

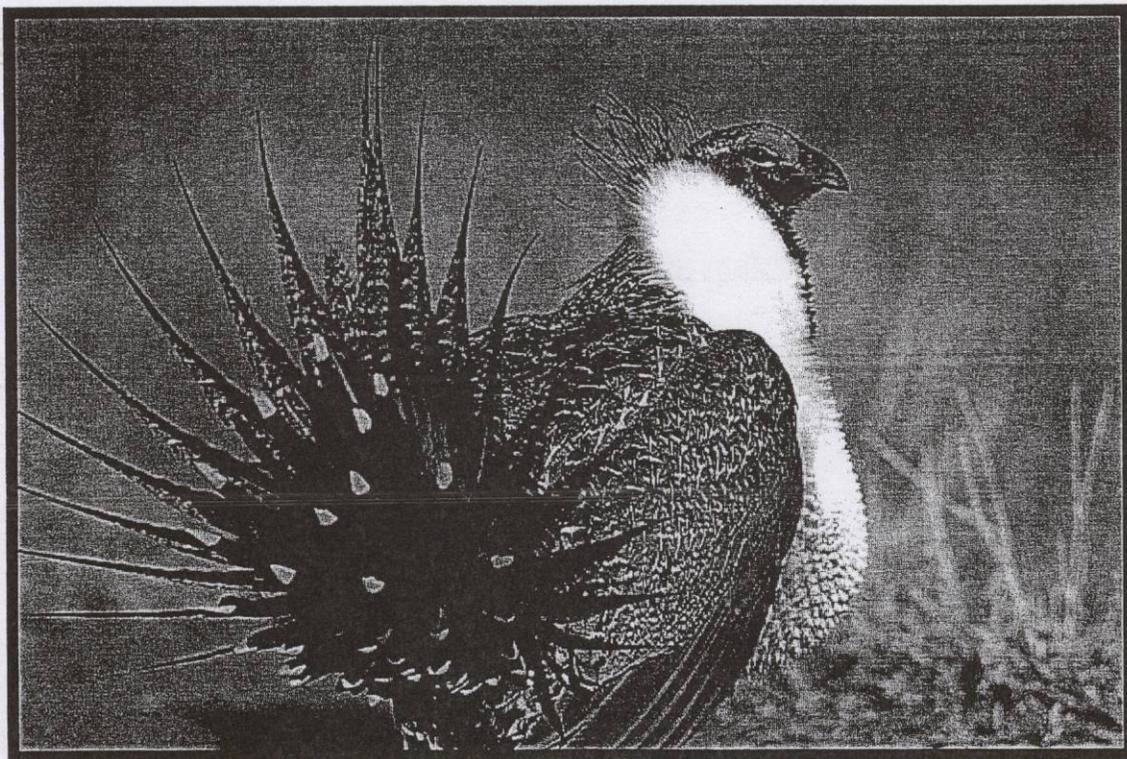
# EXHIBIT 10

Western Association of Fish and Wildlife Agencies

# **GREATER SAGE-GROUSE**

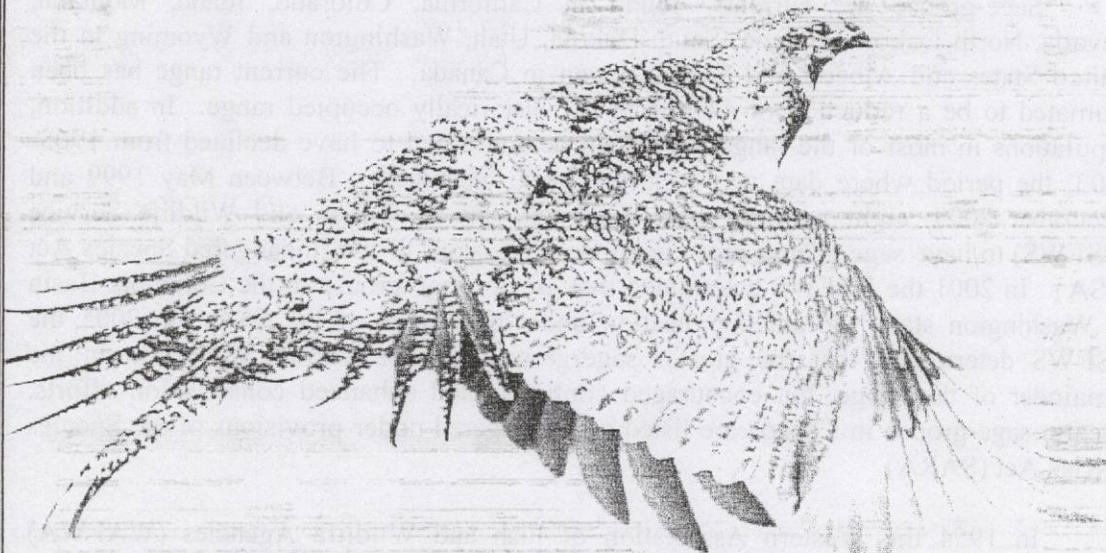
## **COMPREHENSIVE CONSERVATION**

### **STRATEGY**



National Sage-grouse Conservation Planning Framework Team  
December 2006

# Executive Summary



## EXECUTIVE SUMMARY

*"The overall goal of the Greater Sage-grouse Comprehensive Conservation Strategy (Strategy) is to maintain and enhance populations and distribution of sage-grouse by protecting and improving sagebrush habitats and ecosystems that sustain these populations. This Strategy outlines the critical need to develop the associations among local, state, provincial, tribal, and federal agencies, non-governmental organizations, and individual citizens to design and implement cooperative actions to support robust populations of sage-grouse and the landscapes and habitats upon which they depend. The justification for this effort is widespread concern for declining populations and reduced distribution of sage-grouse.*

### Background

Sage-grouse are currently found in California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming in the United States and Alberta and Saskatchewan in Canada. The current range has been estimated to be a reduction of 44% from the historically occupied range. In addition, populations in most of the range have been demonstrated to have declined from 1965-2003, the period where data was collected most intensively. Between May 1999 and December 2003, eight petitions were filed with the U.S. Fish and Wildlife Service (USFWS) to have sage-grouse protected under provisions of the Endangered Species Act (ESA). In 2001 the USFWS determined that greater sage-grouse in the Columbia Basin of Washington state warranted protection under provisions of the ESA. In 2005 the USFWS determined that the greater sage-grouse did not warrant protection in the remainder of the range, but encouraged continued and enhanced conservation efforts. Greater sage-grouse in Canada are listed as Endangered under provisions of the Species at Risk Act (SARA).

In 1954 the Western Association of Fish and Wildlife Agencies (WAFWA) formed a technical committee to monitor the distribution and abundance of sage-grouse. WAFWA formalized a program of interstate coordination and cooperation in 1995 to address the issues of sage-grouse population losses and degradation of sagebrush ecosystems in order to: 1) *Maintain the present distribution of sage grouse and 2) Maintain the present abundance of sage-grouse.* In 1999 WAFWA amended the objectives to: 1) *Maintain and increase where possible the present distribution of sage grouse and 2) Maintain and increase where possible the present abundance of sage grouse.* The Bureau of Land Management, USFWS, and U.S. Forest Service formally joined with WAFWA in range-wide conservation efforts in 2000.

WAFWA entered into a contract with the USFWS in 2002 to produce a complete conservation assessment for greater sage-grouse and its habitat. WAFWA choose to produce the assessment in two phases: Phase I is a 2004 assessment of greater sage-grouse populations and sagebrush habitats upon which they depend ('Assessment', senior author J. C. Connelly; [http://sagemap.wr.usgs.gov/conservation\\_assessment.htm](http://sagemap.wr.usgs.gov/conservation_assessment.htm)) and Phase II ('Strategy', this document) is a conservation strategy for greater sage-grouse and

sagebrush habitats. The Assessment demonstrated that approximately 99% of the current population of greater sage-grouse is found in the United States, while the remaining 1% is located in Canada. Federal lands make up about 72% of the total range of the species making federal land management agencies primarily responsible for habitat management. However, privately owned lands provide critical seasonal habitats for many populations and their importance to conservation may greatly exceed their ownership percentage. Throughout their range, sage-grouse populations are located on lands that overlap significant natural resources such as oil and gas resources, water resources, wind power sites, mineral deposits, agricultural, and recreational areas. Sage-grouse are also found in habitats that are at significant risk of change due to exotic weeds, fire, and conifer encroachment.

In 2000 the Gunnison sage-grouse (*Centrocercus minimus*) was officially recognized as a separate species, based on morphological, genetic, and behavioral differences from the greater sage-grouse (*C. urophasianus*). This Strategy deals with greater-sage grouse, but portions of the Strategy (Chapter 6) make reference to, and are applicable to, Gunnison sage-grouse. The strategy for Gunnison sage-grouse conservation is outlined in the Gunnison Sage-grouse Range-wide Conservation Plan which is available for download at the Colorado Division of Wildlife website (<http://wildlife.state.co.us>).

### Strategy Guiding Principles

The Strategy incorporates seven guiding principles: 1) Inclusion and mutual respect, 2) Local, state, agency and group initiative and leadership, 3) Commitment to monitoring and adaptive management, 4) Commitment to continued cooperation and coordination, 5) Commitment to functional and productive landscapes, 6) Inclusion of the best science and maintaining scientific integrity, and 7) Commitment to the Range-wide Issues Forum suggestion that the Strategy should strive to: a) protect what we have, b) retain what we are losing, and c) restore what has been lost.

Seven sage-grouse management zones are established based on populations within floristic provinces (detailed description in Assessment). The success of conservation actions will be judged on the basis of long-term population trends in each of the seven Management Zones. The overall goal of the range-wide Strategy is to maintain and enhance populations and distribution of sage-grouse by protecting and improving sagebrush habitats and ecosystems that sustain these populations. The overall objective of the range-wide Strategy is to produce and maintain neutral or positive trends in populations and to maintain or increase the distribution of sage-grouse in each Management Zone. Therefore, the future distribution, trend, and abundance of sage-grouse populations will be the ultimate indicators of the Strategy's success.

The Strategy is designed to augment and facilitate other conservation plans and strategies. The Strategy references local, state, provincial, and agency conservation strategies and adds regional and range-wide strategies. Local, state and provincial,

federal agency and other sage-grouse and sagebrush conservation plans are not diminished or changed by this Strategy.

### Strategy Outline

The Strategy is outlined in 7 sub-strategies: 1) Conservation actions, 2) Monitoring the effectiveness of conservation actions, 3) Monitoring the implementation of conservation actions, 4) Research and technology, 5) Funding, 6) Communications, and 7) Adaptive management.

#### *Conservation Actions:*

WAFWA initiated a public process in October 2005 to develop range-wide conservation strategies to benefit greater sage-grouse. Informed and committed individuals representing a wide breadth of experience and involvement with sage-grouse across western North America were invited to participate in a series of meetings known as the Sage-grouse Forum (Forum). The goal of the Forum was to facilitate collaborative development of approaches that address issues, needs, opportunities, and partnerships related to conservation of greater sage-grouse and sagebrush habitats at the range-wide scale. Forum participants identified three essential resources needed to take the Strategy forward: 1) Funding; 2) Leadership committed to organizing, supporting and guiding a long-term effort; and 3) Appropriate organizational structure to sustain conservation actions over time.

The Strategy also involves hundreds of citizens and resource professionals with disparate backgrounds who participate in Local Working Groups scattered throughout sage-grouse range. Due to many individual circumstances, and agency personnel changes, the makeup of working groups will change over time. Therefore, consistent and reliable monitoring data must provide a common language for sage-grouse conservation temporally and spatially.

#### *Monitoring:*

The Strategy repeatedly stresses the need for appropriate types of monitoring to provide the information required to make educated decisions and to adaptively manage resources. Monitoring provides the 'currency' necessary to evaluate management decisions and to assess progress or problems. Adequate monitoring should be considered an integral and inseparable component of all management actions, and therefore, not optional. Lack of proper monitoring will undoubtedly hinder this large-scale conservation effort.

#### *Research and Technology:*

Research and technology are fundamental components of an effective conservation strategy. Research is considered here as a broad categorization of many topics including, inventory, monitoring, and evaluation of specific questions related to the

understanding or management of greater sage-grouse. Even though some monitoring and evaluation activities can be considered research, they are also important components of management and therefore are essential to the success of the Strategy.

#### *Funding:*

Funding is needed to implement conservation actions and is critical to success of the Strategy at the local, regional and range-wide level. The Funding Sub-strategy addresses two elements: funding and appropriate administrative structure. The basic premise of the Strategy is that additional conservation capacity must be developed at all levels (local, state and agency, and range-wide) for both the short-term (first 3-5 years) and for the long term. The Funding Sub-strategy proposes implementation of the North American Sagebrush Ecosystem Conservation Act (NASECA), modeled on the North American Waterfowl Management Plan, to provide funding and structure for sage-grouse conservation. WAFWA and its partners, through a broadly-based Implementation Team, will continue to provide leadership and guidance to implement the Strategy.

#### *Communications:*

WAFWA's sage-grouse conservation program is largely dependent upon groups staffed by volunteers who need continuing support through recognition of their efforts, reimbursement of out-of-pocket expenses, and continuing outreach by the states, provinces, and agencies. There is a continuing and growing need for communication of unbiased, up to date technical information to guide on-the-ground projects. This need is addressed by the Strategy through development of a consortium of conservation experts.

As sage-grouse conservation efforts move forward, there is a need for continuing communication to establish and maintain broad-based support for the Strategy. Public education, outreach, and in reach (communication within agencies and groups to increase understanding) about sage-grouse conservation can be more effective through partnerships between states, federal agencies, non-government organizations, and citizens. The Strategy has a primary message to the public that, "Greater sage-grouse and sagebrush habitats are of critical importance. The Greater Sage-grouse Comprehensive Conservation Strategy has been prepared as a roadmap for the long-term conservation of sage-grouse and their habitats and the Strategy needs your support to be successful."

#### **Conclusion**

There are three essential resources needed to ensure successful implementation of the Strategy: 1) Significant and sustained funding; 2) Leadership committed to organizing, supporting, and guiding a long-term effort; and 3) Appropriate organizational structure to sustain range-wide conservation through time. A basic premise of the Strategy is that additional conservation capacity must be developed at all levels (local, state and agency, and range-wide) for both the short-term (first 3-5 years) and for the long term. The Strategy proposes the development and implementation of the North American Sagebrush Ecosystem Conservation Act (NASECA) to provide the funding and

organizational structure needed to sustain a long-term range-wide conservation effort. WAFWA and its partners must remain strongly committed to providing the leadership and guidance needed to implement the Strategy over time.



## CHAPTER 1

### Introduction

Greater sage-grouse are widely considered in scientific and public arenas to be a species of significant conservation concern (Connelly and Braun 1997, Schroeder et al. 1999; Schroeder et al. 2004). In response to those concerns, states and provinces that are occupied by sage-grouse have implemented extensive conservation efforts. The U.S. Fish and Wildlife Service (USFWS) has determined that greater sage-grouse warrant protection under provisions of the Endangered Species Act (ESA) in the Columbia Basin of Washington state and do not warrant protection in the remainder of the range. (U.S. Fish and Wildlife Service, 2001, 2005) However, the USFWS 2005 "not warranted" finding for the remainder of the species' range encouraged the continued and enhanced conservation efforts for greater sage-grouse (U.S. Fish and Wildlife Service, 2005). An ESA listing for greater sage-grouse would have serious economic, cultural and societal consequences across much of the western United States. In Canada the species is federally listed as Endangered under the Species at Risk Act (SARA).

Recognizing the risk to sage-grouse, the Western Association of Fish and Wildlife Agencies (WAFWA) began extensive conservation efforts to arrest the decline in the species and its habitat. Since these efforts began, the Gunnison Sage-grouse (*Centrocercus minimus*) has been recognized as a separate species apart from the greater sage-grouse (*Centrocercus urophasianus*). The Strategy deals principally with greater-sage grouse but portions of the Strategy (see Chapter 6 for example) make reference to, and are applicable to, Gunnison Sage-grouse. Unless otherwise noted all reference in the Strategy refer to greater sage-grouse. This strategy outlines efforts that are underway today and develops a roadmap for efforts that need to be conducted into the future and at population and range-wide scales that have not been addressed by ongoing sage-grouse and sagebrush conservation efforts. This strategy further develops a series of sub-strategies that will facilitate sage-grouse conservation at each scale. Due to history and current federal regulations (ESA for example), the Strategy focuses on greater sage-grouse but it is anticipated that the Strategy forms the basis for future planning for many sagebrush obligate and dependent species.

#### Background

The presettlement distribution of potential habitat for greater Sage-Grouse includes an area of currently occupy approximately 668,412 km<sup>2</sup> (258,000 mi<sup>2</sup>) of habitat in western North America (Schroeder et al. 2004). The current range of greater sage-grouse consists of approximately 56% of the estimated potential habitat available prior to European settlement (Fig.1.1) Sage-grouse are currently found in California, Colorado, Idaho, Montana, Nevada, North Dakota, Oregon, South Dakota, Utah, Washington and Wyoming in the United States and in Alberta and Saskatchewan in Canada (Schroeder et al. 2004). Approximately 99% of the current population is found in the United States, while the remaining 1% is located in Canada. Federal lands make up about 72% of the total range of the species (Connelly et al. 2004) making federal land management agencies primarily responsible for habitat management. However, privately owned lands provide critical seasonal habitats for many populations and their importance to conservation may greatly exceed the percentage of ownership within a

population's range. Throughout their range, sage-grouse populations are located on lands that overlap significant natural resources such as oil and gas resources, water resources, wind power sites, mineral deposits, agricultural and recreational areas. Sage-grouse are also found in habitats that are at significant risk of change due to exotic weeds, fire and conifer encroachment (Connelly et al. 2004).

Sage-grouse are a landscape-scale species in the sense that they are seasonally mobile and annually they often have an extremely large home range. To maintain genetic flow and opportunities for dispersal, populations need to be connected which requires large expanses of sagebrush habitat. Due to the large expanses of habitat this species require, a single population can span multiple jurisdictions. The need for connected habitats requires coordination between management authorities, private landowners and land management agencies. Conservation of the species requires that healthy populations be maintained across the range of the species.

In the early 1990s the Western States Sage and Columbian Sharp-tailed Grouse Technical Committee (Technical Committee) recognized that sage-grouse populations were declining throughout their range. In 1994, the Technical Committee reported to the WAFWA directors that sustained range-wide declines in sage-grouse numbers and distribution were occurring. The Technical Committee further expressed concern about the continuing decline in the quality and quantity of sagebrush habitat. The WAFWA directors responded by signing the first of a series of MOUs committing sage-grouse and sagebrush states to a coordinated conservation-effort. The initial MOU (WAFWA, 1995) was updated in 1999 (WAFWA, 1999). Specific objectives listed in the WAFWA 1999 MOU are to:

1. Maintain and increase where possible the present distribution of sage grouse.
2. Maintain and increase where possible the present abundance of sage grouse.
3. Develop strategies using cooperative partnerships to maintain and enhance the specific habitats used by sage grouse throughout their annual cycle.
4. Conduct management experiments on a sufficient scale to demonstrate that management of habitats can stabilize and enhance sage grouse distribution and abundance.
5. Collect and analyze population and habitat data throughout the range of sage grouse for use in preparation of conservation plans.

In 2000, the WAFWA directors further committed to inter-jurisdictional coordination with the signing of an interagency sagebrush/sage-grouse conservation MOU with the United States Department of Agriculture, Forest Service (USFS), United States Department of Interior, Fish and Wildlife Service (USFWS) and the United States Department of Interior Bureau of Land Management (BLM) (WAFWA, 2000). Specific objectives of the interagency MOU are to:

1. Maintain, and increase, where possible, the present distribution of sage grouse.
2. Maintain, and increase, where possible, the present abundance of sage grouse.
3. Identify the impacts of major land uses and hunting on sage grouse, and determine the primary causes for declines in sage grouse populations.
4. Develop a Range-wide Conservation Framework to provide for cooperation and integration in the development of Conservation Plans to address conservation needs

- across geographic scales as appropriate.
5. Develop partnerships with agencies, organizations, tribes, communities, individuals and private landowners to cooperatively accomplish the preceding objectives.

The 2000 Interagency MOU established the Sage-grouse Conservation Planning Framework Team (Team). The Team consists of 4 state biologists and 3 federal biologists. The Team is responsible for providing a framework for sage-grouse and sagebrush conservation planning across the range of sage-grouse and between jurisdictions within the range of sagebrush. In 2002, WAFWA signed a contract with the USFWS and assigned the team to produce a Conservation Assessment (CA) for greater sage-grouse.

The Team produced the greater Sage-grouse Conservation Assessment in two Phases: a conservation assessment and a conservation strategy. Phase I of the conservation assessment, *Conservation Assessment of Greater Sage-grouse and Sagebrush Habitats* (Assessment), was completed and delivered to the USFWS in June 2004 (Connelly et al. 2004). Phase II of the CA is the Conservation Strategy (this document).

## Strategy

The overall strategy for the management and/or conservation of greater sage-grouse is to develop the associations among local, state, provincial, tribal, and federal agencies, non-governmental organizations, and individual citizens necessary to design and implement cooperative actions to support robust populations of sage-grouse and the landscapes and habitats upon which they depend. The Strategy proposes establishment of seven biologically based sage-grouse and sagebrush management zones which typically cross jurisdictional boundaries and require continued collaboration and coordination (Figs.1.2-1.4). This Strategy is a multi-faceted approach to greater sage-grouse conservation and is built on a foundation of 50 years of cooperation and coordination. This document contains a series of conservation issues, concerns or risks that confront the species at various scales. Development and implementation of conservation strategies and actions occurs at numerous scales including Local Working Groups (LWG), state/provincial conservation and management planning efforts, and range-wide conservation efforts involving cooperation among states, provinces, federal agencies, and any group interested in the range-wide management of sage-grouse and their habitats. Although each scale of management/conservation action tends to focus on specific areas of interest and/or relevance (i.e., LWGs tend to concentrate on conservation actions at the allotment or local area level), there is by necessity a broad area of overlap. For example, states are required by law to set the laws concerning harvest regulations, which ultimately must be incorporated into LWG and range-wide planning efforts. The identification of conservation issues is only one part of a successful conservation effort. To that end a series of sub-strategies have been identified. Sub-strategies that will facilitate the successful completion of the overall conservation strategy include:

*Monitoring the implementation of conservation actions.* Implementation of management and conservation activities is necessary to achieve the population and habitat goals. This sub-strategy outlines the steps necessary to monitor what conservation activities are

occurring, where they are occurring, the goals and objectives of the action and the partners involved.

**Monitoring the effectiveness (outcomes) of conservation actions.** Successful management will require an effective monitoring program for both sage-grouse and their habitats. The sub-strategy to monitor or to develop monitoring techniques for both sage-grouse and sagebrush habitats will provide managers and decision makers with information to evaluate the effects of treatments and conservation efforts and to adaptively manage sage-grouse conservation.

**Adaptive Management.** Adaptive management is an effective and important component of management. Adaptive management recognizes, and plans for, uncertainties in conservation efforts and actively proposes hypotheses that can then be tested via monitoring and recalibration of these efforts. This sub-strategy encourages the use of outcome-based management. Conservation actions as well as the administration of the conservation efforts are designed or encouraged to have pre-determined measure outcomes. The actual outcome will be evaluated against the expected outcomes and subsequent management will be adapted following the evaluation of the action.

**Research needs and technology.** During the last 50 years the science community has conducted research into many questions regarding sage-grouse and western rangelands. However, many important management questions remain unanswered and need to be addressed on a priority basis. In addition, this sub-strategy takes into account the need to use innovative and emerging technologies that can provide more cost effective and rigorous information.

**Communication and outreach.** Improved, coordinated and cooperative communication efforts will enhance support for conservation and avoid duplication of efforts. Western stakeholders value personal independence and initiative and locally-based solutions to local problems. Many urban residents of the sagebrush biome are not familiar with the complexity of the problems, opportunities and values within the sagebrush ecosystem. In the case of sagebrush and sage-grouse conservation, there is good reason to believe that a more informed public will be a more supportive and involved public; especially when people learn that individuals in their own community are actively engaged in the process.

**Funding.** This sub-strategy outlines a framework for short and long-term funding opportunities. Several state and local conservation plans identified hundreds of conservation actions without a funding mechanism to build capacity to successfully accomplish the outlined goals. The funding opportunities outlined in this sub-strategy, if implemented, would provide a consistent and predictable funding stream to implement this Range-wide Comprehensive Strategy as well as state and local conservation plans. The funding strategy also includes an infrastructure to encourage, coordinate and guide conservation efforts.

## Guiding Principles

The overall goal of the range-wide Strategy is to maintain and enhance populations and distribution of sage-grouse by protecting and improving sagebrush habitats and ecosystems that

sustain these populations. WAFWA and its partners envision a continuation of coordinated, cooperative range-wide sage-grouse and sagebrush conservation resulting in productive sage-grouse populations and habitats that are highly valued by society as sage-grouse habitat and because of their biological, open-space, aesthetic and other intrinsic values. It is further envisioned that this will be accomplished through long-term, coordinated and cooperative efforts which welcomes all stakeholders into the process. Progress will be guided by the following principles and values (not listed in order of priority):

**1. Inclusion and Mutual Respect.**

All interested and affected parties, groups, individuals, and organizations (stakeholders) are welcomed as partners in achieving sage-grouse and sagebrush conservation through a process that is committed to understanding and respecting a diversity of opinions and values among stakeholders.

**2. Local, State, Agency and Group Initiative and Leadership.**

The principle of acting locally is the foundation of this Strategy and is fundamental to sage-grouse and sagebrush conservation. Perspectives, needs, abilities, and resources differ across the range and between the parties involved in sage-grouse and sagebrush conservation. It is important for each group and individual to be informed about range-wide goals and objectives and then to take the initiative to find and commit resources to achieve local conservation goals.

**3. Commitment to Monitoring and Adaptive Management.**

Progress towards long-term population and habitat distribution goals can only be evaluated if projects and activities are accurately monitored over time. It is incumbent upon all entities involved in sage-grouse and sagebrush conservation to establish goals and objectives for each activity and to establish effective monitoring programs concurrent with each project. Over time, monitoring results will provide the information needed to adapt activities, protocols and processes to effectively and efficiently achieve established goals. It is incumbent upon all entities to not only collect monitoring information but also to then appropriately adapt programs based on monitoring data.

**4. Commitment to Continued Cooperation and Coordination.**

Cooperation and coordination between agencies, states, and groups has enabled unprecedented accomplishments in sage-grouse and sagebrush conservation planning. An example is the publication of the range-wide conservation status assessment. All parties involved in sage-grouse and sagebrush conservation are committed to continued cooperation and coordination and are willing to consider inclusion of new groups and organizations as full partners in conservation.

**5. Functional and Productive Landscapes.**

Although this Strategy is specific to sage-grouse, 350 species of flora and fauna occupy

the sagebrush ecosystem (Connelly et al. 2004). Unfortunately a high proportion of these species are endemic and imperiled species (Connelly et al. 2004). Although sage-grouse conservation is the force behind this conservation effort, the success of this effort is dependent upon the success of sagebrush ecosystem conservation. Successful sagebrush ecosystem conservation must incorporate the values and functions of all the species of flora and fauna and all ownerships, which contribute to the stability and productivity of sagebrush ecosystems. To that end, sage-grouse will serve as a surrogate species for the conservation of sagebrush ecosystems (Appendix A).

## **6. Best Science and Scientific Integrity.**

The conservation community is the beneficiary of over 50 years of scientific inquiry dealing with sage-grouse and the relationship of sage-grouse to sagebrush systems. It is incumbent upon the implementers of this Comprehensive Strategy to use knowledge to guide conservation actions and to direct future research. Conservation efforts must be firmly based in sound science or the "Best Available Science." Conservation activities should be grounded in the use of science reported in a variety of: peer-reviewed publications (e.g., *Journal of Wildlife Management*, *Journal of Range Management*, *Ecology*, *Auk*, *Condor*, etc.) Implementation can also refer to (in descending order of precedence) dissertations and thesis, peer-reviewed papers/reports; non-peer-reviewed papers/reports and finally popular literature. Conservation efforts should be framed as a management experiment with careful collection of data and evaluation of the effectiveness of these experiments so these efforts can add to the body of science.

## **7. Range-wide Issues Forum**

The Range-wide Issues Forum suggests that the guiding principle of sage-grouse and sagebrush conservation should be to: 1) protect what we have, 2) retain what we're losing, and 3) restore what has been lost: ranked in descending order of importance because it is easier, cheaper and success is more likely to be achieved if conservation involves protection of existing habitat and populations than it is to restore populations and habitat that have been lost.

# **Measures of Success**

## **Range-wide Management**

Sage-grouse conservation goals and range-wide management are guided by the delineation of sage-grouse management into seven distinct Management Zones. These Management Zones were determined by sage-grouse populations and sub-populations identified within seven floristic provinces (Fig. 1.2) (Connelly et al. 2004). Forty-one sage-grouse populations are distributed across seven floristic provinces. Greater and Gunnison sage-grouse management are encompassed in one Management Zone. (Fig.1.3). Floristic provinces (Connelly et al. 2004) were used to delineate Management Zones because they reflect ecological and biological issues and similarities, not political boundaries. In addition, the vegetation communities found in the floristic provinces, as well as the management challenges, within a Management Zones are similar and sage-grouse and their habitats are likely responding similarly

to environmental factors and management actions.

The Management Zones include:

- Management Zone I:** Great Plains Management Zone (GPMZ)
- Includes the states and provinces of Montana, Wyoming, North Dakota, South Dakota, Saskatchewan, and Alberta.
- Management Zone II:** Wyoming Basin Management Zone (WBMZ)
- Includes the states of Idaho, Wyoming, Utah, and Colorado
- Management Zone III:** Southern Great Basin Management Zone (SGBMZ)
- Includes the states of Utah, Nevada, and California
- Management Zone IV:** Snake River Plain Management Zone (SRPMZ)
- Includes the states of Idaho, Utah, Nevada, and Oregon
- Management Zone V:** Northern Great Basin Management Zone (NGBMZ)
- Includes the states of Oregon, California and Nevada
- Management Zone VI:** Columbia Basin Management Zone (CBMZ)
- Includes only the state of Washington
- Management Zone VII:** Colorado Plateau Management Zone (CPMZ)
- Includes the states of Colorado and Utah and considers greater and Gunnison sage-grouse.

Management Zones I, II, IV, and V encompass the core populations of greater sage-grouse and have the highest reported densities (Fig. 1.4) (Connelly et al. 2004). Management Zone VII includes Gunnison and greater sage-grouse. Management Zone III encompasses lower densities in the Columbian Basin while dispersed numbers exist in Management Zone VI. Gunnison sage-grouse are partitioned from small greater sage-grouse populations associated in the Colorado Plateau.

### Definition of Success

Connelly et al. (2004) conducted an assessment of current population distribution and long-term maximum counts for males on active greater sage-grouse strutting grounds from 1965 – 2003 for each Floristic Province (Management Zone). Their analyses suggested significant long-term declines for 5 of the 7 Management Zones (Management Zones I, II, III, IV, and VI) (Table 1.1). The remaining 2 Management Zones (V and VII) remained statistically unchanged (Connelly et al. 2004). The Strategy treats the Assessment analysis as a reference period upon which future analyses of population trends will be compared. This reference period was selected for the following reasons: 1) this was the interval used in the analyses of Connelly et al. (2004) and as such has an established record of evaluation; 2) a broad time interval reduces the potential problems that selection of a specific and/or “unusual baseline year” would cause in future analyses; and 3) the selection of a relatively large baseline period incorporates ‘natural’ variability of populations. Therefore, the overall objective of the range-wide Strategy is to produce and maintain neutral or positive trends (Table 1.1) in populations and maintain or increase the distribution of sage-grouse in each Management Zone.

The Strategy foresees coordinated and cooperative implementation of actions within each Management Zone that will, over time, alter the slope (Table 1.1) of each Management Zone population trend line in a positive manner. Each Management Zone will define success based on the data from that zone. Definitions of success within a specific Management Zone may change over time as population monitoring techniques or management status change. As population trends within each Management Zone respond long-term success can be judged based on comparisons with data from the 1965-2003 period for that specific Management Zone.

This strategy recognizes that local and/or statewide plans may have more or less ambitious goals than this, perhaps with accompanying efforts to establish and/or expand populations to pre-1965 levels. Consequently, the overall goal of the range-wide Strategy should be considered 'minimal' and not necessarily 'optimal'. Although an optimal range-wide goal would consider population and/or distribution targets that predate the 1965-2003 reference period, there are many range-wide realities such as 'permanent' habitat loss, which would preclude this type of recovery and/or make it unrealistic on a scale this large.

Periodic assessment periods for analysis of the Strategy will occur at 5, 10, 15, 20, 25, and 30 years following publication. Periodic assessments will require an analysis of data using the same methods as Connelly et al. (2004). In addition, this Strategy encourages the use of new or more sophisticated population monitoring or trend analyses techniques developed in the future.

Gunnison sage-grouse are included in Management Zone VII, but were not used in the regression analyses provided by Connelly et al. (2004). The Gunnison Sage-grouse Range-wide Conservation Plan (RCP) offers a rationale for conservation targets for each Gunnison sage-grouse population. Recommended strategies are provided for habitat protection, habitat improvement, and population management. Local conservation targets were established by analyzing the modeled population capacity (Table 1.2). These conservation targets were accepted cooperatively by the agencies that developed the RCP.

### **Organization and Format**

The strategy is organized into 9 chapters. Chapter 1 serves as the introduction to the Strategy and includes background information, a vision statement, a listing of guiding principles, information on organization and format and a list of acronyms used in the report. Chapter 2 summarizes community, state, agency and range-wide conservation strategies. Chapter 3 outlines strategies and protocols for effective monitoring of populations and habitat to determine the effects of conservation activities and projects. Chapter 4 deals with monitoring the implementation of conservation strategies. Chapter 5 addresses research priorities and the needs and opportunities for incorporating improved technology in sagebrush and sage-grouse conservation and management. Chapter 6 sets forth both short-term and long-term funding strategies. Chapter 7 deals with effective communication as an aid to conservation. Adaptive management protocols are discussed in Chapter 8 and the schedule for conservation activities is outlined in Chapter 9.

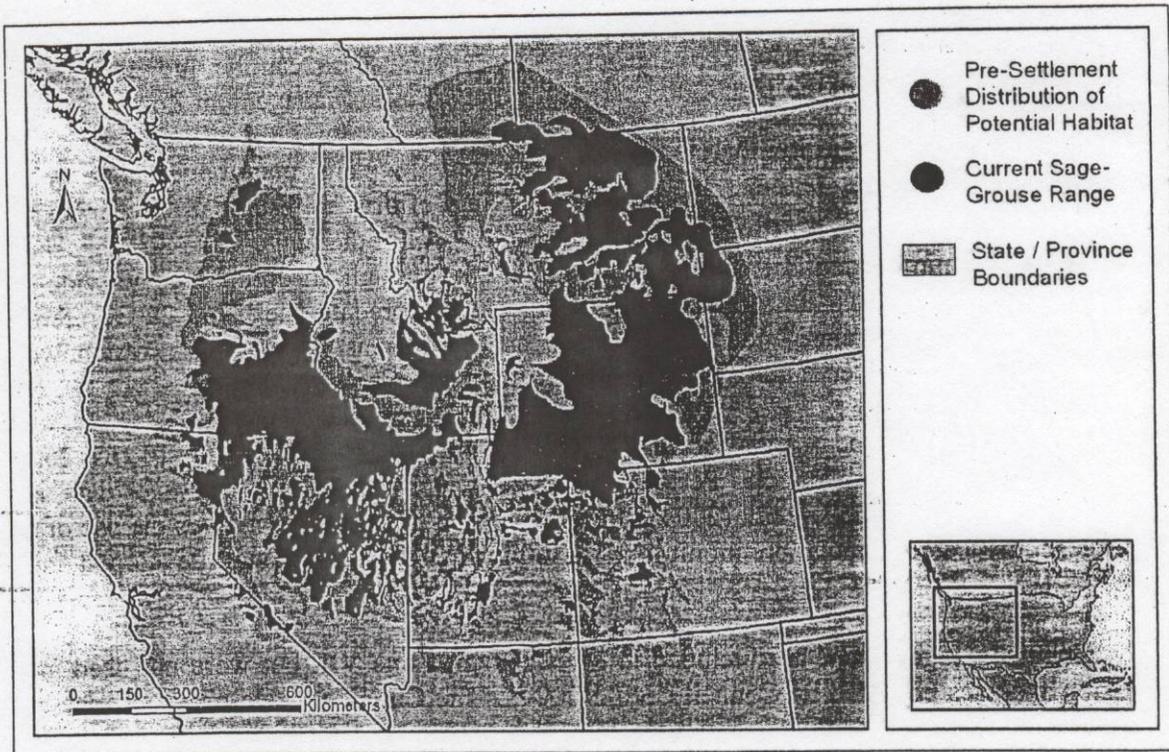


Fig. 1.1 Current distribution of sage-grouse and pre-settlement distribution of potential habitat in North America (Schroeder et al. 2004). For reference, Gunnison sage-grouse in southeastern Utah and southwestern Colorado are shown.

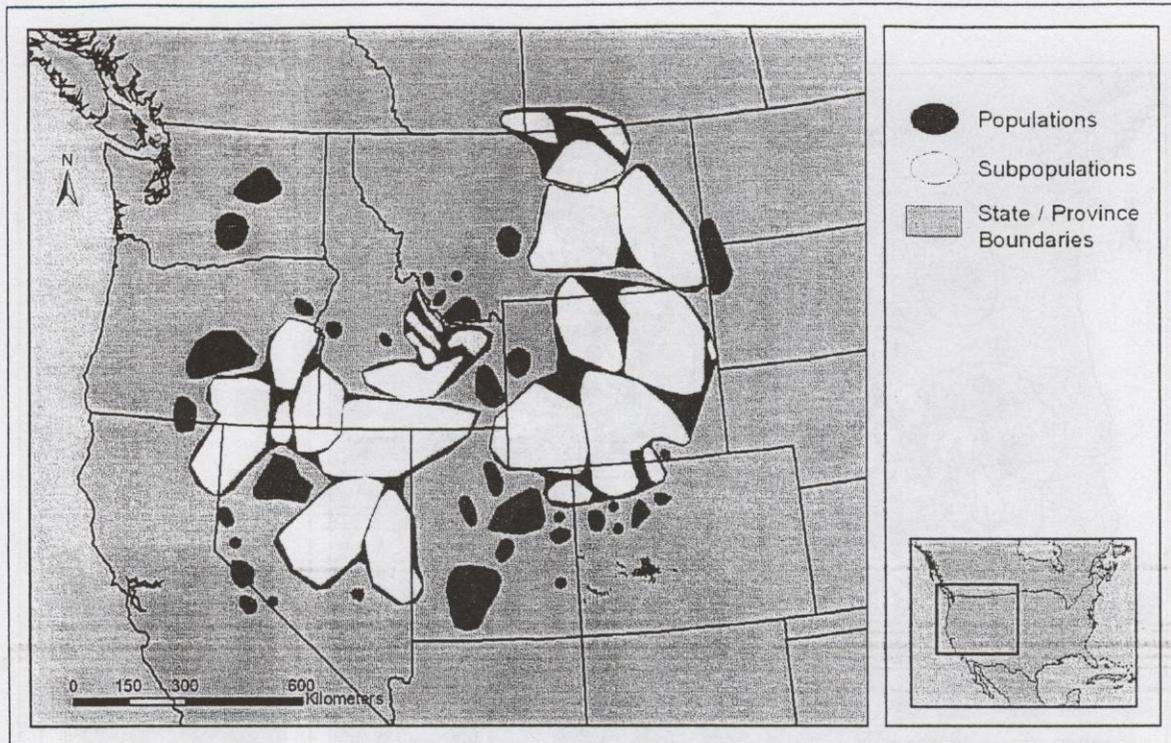


Figure 1.2. Greater sage-grouse population and subpopulations identified in Connelly et al. (2004).

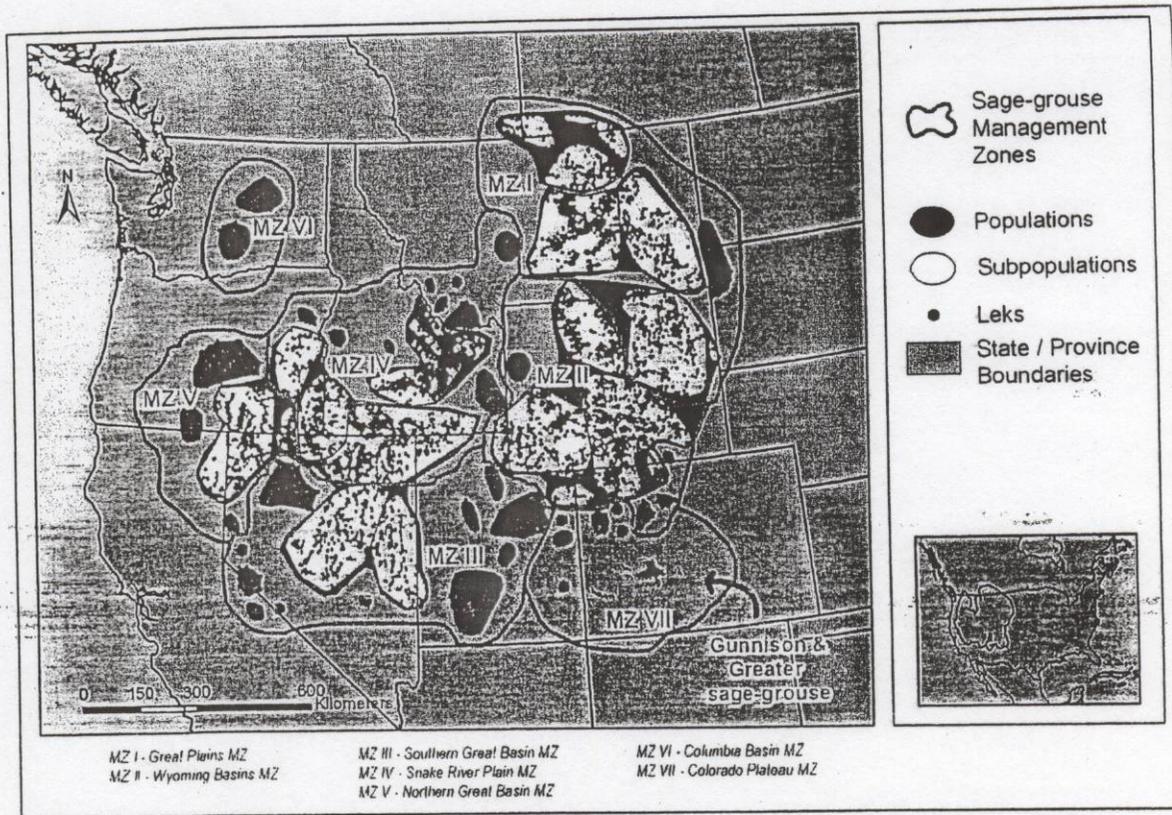


Figure 1.3. Greater and Gunnison sage-grouse Management Zones outlined in North America.

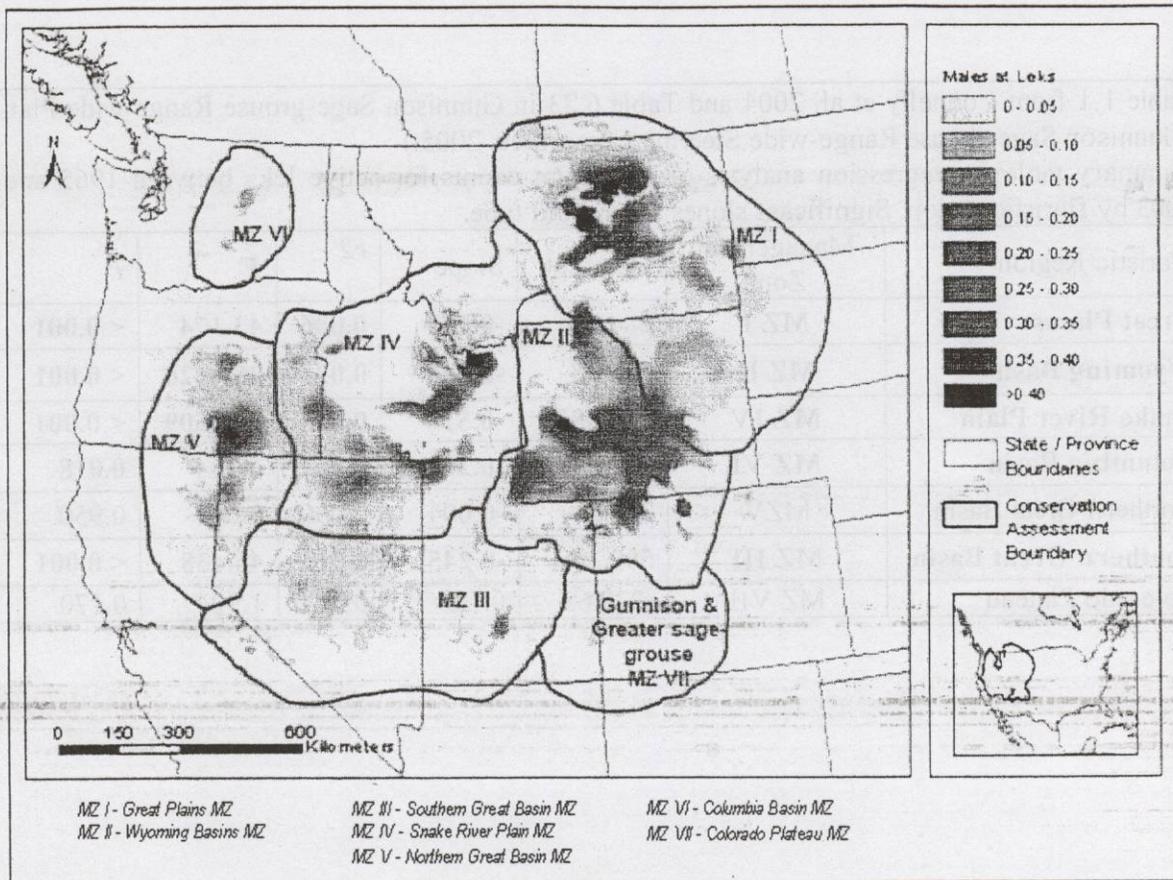


Figure 1.4. Greater and Gunnison sage-grouse Management Zones outlined in North America with associated strutting male densities.

Table 1.1 from Connelly et al. 2004 and Table 6.23 in Gunnison Sage-grouse Range-wide Plan (Gunnison Sage-grouse Range-wide Steering Committee. 2005.)  
 Summary table for regression analysis of maximum counts for active leks between 1965 and 2003 by floristic region. Significant slopes are in **bold type**.

Floristic Region	Management Zone	Intercept	Slope	$r^2$	$F$	$P$
Great Plains	MZ I	284.68	<b>-0.133</b>	0.006	43.174	< 0.001
Wyoming Basin	MZ II	823.28	<b>-0.400</b>	0.021	267.520	< 0.001
Snake River Plain	MZ IV	1042.85	<b>-0.510</b>	0.038	275.509	< 0.001
Columbia Basin	MZ VI	421.31	<b>-0.201</b>	0.012	6.404	0.018
Northern Great Basin	MZ V	35.62	-0.004	0.000	0.004	0.950
Southern Great Basin	MZ III	509.30	<b>-0.245</b>	0.013	46.438	< 0.001
Colorado Plateau	MZ VII	-239.63	0.126	0.014	1.904	0.170

Population	Occupied <sup>3</sup>	Vacant <sup>4</sup>	Potential <sup>5</sup>	Occupied <sup>6</sup>	Occupied Vacant +	Occupied + Vacant + Potential	Males	Total	Future Target
Gunnison	530,464	22,879	157,240	(620) 3,039	(647) 3,174	(836) 4,099	605	2,968	3,000
Crawford	34,908	18,136	61,848	(25) 122	(47) 229	(121) 593	40	196	275
San Miguel	85,999	41,360	61,783	(86) 423	(136) 666	(210) 1,030	62	304	450
Dove Creek	26,907	52,747	237,492	(15) 75	(79) 385	(364) 1,783	30	147	200
Monticello, UT	59,579	56,824	75,285	(54) 267	(123) 602	(213) 1,045	37	182	300
Piñon Mesa	24,185	63,584	136,361	(12) 59	(88) 433	(252) 1,236	26	128	200
Poncha Pass	14,781	0	27,794	(1) 4	(1) 4	(34) 167	8	39	75
Cerro Summit - Cimarron - Sims	37,145	4,874	20,462	(28) 35	(33) 164	(58) 284	7	34	TBD

<sup>1</sup>Estimated from regression of occupied habitat vs. population estimate derived from high count of males.

<sup>2</sup> Based on multiple-year average of lek counts with comparable sampling effort; time period for each population same as habitat model (see pp. 186-187).

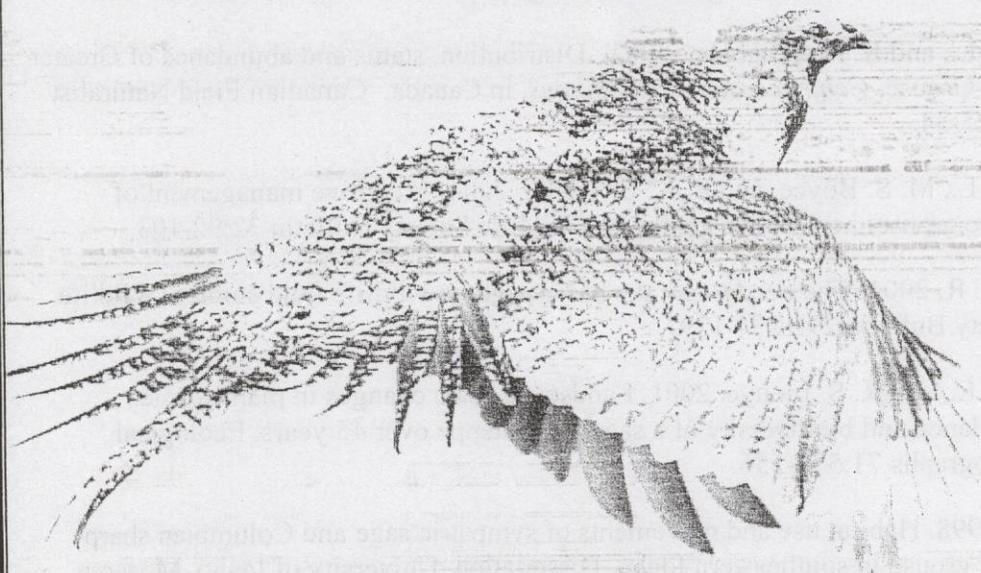
<sup>3</sup> Acreage of habitat within each population thought to be occupied by sage-grouse, as delineated by local biologists. Vegetation classes that are used by grouse were selected by local biologists within occupied range boundary.

<sup>4</sup> Acreage of apparently suitable habitat that is not currently known to be occupied habitat, as delineated by local biologists.

<sup>5</sup> Acreage of habitat that could, with intensive management, be suitable for sage-grouse, as delineated by local biologists.

<sup>6</sup> Population estimate converted from average of recent lek counts as:  $(\text{average number of males}/0.53) + [(\text{average number of males}/0.53) * (1.6)]$ ; (see pg. 45).

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