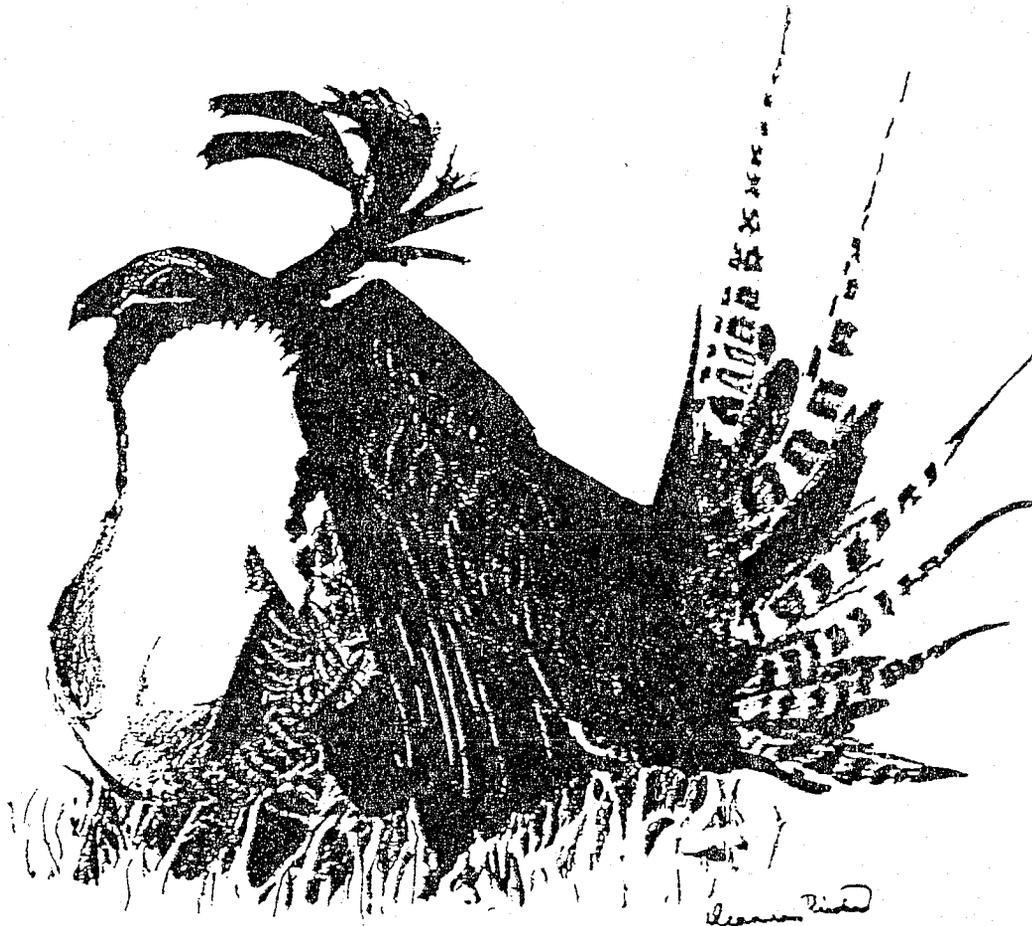


FINAL

**GUNNISON SAGE GROUSE
CONSERVATION PLAN
SAN MIGUEL BASIN COLORADO**



Last Revised 17 July 1998

PLEASE NOTE: This document is an outline of the Draft Conservation Plan. Work continues in developing specific parts of the conservation strategy. As these parts are completed, this document will be updated to incorporate these sections and be available for public review.

file name: Norwood2.sgp



Study area boundary provided by the Sage Grouse Committee and digitized from 1:100,000 scale maps.

Map production - August 3, 1998
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Conservation Plan Boundary San Miguel Basin

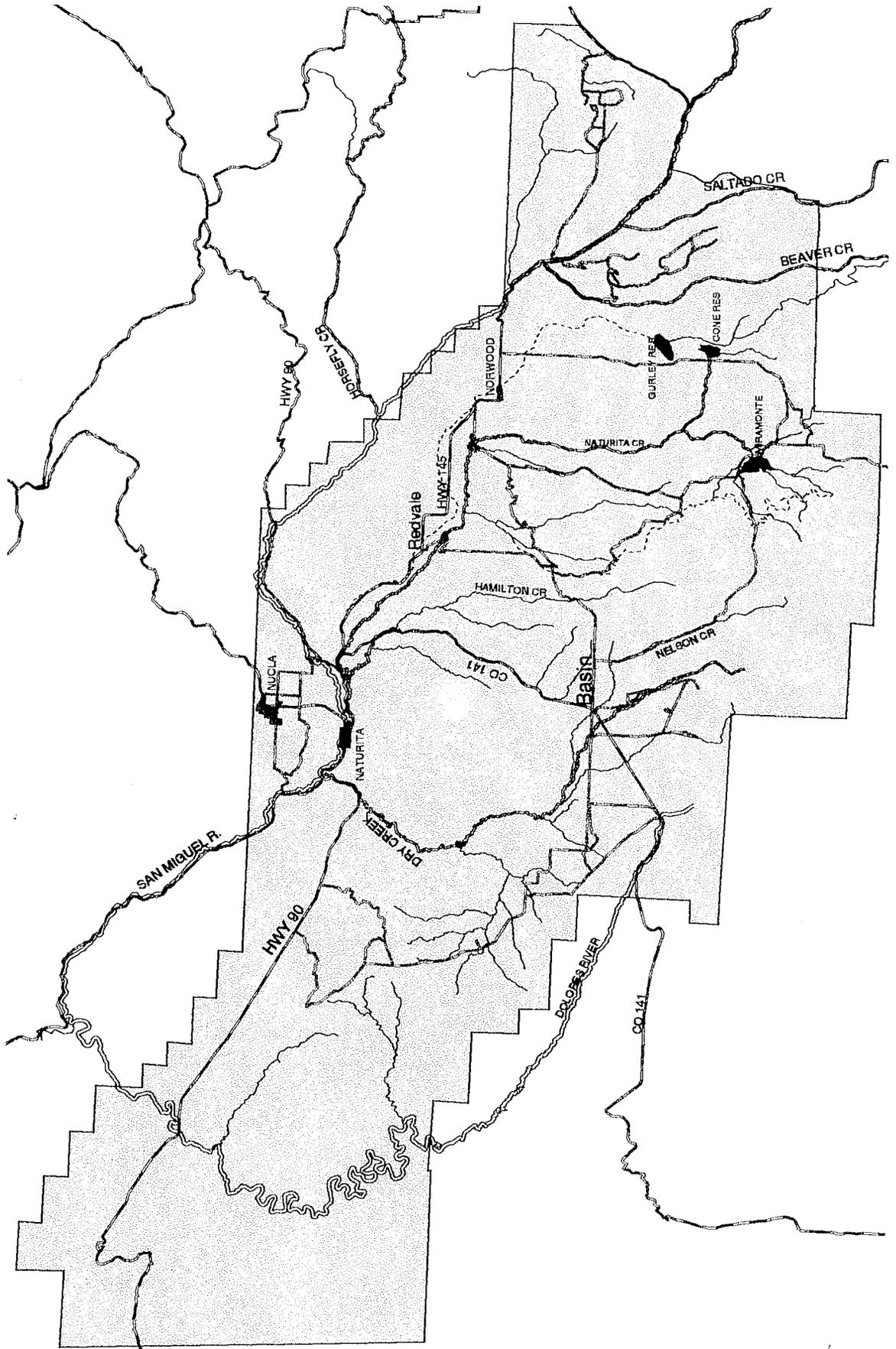
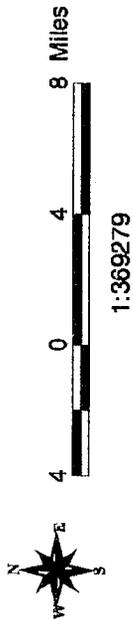


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I. PREAMBLE

Sage grouse in southwestern Colorado occur in 8 highly fragmented populations scattered in 6 different counties. These sage grouse have been identified as a new species with less than 4000 breeding individuals. Because of the fragmentation and distribution and limited size of each population, there is concern that this species may be a candidate for federal endangered or threatened status.

The San Miguel Basin Sage Grouse Working Group is a county level, multi-interested forum representing landowners, sportsmen, land management agencies, local government, and the Colorado Division of Wildlife. There are three important areas that are included in the San Miguel Basin and they will be referred to as Dry Creek Basin, Hamilton Mesa and Miramonte Reservoir. The common goal is to develop a community supported plan to preserve and enhance Gunnison sage grouse populations and habitat in this area, while respecting private landowner rights and maintaining local control, while incorporating economic, social and cultural values. The working group exists to help coordinate and support localized efforts to achieve this goal.

II. THE PLAN AND ITS PURPOSE

This document establishes a process and establishes a framework that will guide management efforts directed at improving sage grouse habitat and reversing the long term decline of the Gunnison Sage Grouse in the Dry Creek Basin/Miramonte watershed. Central to this process is the idea of citizen, community, and agency involvement in determining appropriate management activities designed to meet jointly developed goals and objectives. This plan guides that effort.

The purpose of the San Miguel Basin Sage Grouse Conservation Plan (the plan) is to provide for coordinated management across jurisdictional/ownership boundaries and to develop wide community support that is necessary to assure the survival of the sage grouse species. Designed to be dynamic, the plan will be flexible enough to include new information and issues, as well as results from previous conservation efforts. It will also be designed to answer questions and collect data necessary for future resource management decision making.

III. Guiding Principles

This overall general objective is designed to guide sage grouse management efforts, particularly the selection of conservation actions and the way in which they are implemented.

Promote public involvement in planning and decision making.

Maintain an atmosphere of cooperation and participation among land managers, private landowners, and other stakeholders.

Implement conservation actions in a way that meets the needs of sage grouse and is least disruptive and encourages the development of a stable and diverse economic base in San Miguel County.

Respect individual views and values and implement conservation actions on a collaborative basis in ways that have broad community support.

Make every effort to seek efficiency and integration of efforts especially between agencies in the implementation of conservation actions.

Area Boundary

The area historically and presently occupied (in part) by sage grouse extended east from the Utah State Line south of the Manti La Sal National Forest Boundary to Carpenter Ridge and east-southeast to Nucla east to Pinon and southeast to Sanborn Park and Hotchkiss Reservoir to Colorado Highway 62, then southwest along Highway 62 to its junction with Colorado Highway 145 west to the Specie Creek Canyon road and south to the San Juan National Forest Boundary and west and south to the San Miguel-Dolores County Boundary and then west to the Utah State Line in San Miguel and Montrose counties.

The San Miguel Basin Area boundary was delineated based on known historic use sites and sage grouse observations, as well as the present potential of remaining sagebrush-dominated habitats. Substantial areas with rural dwellings and town sites as well as agricultural developments, especially hayfields, are included within the boundary. While this was necessary to include all areas with potential for habitat development to benefit an expanded Gunnison sage grouse populations, no inferences on future changes in present land uses are inferred by the boundary delineated. Participation in this plan on the part of landowners is strictly voluntary.

IV. Species Description

Description

Sage grouse (Centrocercus urophasianus) are large (2.4-7.2 lbs) brown/gray chicken-like birds with conspicuous black (belly, underthroat) and white markings (breast of males, undertail coverts). They are brown gray above barred with black, with rounded brown wings with some black barring. Males during the breeding season (Mar-May) have conspicuous neck plumes, white upper breast with yellow-green air sacs and prominent, long spiked tail feathers. Both sexes have yellow green eye

combs, which are less prominent in females, and a fringe of pectinations along the toes which are most noticeable in winter and early spring. Males weigh from 3.5 to 7.2 pounds, while females weigh from 2.4 to 4.0 pounds.

Gunnison sage grouse (Centrocercus minimus) found in southwestern Colorado differ in size (males are 3.5 to 5.0 lbs, vs. 5.5 to 7.2 lbs in northern Colorado; females are 2.4 to 3.1 lbs vs 3.3 to 4.0 lbs in northern Colorado), bill shape and size, and tail patterns (larger, more distinct white barring of tail feathers). The mating behavior of the Gunnison sage grouse differs markedly from that of the large-bodied sage grouse in northern Colorado.

Habitat Requirements of the Gunnison Sage Grouse in Dry Creek Basin/Miramonte

Habitat needs for sage grouse in the Dry Creek Basin/Miramonte area were intensively studied in 1995 and 1996. Identified needs relate to survival over winter (Nov-Mar), escape cover adjacent to lek sites (Mar-May), nesting cover (Apr-Jun), early brood-rearing habitat (May-Jun), late brood-rearing habitat (Jul-Aug), and fall habitat (Aug-Oct). Of these habitats, winter, nesting, and early brood rearing are most important with suitable escape cover near leks of near equal importance.

Winter Habitat---Radio-marked sage grouse extensively used black sagebrush (Artemisia nova) near Miramonte Reservoir and low sagebrush (Artemisia arbuscula) flats interspersed with heavier stands of Basin big sagebrush (Artemisia tridentata tridentata) in Dry Creek Basin. Adequate winter habitat is unavailable in some years near Miramonte Reservoir from January into March because of snow depth. Winter habitat does not appear to be limiting in Dry Creek Basin. Foods eaten in winter appear to be black, low, and Basin big sagebrush, as well as winterfat (Ceratoides lanata).

Lek Habitat---Suitable habitats for display do not superficially appear to be limited anywhere in the Dry Creek Basin/Miramonte area. However, known formerly active leks near Cone Reservoir and Gurley Reservoir are no longer occupied. This does not appear to be related to quality of lek sites but instead is related to the reduced amount and quality of total sagebrush-dominated habitats at those sites. With the exception of Nelson Creek and Beaver Mesa, sites presently used for display are alkali flats and low sagebrush sites with taller (>12 in.) sagebrush immediately adjacent (<200 yds.) to the display sites. Presence of taller sagebrush (black sagebrush and Basin big sagebrush) with a lack of taller coniferous shrubs/trees and other obstructions appears to be critical for continued use of these sites by displaying male sage grouse.

Nesting Habitat---Sage grouse hens at Dry Creek Basin/Miramonte Reservoir select sites for nesting with taller, more dense sagebrush (>16 in., >25% canopy cover). These sites are frequently at slightly higher elevations (upper edge of the occupied

habitat) where moisture allows greater and more robust grass and forb cover (>25 and 8% respectively, >6 in. total herbaceous height except in western Dry Creek Basin where >6 in. herbaceous height is uncommon). Nests are typically at the base of taller (>16 in.) sagebrush plants.

Early Brood Habitat---The description of this habitat at hatch is identical to nesting with hens moving their young chicks (<5-10 days of age) into areas dominated by forbs and grasses with <20% live sagebrush canopy cover. Hens select drainage channels in the sagebrush type that have abundant forbs and frequent moisture. Grass and forbs dominate all known use sites with a definite preference for live sagebrush escape cover (>12 in. in height).

Late Brood Habitat---Hens with older broods prefer moist drainage channels and north to northwest slopes depending upon elevation and site (Miramonte Reservoir area vs. Hamilton Mesa vs. Dry Creek Basin). Forbs and grasses dominate at preferred use sites with some live sagebrush and other deciduous shrubs (snowberry, serviceberry, Gambel oak). Shrub cover is important for escape while most foraging is on forbs.

Fall Habitat---Sage grouse of all ages and gender continue to use habitats identical to those used by broods in July and August until plants become desiccated (several successive killing frosts) or heavily grazed. Taller sagebrush (>12 in.) with more canopy cover (>20%) becomes more important. Use increases of north and west facing slopes and diets change gradually from a high proportion of forbs to a high proportion of sagebrush. In Dry Creek Basin, drainage channels and adjacent area of low sagebrush and winterfat continue to be heavily used until major snow events. During extensive snow cover, in late fall and early winter, use of black and Basin big sagebrush stands is extensive.

V. Species Status and Distribution

Geographic Distribution

Two races of sage grouse have been described with the Western race occurring in west-central Oregon and Washington and the Eastern race from eastern Oregon east, north, and south throughout the described distribution. More recently, a 3rd group of sage grouse has been described from the Gunnison Basin, Colorado. This group differs from all other sage grouse populations studied by being significantly smaller in size, having different breeding behaviors and specialized feathers, and having a markedly narrow (one) range of genetic haplotypes. The present distribution of the Gunnison sage grouse is south of the Colorado-Eagle rivers in Colorado extending east to the Arkansas River and San Luis Valley. It also occurs east of the Colorado River in extreme southeastern Utah.

Historic/Current Status of the Gunnison Sage Grouse

Rogers (1964) reported that all big sagebrush-dominated habitats in San Miguel and Montrose counties were historically used by sage grouse. This included portions of the Paradox Valley, the area between Naturita and Nucla, the area immediately south of Norwood, Iron Springs Mesa as well as Beaver Mesa, the Miramonte Reservoir Basin, Gurley Reservoir, Cone Reservoir and extending west into Dry Creek Basin. No reports were found for sage grouse occurrence in the Disappointment Valley and Big Gypsum Valley. The historic distribution was highly fragmented by pinyon-juniper forests, rocky canyons, dry non-sagebrush dominated basins, and ponderosa pine-aspen habitats.

Presently, sage grouse are known to occur in Dry Creek Basin west to within 3-4 miles of the Wedding Bell Mountain-Monogram Mesa road junction, south along the north edge of the ridge dividing Big Gypsum Valley from Dry Creek Basin, north along the north edge of Dry Creek Basin, seasonally (winter) to within 1 mile of the junction of Colorado Highways 141 and 145 east of Naturita, and east into Miramonte Basin to Beaver Mesa south of the Forest Boundary but north of Lone Cone and the San Miguel-Dolores County boundary. No sage grouse are presently known to occur in southern Montrose County except seasonally (winter) along the San Miguel County boundary south of the junction of Colorado Highways 141 and 145.

There are currently five known lek sites within Dry Creek Basin/Miramonte area. These leks have been monitored for the past 10 years and some have been monitored as many as 20 years by the CDOW. During the last several years, the population trend seems to be declining.

There is currently no federal status with U.S. Fish and Wildlife Service, Bureau of Land Management or U.S. Forest Service. Recent scientific research show concern for the decline of population numbers for the Gunnison species in southwestern Colorado. Therefore, there is a potential that the U.S. Fish and Wildlife Service will list this species as threatened or endangered. Sage grouse lek counts have been conducted in the Dry Creek Basin/Miramonte since at least 1976. Lek counts provide managers with an estimate of minimum population size. Studies have documented that during the breeding season the sex ratio of a sage grouse population is approximately 2 females for every male. If the number of males is known it is possible to calculate a minimum population size. It is important to understand that a count will never represent all of the males in the population and any calculated population size will be lower than the actual population size.

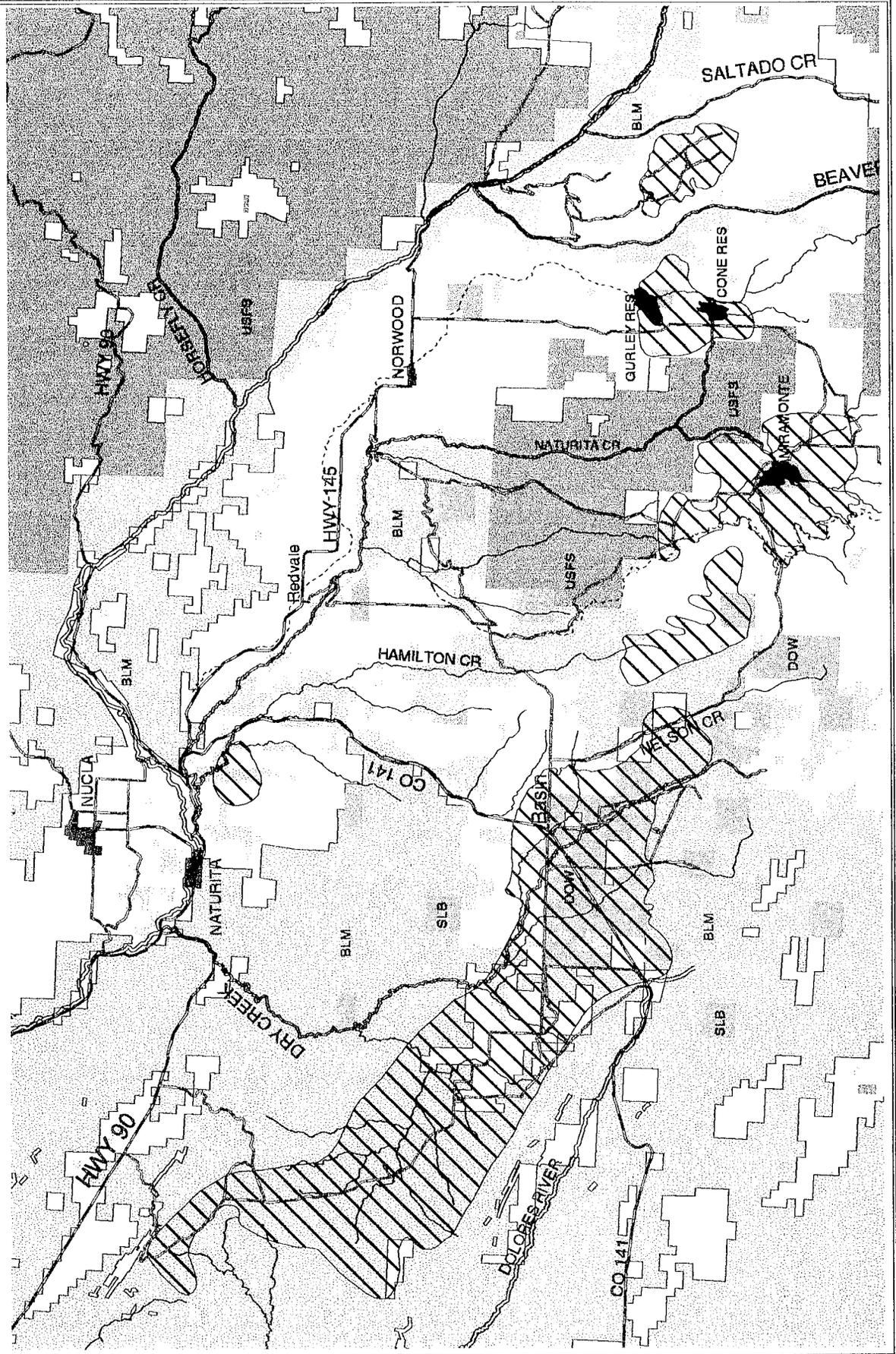
The present (1997) size of the breeding population of sage grouse in the Dry Creek Basin/Miramonte area is between 165 and 276 birds based on the 55 males counted on 4 active lek areas. However, this estimate may be conservative as it has been repeatedly demonstrated that not all males are on leks at one time to be counted and



San Miguel Basin Sage Grouse Overall Range

Overall range for the Hamilton Mesa area was derived from vegetation data and reviewed by L. Bennett on 9/2/97.

Map production - August 6, 1998
Montrose Service Center - JKG.



that locations of all active leks may not be known. Given the terrain and early spring access in this area, it is probable that most active lek areas are known and were counted in spring 1997. It is possible that unknown active leks exist and were not counted. The spring population size of sage grouse at Dry Creek Basin/Miramonte has been considerably higher in the recent past (78 males counted in 1992 and 1994 on 3 leks). These numbers, would indicate a spring population size of at least 234 birds (78 males + 156 hens) and possibly as high as 417 birds. Thus, population size has decreased from 1992-1994. This is a decrease of 46% based on the mean number of males counted on leks.

Viable Population Goals

The estimated breeding population is somewhere between 165-276 birds. To set a goal, we used the conservative number of 165, which is based on the actual number of birds counted in 1997.

Short Term Goal: minimum goal (3-5 years) of 255 birds.

Long Term Goal: optimal goal (10-15 years) of 480 birds.

This translates to at least 150 males counted in spring on at least 7-8 active leks distributed from Dry Creek Basin (4 Leks) to Miramonte Basin (2-3 leks) and Beaver Mesa (1 lek).

VI. General Conservation Objectives

Using this goal as a target, the sage grouse management group developed general objectives. These general conservation objectives were developed largely based on the issues or factors that had been identified as in some way contributing to the declining population size of sage grouse or affecting the quantity or quality of sage grouse habitat in the Dry Creek Basin/Miramonte area..

The purpose of these general conservation objectives is to guide the identification of conservation actions. These objectives are also useful to explain the overall thrust of the conservation strategy. Three dominant themes or categories emerged from the issue discussion which helped frame these general objectives. These three objectives are:

- 1). Maintain and improve the quality of sage grouse habitat.
- 2). Reduce fragmentation by preventing, minimizing, and mitigating past, present and future loss of sage grouse habitat.
- 3). Identify and manage physical disturbances to reduce adverse effects to sage grouse.

VII. Sage Grouse Habitat Quality

Habitat quality is an indication of how well habitat meets the needs of sage grouse. Habitat in poor condition is of lower quality than habitat which is in good condition because higher quality habitat provides more of the essential components such as food, water, cover, etc. Generally, the group of factors that affect habitat quality and/or fragmentation (discussed in the following section) are considered to be the most important to sage grouse recovery.

VIII. Sage Grouse Habitat Loss/Fragmentation

Loss of sage grouse habitat refers to areas that once provided habitat, but no longer does because that habitat no longer exists or is not available. It should be thought of as a permanent loss. Another example of habitat loss occurs when a subdivision occupies an area that once was sagebrush community.

Fragmentation refers to the distribution or location of habitat in terms of its physical position or connectiveness.

IX. Physical Disturbance to Populations

This refers to the physical disturbance to sage grouse, the birds themselves. Physical disturbance can result in sage grouse death or exert stress particularly if disturbance occurs during biologically critical periods. Narratives of these issues can be found in Appendix A. (Issue Descriptions)

Issues that effect sage grouse populations and their habitat:

Vegetative Habitat

- poor habitat quality and quantity
- lack of grasses and forbs
- condition of winter habitat

Land Planning/Mitigation

- fragmentation
- changes in land uses

Land Treatments

- effects of land treatments on winter habitat
- poor management of land treatments
- fire suppression
- lack of habitat management/need for habitat management

Utilities

-powerlines

-roads

-fence designs

-pipelines

Loss of Topsoil & Productivity

Poor Nest and Brood Survival

Timing, Intensity and Duration of Livestock/Big Game Grazing

Drought

Predators (Coyotes, ground squirrels, badgers, eagles and other raptors)

Scientific Lek Harassment

Conflicting Uses During Critical Biological Activity Periods

Recognition of Private Landowners Rights

Monitoring/Research

Reservoirs

Mining & Exploration

X. CONSERVATION ACTIONS

Introduction

The backbone of the Sage Grouse Conservation Plan is its goal and objectives which together establish a framework for developing conservation actions. Conservation Actions are designed to be consistent with the plan's goal and also to meet one or more objectives. These actions also address issues that affect sage grouse, and, or their habitat. Due to the interrelationship of the habitat components, resources values, and issues, many actions may apply to more than one objective.

However, to avoid duplication, these actions have been listed under the objective where the link is most direct.

Any additional actions identified at a later date will be analyzed by the San Miguel Basin Gunnison Sage Grouse Working Group for application and design to ensure appropriateness and compliance with the goals and objectives set forth in this plan.



Conservation Action	Examples of ways to accomplish	Implementation		Schedule
		When	Who	
Monitoring				
Identify important sage grouse habitat, limiting factors and activities that have the potential to impact sage grouse or their habitat. Identify and evaluate critical sage grouse habitats.	Habitat mapping and monitoring.	Ongoing	CDOW	
	Meetings with interested landowners.	Ongoing	Dry Creek Basin Committee Working Group	
	Joint-interagency/landowner evaluation, information sharing.	As opportunities arise		
Continue to gather or initiate the collection of basic resource data to better understand and document conditions for sage grouse, including response to applied conservation measures.	Sage grouse population monitoring/census.	Ongoing	CDOW, NRCS	
	Habitat condition assessment.	Ongoing	BLM, NRCS	
	Design and carry out monitoring for applied measures.	Ongoing	CDOW	
	Continue to identify causes for decline in sage grouse populations.	Ongoing	CDOW, Working Group	
Avoiding or mitigating permanent loss of habitat				
Develop and encourage incentives for landowners and others to avoid or mitigate loss of sage grouse habitat.	Land exchanges.	Ongoing 1998-2000	CDOW, Hughes FS	
	Conservation Easements.	As opportunities arise	TBD	
	Transferrable development rights.	As opportunities arise	TBD	
	Payment for non use.	Ongoing	CDOW	
	Application of specific land use practices that benefit grouse.	Ongoing	CDOW, BLM, Private Landowner	

Conservation Action	Examples of ways to accomplish	Implementation		Schedule
		When	Who	
Enhance and restore existing sage grouse habitat to offset loss of habitat elsewhere.	<p>Re seeding or reclaiming areas, creating or protecting wet areas, vegetation treatments.</p> <p>Mitigating effects of growth.</p> <p>Consider transplants into former habitats.</p>	Ongoing	Dry Creek Basin Committee	
		As opportunities arise	TBD	
		As opportunities arise	TBD	
Prevent loss and fragmentation of habitat from construction of roads, utilities.	<p>Relocation or modification of new utility lines, roads, development, etc in key grouse habitat and provide recommendations to the county or lead agency.</p> <p>Pipelines or powerlines modification.</p>	As opportunities arise	Working Group	
		Ongoing	FS	
Restoring or improving habitat quality				
Enhance existing riparian areas, by creating or enhancing small wet areas to benefit sage grouse nesting and brood rearing habitat.	<p>Design and implement livestock grazing management practices to benefit riparian areas</p> <p>Modify or adapt pipelines/springs to create small wet areas.</p>	Ongoing		BLM, Landowner
		As opportunities arise		TBD
Reduce or modify situations that cause predation.	<p>Modify power lines and wood fence posts (to remove raptor perches) in critical sage grouse areas.</p> <p>Cut pinyon-juniper trees near leks and elsewhere within potential sage grouse habitat to remove raptor perches.</p>	As opportunities arise		TBD
		Ongoing-1998		BLM

Conservation Action	Examples of ways to accomplish	Implementation Schedule	
		When	Who
Develop and use Best Management Practices to guide land uses to increase sage grouse populations and improve sage grouse habitat.	<p>Implement local guidelines that describe:</p> <ul style="list-style-type: none"> Livestock grazing practices that benefit sage grouse. Living with sage grouse in your backyard (control of dogs, etc.). Restoring and rehabilitating riparian areas. Proper land treatment design and construction that reduce impacts to sage grouse (e.g., how and where to plan projects). Land development options. Construction standards (placement, timing, rehab., techniques). Reintroduction of sage grouse to historic areas. 	Ongoing	BLM, Landowner
		As opportunities arise	TBD
		Ongoing	Dry Creek Comm
		As opportunities arise	TBD
		As opportunities arise	TBD
		As opportunities arise	TBD
		As opportunities arise	TBD
Improve sage grouse habitat quality, and improve vegetation cover, especially forbs and grasses in sage grouse areas.	<ul style="list-style-type: none"> Developing and using sound grazing management practices Planting and re-seeding with a high proportion of forbs Designing vegetation treatments in sage grouse areas to be compatible with sage grouse needs. Improving ground cover in sage grouse areas Managing big game to avoid degrading sage grouse habitat or recovery Integrating weed management with grouse needs 	Ongoing	BLM, Landowner
		Ongoing	Dry Creek Comm
		Ongoing	Dry Creek Comm
		Ongoing	Dry Creek Comm
		Ongoing	CDOW
		Ongoing	BLM, Landowner, County, NRCS
		Ongoing	

Conservation Action	Examples of ways to accomplish	Implementation		Schedule
		When	Who	
Increase opportunities for over-winter survival, escape cover near leks, nesting cover.	<p>Improve quality of sagebrush dominated habitats by grazing management, vegetation treatment (eg. mechanical treatment, fertilization).</p> <p>Avoiding treatment projects that remove large stands of sagebrush in critical areas.</p> <p>Develop recommendations for managing sagebrush community as a whole, considering all uses.</p>	Ongoing	Dry Creek Comm	
		As opportunities arise	TBD	
		Ongoing	Working Group	
Reducing Physical Disturbance to Sage Grouse				
Mitigate or reduce conflicts with sage grouse during critical biological periods and in critical habitats.	<p>Noise ordinances or restrictions during critical periods near leks. (March 15-May 20)</p> <p>Delay or modify construction start up dates or hours.</p> <p>Control or limit pets.</p> <p>Designate OHV use areas and other requirements.</p> <p>Manage travel in key grouse sage grouse areas.</p> <p>Predator control in key areas.</p>	1998-1999	BLM, CDOW	
		1998-1999	BLM, CDOW	
		As opportunities arise	TBD	
		As opportunities arise	TBD	
		Ongoing-1998	BLM	
		As opportunities arise	TBD	

Conservation Action	Examples of ways to accomplish	Implementation		Schedule
		When	Who	
	Improving community support and participation			
Incorporate economic, social and cultural values into conservation practices.	Seek understanding, information sharing and maintaining communication. Adopt principle of voluntary compliance and participation. Involve landowners and local communities in all aspects of sage grouse conservation.	Ongoing As opportunities arise As opportunities arise	Working Group TBD Working Group	
Maintain local control.	The Sage Grouse Working Group (must include landowners, local residents) will act as advisory body. Provide for continued public input and involvement.	Ongoing As opportunities arise	Working Group Working Group	
Develop, improve, and encourage credibility and success.	Seek outside scientific review of projects. Involve college and/or universities. Adapting and changing as we go.	As opportunities arise As opportunities arise As opportunities arise	TBD TBD Working Group	

XI. Implementation

Plan implementation will be priority-based starting with those actions the San Miguel Basin Sage Grouse Working Group believes to be most effective at accomplishing their goal. This group recognizes the need to be opportunistic and carry out specific conservation actions as situations present themselves. For example, a particular conservation action might be implemented sooner than scheduled, if funding became available, or a group or individual came forward to help with completing a task.

Some actions have already begun or are ongoing. Other actions would need to be done continually throughout the plan. These are normally a matter of policy or require small changes in the way resources are managed and land use activities take place. Sometimes a land use has to be proposed or initiated by a third party before the conservation action can be applied.

The adoption of these Conservation Actions will be the responsibility of the San Miguel Basin Sage Grouse Working Group. Specific steps or tasks needed to carry out a conservation action will be developed as the implementation precedes. Cost estimates, including those for monitoring and evaluation will be identified. Every effort to leverage money and resources will be made. Many actions, such as vegetation treatments are costly, and will be dependent on seeking cooperative funding from many partners, and possibly outside sources, such as grants.

Because plan accomplishment will require a lengthy period to complete, it is important to track progress at meeting our goals. At least yearly, the San Miguel Basin Sage Grouse Working Group will convene a meeting to examine accomplishments and keep the plan on track. As actions are completed they will become part of the yearly progress report. The public will be invited to attend the annual meeting and copies of the progress report will be available to those interested.

An important part of the yearly progress report and meeting will be to discuss and document any exceptions or deviations to planned accomplishments. Inadequate funding may preclude the completion of an action in a given period. In this instance, an adjustment to the implementation sequence would be needed. What is important, is to show continual progress toward accomplishing the goals in the plan.

Based on the data available, the BLM and CDOW will schedule a public meeting each year to discuss and distribute results of the previous year's efforts and to plan or adjust future conservation actions.

XII. Monitoring and Evaluation

Monitoring data will be gathered and used to evaluate progress in meeting the goals and objectives of this plan. Monitoring will be coordinated to insure that data collected will provide the needed information to assess the on-the-ground management actions and to measure progress in resolving resource problems and conflicts. This coordination will include appropriate consultation and cooperation with rangeland users

to include mining and exploration, general public, landowners, academia, private organizations and local, State, and Federal agencies. Direct involvement by interested parties in the collection of data and in the subsequent evaluations based on these data will add to the credibility of monitoring results.

It is important that all monitoring information can be easily accessed by those interested in reviewing the data. Monitoring the response of the Gunnison sage grouse population to conservation actions will be measured by total number of active leks, and total number of males counted by zone/entire in Dry Creek Basin/Miramonte. The number of active leks and total males will reflect winter survival as well as chick production in the previous year. Changes in habitat quality which result from the implementation of planned actions will be monitored using techniques applicable to the specific project or action.

Evaluations may be conducted anytime during the implementation of this plan. The goal of evaluation is to determine whether progress is occurring and, if progress is not occurring, to identify adjustments.

XIII. GLOSSARY

Big Sagebrush - As referred to in this plan, includes the following species of sagebrush: Artemisia tridentata tridentata- Basin big sagebrush

Black Sagebrush - Artemisia nova

Canopy Cover - The percentage of ground covered by a vertical projection of the outermost perimeter of the natural spread of foliage of plants. Small openings within the canopy are included.

Ecological Site - A kind of land which differs from other kinds of land, in its potential natural community and physical site characteristics and thus differs also in its ability to produce vegetation and in its response to management.

Ecological Status - The present state of vegetation and soil protection of an ecological site in relation to the potential natural community (PNC) for the site. The vegetation rating is an expression of the relative degree to which the kinds, proportions and amounts of plants in a community resemble that of the potential natural community. The four ecological status classes correspond to 0-25, 26-50, 51-75, or 76-100% similarity to the PNC and are called early seral, mid seral, late seral and PNC, respectively. Soil status is a measure of present vegetation and litter cover relative to the amount of cover needed on the site to prevent accelerated erosion.

Haplotypes - A single genetic marker found in blood, tissues, and feathers; usually associated with mitochondrial DNA analysis.

Integrated Weed Management - a strategy using a comprehensive, interdisciplinary approach to weed management. The purpose of integrated weed management (IWM)

is to achieve healthy and productive natural and agricultural ecosystems through a balanced program. This program includes, but is not limited to, education, prevention measures, good stewardship and control methods.

Lek - An arena where male sage grouse display for the purpose of gaining breeding territories and attracting females. These arenas are usually open areas with short vegetation within sagebrush habitats, usually on broad ridges, benches, or valley floors where visibility and hearing acuity are excellent.

Lek Area - The geographic area that includes all closely allied lek sites within 1 mile. This geographic area is usually stable overtime.

Lek Count -The high count of males from all lek sites on the same day; which are taken at 7-10 day intervals between late March and mid May.

Lek Site - A particular site where sage grouse gather for display and mating in spring (Mar-May). The actual site used can vary daily, seasonally, and yearly.

Low Sagebrush - Artemisia arbuscula.

Potential Natural Plant Community (PNC) - The biotic community that would become established if all successional sequences were completed without interferences by man under the present environmental conditions. The potential natural plant community of an ecological site is the assumed end point of natural succession for that site in the absence of disturbances and physical site deterioration. It is the plant community that is best adapted to a unique combination of environmental factors and that is in dynamic equilibrium with the environment. Natural disturbances, such as drought, wild fires, grazing by native fauna, and insects are inherent in the development of any natural plant communities.

Strutting Ground -See Lek.

Uncommon - A term used by bird watchers, in reference to sightings or observations and may be defined as seeing sage grouse or recent sign 20% of the time in the field in suitable habitat, for example one in five days.

Appendix A. Issue Description

The following issues were brought forth by people involved in the sage grouse working group. During the group meetings, individuals were able to explain why they felt the Gunnison sage grouse population, as a whole, was declining. The major reason for the decline in habitat quality and quantity is due to the lack of management to improve herbaceous diversity. All reasons were treated equally and no limitations were placed on what could be an issue. Thus, a long and varied list of possible reasons for the Gunnison sage grouse decline was developed. The issues are listed in no particular order. The issues listed may not include all those discussed and some issues may be not resolved or are out of the scope of the plan.

Issues That Effect Sage Grouse Populations and Their Habitat:

1). Vegetative Habitat

a). Poor habitat quality and quantity

The major factors that drive sage grouse populations are quality and extent of habitat. No other bird is so habitat specific to one particular plant type (sagebrush) in meeting its annual life requirements. Size of habitat is important because sage grouse move seasonally between suitable habitat types. Sage grouse are unable to adjust their life processes to fit a pattern of land use that eliminates or adversely disturbs large tracts of sagebrush.

b). Lack of grasses and forbs

The quality and quantity of residual herbaceous cover have important roles in sage grouse production and survival. Residual herbaceous vegetation (grasses and forbs) in sagebrush areas which provide adequate cover, both horizontal and vertical, is necessary to hide nests and nesting hens, and broods, as well as provide habitat for insects upon which chicks depend. The number and distribution of high quality nesting and early brood-rearing areas appear to be a limiting factor for sage grouse in the Dry Creek Basin/Miramonte area.

c). Condition of winter habitat

Winter habitat is most critical to Gunnison sage grouse because without sufficient areas of exposed sagebrush they cannot survive the winter to reproduce in spring. Although sage grouse are widely distributed in winter, suitable winter feeding sites do not constitute a large proportion of the available land area. Despite improvements made to other habitat types, sage grouse will not survive unless their wintering areas are protected from fragmentation or factors that destroy or degrade them.

2). Land Treatments

Land treatments include such projects as: plowing and seeding, prescribed burning, herbicide, and chaining/cabing. The effects of land treatments on sage grouse populations can be either positive or negative, depending upon location, method, objective of the treatment, and follow-up management. Some historic land treatments conducted in the Dry Creek Basin/Miramonte area have not benefited sage grouse. Effects of poorly designed treatments on sage grouse include reduction of brood carrying capacity of an area, loss of escape cover around leks making birds more vulnerable to predators, elimination of nesting habitat, and loss of winter habitat.

a). Effects of land treatments on winter habitat

Some land treatments which attempt to remove sagebrush to increase livestock and/or big game forage in sage grouse wintering areas, can have a detrimental impact on sage grouse. As snow begins to accumulate, sage grouse winter use areas become limited and are restricted to areas that support dense sagebrush stands such as south facing slopes. Removal of sagebrush at those sites would force sage grouse to use other terrain where sagebrush forage could be buried by snow. This would reduce survival due to greater exposure to winter weather, predators, and starvation. As a result, treatment of sagebrush in critical areas has a disproportionate detrimental effect on winter habitat availability.

b). Poor management of land treatments

A major problem resulting from historic land treatments in the Dry Creek Basin/Miramonte area involve alteration of plant community structure in each of the sage grouse use types. The increases in alterations combined with a lack of subsequent management needed to maintain the health of plants, resulted in treated areas often being overgrazed and reinvaded with sagebrush with little herbaceous understory, especially forbs and native grasses.

c). Fire suppression

Wildfires are natural with effects that vary depending upon size of burned areas and the intensity and severity of the fire. In the past, natural fires were not a problem because they burned relatively small areas and burned areas did not have large numbers of confined grazing animals using them afterwards. For the past several decades, public land management agency policy was to suppress all natural fires. Controlling and preventing fires may have resulted in degraded habitat conditions for sage grouse.

3). Land Planning/Mitigation

a). Fragmentation

Habitat fragmentation occurs when areas of suitable habitat are fragmented and divided into smaller areas due to such processes as physical destruction or degradation. Any patch of habitat isolated from similar habitat or by different habitats and/or unsuitable terrain may be considered fragmented. As habitat becomes increasingly fragmented, fewer individual birds exist. Sage grouse are especially sensitive to fragmentation because of their fidelity to lek, nest, winter, and brood-rearing sites. Even when their habitat is absent or degraded, they will continue to attempt to use these areas and will subsequently be exposed to higher mortality risks further reducing their population size.

b). Changes in land uses

Sage grouse require habitats dominated by sagebrush from October through April. During May through September they prefer habitats with abundant forbs (food) and grasses (cover plus habitat for insects used as food) with some live sagebrush or adjacent to live sagebrush which is used as escape cover. Removal of sagebrush cover to benefit livestock grazing and development of hay production areas have changed land uses (in some cases positively or negatively) in the Dry Creek Basin /Miramonte area.

4). Utilities

a). Powerlines

The effects of powerlines on sage grouse are severe. Powerlines have been documented to serve as predator perches in Utah and Colorado with subsequent loss of all leks visible to raptors (primarily golden eagles) from perches on powerline poles. Further, counts of sage grouse pellets near powerlines decrease as distance to powerlines decrease up to one-half mile. Thus, a strip about one-half mile on each side of powerlines is generally avoided by sage grouse. These observations are supported by measurement of distances to powerlines of radio-marked sage grouse throughout sage grouse habitats in Colorado. Clearly, sage grouse avoid powerlines when possible.

b). Pipelines

Development of pipelines is becoming more common in sage grouse habitats. Pipeline development (construction) can be negative if not properly managed to avoid adverse effects to breeding (Mar-mid May), nesting (mid Apr-early Jul), and early brood rearing (mid May-mid Jul). However, reseeded areas disturbed by pipelines

with desirable forbs and taller grasses can be beneficial to sage grouse especially if the width of the area disturbed is minimal (<100 yards) and roads/trails used during construction are closed and reseeded after completion of the pipeline construction interval.

c). Roads

Roads can be classified as primary, secondary, and as trails. Primary roads are those that are classified as state and federal highways. These roads are generally high speed and are paved. Secondary roads generally have county designations although some BLM and USFS roads can fit in this category. Some of these roads may be paved but most are generally gravel or dirt. These roads have moderate to low speed ratings. Trails generally are unsurfaced, lack formal designation, and have low speed ratings. Sage grouse prefer to walk to reach useable habitats throughout the year except when snow cover increases their conspicuousness. Sage grouse that walk across primary and secondary roads are at great risk of death from moving vehicles. The end result of all primary roads and many secondary roads is reduction in the size of the sage grouse population as those birds adjacent to the road are killed by road traffic. Because young sage grouse learn from older sage grouse, populations that traditionally used areas prior to road establishment or improvement become smaller over time as the older (and young) birds become fewer in number due to road disturbance (and death). Thus, traditional movements are often eliminated. Trails have less impact, depending upon vehicle speed.

d). Fence designs

Fences are necessary for livestock management. However, wood fence posts can provide perches for predators of sage grouse. Also, sage grouse have been observed flying into fence wires, especially near preferred use areas such as leks. Fence management that reduces potential perch sites (metal posts) and allows larger spacing between wires (2 or 3 vs. 4 or 5) could be less negative for sage grouse.

5). Loss of Topsoil & Productivity

Soil is the primary factor determining the potential for vegetation production of a given site. With reduction of the herbaceous understory cover in sagebrush ecosystems, soils have become more vulnerable to wind and water erosion. Accelerated soil erosion has altered soil characteristics and quality by decreasing soil fertility due to loss of plant cover, reduction of organic matter and moisture retention, and increased soil compaction. The loss of topsoil reduces the vegetation production on many sites throughout the Dry Creek Basin/Miramonte area impacting critical nesting and brooding areas through reduced herbaceous plant production.

6). Poor Nest and Brood Survival

Poor nest and brood survival has been attributed to the lack of herbaceous understory within the sagebrush community. This lack of herbaceous cover in sagebrush stands also negatively affects survival of young sage grouse and nests. Since grouse initiate nesting prior to spring herbaceous vegetation growth, it is important that sufficient herbaceous residue remains from the previous year. Such residual cover is lacking in several areas of the Dry Creek Basin/Miramonte area.

7). Timing, Intensity, and Duration of Livestock/Big Game Grazing

Livestock grazing, timing, and intensity can affect sage grouse nesting and brood rearing success. Livestock/big game grazing during the early spring and summer competes directly with sage grouse for food and cover. Historic livestock and big game use patterns and season of use have contributed to the present conditions. Currently, livestock use on public and private ranges corresponds to seasonal limitations of the ranges, such as: forage and water availability and snow depth.

The historic intensity of use combined with existing timing and duration has had a negative impact on the quality and quantity of nesting and brood rearing habitats in some areas, particularly riparian areas. Grazing of riparian areas can be useful for providing forb regrowth. Some grazing use on uplands does not allow the understory to recover to its full potential in some locations. Topography and water availability also have key roles in the distribution of grazing and resulting levels of use.

The distribution and overbrowsing by deer and elk on big game winter ranges has had significant effects on important forage shrubs and associated plant communities. The large deer herds and resultant overbrowsing between 1940 and the mid 1970's is well documented. Overbrowsing of forage shrubs on the winter range by elk has generally occurred only during winters of heavy snowfall. In some areas, shrubs are currently much smaller in canopy and height than desired and sustainable.

The impact to sage grouse includes not only a reduction in areas that have nesting cover but also reduction in areas with herbaceous species that provide food and cover for broods. In terms of grazing, big game species are not as easily controlled as livestock.

8). Drought

Sage grouse production is indirectly affected by drought. While sage grouse are not limited by free standing water in most cases, they are limited by the vegetative growth and insects lost during drought conditions. In the Dry Creek Basin/Miramonte area, both nesting success of females and brood survival decline severely during years with low soil moisture as calculated by the Palmer Drought Index. This effect is probably

compounded if land management practices remain unchanged during years with low soil moisture. However, drought does not appear to impact lek attendance of males.

9). Predators (coyotes, ground squirrels, badgers, eagles, hawks)

Losses of sage grouse nests and young to predation are often high and can, in some locations, be the most significant factor in determining annual recruitment to the population. Studies have shown that ground squirrels and badgers can destroy up to 50% of the current year's nest and egg production. There is also a concern over coyote populations, which appear to be increasing, and the effects they may have on sage grouse populations. Eagles and hawks can be effective predators on sage grouse and some feel that eagle predation is increasing. A difficult issue faces government agencies in trying to manage for bald eagles (Federally Threatened) and managing for Gunnison sage grouse, which they are trying to protect. The quality and quantity of grasses and forbs and other vegetation cover may influence the effects of predation. Predation is reduced when there is sufficient herbaceous vegetation to conceal nests.

10). Scientific Lek Harassment (i.e., Physical Disturbance Resulting From Scientific Studies).

Research on sage grouse frequently requires capture and marking (bands, radios) of individual grouse. Capture of grouse is usually most easily accomplished when birds are concentrated on or near leks for the purpose of display and mating. Methods used range from spotlighting to locate grouse that are then captured using long-handled nets to walk-in traps placed on or near leks. Repeated disturbance of sage grouse on leks has been demonstrated to make individuals more wary and flush more readily. Yearling males may change leks following marking but the available data suggest that this age/gender class commonly investigates a series of leks in their first year of life. Studies of radio-marked male and female sage grouse demonstrate strong attachment to the lek of capture despite repeated trapping activities.

11). Conflicting Uses During Critical Biological Activity Periods

The critical biological activity periods for sage grouse are during winter, breeding, nesting, and early brood rearing (Dec-mid Jul). Conflicting uses during these periods are those that physically prevent sage grouse from using preferred habitats. These uses range from human disturbance (including pets), motorized vehicles, to herding of livestock and heavy grazing/browsing by deer and elk and by domestic livestock.

12). Recognition of Private Landowners Rights

Private landowners are integral to the private/public effort to manage habitats to maintain and enhance the Gunnison sage grouse population that occurs in the Dry Creek Basin/Miramonte Reservoir area of San Miguel County. Private lands are frequently those that had better water, better herbaceous vegetation and generally, were most productive, thus, making private lands important for sage grouse. Most private landowners encourage wildlife and mitigate possible impact of their management actions as long as wildlife does not have negative impacts to their operations. While in Colorado (and the United States), wildlife remains the property of the state, wildlife exists on private lands largely because of the desires of individual landowners. It is recognized that private landowners are important as to the kind and number of wildlife on their private lands.

13). Monitoring/Research

Monitoring of sage grouse populations through use of counts of males on leks has been used to estimate trends in population size. This effort requires vehicle access via roads and trails during the late March-mid May interval. Properly conducted, spring counts are not known to affect sage grouse. Research on sage grouse is periodically needed to learn more about specific requirements and responses to habitat treatments. The need for monitoring and periodic research will continue. Monitoring of vegetation in relation to grazing by domestic livestock and big game, especially response to vegetation treatments, will continue on public lands.

14). Reservoirs

Construction of Miramonte Reservoir is known to have inundated the Greager Flats #1 lek and reduced total sage grouse habitat. However, construction of this reservoir created sage grouse brood habitat on the south edge of the reservoir area. Reservoirs that flood > 100 acres have been documented to have negative effects on sage grouse. Construction of smaller ponds/reservoirs/irrigation ditches may benefit sage grouse through creation of wet meadow sites and provision of open water, especially in Dry Creek Basin.

15). Mining & Exploration

The plan recognizes there are active mining operations included in the overall boundary of the potential sage grouse habitat. Mining has the potential to physically disturb sage grouse habitat and populations. Surface alterations by new mines should consider potential sage grouse use of the area involved through road and powerline locations, possible noise, timing of activities, and road speeds to mitigate possible adverse impacts to Gunnison sage grouse.

Appendix B. List of Participants

Numerous persons have been involved in the process which resulted in the San Miguel Basin Gunnison Sage Grouse Plan. The following is a list of those individuals that have contributed time to this process over the last 14 months.

Josh Sale, San Miguel County Open Space Commission
Terry Ireland, U.S. Fish & Wildlife Service
Clyde Johnson, Bureau of Land Management
Vern Ebert, San Miguel County Open Space Commission
M. J. Cadgene, Private landowner
Lyle Bennett, Colorado Division of Wildlife
Craig Grother, U.S. Forest Service
Dave Kauffman, Bureau of Land Management
Clait Braun, Colorado Division of Wildlife
Dean Stindt, Natural Resource Conservation Service
Hilary Donoghue-Countess, Bureau of Land Management
Charlie Hughes, Private landowner
George Harvey, Realtor and Private landowner
Tom Antonelli, Colorado Division of Wildlife
Ron Arant, Colorado Division of Wildlife
Ron Huntly, Bureau of Land Management
Jim Ferguson, Bureau of Land Management
Raymond Snyder, Private landowner
Mike McLain, Colorado Division of Wildlife
Jim Young, Private landowner
Art Goodtimes, San Miguel County Commissioner
Dave Schneck, San Miguel Environmental Health
Jon Showalter, Cotter Corporation
Bill Barrett, Private Landowner
Gary Thrash, BLM
Robert Bray, Rancher
Rudy Davison, Investor
April Montgomery, San Miguel County
Lyman Campbell, Rancher
Ivan McKinney, Rancher
Hugh Proffitt, Trans Colorado Pipeline

Appendix C: Additional Reading Material

- Braun, C.E. 1995. Distribution and status of sage grouse in Colorado. *Prairie Nat.* 27:1-9.
- Braun, C.E., T. Britt, and R. O. Wallestad. 1977. Guidelines for maintenance of sage grouse habitat. *Wildl. Soc. Bul.* 5:99-106.
- Commons, M. L. 1997. Movement and habitat use by Gunnison sage grouse (*Centrocercus minimus*) in southwestern Colorado. M.S. thesis, Univ. Manitoba, Winnipg. 108 pp.
- Dunn, P.O., and C.E. Braun. 1986. Late summer-spring movements of juvenile sage grouse. *Wilson Bull.* 98:83-92.
- Franklin, I.R. 1980. Evolutionary changes in small populations. Pages 135-140 in M.E. Soule and B.A. Wilcox, editors. *Conservation biology: an evolutionary-ecological perspective*. Sinauer Associates, Sunderland, Mass.
- Hupp, J.W., and C.E. Braun. 1989. Topographic distribution of sage grouse foraging in winter. *J. Wildl. Manage.* 53:823-829.
- Hupp, J.W., and C.E. Braun. 1991. Geographic variation among sage grouse in Colorado. *Wilson Bull.* 103:255-261.
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- Young, J.R. 1994. The influence of sexual selection of phenotypic and genetic divergence among sage grouse populations. Ph.D. diss., Purdue Univ., West LaFayette, Indiana 123pp.
- Young, J.R., J.W. Hupp, J.W. Bradbury, and C.E. Braun. 1994. Phenotypic divergence of secondary sexual traits among sage grouse, *Centrocercus urophasianus*, populations. *Anim. Behav.* 47:1353-1362.

Appendix D: Counts of Male Sage Grouse on Leks, San Miguel County, Colorado.

Year	Cone Res.	Miramonte Res.	Nelson Creek	Triangle	Desert	Beaver Mesa	Total Males
1959a							47
1967b							33b
1978	10	43					53
1979	10	41					51
1980	13	60					73
1981	4	89c					93c
1982	13	51					64
1983	10	32					42
1984	NC	22					22
1985	0	53					53
1986	NC	NC					NC
1987	0	68					68
1988	0	81					81
1989							
1990							
1991							
1992		56	11	11			78
1993		54	5	18			77
1994		57	1	20			78
1995	0	41	9	22			72
1996	0	22	0	6	14		42
1997	0	36	2	5	12		55
1998	0	61	1	12	13	4	91

a--Four leks (Dry Creek Basin 1 and 2, Gregor Flats 1 and 2) reported by Rogers (1964).

b--Gregor Flats #2 (Mangus).

c--Includes "some were hens".

Appendix E: Determination of Endangered and Threatened Species

The U.S. Fish and Wildlife Service uses five factors to determine whether any species is endangered or threatened. These are:

a). The present or threatened destruction, modification, or curtailment of its habitat or range.

The range of the Gunnison sage grouse in the San Miguel Basin has been greatly reduced in size and quality through habitat loss caused by plowing, spraying, road construction, and power lines; habitat fragmentation and habitat degradation caused by the same factors, as well as inappropriate livestock management. Total range reduction is estimated at greater than 50%. Actions recommended in this plan that addresses these threats include: land exchanges, payment of non-use, reseeding reclaiming areas, and relocation or modification of new utility lines, roads, and development in key grouse areas.

b). Overutilization for commercial, recreational, scientific, or educational purposes.

No overuse of Gunnison sage grouse in the San Miguel Basin is apparent as hunting has not been permitted for >20 years, there is no commercial or recreational use, and scientific study (banding, radiomarking) only affected 20-30 birds in 1995-96. Educational field trips may occur but are not likely to cause disturbance to the sage grouse if proper viewing protocols are followed.

c). Disease or predation.

No disease/parasite problems have been identified in Gunnison sage grouse in the San Miguel Basin. Predation is a natural event and about 50% of the total population disappears (dies) each year. Major identified predators of adults include eagles (golden, bald), bobcats, and coyotes. Most loss of potential productivity is through nest failure caused by ground predators, such as ground squirrels, badgers, etc. Some accidental loss due to livestock management has been documented. The action recommended in this plan that addresses predation is to control predators in key areas.

d). The inadequacy of existing regulatory mechanisms.

Members of the San Miguel Basin Sage Grouse Working Group are committed to improving conditions for grouse in the Basin. While landowner adoption of the proposed conservation actions is voluntary, the Conservation Plan was developed with the spirit of cooperation and there is broad support for the goals and objectives contained in the Conservation Plan. The Working Group believes existing regulatory mechanisms are adequate to achieve these goals and objectives.

The Colorado Division of Wildlife, a branch of the Colorado Department of Natural Resources, has responsibility for the management and conservation of wildlife resources. The Division also has enforcement authority for poaching and harassment.

The Board of County Commissioners of San Miguel County, Colorado, has authority to regulate land use, land planning and protect the environment in the County. The County has regulations to exercise such authorities including the review, approval or denial of proposed activities and uses of land.

The USDA Forest Service (USFS) has direction and authority for the maintenance of biological diversity on National Forests and for the protection and management of wildlife species and habitats as defined and directed by various Federal Laws and Regulations.

The USDA Natural Resources Conservation Service (NRCS) also has authority for conservation of the Gunnison sage grouse through various Federal Laws.

The USDI Bureau of Land Management (BLM) has authority for conservation of the Gunnison sage grouse and the management of natural resources and land uses on Public Lands through a number of Federal Laws and Regulations.

The USDI Fish and Wildlife Service (USFWS) has authority for conservation of the Gunnison sage grouse through the Endangered Species Act of 1973 and other Federal laws.

Two other authorities for agencies working on Gunnison sage grouse conservation include a Memorandum of Understanding and a Memorandum of Agreement. In 1994, several federal agencies, including those listed here, signed a Memorandum of Understanding to establish a general framework for better cooperation and participation among these agencies in the management and conservation of species at risk, which are tending towards federal listing as threatened or endangered.

In 1995, the state of Colorado and the U.S. Department of Interior entered into a Memorandum of Agreement which committed agencies in the Department of Interior and the state to collaborate and cooperate in management and conservation of declining populations of fish and wildlife and their habitat. This agreement has two important tasks: "The state and the Department agree to develop and implement programs to determine and monitor the status of species at risk;" and "The state and the Department will encourage partners and stake holders to take a leadership role in working with the state and the Department to develop and implement conservation actions through Conservation Agreements and Recovery Agreements." A list of species for which the Department and the state would initially focus conservation actions on was written. This list specifically mentioned declining populations of sage grouse.

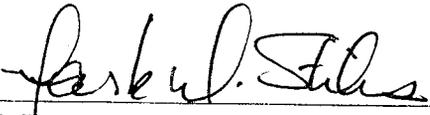
5). Other natural or manmade factors affecting its continued existence.

Fire suppression is manmade threat leading to changes in habitat through invasion of pinyon-juniper and allowing sagebrush habitat types to become decedent. Other

manmade factors that effect sage grouse include continuous noise that impairs the acoustical components of males on the lek; disturbance from construction or other projects; harassment from pets; and disturbance, death or habitat degradation from use of Off-Highway-Vehicles (OHV's). Actions recommended in this plan that address these threats include: Fire or other habitat management may be prescribed for areas in the San Miguel Basin population range to remove invasive trees and restore native plants and vitality to the sagebrush habitats used by sage grouse. Noise ordinance or restrictions during critical periods near leks, delay or modify construction start up dates, control or limit pets, designate OHV use areas and management travel in key sage grouse areas.

Appendix F: Signature Page

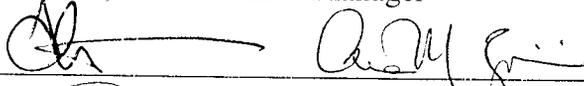
By signing below, the following parties have agreed to implement the San Miguel Basin Gunnison Sage Grouse Plan to the best of their organizational ability.



 USDI, Bureau of Land Management
 Mark Stiles, Montrose Area Manager
 8/19/98
 Date



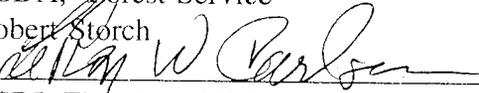
 Colorado Department of Natural Resources
 Colorado Division of Wildlife
 Mike McLain, Area Wildlife Manager
 8/19/98
 Date



 San Miguel County Board of Commissioners
~~Jim Craft, Art Goodtimes, Anna Zivian~~
 8-26-98
 Date



 USDA, Forest Service
 Robert Storch
 9/2/98
 Date



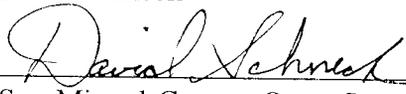
 USDI, Fish & Wildlife Service
 LeRoy Carlson, Colorado Field Supervisor
 8-19-98
 Date



 USDA, Natural Resource Conservation Service
 Dean Stindt
 7-14-98
 Date



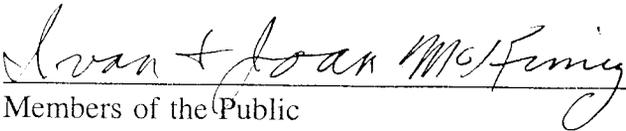
 San Miguel Environmental Health
 Dave Schneck
 8-19-98
 Date



 San Miguel County Open Space Commission
 Josh Sate
 8/19/98
 Date



 Members of the Public
 8/19/98
 Date



 Members of the Public
 8/19/98
 Date

 Members of the Public
 Date