

Northwest Colorado Greater Sage-Grouse Conservation Plan



**Final for Signature
April 2008**

Northwest Colorado Greater Sage- Grouse Conservation Plan

**Prepared by the Northwest Colorado
Greater Sage-Grouse Working Group**

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Cover: High quality greater sage-grouse habitat in Northwest Colorado (A.D. Apa photo)

Northwest Colorado Greater Sage-Grouse Conservation Plan
Executive Summary
April 2008

This Executive Summary is intended to fulfill two purposes: to serve the traditional executive summary role of providing a thumbnail sketch of the contents of this Conservation Plan, and to serve as a standalone handout document for landowners and others who express interest in greater sage-grouse conservation in Northwest Colorado, but who are unable to read the entire Conservation Plan. In order to meet both needs, this Executive Summary is more comprehensive than usual. The Conservation Plan contains valuable information and the Northwest Colorado Greater Sage-Grouse Working Group encourages all who desire to understand greater sage-grouse conservation in Northwest Colorado in detail to read the full plan.

The Plan and Its Purpose

The mission of the Northwest Colorado Greater Sage-Grouse Conservation Plan is to address the needs of greater sage-grouse (*Centrocercus urophasianus*) in the context of multiple land ownerships, uses, and species through a Conservation Plan. A key attribute of this Plan is that the Northwest Colorado Greater Sage-Grouse Working Group (GSGWG) intends to enhance greater sage-grouse populations while taking into account the importance of local economies for the long-term maintenance of greater sage-grouse habitats and while maintaining all existing human uses of sage grouse habitats in Northwest Colorado. The Plan is intended to prevent or preclude the federal listing of greater sage-grouse as threatened or endangered in Northwest Colorado by demonstrating the ability and the intent to maintain or enhance greater sage-grouse populations and greater sage-grouse habitat well into the future.

The U.S. Fish and Wildlife Service (USFWS) determines the need to list species under the Endangered Species Act (ESA) by evaluating five listing factors. These factors are:

1. The Present or threatened destruction, modification, or curtailment of the species' habitat or range.
2. Overutilization of the species for commercial, recreational, scientific, or educational purposes.
3. Disease or predation affecting the species.
4. The inadequacy of existing regulatory mechanisms to protect the species.
5. Other natural or manmade factors affecting the species' continued existence.

This Conservation Plan addresses all five listing factors both directly and indirectly, identifies potential solutions, and provides for implementation of conservation actions to address issues the GSGWG believes impact greater sage-grouse and sage grouse habitat. If greater sage-grouse are listed as threatened or endangered under the ESA, it is intended that this Plan will serve as the basis of a recovery plan for the species in Northwest Colorado.

The Conservation Plan consists of five sections.

Part I: Conservation Assessment--A description of the area covered by this Plan, greater sage-grouse habitat, species distribution, and factors that influence or affect greater sage-grouse are discussed.

The Conservation Assessment is further divided into five sections:

- A. Description of Northwest Colorado, Greater Sage-Grouse Taxonomy and Life History, and Mortality Factors.
- B. Greater Sage-Grouse Populations
- C. Trends in Numbers and Distribution of Wildlife Populations
- D. Land Use Trends
- E. Historic and Present Role of Fire in Sagebrush Habitats

Part II: Identification of Issues Affecting Greater Sage-Grouse Populations--identifies and describes the primary threats faced by greater sage-grouse in Northwest Colorado.

Part III: Conservation Strategy--outlines the goals and objectives for greater sage-grouse populations and habitat in Northwest Colorado and specific conservation actions to meet those goals and objectives.

Part IV: Implementation and Monitoring--describes how the Conservation Plan will be applied, how it will be kept current, and how progress will be measured.

Part V: Listing Factor Analysis--describes the extent to which the Conservation Plan addresses the five ESA listing factors described above and the U.S. Fish and Wildlife Service's Policy for Evaluation of Conservation Efforts (PECE) standards.

This document has evolved as a cooperative effort between community members, landowners, local industry, conservation groups, and county, state, and federal agency personnel known collectively as the Northwest Colorado Greater Sage-Grouse Working Group (GSGWG). It formed in 1996 to discuss and address issues relating to sage grouse management and has worked consistently and cooperatively toward the completion and implementation of this Conservation Plan since that time. Portions of the Conservation Plan have been in effect since early in the working group's existence. Through an open public process based on consensus decision making, the GSGWG has established specific goals and objectives that extend across property boundaries and that view management of greater sage-grouse populations and habitats on a landscape level to achieve the overall mission of the Plan. Annual working group meetings, work plans and accomplishment reports will monitor progress toward meeting the goals of the Plan. It is important to note that this Conservation Plan must be a dynamic document, incorporating principles of adaptive management and evolving as new information arises, to be successful. Management strategies and recommendations will be updated to incorporate results of local studies, new information, and management successes and failures during annual review meetings.

This Plan outlines a process to stabilize and enhance greater sage-grouse populations in Northwest Colorado and establishes a framework to improve greater sage-grouse habitat condition and population performance; thus maintaining greater sage-grouse populations at desired objectives. Implementation of this Plan (and the conservation actions presented within) is intended to be **voluntary** by private landowners and organizations. State and federal resource

agencies involved with greater sage-grouse management, however, are required to manage greater sage-grouse populations and habitat by various statutes and policies. The information contained in this Plan will be used as a set of guidelines by those state and federal agencies to maintain and enhance greater sage-grouse habitat and greater sage-grouse populations in Northwest Colorado. Participation of private landowners and consideration of the landowners' needs are critical for management of greater sage-grouse habitat on private lands to meet the overall goal of the Plan. True success cannot be achieved without managing on an overall landscape scale. This Plan provides an opportunity to promote ecologically sound management of private and public lands for greater sage-grouse without impinging on private property rights. The GSGWG believes the best way to guide actions to improve greater sage-grouse population trend in Northwest Colorado is through citizen involvement with federal and state resource agencies.

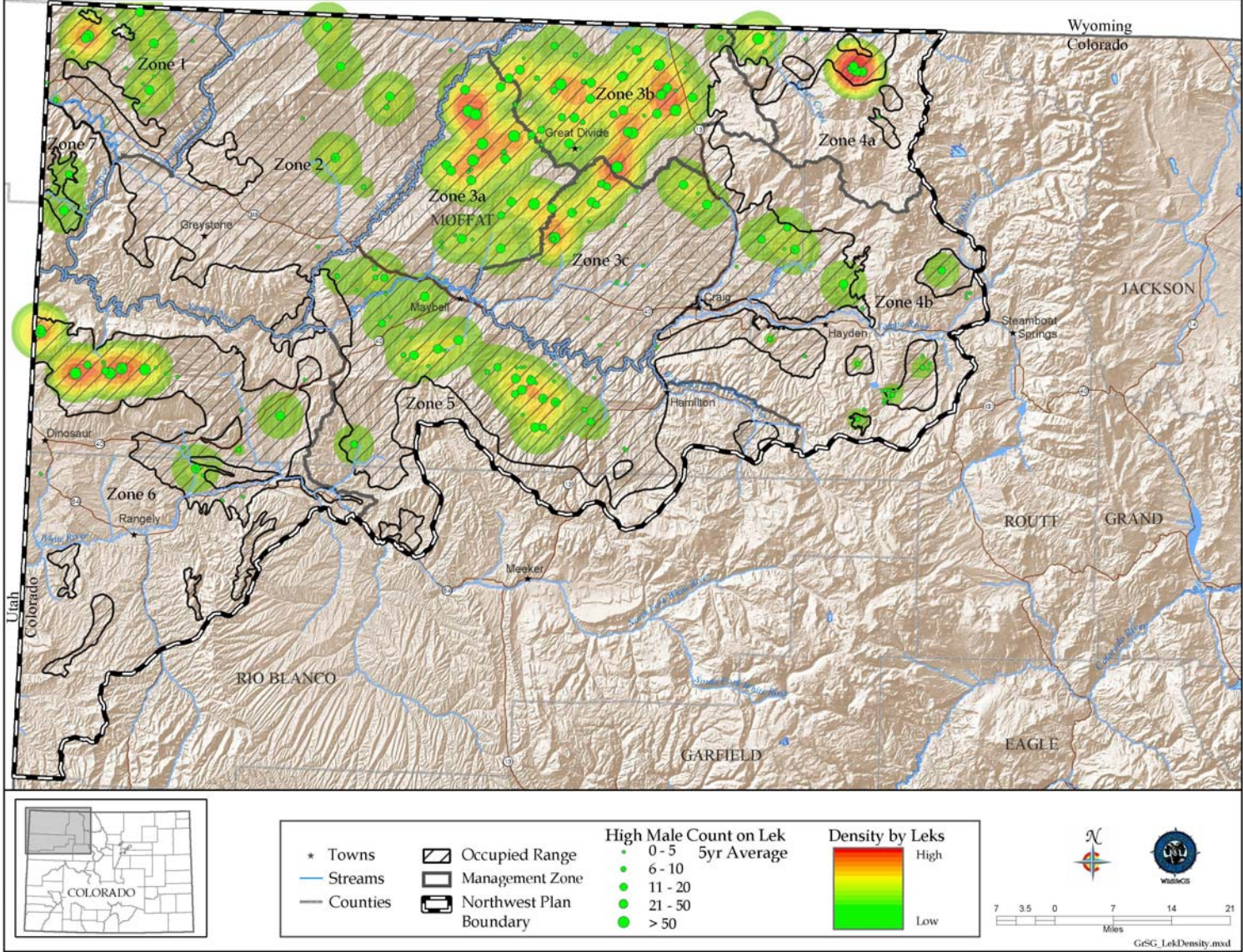
While this Conservation Plan focuses on greater sage-grouse, the GSGWG acknowledges that many other species of sagebrush obligates and a host of facultative species also utilize the sagebrush habitats occupied by greater sage-grouse in Northwest Colorado. Effective management of sagebrush environments in Northwest Colorado for healthy populations of greater sage-grouse will also result in healthy populations of other sagebrush obligate and facultative species.

It is the intent of the GSGWG that this Plan be read and interpreted in its entirety. If the reader reads only isolated sections of this Plan, single statements may be taken out of context or misinterpreted.

Northwest Colorado Planning Area

The Northwest Colorado Greater Sage-Grouse Conservation Plan addresses the largest greater sage-grouse population in Colorado. The Plan covers approximately 4,276,000 acres of land in Moffat, Routt and Rio Blanco counties. Approximately 2,563,000 acres of that area are occupied by greater sage-grouse. Sage grouse habitat in Northwest Colorado is diverse, ranging from arid salt desert shrub communities to high elevation sagebrush/mountain shrub areas. The large scale and wide diversity of sites has resulted in the GSGWG dividing sage grouse habitat for this population being divided into 10 Management Zones for evaluating greater sage-grouse population trends, applying conservation strategies and measuring progress. Greater sage-grouse habitat and sage grouse distribution are shown in Figure i.

Figure i. Greater sage-grouse habitat and grouse distribution in Northwest Colorado



Greater Sage-Grouse Population Trends and Targets

The GSGWG will use spring male counts on leks as the primary inventory technique for determining greater sage-grouse population trend with the number of active leks and the average number of males per lek also considered. Management Zone specific three-year running averages of high male counts will be the primary criterion for measuring progress. High male lek counts for the entire population are presented in Figure ii. The data presented are three year running averages, which serve to take some of the annual variation out of the data to make the trend more clear. The Conservation Plan establishes population targets for each Management Zone. These targets are displayed in Table i.

Figure ii. Northwest Colorado greater sage-grouse population trend

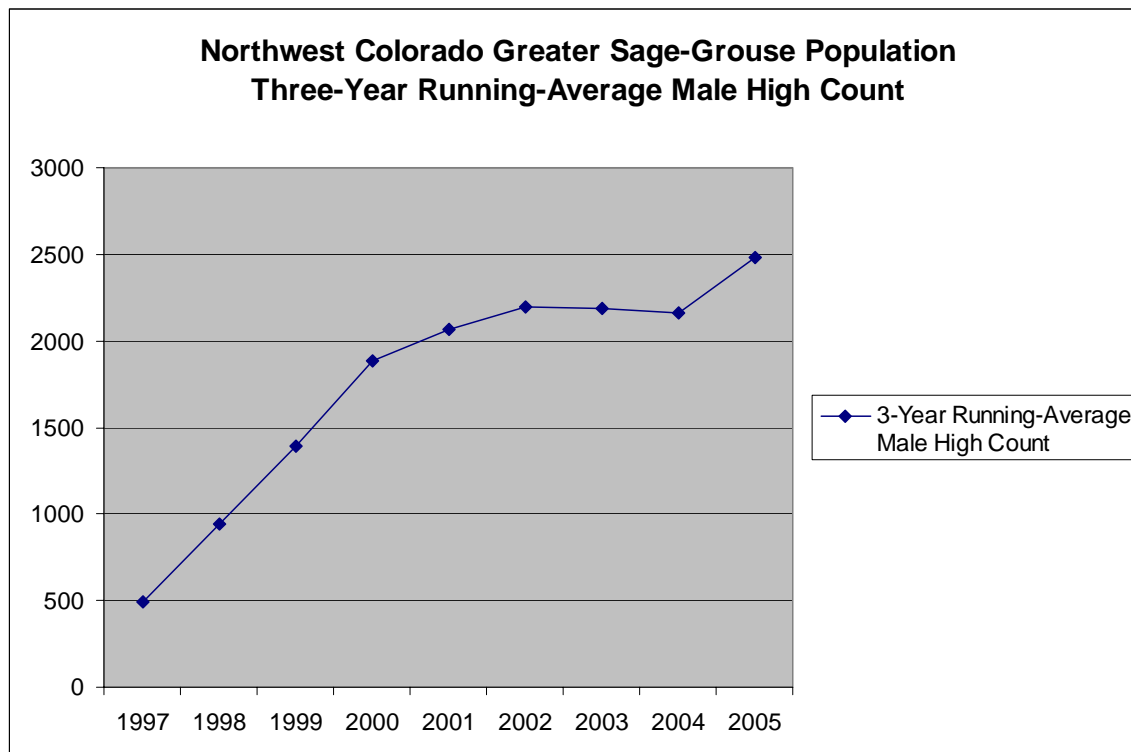


Table i. Whole population and Management Zone specific population targets

| | Whole Pop. | Zone 1 | Zone 2 | Zone 3a | Zone 3b | Zone 3c | Zone 4a | Zone 4b | Zone 5 | Zone 6 | Zone 7 |
|---|-------------------|---------------|---------------|----------------|----------------|----------------|----------------|----------------|---------------|---------------|---------------|
| Population Target Range | 1643 to 2191 | 125 to 167 | 29 to 39 | 195 to 461 | 398 to 531 | 82 to 109 | 85 to 113 | 53 to 70 | 238 to 317 | 289 to 385 | 3 to 4 |
| 2005 Raw High Male Count | 3100 | 202 | 36 | 825 | 731 | 78 | 267 | 153 | 428 | 357 | 23 |
| 2003 -2005 3-Yr. Running Average | 2482 | 167 | 29 | 541 | 662 | 129 | 190 | 97 | 327 | 327 | 11 |
| 1998 Initial Year of Good Data | 1749 | 177 | 64 | 258 | 195 | 12 | 69 | 49 | 422 | 503 | 0 |
| 1998-2005 Average (Mean) High Male Count | 2191 | 167 | 39 | 461 | 531 | 109 | 113 | 70 | 317 | 385 | 4 |
| Mean minus 25% | 1643 | 125 | 29 | 195 | 398 | 82 | 85 | 53 | 238 | 289 | 3 |

Issues Facing Greater Sage-Grouse and Conservation Actions

The Conservation Plan identifies seven issues facing greater sage-grouse in Northwest Colorado. These are Habitat Quality, Habitat Loss and Fragmentation, Predation, Hunting, Physical Disturbance, Disease and Genetics, and Planning and Outreach. The Conservation Plan establishes goals for each issue and identifies a number of conservation strategies for each issue. These conservation strategies are the core of this Conservation Plan. Conservation goals and strategies for each issue are presented below.

Habitat Quality Goals:

- ✓ Identify and assess greater sage-grouse habitats across Northwest Colorado.
- ✓ Manage sagebrush habitats in Northwest Colorado on a landscape scale within the range of natural variability.
- ✓ Restore the ecological role of fire in managing sagebrush habitats where appropriate.
- ✓ Enhance existing and potential greater sage-grouse habitats where need and opportunity exist.
- ✓ Manage seasonal greater sage-grouse habitats on a site-specific basis to provide breeding, nesting, brood rearing, and winter habitats.
- ✓ Provide for a level and system of domestic livestock grazing that maintains and improves both the long-term stability of greater sage-grouse populations and habitats and the livestock industry in Northwest Colorado.
- ✓ Provide for a level of grazing by wild ungulates that maintains and improves the long-term stability of greater sage-grouse populations and habitats and the recreational and economic benefits derived from wild ungulates in Northwest Colorado.
- ✓ Develop desired plant communities that provide for a level of livestock grazing that promotes a thriving livestock industry and healthy greater sage-grouse populations.

Conservation Actions Table I . Improving Habitat Quality

| I. CONSERVATION ACTIONS - IMPROVING HABITAT QUALITY | | |
|--|--|---|
| Issues | Objectives | Strategies |
| A. Quality and quantity of sagebrush (all seasonal habitats) (Strategies address Listing Factor A) | 1. Manage sagebrush habitats on a landscape level. 2. Develop desired conditions for sagebrush communities' composition and distribution in seasonal greater sage-grouse habitat. 3. Take necessary actions to correct deficiencies and improve sagebrush habitats. 4. Monitor the sagebrush overstory and vegetative understory to determine progress toward meeting desired conditions for greater sage-grouse. | a. Map broad habitat types across landscapes using remote sensing. b. Repeat inventory and mapping of sagebrush habitats on a 10-year cycle or as determined by the GSGWG. c. Track treatments or other alterations in sagebrush cover type, such as brush beating and prescribed fire, on an annual basis. d. Use site-specific habitat assessments to identify and map quality greater sage-grouse seasonal range and identify deficient areas. e. Ensure vegetation treatments in sagebrush areas are compatible with greater sage-grouse needs. f. Conduct habitat enhancement treatments as needed. g. Monitor progress toward objectives. |

| I. CONSERVATION ACTIONS - IMPROVING HABITAT QUALITY | | |
|---|--|---|
| Issues | Objectives | Strategies |
| <p>B. Age distribution of sagebrush</p> <p>(all seasonal habitats)</p> <p>(Strategies address Listing Factor A)</p> | <ol style="list-style-type: none"> 1. Manage sagebrush habitats on a landscape level within the range of natural variability. 2. Manage stands for multi-age sagebrush within range of natural variability. | <ol style="list-style-type: none"> a. Identify areas of over-mature stands of sagebrush for treatment that do not appear to be serving as quality habitat. b. Initiate successional processes, on an appropriate scale, in identified old age stands through disturbance such as fire use, prescribed fire, brush beating, plowing, or chemical treatment. c. Develop and implement grazing management practices that influence sagebrush growth. d. Conduct long-term planning for sagebrush treatments on a landscape scale. e. Monitor progress toward objectives. |
| <p>C. Quality and quantity of sagebrush understory, including forbs.</p> <p>(breeding habitat and summer-late brood-rearing habitat)</p> <p>(Strategies address Listing Factor A)</p> | <ol style="list-style-type: none"> 1. Identify and describe vegetative understories in current and potential greater sage-grouse habitat 2. Develop desired conditions for vegetative understories in greater sage-grouse habitat by seasonal habitat and population zone. 3. Take necessary actions to correct deficiencies and improve vegetative understories. 4. Monitor the vegetative understory to determine progress toward meeting desired conditions for greater sage-grouse. 5. Identify and implement Best Management Practices (BMPs) and other vegetative treatments to improve sagebrush/grass plant communities and species diversity. 6. Maintain and where possible, improve forb component in the understory. | <ol style="list-style-type: none"> a. Use site-specific habitat assessments to identify and map quality greater sage-grouse seasonal range and identify areas deficient in understory quality and quantity to meet greater sage-grouse life cycle needs. b. Analyze habitat by greater sage-grouse life cycle needs within each Management Zone using the best available data. c. Identify and implement local guidelines and BMPs that will improve understory habitat quality and quantity within the capability of the site. d. Maintain residual herbaceous cover through grazing management within the capability of the site. e. Make annual measurements of vegetation understory in greater sage-grouse habitats. f. Reclaim and/or re-seed areas disturbed by treatments when necessary, using seed mixtures high in native bunch grasses and desirable forbs. g. Restore understory vegetation in areas lacking desirable quality and quantity of herbaceous vegetation where economically feasible. h. Conduct vegetation treatments to improve forb diversity (e.g., brush beating, burning) and reclaim or re-seed disturbed area, if needed. i. Develop management techniques to increase forb diversity and density in sagebrush steppe, within limits of ecological sites and annual variations. j. Monitor impacts of Mormon crickets and grasshoppers on forbs. k. Monitor progress toward objectives. |
| <p>D. Quality and quantity of wet meadows</p> <p>(summer-late brood-rearing habitat)</p> <p>(Strategies address Listing Factor A)</p> | <ol style="list-style-type: none"> 1. Manage wet meadows and riparian areas on a landscape basis. 2. Identify, describe and map existing and potential wet meadows and riparian habitats suitable for brood-rearing habitat. 3. Enhance existing riparian areas or create small wet areas to improve nesting & brood-rearing habitat. 4. Monitor the vegetative understory to determine progress toward meeting desired conditions for greater sage-grouse. 5. Work with willing local interests to ensure sufficient water is available annually in key sage grouse brood- | <ol style="list-style-type: none"> a. Review existing BLM riparian inventory and remote sensing information to identify distribution and current conditions of mesic/moist areas that fall within greater sage-grouse range. b. Inventory existing wet meadows or riparian areas on state and private land including the presence of noxious weeds. c. Repeat inventory of selected riparian areas and wet meadows every 10 years or as determined by the GSGWG. d. Identify & prioritize important mesic areas in need of restoration, or enhancement and restore degraded areas. e. Identify opportunities or needs to create small wet areas. Implement such projects where economically feasible. |

| I. CONSERVATION ACTIONS - IMPROVING HABITAT QUALITY | | |
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| Issues | Objectives | Strategies |
| | rearing habitat. | <ul style="list-style-type: none"> f. Encourage livestock operators to design and implement livestock grazing management practices to benefit riparian areas. g. Modify or adapt pipelines or developed springs to create small wet areas. h. Locate projects to minimize potential loss of water table associated with wet meadows. i. Protect existing wet areas where necessary. j. Monitor the success and failure of projects and land management practices as they relate to desirable brood-rearing habitat. k. Monitor impacts of Mormon crickets and grasshoppers on wet meadows. l. Monitor progress toward objectives. m. Work with willing landowners to continue to irrigate hay meadows that provide brood rearing habitat. n. Work with willing landowners to keep water rights associated with existing irrigated meadows. o. Where possible, work with willing landowners to provide late summer irrigation in critical brood rearing areas. p. Work with willing land managers to provide livestock impoundments, guzzlers and spring developments for improved sage grouse habitat. q. Control upland woody vegetation from encroaching on and adversely impacting riparian areas. |
| <p>E. Vegetation encroachment</p> <p>(all seasonal habitats)</p> <p>(Strategies address Listing Factor A)</p> | <ul style="list-style-type: none"> 1. Manage pinyon/juniper areas to reduce encroachment into sagebrush/grass communities. 2. Open lek vegetation that has been invaded by sagebrush and other shrubs. 3. Integrate weed management with sage grouse needs. | <ul style="list-style-type: none"> a. Plan for small prescribed fires and managed natural fires that mimic natural openings in sagebrush cover when and where feasible. b. Remove encroaching trees and tall shrubs mechanically (chainsaws, chaining, etc.) or by other methods, where needed to maintain visibility at lek sites and security from predation in other seasonal habitats. c. Consider herbicide application when and where appropriate. d. Map and inventory leks with potential for restoration. e. Roto-beat or treat with other mechanical methods on specified areas and re-claim or re-seed as necessary. f. Monitor progress toward objectives. |
| <p>F. Desirable seasonal habitat for greater sage-grouse.</p> <p>(all seasonal habitats)</p> <p>(Strategies address Listing Factor A)</p> | <ul style="list-style-type: none"> 1. Identify, describe and map current and potential greater sage-grouse habitat in Northwest Colorado. 2. Maintain and enhance desired conditions for leks. 3. Maintain and improve habitat conditions in nesting/early brood rearing habitat to reach desired conditions. 4. Maintain and improve habitat conditions in late brood rearing habitat to reach desired condition. 5. Maintain and improve habitat conditions in winter range. 6. Improve the quality and quantity of insects by improving the forb composition and wet meadow habitat associated with early and late-brood rearing habitats. | <ul style="list-style-type: none"> a. Identify and map important greater sage-grouse habitat by Management Zones - winter range, nesting, early brood rearing, late-brood rearing, leks. b. Use site-specific habitat assessments to evaluate important greater sage-grouse habitats identified above. c. Inventory important seasonal habitats that do not meet desired habitat conditions and determine reasonable mitigation options. d. Identify seasonal activities that may impact greater sage-grouse use of leks. e. Prioritize important seasonal habitats that may be enhanced by management and/or vegetation treatments according to how areas are meeting greater sage-grouse requirements. f. Implement previously identified actions that target the improvement of habitat attributes. g. Analyze habitat by greater sage-grouse life cycle |

| I. CONSERVATION ACTIONS - IMPROVING HABITAT QUALITY | | |
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| Issues | Objectives | Strategies |
| | | needs within each population zone using the best available data. h. Monitor progress toward objectives. |
| <p>G. Livestock grazing</p> <p>(breeding habitat and summer-late brood-rearing habitat)</p> <p>(Strategies address Listing Factor A)</p> | <ol style="list-style-type: none"> 1. Provide for a level and system of domestic livestock grazing that maintains and improves both the long-term stability of greater sage-grouse populations and habitats and the livestock industry in Northwest Colorado. 2. Develop desired plant communities that provide for a level of livestock grazing that promotes a thriving livestock industry and greater sage-grouse populations. 3. Use grazing management practices that enhance greater sage-grouse habitat, while providing for flexibility and adaptability to current range conditions. 4. Reduce resource conflicts between livestock and sage grouse on leks and in nesting areas. | <ol style="list-style-type: none"> a. Evaluate effects of different grazing systems on greater sage-grouse productivity, survival and habitat use. b. Coordinate grazing management with livestock operators to reduce resource and timing conflicts on leks and prime nesting habitat when possible. c. Apply grazing management practices to achieve desired conditions including maintenance of residual herbaceous vegetation appropriate for the site. d. Encourage implementation of grazing systems that provide for areas and times of deferment while taking into consideration the resource capabilities and needs of the livestock operator. e. Encourage the development and utilization of BMPs with willing land managers that are compatible with desired habitat conditions for greater sage-grouse. f. Allotment management plans and other grazing management plans will be developed and evaluated on a site-by-site basis to consider the diversity and capability of range sites that exist in Northwest Colorado. g. Manage livestock to enhance riparian conditions. h. Monitor condition and level of use on browse and grass in identified conflict areas. i. Monitor and evaluate impacts of grazing management systems on livestock industry viability. j. Monitor progress toward objectives. |
| <p>H. Wild ungulate grazing</p> <p>(breeding habitat and summer-late brood-rearing habitat)</p> <p>(Most strategies address Listing Factor A, Strategies a, b, c, d, e, f also address Listing Factor D)</p> | <ol style="list-style-type: none"> 1. Provide for a level of grazing by wild ungulates that maintains and improves the long-term stability of greater sage-grouse populations and habitats in Northwest Colorado. 2. Develop desired plant communities that provide for a level of wild ungulate populations that are compatible with sustainable greater sage-grouse populations and desired ecological conditions for greater sage-grouse throughout their range. 3. Evaluate effects of wild ungulates on greater sage-grouse lek attendance patterns, forage availability, and habitat use. 4. Reduce resource conflicts between wild ungulates and sage grouse on leks and in nesting areas. | <ol style="list-style-type: none"> a. Maintain wild ungulate populations in accordance with DAU plans for the area. b. Review the big game herd objectives in DAU plans and modify as necessary to improve conditions for greater sage-grouse. c. Incorporate greater sage-grouse habitat guidelines into habitat management plans for wild ungulates. d. Encourage coordination of DAU plans for all ungulates. e. If necessary, implement special big game hunting seasons to meet harvest objectives. f. Improve accuracy and precision of census procedures and harvest estimates for wild ungulates within Northwest Colorado. g. Manage big-game population levels and habitat to minimize or avoid resource conflicts on grouse habitats. This includes creating big game habitat elsewhere to move them off prime sage grouse habitat. h. Identify and map potential big game/greater sage-grouse conflict areas. i. Monitor condition and level of use on browse and grass in identified conflict areas. j. Maintain residual herbaceous cover, appropriate for the site, to reduce predator effectiveness. k. Monitor progress toward objectives. |

| I. CONSERVATION ACTIONS - IMPROVING HABITAT QUALITY | | |
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| Issues | Objectives | Strategies |
| <p>I. Water quality</p> <p>(summer-late brood rearing habitat)</p> <p>(Strategies address Listing Factor A and Factor E contamination issues)</p> | <ol style="list-style-type: none"> 1. Manage vegetation and artificial structures to increase water-holding capability of areas. 2. Prevent head cutting through wet meadows. 3. Evaluate non-point sources of pollution. 4. Ensure oil & gas activities do not degrade water quality. | <ol style="list-style-type: none"> a. Manipulate vegetation on uplands and in drainages to slow movement of sediment using various techniques. b. Adjust big game herd objectives to lessen impacts on riparian areas where problems exist. c. Manage livestock grazing to protect the uplands and enhance riparian conditions where possible. d. Install catchment structures to slow run-off, hold water, and eventually raise water tables. e. Partner with EPA for 319 funds. f. Permit oil and gas activities to minimize sedimentation throughout greater sage-grouse range, and exclude birds from pit sites. g. Monitor progress toward objectives. |
| <p>J. Fire management</p> <p>(all seasonal habitats)</p> <p>Strategies address Listing Factor A)</p> | <ol style="list-style-type: none"> 1. Prescribe small acreage fires, rotational burning, or other treatments to create mosaic patterns in selected areas. 2. Allow natural fires to burn when prudent and possible. 3. Determine if fire standards are appropriate for long-term greater sage-grouse habitat management. | <ol style="list-style-type: none"> a. Coordinate and plan fires with BLM/Forest Service fire management teams and Moffat County, which incorporate life requirements for greater sage-grouse. b. Reclaim and/or re-seed after disturbance, if needed. c. Map/Inventory habitats and burns to assess condition. d. Implement White River FO, NW Fire Management Plan, and the Moffat County Fire Management Plan. Coordinate with LSFO Field Management Plan (2000). e. Determine the appropriate role of fire use for the benefit of greater sage-grouse habitat. f. Monitor progress toward objectives |
| <p>K. Insecticide use</p> <p>(breeding habitat and summer-late brood-rearing habitat)</p> <p>(Strategies address Listing Factor E)</p> | <ol style="list-style-type: none"> 1. Manage the use of insecticides on public, state, and private land to minimize impacts on greater sage-grouse by selecting the most appropriate and least harmful chemicals, application, season of use. | <ol style="list-style-type: none"> a. Develop cooperative agreements with County, BLM, state, NRCS, and private landowners which will schedule insecticide applications to reduce the negative impact to greater sage-grouse during the nesting and brood-rearing period. b. Recognize the secondary impacts of insecticide treatments on greater sage-grouse habitat and evaluate the need, timing and location of such treatments. c. Explore alternative pest management options in greater sage-grouse habitats during important times of the year. d. Monitor progress toward objectives. |
| <p>L. Herbicide use for sagebrush treatment</p> <p>(all seasonal habitat)</p> <p>(Strategies address Listing Factor E)</p> | <ol style="list-style-type: none"> 1. Manage the use of herbicides for vegetative treatment on public, state, and private land to minimize impacts on Greater Sage-Grouse by selecting the most appropriate and least harmful chemicals, application, season of use. 2. Incorporate Greater Sage-Grouse life cycle needs when considering herbicide treatments. | <ol style="list-style-type: none"> a. Discourage use of herbicides that may have detrimental effects on forbs in quality greater sage-grouse habitat. b. Schedule and manage herbicide use and application methods across ownership boundaries to minimize large-scale impacts to high quality greater sage-grouse habitat. c. Design sagebrush treatment projects (size, kill rate and rate of recovery) to incorporate greater sage-grouse needs and existing habitats. d. Consider timing of application to reduce impacts to grouse during important biological periods. e. Conduct outreach sessions for applicators, agencies, and landowners to encourage properly designed and scaled herbicide application projects and the associated benefits to greater sage-grouse. |

| I. CONSERVATION ACTIONS - IMPROVING HABITAT QUALITY | | |
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| Issues | Objectives | Strategies |
| | | f. Monitor progress toward objectives. |
| M. Weed infestations (all seasonal habitats) (Strategies address Listing Factor A) | 1. Control exotic and noxious weeds in greater sage-grouse habitats. | a. Work cooperatively to develop chemical and biological weed management strategies in key greater sage-grouse habitat. b. Locate and map weed infestations in greater sage-grouse habitat in coordination with existing county weed mapping. c. Coordinate with county weed control program to ensure that treatment of weed infestations is compatible with greater sage-grouse habitat needs. d. Monitor progress toward objectives. |

Habitat Loss/Fragmentation Goals:

- ✓ Evaluate and quantify the effects of various causes of habitat loss and fragmentation in Northwest Colorado.
- ✓ Develop Management Zone specific thresholds for sagebrush habitat loss or fragmentation per Connelly et al (2000).
- ✓ Minimize the long-term or permanent loss of sagebrush habitat in Northwest Colorado. Encourage a “no net loss” of sagebrush habitat beyond the range of natural variability approach to sagebrush habitat.
- ✓ Maintain large blocks of undeveloped sagebrush ecosystem, consistent with the range of natural variability, distributed across the landscape.
- ✓ Encourage agricultural practices that minimize sage grouse habitat loss and fragmentation.
- ✓ Prevent noxious weed infestations and other undesired vegetation from destroying or seriously fragmenting sage grouse habitats.
- ✓ Eliminate where possible or otherwise modify, reduce, or mitigate surface disturbance, fragmentation, or loss of greater sage-grouse lek, nesting, brood rearing or winter habitats.
- ✓ Design sagebrush treatments intended to restore or enhance greater sage-grouse habitats to minimize fragmentation or long-term loss of habitats.

Conservation Actions Table II. Habitat Loss and Fragmentation

| II. CONSERVATION ACTIONS – HABITAT LOSS AND FRAGMENTATION | | |
|---|---|--|
| Issues | Objectives | Strategies |
| <p>A. Agricultural practices/CRP</p> <p>(Strategies address Listing Factor A)</p> | <ol style="list-style-type: none"> 1. Minimize impacts of agricultural conversion on sage grouse. 2. Maintain the CRP program and improve its benefit to wildlife by altering seed mixes. 3. Encourage easement, management, and restoration programs that provide incentives in greater sage-grouse habitats. | <ol style="list-style-type: none"> a. Maintain or reestablish sagebrush patches of sufficient size and appropriate shape to support sage grouse between agricultural fields. b. Work with FSA and others to maintain the CRP program and enroll important sage grouse habitats currently in grain production. c. Encourage use of sage grouse friendly seed mixes, including bunchgrasses, forbs and big sagebrush, in CRP and other grassland plantings d. Rehabilitate old low diversity, sod bound CRP fields with sage grouse friendly seed mixes including bunchgrasses, forbs, and big sagebrush. e. Encourage interest and enrollment of key greater sage-grouse habitats in the Grassland Reserve Program. |
| <p>B. Encroachment by weeds and undesirable vegetation</p> <p>(Strategies address Listing Factor A)</p> | <ol style="list-style-type: none"> 1. Identify areas where undesirable vegetation is encroaching on greater sage-grouse habitat. 2. Treat areas where undesirable vegetation has become or is at risk of becoming a factor in greater sage-grouse habitat loss or fragmentation. | <ol style="list-style-type: none"> a. Work with existing weed management programs to incorporate greater sage-grouse habitat needs. b. Identify large areas of introduced plant species that are not meeting greater sage-grouse habitat needs and reseed with native species where appropriate. c. Identify areas where pinyon or juniper trees are encroaching on good quality sagebrush habitat and treat as needed. d. Manage fire, transportation and vegetation treatments to minimize undesirable vegetation where possible. |
| <p>C. Oil and gas development</p> <p>(Strategies address Listing Factor A)</p> | <ol style="list-style-type: none"> 1. Minimize greater sage-grouse habitat loss to oil and gas activities while ensuring continued development. 2. Reduce fragmentation of greater sage-grouse habitat by oil and gas development activities. 3. Minimize disturbance to greater sage-grouse associated with oil and gas development. 4. Reduce cumulative impacts of oil and gas development. 5. Actively seek opportunities to achieve better situations for greater sage-grouse facing oil and gas development than would be achievable using traditional approaches, through pursuit of creative solutions to impacts, especially at large scales. | <ol style="list-style-type: none"> a. Plan and construct roads to minimize duplication b. Cluster development of roads, pipelines, electric lines and other facilities and use existing, combined corridors where possible. c. Use early and effective reclamation techniques, including interim reclamation, to speed return of disturbed areas to use by grouse. (may require multiple reclamation efforts) d. Reduce long-term footprint of facilities to the smallest practical space. e. Utilize reclamation seed mixes consisting of native bunchgrasses, forbs and appropriate subspecies of big sagebrush. f. Practice reclamation techniques that speed recovery of pre-existing vegetation. (e.g. brush-beating of sage brush for site clearance, retention of topsoil with native seed) g. Avoid aggressive, non-native grasses (e.g. intermediate wheatgrass, pubescent wheatgrass, crested wheatgrass, smooth brome, etc) in reclamation seed mixes. Under some circumstances, short term non-invasive species may be used for interim reclamation. h. Use directional drilling where biologically significant habitats are involved, to minimize |

II. CONSERVATION ACTIONS – HABITAT LOSS AND FRAGMENTATION

| Issues | Objectives | Strategies |
|--------|------------|---|
| | | <p>impact to greater sage-grouse habitat, if such techniques are technically feasible and cost effective.</p> <ul style="list-style-type: none"> i. Minimize pad size and other facilities to the extent possible, consistent with safety. (Where directional drilling is utilized, larger pads are needed for multiple wells.) j. Cooperate with county weed programs to control noxious weed infestations associated with oil and gas development disturbances. k. Minimize width of field surface roads. Avoid engineered and graveled roads when possible to reduce the footprint. l. Avoid breeding/nesting season (March 1 – June 30) construction and drilling when possible in sage grouse habitat. m. Limit breeding season (March 1 – May 1) activities near active sage grouse leks to portions of the day after 9:00 a.m. and before 4:00 p.m. n. Reduce daily visits to well pads and road travel to the extent possible in sage grouse habitat. o. Utilize well telemetry when practical to reduce daily visits to wells. p. Gate field service roads or otherwise limit regular public access on field service roads, consistent with landowner wishes and direction. q. Reduce noise impacts from compressor stations by locating stations at least 2500 feet away from leks or by decibel reduction equipment. r. Upon indications that substantial drilling may occur, a plan that evaluates impacts to sage grouse from entire field development would be preferable to individual well analysis. (where possible) s. Study, monitor and attempt to quantify impacts to sage grouse from oil and gas development, including the accuracy and importance of lek and nesting radius buffers used in this Plan and incorporate findings into future management decisions. t. Evaluate need for near-site and/or off-site mitigation to maintain sage grouse populations during oil and gas development and production. u. Share greater sage-grouse data with industry to allow planning to reduce impacts. v. Avoid locating above-ground facilities within 0.6 miles of greater sage-grouse lek sites to the maximum extent practical. Conservation Plan signatories, particularly agencies, should encourage, assist, and facilitate implementation of project alternatives where avoidance is desirable. Where avoidance is not possible, incorporate impact minimization and funding strategies developed by resource agencies, landowners and project proponents into the project to maintain the integrity of greater sage-grouse habitat. w. Explore and implement creative solutions to limit the cumulative or landscape effects of oil and gas development through voluntary incentives and |

II. CONSERVATION ACTIONS – HABITAT LOSS AND FRAGMENTATION

| Issues | Objectives | Strategies |
|----------------|---|---|
| | | <p>negotiated agreements (e.g. minimize surface disturbance in exchange for exception of timing stipulations, etc.).</p> <p>x. The GSGWG recommends application of proposals to provide incentives to companies that voluntarily agree to limit surface disturbance. Voluntary approaches provide incentives for companies to limit fragmentation by voluntarily limiting their development to 5% across the NWCO planning area and 1% in new leases and defined sage grouse areas in exchange for exceptions to timing restrictions. Some companies have said they would be willing to limit disturbance, which would be a great benefit to sage grouse. The GSGWG recommends that its 5% proposal or other voluntary strategies be applied rather than relying solely on prescriptive measures.</p> <p>y. Although the GSGWG believes that voluntary adaptive management approaches can be more effective than prescribed regulatory approaches, the Work Group also recognizes the need to define some disturbance buffers when sage grouse habitat has not been adequately mapped. For the purposes of this Conservation Plan, and when habitat mapping has not been completed, the GSGWG defines the following two habitat types.</p> <ul style="list-style-type: none"> • A lek protection zone is defined as 0.6 miles radius around an active lek. The GSGWG agrees to accept this definition for 3 years with the intent to reevaluate this buffer at that point to determine if this buffer distance remains appropriate. Disturbance within this zone should be limited to the maximum extent practical. Where mapping has been completed and areas determined not to be habitat, or geographical relationships and topographic barriers provide screening for the lek, then exceptions can occur. A large proportion of Northwest Colorado has already been leased under ¼ mile NSO stipulations. • Nesting and early brood-rearing habitat is defined as a 4-mile radius around an active lek. Mapping can better define the areas within the 4-mile radius that are actually sage grouse nesting habitat and where to apply sage grouse stipulations. The 4-mile radius is not a No Surface Occupancy (NSO) or Avoidance Area. Rather it is an area of consideration where disturbance guidelines should be applied when, and if, possible. <p>z. Consult private surface owners prior to defining COAs on private surface.</p> |
| D. Coal mining | 1. Minimize area impacted and duration of impact on greater sage-grouse habitat from surface mines and above ground facilities of | <p>a. Limit facility footprint in greater sage-grouse habitat to that necessary for safe and effective mining.</p> |

II. CONSERVATION ACTIONS – HABITAT LOSS AND FRAGMENTATION

| Issues | Objectives | Strategies |
|--|---|---|
| (Strategies address Listing Factor A) | <p>underground mines</p> <p>2. Engage in effective mitigation measures to carry over greater sage-grouse displaced from the mine site or to supplement off mine sage grouse populations.</p> | <p>b. Structure reclamation soil profiling and re-vegetation seed mixes to create high quality greater sage-grouse habitat as quickly post mining as possible.</p> <p>c. Determine whether sage grouse will move to mitigation areas as mine sites develop in active habitat.</p> <p>d. Conduct effective enhancements to adjacent or nearby habitats to maintain greater sage-grouse population numbers.</p> <p>e. Complete mitigation measures prior to mine site development or expansion where possible to minimize greater sage-grouse population disruption.</p> <p>f. Share greater sage-grouse data with industry to allow planning to reduce impacts.</p> <p>g. Utilize reclamation seed mixes consisting of native bunchgrasses, forbs and appropriate subspecies of big sagebrush. Under some circumstances, short term non-invasive species may be used for interim reclamation.</p> |
| <p>E. Land development</p> <p>(Most Strategies address Listing Factor A, Strategies b, c address Listing Factor D)</p> | <p>1. Minimize the amount of quality sage grouse habitat eliminated by residential and commercial land development consistent with private property rights.</p> <p>2. Minimize the disruption of greater sage-grouse populations around residential developments.</p> | <p>a. Participate with County land use decision makers in identifying key greater sage-grouse habitats.</p> <p>b. Encourage County adoption of important greater sage-grouse areas for protection.</p> <p>c. Encourage counties to consistently forward development proposals to CDOW for comment.</p> <p>d. Encourage use of planned subdivision developments and land preservation subdivisions, where applicable, to cluster impact in smaller portions of development area.</p> <p>e. Maintain sagebrush environments of sufficient size and shape around developments in greater sage-grouse habitat.</p> <p>f. Encourage the voluntary use of conservation easements and other land protection vehicles with willing sellers in greater sage-grouse habitats.</p> <p>g. Educate rural residents about the impacts of free-ranging pets on sage grouse and other wildlife and encourage responsible pet ownership.</p> <p>h. Educate rural residents about the importance of good grazing management in keeping small tracts weed free and capable of providing wildlife habitat.</p> <p>i. Incorporate greater sage-grouse issues into the Code of the West publication for new landowners.</p> |
| <p>F. Roads/recreation.</p> <p>(Strategies address Listing Factor A and Listing Factor E)</p> | <p>1. Develop a transportation management plan across land ownership boundaries in important greater sage-grouse habitat.</p> <p>2. Consider greater sage-grouse needs when planning recreation areas.</p> | <p>a. Minimize amount of unnecessary or duplicate roads in greater sage-grouse habitat.</p> <p>b. Limit width of roads to minimum necessary to ensure function and safety</p> <p>c. Identify areas during transportation planning for seasonal or permanent closures of roads which fragment greater sage-grouse habitat.</p> <p>d. Work with OHV, recreational hunting groups and private landowners to develop</p> |

II. CONSERVATION ACTIONS – HABITAT LOSS AND FRAGMENTATION

| Issues | Objectives | Strategies |
|--|---|--|
| | | <p>guidelines/restrictions that will minimize vehicle damage to important greater sage-grouse habitat and reduce fragmentation of existing habitat.</p> <p>e. Avoid important greater sage-grouse habitats when designing recreation areas.</p> <p>f. Manage primitive camping opportunities to limit impacts to quality habitat and reduce fragmentation of existing habitat.</p> |
| <p>G. Fence construction</p> <p>(Strategies b, f, g address Listing Factor A, Strategies a, c, d, e address Listing Factor C)</p> | <ol style="list-style-type: none"> 1. Reduce the impact of existing fences in key habitats on sage grouse where feasible. 2. Design and install new fences to minimize impacts on sage grouse in key habitats where feasible. | <ol style="list-style-type: none"> a. Minimize the width of cleared area along fences to reduce predator effectiveness. b. Add high visibility top wire (e.g. vinyl coated or ribbon wire) to fences in areas of high sage grouse activity or where significant bird strikes occur, as around leks. c. Install perch preventers on wood fence posts where raptor perching is a concern. d. Remove old fence posts, especially from rises and ridge tops. e. Locate new construction off rises and ridge tops where feasible. f. Avoid use of woven wire wherever possible. g. Minimize duplication of fences. |
| <p>H. Power line and pipeline maintenance and construction</p> <p>(Most Strategies address Listing Factor A, Strategies c, e address Listing Factor C)</p> | <ol style="list-style-type: none"> 1. Provide utility access to residents in Northwest Colorado while minimizing adverse impacts to greater sage-grouse populations in the area. 2. Minimize potential impacts to greater sage-grouse populations from utility construction and maintenance 3. Improve communication between Utility Companies, CDOW, and Publics to better accommodate greater sage-grouse needs. | <ol style="list-style-type: none"> a. Consult with the Colorado Division of Wildlife (CDOW) during transmission and distribution line siting and new gas line projects to minimize impacts to greater sage-grouse populations. Utility construction will avoid critical periods and sensitive areas where technically and economically feasible. b. Schedule regular maintenance to minimize impacts to greater sage-grouse populations during critical periods. Maintenance in emergency situations will be unrestricted. c. Avian protection devices, which include raptor perch deterrents, will be utilized when deemed appropriate to protect greater sage-grouse populations. CDOW will be consulted to determine appropriate measures to be taken. d. Share new lek/habitat/biology information as it becomes available with members of the Colorado Rural Electric Association, other electric transmission/distribution and gas utilities, the CDOW, and the Working Group. The information will be handled under the terms of existing or future confidentiality agreements. e. Seek input from affected landowners and the CDOW on power line modifications proposed for greater sage-grouse protection. |
| <p>I. Reservoirs and water development</p> <p>(Strategies address Listing Factor A, Strategy d also addresses Listing Factor E)</p> | <ol style="list-style-type: none"> 1. Work with water development interests to consider greater sage-grouse habitat when planning future projects. | <ol style="list-style-type: none"> a. Work with water development interests to seek avoidance, changes to, or mitigation for water projects that could displace greater sage-grouse and their habitat. b. Where reservoir projects appear likely, work towards a cooperative partnership that considers mutual benefits for greater sage-grouse and water interests. c. Where reservoir projects appear likely, convene |

| II. CONSERVATION ACTIONS – HABITAT LOSS AND FRAGMENTATION | | |
|---|------------|--|
| Issues | Objectives | Strategies |
| | | <p>Northwest Colorado Greater Sage-Grouse Working Group to represent greater sage-grouse concerns and address conservation actions relating to reservoir development.</p> <p>d. Where reservoir projects appear likely, consider the potential impacts to greater sage-grouse from indirect effects such as recreation, real estate development, and road realignment.</p> |

Predation Goals:

- ✓ Obtain current predator population estimates through scientific research.
- ✓ Identify areas where predation impact on greater sage-grouse is a limiting factor.
- ✓ Develop predation control methods to address site-specific predation concerns that are consistent with the Wildlife Commission's Mammalian Predator Management Policy.
- ✓ Develop or adopt new methods to control predators or their reproductive processes, on a site-specific basis, that would be acceptable to society.
- ✓ Design, modify or remove existing or proposed construction, such as fences and power lines, to minimize predator effectiveness in greater sage-grouse habitats where economically and technically feasible.
- ✓ Design habitat treatments to minimize predation.
- ✓ Develop research-based estimates of predation impact on specific segments of greater sage-grouse populations in Northwest Colorado.
- ✓ Reduce predator effectiveness.

Conservation Actions Table III. Predation

| III. CONSERVATION ACTIONS - PREDATION | | |
|--|---|--|
| Issue | Objective | Strategies |
| A. Predator/prey interactions (Most Strategies address Listing Factor C, Strategy c addresses Listing Factor A) | 1. Modify situations that may increase predation. 2. Initiate a study to develop a better understanding of predator/prey relationships. 3. Initiate research to monitor predator populations and interactions with greater sage-grouse. This may include the percentage of greater sage-grouse in predator diets, determination of the percentage of egg predators vs. live bird predators, or other predation factors. 4. Modify predator management where necessary. | a. Study impacts of power lines, fences and roads on predation rates. b. Modify power lines and wood fence posts (to remove raptor perches) in important greater sage-grouse areas, where feasible and where predator concerns have been identified. c. Avoid fragmenting existing habitats during new power line and fence design, where feasible and where predator concerns have been identified. d. Remove trees, remove/modify raptor perches, and maintain quality sagebrush habitat, where predation concerns on greater sage-grouse have been identified. e. Begin site-specific predation management considering all predator species (including fox and raccoons) where necessary and appropriate. f. Develop studies with a University, DOW or private consultants to answer predator/prey relationship questions. g. Investigate new technology for impeding successful reproduction of predators. h. Encourage longer season/higher bag limits on red fox, raccoon, and skunk. i. Manage red fox and raccoons as "non-native" species in the sagebrush steppe to prevent further range expansion and reduce population numbers. |

Hunting Goals:

- ✓ Maintain recreational hunting of greater sage-grouse in Northwest Colorado where lek counts permit.
- ✓ Modify or adjust greater sage-grouse hunting regulations within Northwest Colorado to maintain at least 100 counted male minimum population levels in each Management Zone that is hunted.
- ✓ Monitor hunting/harvest levels and refine impacts of hunting on greater sage-grouse populations of varying size and level of isolation.

Conservation Actions Table IV. Hunting

| IV. CONSERVATION ACTIONS - HUNTING | | |
|--|--|--|
| Issues | Objectives | Strategies |
| A. Impacts of hunting marginal greater sage-grouse populations. (Strategies address Listing Factor D) | 1. Regulate hunting season annually, considering population status by Management Zone. 2. Monitor harvest and population numbers. | a. Maintain open hunting seasons by GSGWG Management Zone only if the previous 3 year running average (as monitored by spring lek surveys) meets a 100 male minimum. b. Maintain current 7 day, one weekend season structure with a 2 nd Saturday in September opening, subject to annual review and considered for change only by consensus recommendations of the GSGWG. c. No hunting season should be held in a Management Zone if annual lek monitoring is not done. d. If for some reason, the CDOW is not able to conduct annual lek monitoring, then the CDOW should notify the GSGWG of the plans to discontinue monitoring, recognizing that emergencies may occur. e. Refine estimates of relative hunting impacts on large, small, contiguous and isolated populations. |

Physical Disturbance Goals:

- ✓ Minimize physical disturbance from human activities on or within viewing/hearing distance of leks between 15 March and 15 May.
- ✓ Minimize physical disturbance from human activities in nesting/brood-rearing areas between 15 April and 15 July.
- ✓ Minimize physical disturbance from human activities in wet meadows between 15 July and 1 September.
- ✓ Minimize physical disturbance from human activities in winter range between 15 December and 15 March.
- ✓ Allow for the substitution of an effective adaptive management plan to replace the prescriptive goals when that adaptive plan provides better management of greater sage-grouse than the prescribed approach.

Of the various seasonal disturbance periods, the GSGWG is most concerned with minimizing sage grouse disturbance during breeding and nesting periods. It is not the intent of the GSGWG to apply timing restrictions to all parts of Northwest Colorado year around. Not all areas of Northwest Colorado provide all four of these seasonal habitats. While the GSGWG believes it is important to minimize disturbance to breeding and nesting sage grouse across Northwest Colorado, it is the intent of the GSGWG that disturbance goals for brood range and winter range be applied to specific areas where problems have been identified and when severe conditions exist (e.g. drought, severe winter conditions). The GSGWG recognizes that there are many circumstances where disturbance can have a positive effect on sage grouse and that there are circumstances where disturbance cannot be totally avoided (e.g. livestock stock ponds in the middle of sage grouse habitat). Livestock fences, stock ponds and other range improvements should be exempted from the disturbance guidelines above and the 0.6 mile lek protection zone. Voluntary efforts should still be made to minimize disturbance within 0.6 mile of a lek.

Conservation Actions Table IV. Reduction of Physical Disturbances in Greater Sage-Grouse Habitats

| V. CONSERVATION ACTIONS - REDUCTION OF PHYSICAL DISTURBANCES IN GREATER SAGE-GROUSE HABITATS | | |
|---|---|---|
| Issues | Objectives | Strategies |
| A. Recreation (Strategies address Listing Factor E) | 1. Reduce physical disturbance to greater sage-grouse during important biological periods or on important habitats (nesting, brood-rearing and winter). | a. During transportation planning, identify areas for seasonal or permanent road closures of roads to reduce impacts to greater sage-grouse where conflicts exist. b. Manage on-road travel and OHV use in key sage grouse areas to avoid disturbance during important times (winter-nesting periods). c. Encourage recreationists to control pets in greater sage-grouse habitats. d. Avoid important greater sage-grouse habitats when |

V. CONSERVATION ACTIONS - REDUCTION OF PHYSICAL DISTURBANCES IN GREATER SAGE-GROUSE HABITATS

| Issues | Objectives | Strategies |
|---|--|--|
| | | designing and planning recreational facilities. |
| B. Change in rural population (Strategies address Listing Factor E) | 1. Develop education programs for current and new residents unaware of greater sage-grouse needs. | a. Educate homeowners about the impacts of free-ranging pets on greater sage-grouse chick survival. |
| C. Disturbance at lek sites and brood rearing areas (Strategies a, f, g address Listing Factor A, Strategies d, h address Listing Factor B, Strategy b addresses Listing Factor C, and Strategies c, e address Listing Factor E) | 1. Mitigate or reduce conflicts with sage grouse during important biological periods and in important habitats where concerns have been identified. 2. Manage on-road travel and OHV use in key grouse areas to avoid disturbance at important times where concerns have been identified. 3. Manage livestock and big game to minimize disturbance on leks during important periods. 4. Determine the effects of disturbance from livestock and big game at lek sites during important periods. | a. Authorize oil and gas permits to minimize activity during important biological periods. b. Remove/modify raptor perches within view of active leks, where feasible and where concerns have been identified. c. Limit seasonal access into lek and brood-rearing areas as needed. d. Identify and select leks for public viewing to minimize disturbance elsewhere. e. Adjust hunting seasons and harvest on big game to minimize physical disturbance to grouse during important biological periods. f. Redistribute big game animals away from lek and nesting areas where and when practical. g. Develop study to determine if there are significant disturbances from livestock and big game at lek sites. h. Limit number of daily trips for commercial use in key greater sage-grouse habitats. |
| D. Sage grouse lek viewing (Strategies address Listing Factor B) | 1. Identify and publicize suitable leks where sage grouse viewing can be accommodated without harm. 2. Develop incentives to encourage sustainable viewing opportunities on private land. 3. Develop viewing guideline protocols. | a. Evaluate impacts of sage grouse viewing on leks. b. Identify and publicize leks where sage grouse viewing can be accommodated without harm. c. Coordinate with existing and future wildlife watching books and web sites to ensure that sage grouse viewing remains appropriate. d. Develop and publish viewing guidelines that minimize disturbance to sage grouse. e. Develop facilities (parking, blinds, etc.) as needed at identified viewing leks. f. Discourage use of leks where viewing is detrimental to sage grouse. g. Encourage sustainable viewing on private lands. h. Develop incentives to encourage sustainable viewing opportunities on private land. i. Monitor the impacts of viewing on lek attendance. |
| E. Research and inventory impacts (Strategies address Listing Factor B) | 1. Minimize impacts of research activities on sage grouse populations while conducting effective research programs. 2. Minimize impacts of annual lek counts on breeding sage grouse. | a. Conduct research in accordance with Division of Wildlife and participating university animal care and use standards and Division of Wildlife sage grouse trapping and handling protocol. b. Collect as much information as possible from each sage grouse handled to reduce need for recaptures or capture of additional birds for equivalent data. c. Assess benefits of information collected versus impacts inflicted when designing research projects (cost-benefit analysis specific to impact). d. Continue to foster GSGWG review and participation |

V. CONSERVATION ACTIONS - REDUCTION OF PHYSICAL DISTURBANCES IN GREATER SAGE-GROUSE HABITATS

| Issues | Objectives | Strategies |
|---|---|---|
| | | <p>in research question development and study design.</p> <p>e. Minimize disturbance during lek counts to the extent compatible with accomplishing needed counts.</p> <p>f. Avoid flush counts unless absolutely necessary.</p> |
| <p>F. Disturbance on important wintering grounds</p> <p>(Most Strategies address Listing Factor E, Strategy c addresses Listing Factor C)</p> | <p>1. Minimize disturbance on identified important wintering areas for greater sage-grouse.</p> | <p>a. Manage big-game populations to minimize or avoid conflicts on greater sage-grouse winter habitats and to encourage moving them off prime grouse habitat through the development of big-game habitat elsewhere.</p> <p>b. Close important winter areas to people, vehicles, and other uses during severe winters wherever possible.</p> <p>c. Remove/modify raptor perches on important wintering grounds, where possible.</p> <p>d. Adjust hunting seasons and harvest on big game to minimize physical disturbance to greater sage-grouse during important biological periods.</p> |

Disease and Genetics Goals:

- ✓ Monitor populations for disease outbreaks and develop and implement additional conservation actions if serious outbreaks develop in the future.
- ✓ Evaluate the risk of genetic depression if any isolated populations of greater sage-grouse are discovered through future research.

Conservation Actions Table VI. Disease and Genetics

| VI. CONSERVATION ACTIONS - DISEASE AND GENETICS | | |
|--|---|---|
| Issue | Objective | Strategy |
| <p>A. Effects of disease and genetics on local greater sage-grouse population.</p> <p>(Most Strategies address Listing Factor C, Strategies c, d address Listing Factor E)</p> | <p>1. Improve knowledge of disease in greater sage-grouse populations.</p> <p>2. Improve knowledge of genetics in greater sage grouse and relation to minimum viable populations.</p> | <p>a. Collect greater sage-grouse parasite and disease organism samples while handling birds for other research.</p> <p>b. Collect blood samples from greater sage-grouse to determine if they have diseases or other physical problems.</p> <p>c. Collect samples for genetic research, especially from eastern Moffat County and western Routt County.</p> <p>d. Conduct minimum viable population modeling by Management Zone.</p> <p>e. Monitor radio-collared and other greater sage-grouse for West Nile Virus and other disease outbreaks.</p> |

Planning and Outreach Goals:

- ✓ GSGWG will annually plan, monitor and report progress toward implementation of this Conservation Plan.
- ✓ Increase public knowledge of and support for greater sage-grouse conservation in Northwest Colorado.
- ✓ Wildlife professionals, livestock producers, and other entities will continue to become more tolerant, understanding and respectful of each other's perspectives and focus on areas of mutual interest.
- ✓ Develop partnerships with local HPP committees, private landowners, federal land users, state and federal agencies, private conservation groups, and other interested or affected parties to identify projects mutually beneficial to greater sage-grouse, wild ungulates, and domestic livestock.
- ✓ Aggressively seek joint ventures with private conservation groups and other interested and affected parties to improve and/or acquire important greater sage-grouse habitats. Acquisition in this statement refers to protection of greater sage-grouse habitat through a variety of means ranging from management agreements through leases and conservation easements to fee title ownership where appropriate.

Conservation Actions Table VII. Planning and Outreach Activities

| VII. CONSERVATION ACTIONS - PLANNING AND OUTREACH ACTIVITIES | | |
|---|---|--|
| Issues | Objectives | Strategies |
| <p>A. Annual coordination</p> <p>(Most Strategies generally address Listing Factor D-GSGWG coordination is part of the regulatory framework, Strategy f addresses Listing Factor A)</p> | <ol style="list-style-type: none"> 1. The GSGWG will meet at least twice per year. Attendance includes but is not limited to, current members, private landowners, BLM, NRCS, CDOW, and FWS. The meeting agenda would include planning for the upcoming year and reviewing the previous year's progress. 2. Annually review status of greater sage-grouse populations within Northwest Colorado to determine if changes in hunting seasons should be recommended to the Wildlife Commission. 3. Consider economic impacts to stakeholders in planning process. | <ol style="list-style-type: none"> a. Develop long-term structure and procedures for the GSGWG to follow as it transitions from planning to implementation. b. Develop annual work plans to ensure completion of resource objectives. This should include proposed projects, resource objectives and a completion report of previous year's activities. c. Provide Fish and Wildlife Service with a copy of the annual work plan and accomplishment report for previous year. d. Gather together information past and future greater sage-grouse conservation actions and serve as a clearinghouse across agency boundaries for information on treatments and other actions taken to benefit greater sage-grouse. e. Periodically review the Northwest Colorado Greater Sage-Grouse Conservation Plan and update its provisions as necessary to achieve goals. f. Schedule field tours to evaluate projects designed to enhance greater sage-grouse habitat. g. Review lek data and anecdotal material gathered by resource agencies and private landowners to annually assess current local greater sage-grouse population status. h. Determine how decisions will affect the economic viability of the stakeholders and provide incentives for change. i. Include stakeholders in the planning process in order |

VII. CONSERVATION ACTIONS - PLANNING AND OUTREACH ACTIVITIES

| Issues | Objectives | Strategies |
|---|---|--|
| | | to provide a win-win situation while working towards common goals. |
| <p>B. Outreach and education</p> <p>(Education Strategies a, b, c, d, e address multiple Listing Factors depending on the content of information presented. Strategy f addresses Listing Factor D, Strategy g addresses Listing Factor E, Strategy h addresses Listing Factor C, Strategy i addresses Listing Factor A)</p> | <p>1. Increase awareness of greater sage-grouse status and decline.</p> | <p>a. Develop educational materials for schools, churches, clubs, etc. to describe the current status of the greater sage-grouse. Materials may include posters, pamphlets, etc.</p> <p>b. Create an educational video about greater sage-grouse conservation for use in schools, public events, and other forums.</p> <p>c. Create a user-friendly greater sage-grouse management guide for landowners and others.</p> <p>d. Communicate and coordinate with other greater sage-grouse working groups and others interested in greater sage-grouse issues to exchange ideas and information.</p> <p>e. Take advantage of opportunities to convey greater sage-grouse conservation information at public events.</p> <p>f. During the county planning process, create and strengthen zoning regulations and ordinances that regulate growth and reduce negative impacts to greater sage-grouse habitat.</p> <p>g. Encourage recreationists to control pets when recreating in potential greater sage-grouse habitats.</p> <p>h. Educate homeowners about the impacts of free-ranging pets on greater sage-grouse chick survival.</p> <p>i. Extend information & education on ecosystem management.</p> |
| <p>C. Other threatened & endangered species influences on greater sage-grouse.</p> <p>(This Strategy mostly addresses Listing Factor D)</p> | <p>1. Identify other T&E species that nest, migrate, or otherwise use resources in sagebrush/grass habitat.</p> | <p>a. The effects of other T&E species on greater sage-grouse cannot be controlled by this Plan. However, The USFWS will consider the effects of specific actions related to greater sage-grouse on threatened or endangered species. At the present time, the black-footed ferret is the only federally listed species occurring in greater sage-grouse habitat in Northwest Colorado. Moffat County black-footed ferret populations are designated “experimental, non-essential” under section 10(j) of the Endangered Species Act and should not be a factor in sage grouse management. Although their habitats overlap, it is unlikely that actions to benefit greater sage-grouse would conflict with black-footed ferret habitat.</p> |

Implementation and Monitoring

The Conservation Plan sets up implementation procedures to ensure that this Plan translates into effective action on the ground. It also specifies monitoring practices to gather information on the application and effectiveness of conservation strategies from this Plan.

Listing Factors

The U.S Fish and Wildlife Service evaluates five Listing Factors when considering potential listing actions under the Endangered Species Act. The USFWS 12-month finding (U.S. Fish and Wildlife Service 2005) described the Listing Factors as they relate to greater sage-grouse. This Plan addresses all five Listing Factors. Please see strategy crosswalk to Listing Factors in the Strategy Tables above.

Listing Factor A- The present or threatened destruction, modification, or curtailment of its habitat or range

Threats identified under this listing factor by the USFWS (U.S. Fish and Wildlife Service 2005) included habitat conversion, habitat fragmentation, infrastructure (power lines, fences, pipelines, communication towers, roads, and railroads), grazing, mining, energy development, fire, invasive species and noxious weeds, pinyon-juniper expansion, and urbanization.

The GSGWG acknowledges that some of the issues above did occur in the past in Northwest Colorado, for example conversion to agriculture, but large scale habitat conversion is not taking place today. Although conversion did occur in the past, a large proportion of this acreage is trending back to sage grouse habitat (e.g. CRP and sagebrush moving back into these grassland habitats).

This Conservation Plan will enhance greater sage-grouse habitat through coordinated planning of greater sage-grouse habitat management by private individuals and by county, state, and Federal agencies. Such coordinated habitat management efforts have been ongoing for several years. See Appendix C for a list of habitat projects completed to date. Furthermore, opportunities exist to develop Candidate Conservation Agreements with Assurances within the Northwest Colorado planning area. This Plan describes strategies to use fire and/or other habitat management actions to restore native plant composition and enhance ecosystem vitality in sagebrush habitats used by greater sage-grouse. This Plan will reduce modification and destruction of greater sage-grouse habitat through implementing the following actions:

- development of an information and education program to improve awareness of greater sage-grouse habitat requirements;
- improved and restored quality greater sage-grouse habitat through habitat enhancement, livestock grazing management, and big game population management;
- targeted, well designed assessment and modification of habitat to benefit greater sage-grouse;
- implementation of Best Management Practices for sagebrush habitat treatments and management;
- avoidance and/or mitigation for long-term or permanent loss of habitat;

- monitoring of applied measures to document habitat improvement and population increases;
- encourage implementation of adaptive strategies to minimize impacts from oil and gas development;
- encourage implementation of adaptive strategies to minimize impacts from surface coal mining;
- encourage implementation of adaptive strategies to minimize impacts from residential development;
- provided strategies to maintain and enhance CRP or similar type of programs.

Fire suppression is a man-made issue leading to change in habitat through invasion of pinyon-juniper and allowing sagebrush habitat types to become over-mature to the detriment of greater sage-grouse habitat quality. The Plan has strategies to address pinyon juniper expansion and incorporate fire use in sagebrush ecosystems.

Listing Factor B-Overutilization for commercial, recreational, scientific, or educational purposes

Threats identified under this listing factor by the USFWS (U.S. Fish and Wildlife Service 2005) include hunting, and scientific and recreational use. Scientific use is further described to include research studies that involve capture and handling of the species. This category also includes translocations. Under recreational use, lek viewing, general wildlife viewing and photography were identified as having possible effects on sage grouse.

This Conservation Plan will address Factor B through the following actions:

- reduction of physical disturbance to greater sage-grouse by altering hunting seasons;
- limiting impacts of wildlife/lek viewing; and
- where appropriate, recommend hunting closures in specific management zones.

The hunting season in Northwest Colorado has been reduced from a 30-day season down to a 7-day season with a 2/4 bag/possession limit as a result of this Conservation Plan. An approach to recommending season openings and closings based on documented greater sage-grouse population trends has been developed and has been successfully used to both close and open hunting seasons as appropriate. Hunting is not considered to be a limiting factor in greater sage-grouse numbers in Northwest Colorado.

There is no other recreational or commercial use occurring or anticipated at present. Scientific study is ongoing, but sage grouse are carefully handled under the provisions of the Colorado Division of Wildlife's sage grouse trapping and handling protocol and animal care and use standards. Research sage grouse in Northwest Colorado are returned alive to the wild. No consumptive scientific study is anticipated. Scientific studies, educational field trips, and wildlife viewing are not likely to cause a disturbance to greater sage-grouse if proper scientific and viewing protocols are followed.

Listing Factor C-Disease or predation

Threats identified under this listing factor by the USFWS (U.S. Fish and Wildlife Service 2005) include both disease and predation.

No disease/parasite problems had been identified to be active in greater sage-grouse in Northwest Colorado until West Nile Virus appeared in the summer of 2006. The appearance of West Nile Virus in Northwest Colorado greater sage-grouse is of concern, but the long-term implications are far from clear. Research sage grouse are being monitored for presence of the disease. Moffat County has an aggressive testing and treatment program in place and should provide warning if the disease makes major encroachment into Northwest Colorado.

Predation is one of the issues the GSGWG believes could be having an adverse effect on greater sage-grouse nest success, reproduction and recruitment in Northwest Colorado. Ground and aerial predators include golden eagles, hawks, coyotes, foxes and badgers, and nest predators include coyotes, foxes, skunks, badgers, ravens, ground squirrels, and possibly raccoons.

The Plan contains many strategies to address predation. A predator study is proposed to gain understanding of predator/prey relationships in Northwest Colorado and assess the need for direct predator management to maintain greater sage-grouse populations. Results will influence future applications of conservation strategies. Many of the conservation actions in the Plan also have objectives for enhancing greater sage-grouse habitat and managing predator populations to reduce predation on greater sage-grouse and to expand greater sage-grouse populations over the long term.

Listing Factor D- The inadequacy of existing regulatory mechanisms

The Colorado Division of Wildlife, a branch of the Colorado Department of Natural Resources, has responsibility for the management and conservation of wildlife resources as defined and directed by state laws.

The USDI Bureau of Land Management has responsibility for conservation and management of natural resources and land uses, including management of greater sage-grouse habitat on Public Lands through a number of Federal Laws and Regulations. The BLM considers the greater sage-grouse a sensitive species and analyzes the effects of actions on sage grouse and attempt to minimize potential effects. The BLM recently revised their RMP and has had significant public participation. The Little Snake RMP addresses several strategies designed to benefit sage grouse.

The USDA Natural Resources Conservation Service partners with private landowners for conservation of greater sage-grouse habitat on private property through various Federal laws. Furthermore, the NRCS consults with CDOW on projects designed to enhance sage grouse habitat.

The USDI Fish & Wildlife Service (USFWS) has authority for conservation of greater sage-grouse, if listed as Threatened or Endangered, through the Endangered Species Act of 1973 and other Federal laws.

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 included in the agreement. This list specifically mentioned declining populations of greater sage-grouse.

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

- Moffat County has been proactive in implementing adaptive strategies to benefit sage grouse habitat through their oil and gas leasing and permitting process of own county minerals;
- Moffat County’s land use planning process provides mechanisms for consultation with CDOW and Federal agencies.

All of the above mentioned authorities and regulatory agencies are signatories to this Conservation Plan.

Listing Factor E-Other natural or manmade factors affecting its continued existence

Threats identified under this listing factor by the USFWS (U.S. Fish and Wildlife Service 2005) included pesticides, contaminants, non-consumptive recreational activities, drought/climate change, and life history traits that affect the population viability. Pesticides included the direct mortality of individuals and reduction in available food sources (insects) that may contribute to sage grouse mortality as well as herbicide applications that can kill sagebrush and forbs needed by sage grouse. The contaminant discussion lists many sources that potentially occur as a result of various human activities ranging from agricultural practices, energy development, pipeline operations, and transportation of materials along roads and railways. Non-consumptive recreational activities included hiking, camping, pets, and off-highway vehicle use. Primary impact to sage grouse from recreation activities was disturbance related, but impacts to vegetation and soils and spread of noxious weeds were also mentioned. The discussion of life-history traits centered on low reproductive rates of sage grouse and their polygamous mating system and how these traits may affect population growth rates.

This Conservation Plan includes strategies aimed at minimizing the impacts of pesticides, contaminants, and non-consumptive recreational activities on sage grouse. Many strategies also attempt to minimize the impacts of drought on sage grouse.

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