISG implementing decision.
	Idaho Department of Lands Private Landowners	The Idaho Department of Lands participates in the ISG plan development on State grazing lands intermingled with Federal land, landowners participate in the development of ISG management plans applicable to private land intermingled with Federal land.	Idaho Department of Lands. Private Landowners.	There are 87,603 acres of State land under ISG plans in 74 allotments. There are 158,448 acres of private land under ISG plans in 74 allotments.	IDL participates in ISG plan development. Private landowners participate in ISG plan development.
	Idaho Department of Lands	On State grazing lands that provide sage grouse habitat, the IDL will continue to conduct Resource Assessments on all expiring grazing leases and insure that new grazing leases include livestock management practices that address all resource concerns.	Idaho Department of Lands	Ongoing as part of IDL leasing program	IDL plan approval required
	Owyhee LWG Private landowners	Seek landowner cooperation in providing bird ladders in tanks for private water developments and pipelines.	None Required	Initiate in 2004, Ongoing	No authority or process constraints.

Listing Factor / Threats or Conditions	Lead for Accomplishing Conservation Measures	How Threat or Condition Will Be Addressed	Funding Source(s)	Completion or Planned Implementation Date	Authorities Processes Required
Invasive species and Noxious Weeds	BLM Field Office(s)	<p>Sites with high priority sage grouse habitat will be re-seeded with sagebrush and as necessary grass/forb mixtures to prevent annual grass dominance.</p> <p>Sagebrush seeding may be unsuccessful (generally in the Wyoming big sagebrush zone) where annual grass dominance may be a threat following wildfire. In these cases, perennial grass seedings may be required to facilitate long-term future establishment of the shrub component.</p>	Budgeted BLM Emergency Fire Management Funds.	Initiate 2001 Ongoing as wildfire occurs	Environmental Assessment for fire rehab plans
	Owyhee LWG Cooperative Weed Management Area Steering Committee & Cooperating Agencies	Support actions of the Jordan Valley CWMA covering the entire Jordan Creek Watershed. The CWMA participants include the Idaho and Oregon BLM, SCA, Owyhee County, Idaho Dept. of Lands, Owyhee Watershed Council and 10	None Required for LWG activity.  The JV-CWMA is 50% cost share funded Private w/ IDA. BLM provides additional funding. Potential additional sources include FWS, IDFG & OCS	JV-CWMA Organization completed 2002  2004 AOP \$60,900 for mapping 1000 acres, herbicide treatment 500 acres and Bio-control 100 acres	No authority or process constraints. CWMA's are organized through landowner multi agency agreement or MOU

			ranchers. Seek additional funding to support projects of the JV-CWMA.			
	Owyhee LWG		Encourage development of additional CWMA programs in other locations in Owyhee County and seek additional State, Federal and Private funding.	None Required for LWG activity.	Ongoing	No authority or process constraints.
	Idaho Department of Lands		Support IDL efforts to identify and control noxious weeds particularly leafy spurge.	IDL is funded to provide weed control on State Lands	Annual treatments on Boulder Cr. have reduced leafy spurge to isolated plants	No authority or process constraints.

Listing Factor / Threats or Conditions	Lead for Accomplishing Conservation Measures	How Threat or Condition Will Be Addressed	Funding Source(s)	Completion or Planned Implementation Date	Authorities Processes Required
Western Juniper Encroachment	BLM Field Office(s)	Treat and eradicate seral Western juniper on a minimum of 12,000 Acres of Federal land annually.	Budgeted - Bureau of Land Management.	Initiated in 2002. Ongoing.	NEPA Required for each project.
	BLM Field Office(s)	Pixley Basin Burn treated 3,337 ac BLM. Unauthorized 180 ac on private land. These including seedings conforming to wildfire management plan.	Budgeted - Bureau of Land Management.	Completed 2003.	NEPA Completed.
	Agric. Res. Service (ARS)	ARS -- Reynolds Creek Project completed 166 ac	Budgeted ARS.	Initiated in 2002. Ongoing.	NEPA Completed.

		planned additional 300 ac.				
BLM Field Office(s)	Juniper Mountain Restoration Project to initiate burn program within the 300,000 Acre planning area	Treat and eradicate seral Western juniper on a minimum of 500 acres of State land. The IDL conducts juniper control programs annually on State lands in Owyhee County	Budgeted - Bureau of Land Management.	Initiated in 2003. Ongoing.	NEPA in progress.	
Idaho Department of Lands			Budgeted - Idaho Dept. of Lands.	2000 - 2004, Four projects covering 1,200 ac. Ongoing	No authority or process constraints.	
Private Landowners	Encourage Treatment programs on private lands by seeking 50/50 cost share for control programs.		\$25,000 annually. LWG / OSC and FWS programs	Implement January 2005. 400 ac treated w/o cost share	No authority or process constraints. Landowner Participation.	
BLM Field Office(s)	Encourage permittee cooperation in treatment programs by seeking a change in BLM policy to allow grazing in the fall that burn treatments occur.		None Required.	Implement January 2005.	No authority or process constraints.	



	Owyhee LWG	Develop a list of entities interested in supplying alternative forage and encourage sponsors to develop a grassbank program to encourage permittee treatment program participation	None Required.	January 2005.	No authority or process constraints.
--	------------	--	----------------	---------------	--------------------------------------

Listing Factor / Threats or Conditions	Lead for Accomplishing Conservation Measures	How Threat or Condition Will Be Addressed	Funding Source(s)	Completion or Planned Implementation Date	Authorities Processes Required
Predator Action Plan	Wildlife Services and IDFG	Conduct artificial nest studies to identify the primary sources of nest predation.	APHIS – WS IDFG LWG / State OSC.	Artificial nest predation study identified raven and coyote as primary nest predators.	NEPA – EA Completed.
	Wildlife Services and IDFG	Conduct a research project to evaluate the effect of predator suppression on nesting success rates in different habitat types. ** Where predation is identified as a important biological factor in a particular area, identified predators would be reduced. Document nest success and survival rate changes.	APHIS – WS IDFG LWG / State OSC. Funded, IDGF and Wildlife Services	Research project ongoing  Initiated 2000. Contingent on identification of problem areas	NEPA – EA Completed.  NEPA – EA Completed.
	Wildlife Services predator removal. IDFG monitoring.	Conduct Landowner survey to document current local sage grouse and predator characteristics and changes over time. Data will be used to update and improve maps of known high priority sage grouse habitat	Funded. LWG / State OSC	Initiated June 2004 completion Fall 2004	No authority or process constraints. Landowner Cooperation.