

FINAL

**A CONSERVATION AGREEMENT FOR SAGE-
GROUSE IN THE GREATER CURLEW VALLEY
AREA IN SOUTHEAST IDAHO**

June 2004

Executive Summary

In 1997, the Idaho Department of Fish and Game (IDFG) established the Idaho Sage-grouse Task Force, which developed the Idaho Sage-grouse Management Plan (Idaho Plan) to address concerns for declining sage-grouse populations in the State. The Idaho Plan called for the establishment of local sage-grouse working groups to develop local plans and programs that maintain, improve and restore local sage-grouse populations and their habitat. A local working group was formed for the Greater Curlew Valley Area (GCVA) in April of 1998. The group consists of state and federal agencies, conservation groups, permittees and private individuals. The local working group compiled an extensive list of issues concerning sage-grouse. This document presents those issues and recommended conservation measures to address them.

I. PURPOSE AND GOALS

In 1997, IDF&G established the Idaho Sage-grouse Task Force, which developed a State plan that addresses concerns for declining sage-grouse populations in the State. This plan called for the establishment of local sage-grouse working groups to develop local plans and programs that maintain, improve, and restore local sage-grouse populations and their habitat. The purpose of this Conservation Agreement is to provide state and federal agencies, and federal grazing permittees and others with the information necessary to plan, monitor and guide the management of sage-grouse and their hunting, predators and habitat within the GCVA (see Figure 1 below).

A. Guiding Principles for Plan Development

The GCVA Local Working Group desired participation from as diverse a group as possible to ensure a collaborative and cooperative effort from all resource interests. The group has been meeting since April of 1998. Representatives include the U.S. Bureau of Land Management, U.S. Forest Service, U.S. Fish and Wildlife Service, Idaho Department of Fish and Game, Idaho Cattleman's Association, Natural Resources Conservation Service, County Government, Grazing Lands Conservation Initiative, Idaho Association of Soil Conservation Districts, Pheasants Forever, permittees and general public interests. Land management agencies referred to throughout the text of this document include; U.S. Bureau of Land Management, U.S. Forest Service, and the Idaho Department of Lands. Other stakeholders, while choosing not to be a part of this process, were identified and invited to participate (Appendix I).

B. Guiding Principles for the Local Working Group

The guiding principles of the Local Working Group include:

1. Invite and include everyone interested in sage-grouse management in the GCVA.
2. Respect individual views and make decisions through collaboration and consensus.
3. Develop a conservation plan and actions that are compatible with the purpose and intent of the 1997 Idaho Sage-grouse Management Plan.
4. Implement conservation actions in ways that meet the plans/goals as agreed to by the Local Working Group.
5. This Plan is intended to be a fluid and dynamic plan that will change as new information becomes available.

C. Goal

To overall goal of this plan is to preserve and increase sage-grouse populations in the GCVA. Specific goals of this plan are:

1. Monitor sage-grouse populations.
2. Monitor the impacts of hunting on sage-grouse if hunting resumes.
3. Assess the impacts of predators on sage-grouse.

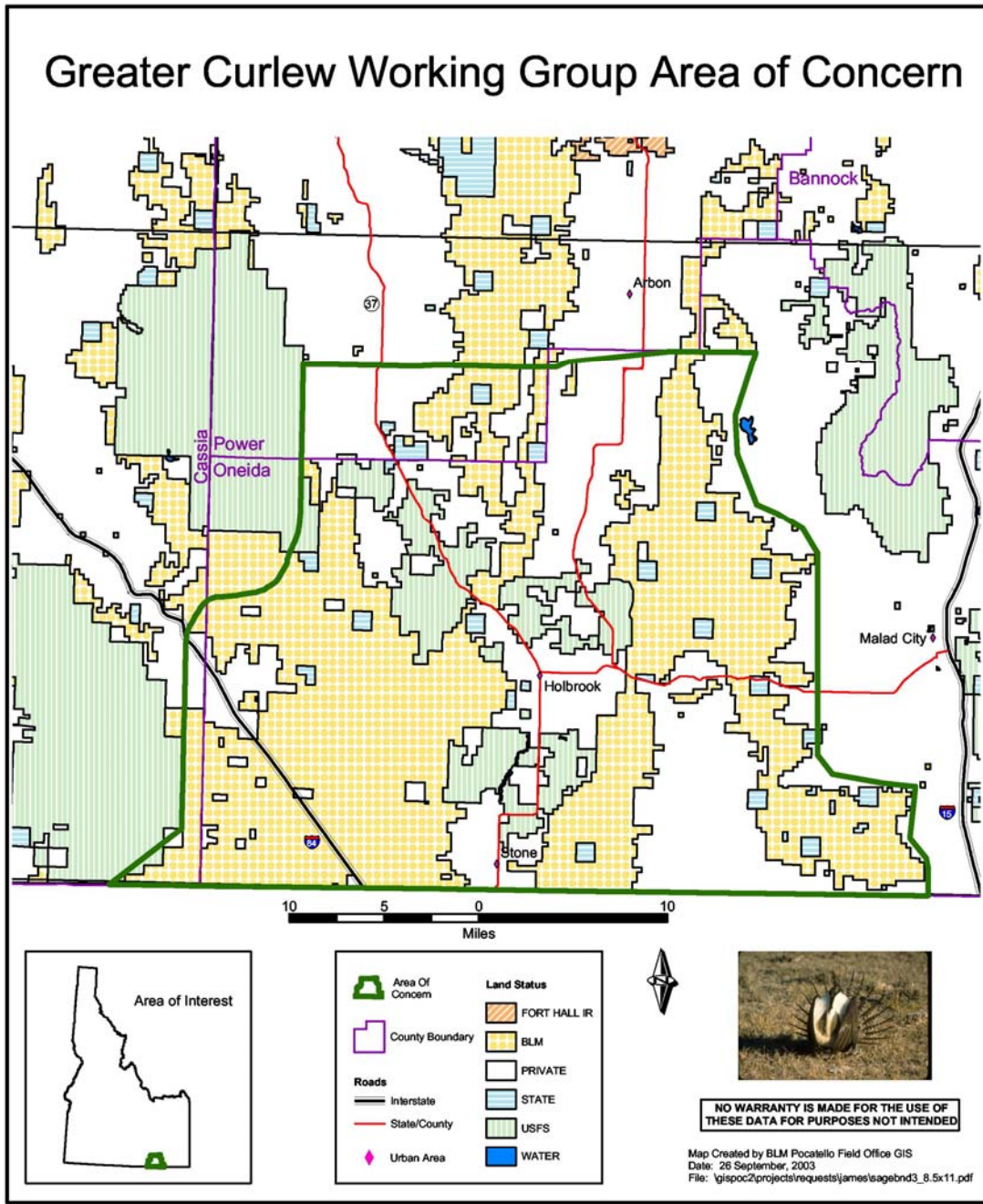


Figure 1. Greater Curlew Valley Area of Interest for the Conservation Agreement.

4. Evaluate current habitat conditions and monitor habitat change over time.
5. Protect and restore habitat for sage-grouse.
6. Maintain current livestock grazing levels.

The objectives to obtain the goals are:

1. Continue to monitor known sage-grouse leks while looking for new ones.
2. Continue intensive patrols in the GCVA during the sage-grouse hunting season and collect as many wings as possible to monitor harvest.
3. Initiate a long-term predator reduction study in parts of the GVCA while not in others to determine impacts on sage-grouse populations.
4. Inventory and establish vegetative trend monitoring sites within the GVCA core area habitats.
5. Identify and protect remaining core area habitats while restoring others.
6. Identify livestock grazing levels associated with different sage-grouse nesting and brood rearing habitat conditions across years and core area habitats of the GVCA.

II. SAGE-GROUSE POPULATION INFORMATION

Sage-grouse populations in western states have shown significant declines in recent years. The average number of males attending leks in Colorado was 31% lower between 1986 and 1995 than the long-term average (1948-1985). Counts were lower by 17% in Wyoming, 30% in Utah and Oregon, 47% in Washington, and 31% in Montana during similar time periods. Recent trends of sage-grouse populations in Idaho have shown a decline of about 40% from long-term average.

The Local Working Group has been actively looking for new sage-grouse leks in the GCVA since 1997 and will continue this effort. In review of these data it has become apparent that there is limited information to determine if the population is migratory or nonmigratory. Breeding populations are being assessed by either lek counts or lek surveys.

Brood counts are labor intensive and usually result in inadequate sample sizes. We have made every effort in collecting as many wings as possible through wing barrels and hunter contacts but sample sizes are small. Closed hunting seasons prevent the collection of wing samples, which can be used to determine annual chick recruitment and genetic information.

Table 1 presents population counts for the Greater Curlew Valley area since 1999.¹

Year	Number of Males ¹	Number of Females ²	Spring Population ³	Juveniles per Adult Female ⁴	Fall Population ⁵
1999	321	578	899	1.78	1318
2000	340	612	952	1.21	1150
2001	137	247	384	1.60	532
2002	126	227	353	1.99	551
2003	198	356	554	1.79	814
2004	180	324	504		

Table 1. Sage-grouse Populations in the Greater Curlew Valley Area, 1999-2003

Notes on Table 1:

1. Male populations are based on the number of males counted on known lek routes
2. Female populations are estimated at 1.8 times the counted male population
3. Spring populations are estimated using the actual counts of male birds and the estimate of female populations.
4. Estimates of juvenile birds per adult female in the fall.

¹ Calculated the same as in previous years using the following leks: Marble, Exchange, Smith-Pett, S. Funk, N. Funk, E. Jacobson, W. Jacobson, W. Strong, N. Huffman.

- Fall populations are estimated based on two assumptions: 1) 60% of males survive from lek to fall and 2) 70% of females survive from lek to fall.

Genetic testing was conducted during the fall of 2000; results indicate that populations in the Greater Curlew Valley Area are not genetically isolated.

In the GCVA, sage-grouse population data show a general downward trend in mean maximum male lek attendance (Table 2) over the past 30 years while stable to increasing during the past four years. Wing data (Table 3) indicate poor juvenile survival and recruitment (≤ 225 chicks per 100 adult females) into the fall population, but these data suffer from small or limited sample sizes.

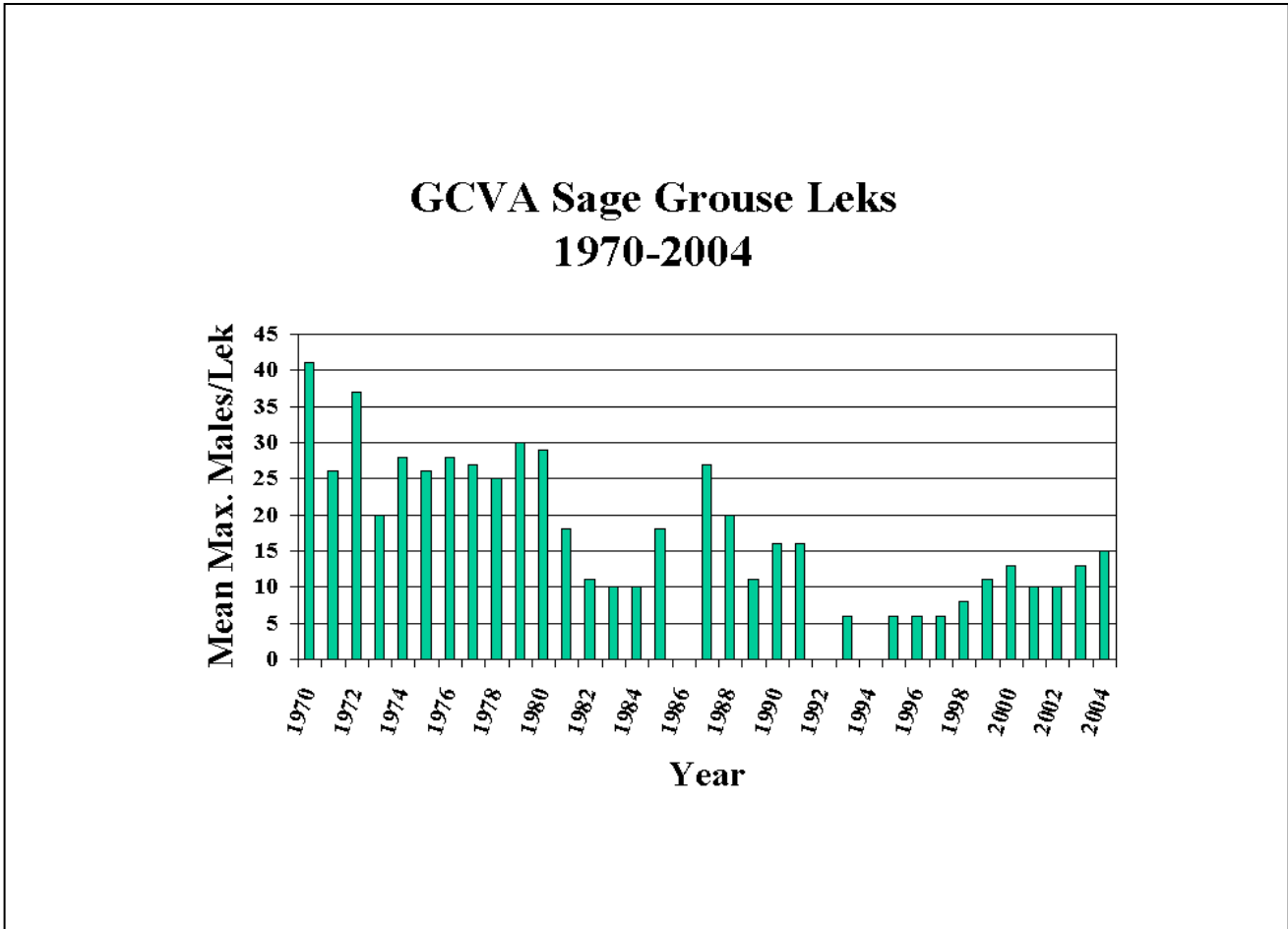
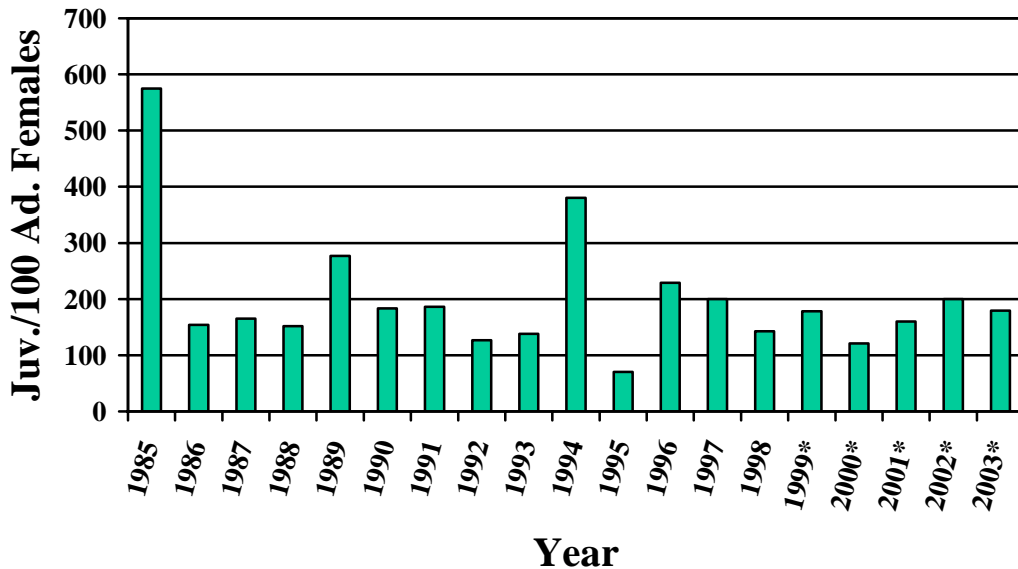


Table 2. Mean Maximum Male Lek Attendance on leks in the Greater Curlew Valley Area, 1970-2004.

GCVA Sage Grouse Production Wing Data 1985-2003



* Data taken from Magic Valley region wing collection since there was no hunting season in the GCVA.

Table 3. – Estimated Number of Juvenile Grouse/100 Adult Females from 1985-2003

SAGE-GROUSE HABITAT INFORMATION

Sage-grouse are dependent on large acreages (i.e., thousands of acres) of sagebrush/grassland habitats that have a 15-25% sagebrush canopy cover and a diverse grass and forb understory. Agricultural crops are also beneficial to sage-grouse. These habitats provide critical breeding range for sage-grouse and their loss will result in a loss of sage-grouse. Meadows, riparian areas, alfalfa fields, other agricultural fields, and other moist areas provide important summer range for sage-grouse. Similarly, sagebrush habitats (those that remain 10-12 inches above snow level) provide critical winter range for sage-grouse. Sage-grouse populations can decline when sagebrush/grassland habitat is altered or fragmented by reducing or eliminating sagebrush canopy cover, seeded to introduced grass species, converted to agriculture, or altered in any way that results in a significant reduction of the native grass/forb understory. Many habitat changes can be beneficial and will be reviewed on a case-by-case basis. Large scale changes have potentially greater effects on populations.

Sagebrush (15-25% canopy cover) and understory grass and forb cover (7 inches or more during the May nesting period) are key components of sage-grouse nesting and early brood-rearing habitat. Most sage-grouse nests occur under sagebrush. If sagebrush is eliminated from a large area, it will not support sage-grouse populations because nesting success and/or juvenile survival will also be reduced.

Insects are a key component of sage-grouse brood habitat. Insects are found in diverse grass and forb plant communities. A high protein diet of insects is necessary for all young upland game birds during the

first month of life. Sage-grouse chick survival is lower if insects are unavailable probably because of starvation and increased vulnerability to predation while searching for scarce food.

During winter, sage-grouse feed almost exclusively on sagebrush leaves and buds. If adequate sagebrush is available for winter food and cover, sage-grouse are seldom impacted by severe winter weather. Loss of sagebrush on grouse winter ranges can, however, severely impact sage-grouse populations.

III. CONSERVATION PLAN DEVELOPMENT

The area of concern for the GCVA was agreed to encompass IDF&G Sage-grouse Management Area 3 (Southern Power and Western Oneida Counties). The area includes approximately 551,373 acres (Figure 1) which includes approximately 275,360 acres BLM, 214,019 acres private, 12,652 acres State, 49,200 acres Forest Service, and 142 acres water. The Local Working Group compiled an extensive list of issues concerning sage-grouse.

Sage-grouse management efforts in this Conservation Agreement are focused on the following to address the issues identified by the Local Working Group:

1. Population Priorities
2. Sage-grouse Habitat Inventory and Monitoring Priorities
3. Sage-grouse Habitat Management Priorities
4. Sage-grouse Habitat Treatments

The individuals who were invited to participate in the proceedings of the Local Working Group are listed in Appendix A.

A list of documents that were used by the Local Working Group in developing this document is included as Appendix B.

Following completion of the Draft of this document, the Local Working Group provided an opportunity for interested individuals to submit comments. Only one comment was submitted during that timeframe. It is included in its entirety in Appendix C.

IV. MANAGEMENT PRIORITIES

A. Population Priorities

1. Sage-grouse Inventories and Monitoring

a) Description:

Population data is collected through chick mortality studies, lek counts, brood counts, harvest data, and radio-telemetry tracking, etc. Idaho Department of Fish and Game has compiled all existing population data for historic and current Sage-grouse populations in the Greater Curlew Valley area. In review of this data it has become apparent that there is limited information as to the designation of the population as migratory or nonmigratory

b) Objectives:

The objectives of the “Sage-grouse Population Inventories and Monitoring” Recommended Actions are to: 1) complete review of the data collection measures for use in the population database, 2) ensure high quality population data is available to support decision-making, and 3) continue existing data collection efforts and incorporate radio-telemetry studies to determine migratory/nonmigratory status and key seasonal use areas.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) IDF&G continue to analyze the existing data for adequacy and quality.
- 2) IDF&G standardize data collection techniques and ensure they are applied consistently. Consider all past, present, and future data collection techniques used within or outside the agency.
- 3) IDF&G ensure that only high quality data are used in analysis.
- 4) IDF&G report data in a consistent format and a manner that can be understood by the general public on an annual basis.
- 5) IDF&G ensure that data is stored and managed consistently on a statewide basis.
- 6) IDF&G collect sufficient data to be able to ascertain whether populations are migratory and which are non-migratory, and map movement patterns to determine key seasonal habitat use areas when possible and appropriate.
- 7) IDF&G encourage investigation into the need for and methodology to collect population data in areas where there is no sage-grouse hunting.
- 8) IDF&G analyze status and trend annually for the sage-grouse population.

d) Benchmarks:

Recommended Actions #1 - #8 should be implemented immediately and on an on-going basis.

e) Monitoring:

IDF&G will present a status report on all Recommended Actions to the Local Working Group at its annual meeting. The Local Working Group will determine whether all information has been compiled into a useable database and monitor the efficacy of the survey methods.

2. Sage-grouse Hunting

a) Description:

Given the low densities of sage-grouse found on the GCVA a great deal of concern has

been expressed as to the validity of maintaining a hunting season for these birds. Until 1996 the state had a 4 week hunting season with a daily bag limit of 3 birds. In 1996, to gain a better understanding of the impact hunting has on sage-grouse, the Idaho Department of Fish and Game (IDFG) Commission divided the state into 3 areas and agreed to hold these seasons in place for 5 years. One area was closed to hunting. The second area, which included the GCVA, had the season length and bag limit greatly reduced (1 week with a 1 bird daily bag limit). The third area was given a more liberal season (2 weeks with a 2 bird daily bag limit). In 2002, the Commission closed the season in the area that includes the GCVA.

b) Objective:

The objective of the “Sage-grouse Hunting” Recommended Actions is to manage sage-grouse harvest to ensure a sustainable population.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) The Idaho Fish and Game Commission allow hunting of sage-grouse only after a 3 year period where populations maintain a minimum of 300 birds or at least 100 males are counted on the leks as recommended by Connelly et al (2000).
- 2) The Idaho Fish and Game Commission establishes hunting seasons based on the guidelines set forth by Connelly et al (2000).
- 3) The Idaho Fish and Game Commission only allow hunting as long as the total number of active leks are >12 throughout the area of concern.

d) Benchmarks

Recommended Actions #1 - #3 should be implemented immediately and on an ongoing basis.

e) Monitoring

The Local Working Group will monitor progress on the recommended actions by reviewing the IDFG’s lek survey summary annually.

3. Predators

a) Description

In April of 1999, an artificial nest study was carried out by Idaho Department of Fish and Game and APHIS Wildlife Services in the Curlew Valley area of southeast Idaho, to assess the potential impacts of nest predation on sage-grouse. Fifty artificial sage-grouse nests were exposed and monitored for a one-week period. Each nest consisted of 3 brown chicken eggs concealed in a depression under a sage bush. All 50 nests were placed at night, to reduce the likelihood of increased detection by ravens that might otherwise observe nest placement during the daylight hours. Ten transects of 5 nests each were placed, with each transect about one mile apart, with nests situated on alternating sides of the road, 0.3 of a mile apart, approximately 25 meters from and at right angles to the road. Nests were monitored by visiting each nest at 2, 3 and 7-day

intervals, during daylight hours. After only one week of exposure, 84% of the 50 nests (100% on the proposed treatment area and 68% of the proposed control area) had been destroyed by predators.

A similar study was repeated in the same area beginning in April 2000. Fifty artificial nests were again exposed along the same routes used in 1999. This time, the area was divided roughly in half, with half the artificial nests in a “treatment” (Unit 73A) area, and the other half in the “control” (Unit 56, or non-treatment) area. Each area was approximately 32 square miles. Ideally, these two areas would have been separated by at least 10 –20 miles, but because of the limited size of the study area, the treatment and control areas were immediately adjacent to each other. All 50 nests were again exposed and monitored for one week. Sixty-four percent of the nests in the treatment area were destroyed, while 56% of the nests in the non-treatment area were destroyed. Favorable weather conditions allowed identification of nest predators in most cases, based on sign left at the nest sight. Ravens were the predominant nest predators, destroying approximately 65% of the nests in both the treatment and control areas, while mammalian predators (coyotes, red fox, and badger) destroyed 35% of the nests in both the treatment and control areas.

Immediately following the week of artificial nest monitoring, control methods were implemented in the treatment area to try and effect a reduction in the number of nest predators. Brown chicken eggs treated with the avicide DRC-1339 were placed on elevated wooden platforms and exposed on the ground. Leg-hold traps were placed to capture and remove coyotes, red fox and badgers. Egg baits and traps were monitored and replaced or maintained every 2-3 days for a 4-week treatment period. Approximately 100 egg baits and 50 leg-hold traps (approximately 1100 trap-nights) were maintained in the 32 square-mile treatment area during this time. An estimated 37 ravens were removed during the treatment period along with 10 coyotes, 17 badgers, 3 red fox, and 1 striped skunk. Immediately following the treatment period, fifty artificial nests were placed along transect routes in both the treatment and the control areas (an increase of 25 nests in each area) and monitored every other day for another week to assess post-treatment levels of nest predation. Post-treatment predation rates were significantly different, with only 28% nest loss in the treatment area, compared to 98% nest loss in the non-treatment area.

The results of this work suggest that further information is needed. A proposal to duplicate this work over several areas across southern Idaho using radio-collared sage-grouse hens has been submitted. Predator removal will continue in the GVCA by conventional sport hunting and livestock management support programs until other options arise with federal predator management EIS decisions.

b) Objective

The objective of the “Predators” Recommended Actions is to manage predator populations and sage-grouse habitat to ensure a sustainable sage-grouse population.

c) Recommended Actions

The Local Working Group recommends that:

- 1) The Idaho Office of Species Conservation fund a comprehensive study in the Greater Curlew Valley area that includes the impacts of predation on local sage-grouse populations.
- 2) Wildlife Services and the Idaho Department of Fish and Game initiate a predator control program if the data from the research demonstrates that predators are having a significant impact on the sage-grouse population, then.
- 3) Wildlife Services conduct an annual predator survey to monitor predator numbers if a predator control program is initiated.
- 4) All land managers² manage sage-grouse nesting habitat to provide maximum security for nesting sage-grouse and reduce their susceptibility to predation.
- 5) IDF&G discourage the establishment of red fox and other non-native predator populations in sage-grouse habitat.

d) Benchmarks

- Recommended Actions #1, 4 and 5 should be implemented immediately and on an on-going basis.
- Recommended Actions #2 and 3 should be implemented based on the results of the study completed through implementation of Recommended Action #1. The Local Working Group will work with Wildlife Services and the Idaho Department of Fish and Game to design a predator removal plan and predator population monitoring program.

e) Monitoring:

Wildlife Services will present a status report on implementation of Recommended Actions 2 and 3. IDF&G will present a status report on implementation of Recommended Action 5. The Local Working Group review information presented at its annual meeting.

B. Sage-grouse Habitat Inventory and Monitoring Priorities

The Local Working Group understands that the legal status of sage-grouse may change based on the results of a status review currently being conducted by the U.S. Fish and Wildlife Service. Some of the recommended actions included in this section are designed to provide more complete and accurate information about sage-grouse and their habitat. The inclusion of these recommended actions should not be interpreted as a desire to delay conservation actions to benefit sage-grouse.

The Local Working Group intends to pursue conservation actions to benefit sage-grouse as resources become available. However, the Local Working Group also recognizes the potential

² The Local Working Group uses the term "land managers" to include federal and state land management agencies as well as private land managers.

benefit of additional information. New information will help ensure the success of all conservation actions. The order of presentation of recommended actions derives from a desire for logical presentation in this document rather than as an indication of the relative priorities of the recommended actions nor the recommended order in which they should be implemented.

1. Habitat Inventories

a) Description:

Information regarding the location of historical, potential, and current habitat areas for Sage-grouse in the Greater Curlew Valley Area is incomplete.

b) Objective:

The objective of the “Habitat Inventories” Recommended Actions is to obtain more complete information regarding the location of historical and current habitat areas for Sage-grouse in the Greater Curlew Valley Area on public and private lands.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) The Pocatello Field Office of the Bureau of Land Management, the Curlew National Grassland of the U.S. Forest Service, the Idaho Department of Lands, the Natural Resources Conservation Service, and IDF&G create/compile a useable habitat map and Geographic Information Systems (GIS) database of the Greater Curlew Valley area that identifies all four types of habitat/seasonal Sage-grouse use areas using data (provided by all relevant agencies) including:
 - Breeding habitat
 - Summer-Late brood rearing habitat
 - Winter habitat
 - Migration corridors/linkage areas
- 2) IDF&G and the Natural Resources Conservation Service delineate habitats into the following categories:
 - Presently lost areas (areas that currently do not provide usable habitat due to land use changes but which may potentially be recovered).
 - Permanently lost areas (no chance for recovery).
 - Vital areas (areas that remain intact and vital for current populations).
 - Underutilized areas (suitable; but currently not used; lightly occupied areas; or areas that received historical use).
 - Fragmented areas (isolated areas of habitat that may or may not be occupied).

- Low priority areas that are being used incidentally, but have low site potential.
- 3) The Bureau of Land Management, with assistance from other land management agencies and the Natural Resources Conservation Service develop standardized habitat inventory methods. Once the agencies agree to use the standardized inventory methods, documentation will be appended to this plan.
 - 4) Idaho Department of Fish and Game, with assistance from land management agencies and the Natural Resources Conservation Service, update the database and map annually

d) Benchmarks:

- Recommended Actions #1, #2, and #3 should be completed in 2005.
- Recommended Action #4 should be completed annually.

e) Monitoring:

The Local Working Group will monitor progress on the Recommended Actions by reviewing the development and quality of the database and map annually. In addition, the Bureau of Land Management would present a status report on all recommended actions to the Local Working Group at its annual meeting.

2. Evaluate Sage-grouse Habitat Conditions

a) Description:

Information regarding the sage-grouse habitat conditions within the Greater Curlew Valley area is incomplete.

b) Objective:

The objective of the “Evaluate Sage-grouse Habitat Conditions” Recommended Actions is to develop more complete information regarding habitat conditions in Sage-grouse habitat areas within the Greater Curlew Valley area.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) The federal and state land management agencies and the Natural Resources Conservation Service develop standardized methods for evaluating vegetative characteristics. The inventory method should be based on important sage-grouse habitat parameters and include those vegetative conditions that are determined by site potential and are necessary to sustain overall resource productivity. These parameters including but not limited to: predominant sagebrush species, average sagebrush height, sagebrush canopy, sagebrush age, predominant grass species, average grass height, grass canopy, forb canopy, patch size, and vegetative mosaic on the landscape. Once the agencies agree to standardized evaluation methods, documentation of the methodology will be appended to this plan

- 2) The land management agencies enhance current maps of vegetative characteristics in sage-grouse habitat, including presently lost areas, vital areas, underutilized areas, and fragmented habitat areas within the Greater Curlew Valley area. (Standardized inventory methods developed in Recommended Action 1.3 above will be used.) Those areas that are permanently lost and low-priority areas (see Habitat Action #1 “Habitat Inventories” above) and do not have the potential to provide suitable habitat may be excluded from this inventory.

d) Benchmarks:

- Recommended Action #1 should be completed within one year of completion of this Plan.
- The first inventory and map (for Recommended Action #2), based on currently available data, should be completed within one year of completion of this Plan.
- The revised inventory and map for occupied sage-grouse habitat, incorporating new data, should be completed by 2007.

e) Monitoring:

The Local Working Group will monitor progress on the recommended actions by reviewing the development and quality of the inventory and map annually. In addition, the federal land management agencies will present a status report on all recommended actions to the Local Working Group at its annual meeting.

C. Sage-grouse Habitat Management Priorities

1. Management Strategies for Sustainable Sagebrush/Grass Communities

a) Description:

Sage-grouse require large expanses of sagebrush habitats with healthy, diverse understories of grasses and forbs. In some areas, past management of rangelands has altered the density, structure, and composition of sagebrush communities—sometimes creating a variety of conditions that do not meet sage-grouse seasonal needs. Composition of grasses and forbs, condition, and canopy cover of sagebrush, and other habitat-related conditions vary across Idaho. Variation may result from environmental factors such as climate, soil type, site potential and/or land management practices, e.g., fire management, grazing, weeds, recreation, etc. Because areas are diverse, maintaining, restoring or enhancing sage-grouse habitats requires different strategies.

b) Objective:

The objective of the “Management Strategies for Sustainable Sagebrush/Grass Communities” proposed action is to manage the density, structure, and composition of shrubs, forbs, and grasses at a standard that will maintain the long term health and

sustainability of the plant community, enhance the long term health of sage-grouse habitats, and meet the needs of other species and human uses.³

c) Recommended Actions:

The Local Working Group recommends that:

- 1) The federal and state land management agencies and cooperators use the following process to analyze habitat management actions necessary to achieve the objective.
 - a) Inventory proposed management area for the following parameters. The Local Working Group recognizes that not all of these parameters may be applicable depending on the proposed management action.

Site potential, current vegetative structure and condition, current sage-grouse use, potential sage-grouse use, types of sage-grouse habitat, ecological condition of the surrounding sagebrush habitat, current condition of the sage-grouse habitat, current and past land use, past fire history, current fuel loads, and noxious weed and undesirable plant inventory.
 - b) Identify habitat characteristics that the project is designed to change and the desired results of the project.
 - c) Evaluate the current land management and infrastructure of project area to determine if they are adequate to ensure likely success of the project.
 - d) Assess the short and long-term impact of the management action on the sagebrush community, sage-grouse habitats, and other wildlife needs.
 - e) Assess the positive and negative impacts that the management action will have on other human uses.
 - f) In conducting the analysis of the proposed management action, consider the cumulative affects of the proposed action by analyzing the effects against (1) current conditions occurring outside the immediate project area and (2) those reasonably known or foreseeable activities occurring within the area that may effect the sage-grouse or sage-grouse habitat.
 - g) The scale of analysis should be commensurate with the affected sage-grouse population's seasonal distribution.
- 2) The land management agencies and cooperators determine the treatment to be used in the management action to achieve the objective by using the following:
 - a) Review current literature and experiment with new techniques and procedures to achieve the objective.

³ Throughout this section, the term "human uses" is intended to include livestock grazing.

- b) Analyze the impacts of past management actions or natural disturbances in the area. This would include local landowner actions, federal and state resource management actions or management by university or federal experiment entities. Consider ecological responses to past treatments in the immediate area of the proposed management action to help choose an appropriate treatment.
 - c) Choose a treatment that will best accomplish the management action Objective and will be cost effective, feasible, and complementary to the long-term benefit of the current and future land uses.
 - d) For project proposals in currently occupied sage-grouse habitat, design the implementation of the treatment to accommodate as much as possible the short term needs of the sage-grouse (mosaic prescribed burns, patch herbicide treatments, adjacent habitat requirements and etc) while meeting the objectives of the project.
 - e) Work with all cooperators to coordinate current land uses to enhance the efficacy of the treatment (e.g., be sure grazing is adjusted to accommodate treatment).
 - f) Identify landowner incentives to encourage participation and cooperation.
- 3) Land management agencies and cooperators implement management actions.
 - 4) The land management agencies and cooperators monitor the results of the treatment.
 - a) Determine if the treatment achieved the short-term results and if additional treatments are necessary to achieve the long-term objective (seeding and etc).
 - b) Monitor the short- and long-term results of the treatment on the sagebrush habitat to determine if the desired vegetative responses are occurring and the response timeframe.
 - c) Monitor the short- and long-term effects of the treatment on sage-grouse and other wildlife populations and the response timeframe.
 - d) Monitor the short- and long-term results of the treatment on other human uses.
 - e) Monitor the effects of other human uses on the treated habitat.
 - f) Use monitoring results of project to improve project planning and design for future projects.

d) Benchmarks:

- Recommended Actions #1 and #2 should occur within a year after the management action is proposed.
- Recommended Action #3 should be implemented as soon as possible after Recommended Actions #1 and #2.
- Recommended Action #4 should begin after completion of the treatment and continue as necessary to measure efficacy.

e) Monitoring:

The federal or state agencies cooperating on management actions will present an annual report to the Local Working Group on the long- and short-term results of the management actions they are responsible for.

2. Wetlands/Riparian Area Management in Sage-grouse Habitat

a) Description:

Wetland and riparian areas⁴ are vital to the survival of sage-grouse throughout the Greater Curlew Valley area. Wetlands and riparian areas provide a rich abundance and diversity of forbs and insects important to sage-grouse, particularly broods. Reduction, loss, or degradation of these areas (through trampling, compaction, alteration, vegetative encroachment, or diversion of water) negatively affect sage-grouse.

b) Objective:

The objective of the “Wetland/Riparian Area Management in Sage-grouse Habitat” Recommended Actions is to ensure that: 1) wetlands and riparian areas are managed to maintain or improve sage-grouse habitat, 2) wetlands and riparian areas are inventoried, and 3) the condition of each wetland and riparian area is assessed relative to its potential to provide sage-grouse habitat.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) All land managers manage springs and associated riparian areas to protect sage-grouse habitat from excessive grazing.⁵ Where appropriate, new spring developments with riparian sites should be fenced⁶ to exclude livestock grazing. Existing spring developments with riparian sites should be inventoried and fenced where needed to provide high quality sage-grouse foraging habitat.
- 2) Spring sources be protected and spring development projects be designed to maintain similar volume of free water and area of wet meadows at the spring. Capturing water

⁴ Wetlands are defined as areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include marshes, shallow swamps, lakeshores, bogs, muskegs, wet meadows, and estuaries. Riparian areas are found in transition between permanently saturated wetlands and upland areas. These areas exhibit vegetation or physical characteristics reflective of permanent surface or subsurface water influence. Riparian areas include lands along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, glacial potholes, and the shores of lakes and reservoirs with stable water levels.

⁵ Excessive grazing is defined as grazing that results in a downward vegetative trend or maintenance of unacceptable vegetative conditions.

⁶ Whenever fencing is considered to benefit sage-grouse, it is advised that visible fencing be used, if possible, to avoid mortality associated with birds colliding with fences.

from springs using pipelines and troughs may affect adversely wet meadows used by grouse for foraging. Current methods exist for spring development and design that can actually increase wet meadow.

- 3) Enclosures be constructed, where appropriate, to provide a buffer around spring sources to protect the spring and riparian habitat from trampling, overgrazing by ungulates, and mechanical destruction by off-road vehicles. Enclosures should begin a minimum of 10 feet beyond the wetland/riparian area.
- 4) Troughs be installed in upland areas if possible. Design troughs to discourage loafing to the extent practical.
- 5) The effects of trough placement on the associated sage-grouse habitat be considered, particularly if placement results in livestock use of new areas or decreased use on areas already grazed.
- 6) All roads and trails be managed to minimize their potential negative impacts on springs and riparian areas. New roads and trails should be located appropriately. If feasible, existing roads that are adversely effecting springs and riparian areas in sage-grouse habitat should be relocated.
- 7) Vegetation be managed to maintain or enhance spring flows and in-stream flows be enhanced through vegetative manipulation, where appropriate.
- 8) Dewatering of streams be avoided.
- 9) Non-governmental organizations be encouraged to purchase or lease water rights from willing sellers where sage-grouse habitat is lost or degraded by dewatering.
- 10) Livestock be managed through development of riparian pasture systems, water gaps, troughs, etc. where appropriate to protect and enhance habitat.
- 11) Removal of sagebrush be avoided within 100 meters of sage-grouse foraging areas along riparian zones, meadows, lakebeds, and farmland, unless such removal is necessary to achieve habitat management objectives (e.g., meadow restoration, treatment of conifer encroachment) and long term ecosystem health. When prescribed fire is used in steep terrain to achieve other management objectives outside the 100-meter buffer zone, practical fire control measures should be applied to reduce the possibility of the spread of fire into the 100-meter buffer strip. Fire personnel should not be put at risk in any situation.
- 12) Water developments for sage-grouse only be constructed in or adjacent to known summer use areas and provide escape ramps suitable for all avian species and other small animals. Water developments and "guzzlers" may improve sage-grouse summer habitats (Autenrieth et al. 1982, Hanf et al. 1994). However, sage-grouse used these developments infrequently in southeastern Idaho because most were constructed in sage-grouse winter and breeding habitat, rather than summer range (Connelly and Doughty 1989).
- 13) Off-road vehicle use be restricted to existing roads and trails in sage-grouse habitat in and adjacent to wetlands, riparian areas, and spring areas.

d) Benchmarks:

Recommended Actions #1 - #13 should be implemented immediately and on an on-going basis.

e) Monitoring:

Relevant agencies will present a status report on all Recommended Actions to the Local Working Group at its annual meeting.

3. Grazing Management

a) Description:

Ungulate grazing can have a positive, neutral, or negative impact on sage-grouse habitat.

b) Objectives:

The objectives of the "Grazing Management" Recommended Actions are to 1) manage ungulate grazing to maintain or enhance sage-grouse habitat and sagebrush ecosystem sustainability and 2) conduct research efforts to enhance knowledge of grazing impacts on sage-grouse populations, sage-grouse habitat, and sagebrush ecosystems.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) All land management agencies evaluate the location, timing, intensity, and overall impact of grazing by domestic livestock and wildlife upon sage-grouse habitat use areas identified during agency planning efforts.
- 2) Where current documented ungulate use is a factor in not meeting sage-grouse habitat requirements, initiate changes that will result in improving habitat conditions.
- 3) During the development and review of grazing plans (including grazing systems and objectives) proposed range projects (e.g. fences, pipelines, etc.) are designed to consider seasonal sage-grouse habitat needs and the needs of sustainable sagebrush ecosystems.
- 4) Incentives are developed to encourage private landowners to work with the Natural Resources Conservation Service, the Idaho Department of Agriculture, and the Extension Service to manage grazing in a manner that provides good sage-grouse habitat on private land.
- 5) All land management agencies monitor grazing use levels and ecological trends on a regular cycle to ensure that sage-grouse habitat requirements and sagebrush ecological sustainability are achieved on at least 50% of federal land in the GCVA.

- 6) All federal and state land managers implement suitable habitat restoration practices for sagebrush ecosystems that have deteriorated to such an extent that livestock management alone will not restore an upward habitat trend.
- 7) All land management agencies, in conjunction with IDF&G, inform livestock operators of lek locations and encourage operators to avoid leks during breeding season (mid-March through mid-to-late-May) when trailing, bedding, salting, or watering livestock.
- 8) All land management agencies route new fences in a manner that minimizes negative impacts to sage-grouse. Where excessive fence mortality has been documented, consider rerouting or modifying existing fences.
- 9) All federal and state land managers increase the visibility of fences and other structures occurring within one kilometer of seasonal ranges by flagging or similar means if these structures have been documented as hazardous to flying grouse (e.g., birds have been observed hitting or grouse remains have been found next to these structures).

d) Benchmarks:

- Recommended Action #1 should be implemented based on agency planning procedures and budgets. New land use plans should address sagebrush ecosystem analysis of grazing management objectives.)
- Recommended Actions #2 - #9 should be implemented immediately and on an on-going basis.

e) Monitoring:

All land management agencies will present a status report (including a review the procedures used by the agencies) on all Recommended Actions to the Local Working Group at its annual meeting.

D. Sage-grouse Habitat Treatments

1. Wildfire Policy

a) Description:

Wildland fires reduce the amount of sage-grouse habitat. This reduction lasts until sagebrush has recovered from the fires.

b) Objective:

The objective of the “Wildfire Policy” Recommended Actions is to retain sage-grouse habitat a priority of the fire suppression program.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) All land management agencies present sage-grouse habitat concerns to both the Fire Management Officer and field crews.
- 2) Burnout operations that result in the loss of large expanses of sagebrush be discouraged.
- 3) Burnouts of interior stands of sagebrush in wildfires should be discouraged as islands of unburned sagebrush provide a seed source.
- 4) During wildland fire rehabilitation planning, three considerations should be emphasized: 1) sagebrush should be planted, 2) cheatgrass should be controlled, and 3) native forbs and grasses should be planted if herbaceous seeding takes place.

d) Benchmarks

Recommended actions # 1-4 should be implemented immediately and on an on-going basis.

e) Monitoring:

The land management agencies will present a status report on all Recommended Actions to the Local Working Group at its annual meeting. The report will address all wildfire locations (in sage-grouse habitat) long- and short-term response in burn locations and rehabilitation efforts undertaken.

2. Prescribed Fire Policy

a) Description:

Prescribed fire is a tool used to manage vegetation composition.

b) Objective:

The objective of the “Prescribed Fire Policy” Recommended Actions is to ensure that all planning for prescribed fire is based on a thorough analysis of the effect of prescribed fire on sage-grouse, sage-grouse habitat, and rangeland health as outlined in Habitat Action 3 “Management Strategies for Sustainable Sagebrush Grass Communities.” The analysis should also consider effects on other wildlife and human uses. .

c) Recommended Actions:

The Local Working Group recommends that:

- 1) The land management agencies and the Natural Resources Conservation Service develop agreement on a set of guidelines for prescribed burn proposals in sage-grouse habitat. The guidelines should address analysis, implementation, and monitoring for prescribed burning.
- 2) Prescribed fire not be used in sage-grouse habitats prone to invasion by cheat grass and other invasive weed species unless adequate measures are included in restoration plans to replace the cheat grass understory with perennial species using approved re-seeding strategies. These strategies could include, but are not limited to, use of pre-

emergent herbicides (e.g., Oust®, Plateau®) to retard cheat grass germination until perennial herbaceous species become established.

- 3) In winter habitat, burns larger than 120 acres (50 hectares) should be discouraged unless other compelling reasons warrant larger areas. In those cases, the reasons should be thoroughly justified in the analysis. Burns should not exceed 20% of winter habitat within any 20-30 year interval (depending on the estimated recovery time for the sagebrush habitat, especially mountain big sagebrush).
- 4) IDF&G, in cooperation with the other land management agencies, initiate a study of sage-grouse response to prescribed fire in Mountain Big sagebrush habitat areas on a landscape basis.

d) Benchmarks:

- Recommended Actions #1 should be completed by 2004.
- Recommended Actions #2 and #3 should be implemented immediately.
- Recommended Action #4 should be implemented as funding is available.

e) Monitoring:

The land management agencies will present a status report on all Recommended Actions to the Local Working Group at its annual meeting. The report will address all prescribed burn locations (in sage-grouse habitat) long- and short-term response in burn locations by plant species, plant diversity, and canopy cover.

3. Grasshopper and Mormon Cricket Control

a) Description:

Sage-grouse chicks typically hatch in late May through mid to late June. Insects are the primary food source for young birds through the first few months. Typically at the same timeframe Mormon Crickets and grasshoppers are beginning to move or otherwise become a problem and landowners want them controlled. Three pesticides used for control of both Mormon Crickets and grasshoppers are malathion, diflubensuron, and carbaryl. In liquid form these pesticides are non-selective pesticides, killing insects by contact as well as through ingestion. These pesticides may also have residual affects of killing other fauna that eat the dead insects. Historic infestations of Mormon Crickets and grasshoppers have occurred in prime sage-grouse habitat.

b) Objective:

The objective of the “Grasshopper and Mormon Cricket Control” Recommended Actions is to allow land managers to maintain the ability to provide for treatment of Mormon crickets and grasshoppers, while minimizing potential impacts to local sage-grouse populations.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) Land management agencies focus control of Mormon crickets and grasshoppers in areas adjacent or near cropland. When crickets and grasshoppers are in an area that is entirely managed by the Federal government (and therefore pose no threat to cropland), no treatment should occur.
- 2) When crickets or grasshoppers are discovered in remote areas, the relevant land management agency should consult with U.S. Department of Agriculture Animal Plant and Health Inspection Service (APHIS) personnel on control requirements.
- 3) If block treatments are deemed necessary, aerial application of carbaryl bait or diflubenzuron is the preferred treatment, as baits are much more specific to crickets, some types of grasshoppers, and ants.
- 4) Land management agencies should follow the APHIS policies of treating strips not greater than 100 meters in width.

d) Benchmarks:

Recommended actions 1-4 should be implemented immediately and on an on-going basis.

e) Monitoring:

The Local Working Group will review annual reports prepared by APHIS.

4. Undesirable Plant and Noxious Weed Control

a) Description:

The current situation is best described as a general increase in undesirable plants and noxious weeds (as defined by the Idaho Department of Agriculture). Undesirable plants and noxious weeds are invading sagebrush-steppe plant communities. These plant species displace desirable species, change fire frequencies, reduce the value of the habitat for sage-grouse and reduce forage for livestock and wildlife. Control of these species is difficult and expensive and technology for controlling some species is limited.

b) Objective:

The objective of the “Undesirable Plant and Noxious Weed Control” Recommended Actions is to implement management practices that reduce, eliminate, or discourage the further establishment or spread of undesirable plants and noxious weeds in sage-grouse habitat.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) All land management agencies should participate with the Cooperative Weed Management Areas (CWMA) to ensure that the needs of sage-grouse are addressed in CWMA activities.
- 2) County weed supervisors encourage enforcement of existing regulations on all land ownerships (i.e., fire, supplemental feeding, inadvertent transportation of seeds,

impacts of control measures on other species, construction, and deconstruction projects).

- 3) The Local Working Group educate/inform the public of the potential for some activities to introduce and encourage invasion of undesirable plants and noxious weeds on rangeland and sage-grouse habitat and encourage them to comply with land management regulations.
- 4) All federal and state land managers evaluate planned management activities for their potential to increase or spread undesirable plants and noxious weeds.
- 5) CWMAAs consider feasibility of constructing and operating vehicle wash stations.
- 6) CWMAAs utilize biological control where feasible and appropriate.
- 7) All land managers should utilize native and non-native beneficial use seed mixtures for all rehabilitation efforts to replace undesirable plant and noxious weeds within the plant community.

d) Benchmarks

Recommended Actions #1 - #7 should be implemented immediately and on an on-going basis.

e) Monitoring:

The relevant Cooperative Weed Management Area Coordinators will present a status report on all Recommended Actions to the Local Working Group at its annual meeting.

5. Cheatgrass

a) Description:

Cheatgrass can significantly alter native rangeland vegetation composition through competitive exclusion of native species reproduction and facilitation of wildfires. Cheatgrass reduces the productivity of rangeland for livestock production and for sage-grouse.

b) Objective:

The objective of the "Cheatgrass" Recommended Actions is control the extent and spread of the Cheatgrass infestation.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) All land managers implement a specific Cheatgrass grazing program. Grazing of cheatgrass should have a two-fold purpose, to protect adjacent communities of perennial plants from fire and to reduce seed production of the cheatgrass. Two defoliations are required in the spring of each year with the goal of preventing seeds from reaching the dough stage. Grazing should take place while cheatgrass is in the boot stage, then allow the plants to re-grow for three to four weeks and graze again. At least two consecutive years of grazing is required to control cheatgrass. Grazing

timing and intensity has to be early enough prevent overuse of the perennial grasses or light enough to enable desirable plants to prosper (at least three inch stubble height in later season grazing.)

- 2) All land managers consider the use of herbicide to control cheatgrass when deemed appropriate.
- 3) All land managers utilize native and non-native beneficial use seed mixtures for all rehabilitation efforts to replace cheatgrass within the plant community.

d) Benchmarks

Recommended Actions 1-3 should be implemented immediately and on an on-going basis.

e) Monitoring:

Land management agencies will report on all cheatgrass treatment projects to the Local Working Group at its annual meeting.

6. Drought

a) Description:

Drought may adversely affect sage-grouse habitat by reducing herbaceous cover at nests and the quantity and quality of food available in the spring.

b) Objective:

The objective of the “Drought” Recommended Action is to ensure sage-grouse are considered during implementation of drought mitigation strategies.

c) Recommended Action:

The Local Working Group Recommends that federal agencies become more flexible with grazing management to benefit both sage-grouse and the livestock industry.

d) Benchmarks

The recommended action should be implemented immediately and on an on-going basis.

e) Monitoring:

Land management agencies will report to the Local Working Group at its annual meeting on all drought mitigation efforts.

7. Recovery/Restoration

a) Description:

As a result of fire, invasion of undesirable plants and noxious weeds, over-grazing, non-native species seedings, or other events, there are areas of sage-grouse habitat within the Greater Curlew Valley area that could benefit from deliberate restoration efforts. Brush beating, fire, and herbicides are treatment methods that are available for creating a mosaic of openings (early seral plant communities) to improve late brood rearing

habitats. Land managers, rangeland ecologists, and biologists consider numerous factors when determining which treatment method is most appropriate, affordable, and potentially effective in any specific circumstance.

b) Objective:

The objective of the “Recovery/Restoration” Recommended Actions is to restore degraded areas (areas with undesirable vegetation and areas in poor ecological condition) with a desired mix of grasses, forbs, and shrubs so they again can become usable for sage-grouse.

c) Recommended Actions:

The Local Working Group recommends that:

- 1) All land management agencies identify areas in fair or poor ecological condition and prioritize areas for implementation of restoration activities. All land management agencies restore degraded rangelands to a condition that again provides suitable breeding habitat for sage-grouse by including sagebrush, native forbs (especially legumes), and native grasses in re-seeding efforts (Apa 1998). If native forbs and grasses are unavailable, use species that are functional equivalents and provide habitat characteristics similar to those of native species.
- 2) All land management agencies consider the protocol developed in Habitat Action #3 “Management Strategies for Sustainable Sagebrush Grass Communities” of this document when implementing recovery/restoration projects.
- 3) All land management agencies follow the latest science for cheat grass control and sagebrush reestablishment in cheatgrass/noxious weed-prone sites.
- 4) All land management agencies utilize prescriptive grazing to achieve desired restoration objectives, (for example, crested wheatgrass seedings) if appropriate.
- 5) Undesirable plant species be aggressively controlled or eliminated through the application of chemical, mechanical, or biological control methods where appropriate.
- 6) All land management agencies require vegetation monitoring to be included in fire rehabilitation plans and immediately establish monitoring plots following all fires.
- 7) All land management agencies promote rangeland practices that improve soil moisture effectiveness, reduce erosion, and increase abundance and diversity of forbs.
- 8) In areas of significant winter habitat loss (>40% of original winter habitat), all land managers⁷ manage all remaining sagebrush habitats conservatively to meet sage-grouse needs.

⁷ The term “land managers” in this and subsequent recommended actions is meant to include both public land management agencies and private land managers. The Local Working Group understands that it can only make recommendations to private landowners, and that individual landowners may not choose to implement the recommendations.

- 9) All land managers re-seed former winter range with the appropriate subspecies of sagebrush and herbaceous species unless the species are re-colonizing the area in a density that would allow recovery within an acceptable timeframe based on site potential and past experience.
- 10) All land managers re-seed winter range areas burned by wildfire or prescribed fire as soon as possible after the fire if an evaluation of the area determines that reestablishment of sagebrush or native herbaceous species is not likely to occur naturally.
- 11) All land management agencies review status of habitat areas every five years to identify opportunities for restoration and prioritize those opportunities for implementation of restoration activities.

d) Benchmarks:

- Recommended Actions #1 - #10 should be implemented immediately and on an on-going basis.
- Recommended Action #11 should be implemented every five years.

e) Monitoring:

All land management agencies will present a status report on all Recommended Actions to the Local Working Group at its annual meeting.

V. SEMI-ANNUAL PLANNING AND REPORTING

The Local Working Group will meet annually to discuss grazing plans, projects and monitoring along with lek counts and harvest information. These meetings will allow us to stay informed as to what progress is being made towards this plan's goals.

VI. LIST OF CONTRIBUTING MEMBERS

The Conservation Agreement for Sage-grouse in the Greater Curlew Valley Area in Southeast Idaho was developed through the donations of time, effort, and diverse perspectives of the Contributing Members of the Greater Curlew Valley Area Sage-grouse Local Working Group. Through an exhaustive collaborative effort, these individuals completed the task of developing a sage-grouse conservation plan for the Greater Curlew Valley Area of Idaho, as defined in the Idaho Sage-grouse Management Plan.

The Contributing Members of the Greater Curlew Valley Area Sage-grouse Local Working Group, listed below, believe that the Conservation Agreement for Sage-grouse in the Greater Curlew Valley Area in Southeast Idaho represents the best product that could be developed through collaborative processes.

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APPENDIX B - LITERATURE CITED

- Allen, D.L. 1954. Our wildlife legacy. Funk and Wagnalls, NY. 422pp.
- Apa, A.D. 1998. Habitat use and movements of sympatric sage and Columbian sharp-tailed grouse in southeastern Idaho. Moscow ID: University of Idaho. 198pp. Dissertation.
- 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. 42pp.
- Barnett, J.F., and J.A. Crawford. 1994. Pre-laying nutrition of sage-grouse hens in Oregon. *Journal of Range Management* 47:114-118.
- Bleak, A.L.; Miller, W.G. 1955. Sagebrush seedling production as related to time of mechanical eradication. *Journal of Range Management*. 8: 66-69.
- Bradley, Anne. 1986. *Artemisia tridentata* ssp. *Vaseyana*. In: Fischer, William C., compiler. The Fire Effects information System [Data base]. Missoula, MT: U.S. Department of Agriculture, forest Service, Intermountain Research Station, Intermountain Fire Sciences Laboratory.
- Connelly et al. 2000. Guidelines to manage sage-grouse populations and their habitat. *Wildlife Society Bulletin* 2000, 28(4):967-985.
- Drut, M.S., J.A. Crawford, and M.A. Gregg. 1994. Brood habitat use by sage-grouse in Oregon. *Great Basin Naturalist* 54:170-176.
- Frischknecht, N.C.; Bleak, A.T. 1957. Encroachment of big sagebrush on seeded range in north-eastern Nevada. *Journal of Range Management*. 10: 165-170.
- Goodwin, D.L. 1956. Autecological studies of *Artemisia tridentata*, Nutt. Pullman, WA: State College of Washington. 79 p. Dissertation.
- Hironaka, M.; Fosberg, M.A.; Winward, A.H. 1983. Sagebrush-grass habitat types of southern Idaho. Bulletin Number 35. Moscow, ID: University of Idaho, forest, Wildlife and Range Experiment Station. 44p.
- Johnson, J.R.; Payne, G.F. 1968. Sagebrush reinvasion as affected by some environmental influences. *Journal of Range Management*. 21: 209-213.
- Makela, P. 2000. [Personal communication]. Burley, ID: U.S. Dept. of Interior, Bureau of Land Management, Burley Field Office.
- Mosley, J.C.; Bunting, S.C. and Manoukian, M.E. 1999. Cheatgrass. In: Sheley, R.L. and Petroff, J.K.: *Biology and Management of Noxious Rangeland Weeds*. Oregon State University Press. 438 p.

- Mueggler, W.F. 1956. Is sagebrush seed residual in soil or is it windborne? Res. Note 35. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 10p.
- Myler-McCance, S.J., N.W. Kahn, K. P. Burnham, C.E. Braun, and T.W. Quinn. 1999. A population genetic comparison of large and small-bodied sage-grouse in Colorado using microsatellite and mitochondrial DNA markers. *Molecular Ecology*, in press.
- Pellant, M. 2000. [Personal communication]. Boise, ID: U.S. Dept. of Interior, Bureau of Land Management, Idaho State Office.
- Prichard, D., H. Barrett, J. Cagney, R. Clark, J. Fogg, K. Gebhardt, P. Hansen, B. Mitchell, and D. Tippy. 1993. Riparian area management: process for assessing proper functioning condition. TR 1737-9. Bureau of Land Management, BLM/SC/St/-93/003+1737, Service Center, CO. 60 pp.
- Uhrig, S. 2000. [Personal communication] Shoshone ID: U.S. Dept. of Interior, Bureau of Land Management, Shoshone Field Office.
- U.S. Dept. of Interior, Bureau of Land management. 2000. Grasshopper/Mormon Cricket Control for Upper Snake River District. Environmental Assessment 28 p.
- U.S. Dept. of the Interior, Bureau of Land Management. 1984. Rangeland monitoring utilization studies. Technical Reference, 4400-3. 104p.
- U.S. Dept. of the Interior, Bureau of Land Management. 1985. Rangeland monitoring trend studies. Technical Reference, 4400-4. 130p.
- Wagstaff, F. J.; Welch, B.L. 1990. Rejuvenation of mountain big sagebrush on mule deer winter ranges using onsite plants as a seed source. In: McArthur, E. D.; Romney, E.M.; Smith, S.D.; Tueller, P.T., comps. Proceedings—symposium on cheatgrass invasion, shrub die-off, and other aspects of shrub biology and management. Gen. Tech. Rep. INT-276. Ogden, UT: U.S. department of Agriculture, Forest Service, Intermountain Research Station: 171-174.
- Young, J.R. 1994. The influence of sexual selection on phenotypic and genetic divergence among sage-grouse populations. Ph.D. Dissertation, Purdue University, West Lafayette, IN.
- Young, J.A.; Evans. R.A. 1989a. Dispersal and germination of big sagebrush (*Artemisia tridentata*) seeds. *Weed Science*. 37: 201-206.

APPENDIX C – PUBLIC COMMENTS RECEIVED