CONSERVATION PLAN FOR GRASSLAND SPECIES IN COLORADO

COLORADO DIVISION OF WILDLIFE AND
COLORADO GRASSLAND SPECIES WORKING GROUP
APPROVED BY CDOW DIRECTOR RUSSELL GEORGE
NOVEMBER 2003

STATE OF COLORADO

Bill Owens, Governor
DEPARTMENT OF NATURAL RESOURCES

DIVISION OF WILDLIFE

AN EQUAL OPPORTUNITY EMPLOYER

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For Wildlife-
For People

November 26, 2003

To All Concerned About Colorado Grassland Species and Habitats:

It is with pleasure that I sign and present the Conservation Plan for Grassland Species in Colorado. This landmark multi-species plan will guide the Colorado Division of Wildlife's (CDOW) management of grassland areas and associated wildlife species (black-tailed prairie dog, swift fox, Ferruginous Hawk, Mountain Plover and Burrowing Owl) for the foreseeable future.

Joining the plans of the 10 other states that comprise the black-tailed prairie dog's range, Colorado's Plan is also part of the foundation of the multi-state Range-wide Black-tailed Prairie Dog Plan. All of these plans, which outline necessary surveying, monitoring and management objectives, are aimed at providing for the continued existence of the black-tailed prairie dog and thereby removing the need for this species to be listed under the Federal Endangered Species Act. The Plan also considers the needs of people – economics, tourism, development and private land concerns.

Colorado's 2002 black-tailed prairie dog survey, which was called for in the Plan and completed while the Plan was in progress, showed the state to have 631,000 acres of occupied black-tailed prairie dog range, a figure much higher than many had thought. The Plan calls for continued monitoring at regular intervals in the future.

I am indebted to the 18-member working group representing the interest areas of agriculture, development, environment, local government and agencies, who met monthly for a year and a half to forge the first Plan draft. I also appreciate the individuals and organizations that took time to review and comment on the Plan. I again thank the working group for considering and incorporating comments into the final copy attached to this letter. This plan will be dynamic, with periodic evaluation and adjustment in response to changes in grassland habitat conditions and wildlife populations.

I hereby approve the Conservation Plan for Grassland Species in Colorado on this 26th day of November, 2003.

Russell George

Russell George, Director
Colorado Division of Wildlife

BIBLIOGRAPHIC CITATION

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ACKNOWLEDGMENTS

The Colorado Division of Wildlife (CDOW) sincerely appreciates the time and effort that members of the Grassland Species Working Group (Working Group) devoted to developing this document. The goal, objectives and actions outlined in this plan were developed by the Working Group who met monthly starting in July of 2002 until the plan was completed in November of 2003. Working Group members include:

Name	Representing
Kim Burgess	Colorado Division of Wildlife - Policy and Regulation Manager
Dave Carlson	Colorado Department of Agriculture
Miles Davies	Colorado Cattlemen's Association
Mark Frasier	Colorado Livestock Growers Association
Catherine Johnson	National Wildlife Federation
Bob Leachman	US Fish and Wildlife Service
Jim McKee	Boulder County Nature Association
Pat Melhlop	US Fish and Wildlife Service
Susan Miller	Private Consultant – Wild Places
Ken Morgan	Colorado Division of Wildlife – Private Lands Coordinator
Rob Nanfelt	Colorado Association of Home Builders
Chris Pague	The Nature Conservancy
Francie Pusateri	Colorado Division of Wildlife – Grassland Species Coordinator
Chris Roe	Private Consultant – Roe Ecological Services
Carl Stogsdill	Colorado Farm Bureau
John Stulp	Prowers County Commissioner, State Land Board Member
Ted Toombs	Environmental Defense
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The Introduction and Background sections of the plan, as well as species accounts for the black-tailed prairie dog and swift fox were prepared by Chris and Kelly Roe of Roe Ecological Services, under contract to CDOW. Species accounts for the Mountain Plover, Burrowing Owl and Ferruginous Hawk, as well as recommendations of conservation strategies for grassland bird species, were prepared by Lee Grunau of Colorado Natural Heritage Program at Colorado State University, under contract to the CDOW.

CONSERVATION PLAN
FOR GRASSLAND SPECIES IN COLORADO

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EXECUTIVE SUMMARY

The shortgrass prairies of eastern Colorado have been an important component in our State's agricultural productivity, ecological diversity and unique character for more than 150 years. Early settlers of this region found a vast sea of productive grasslands suitable for raising livestock and a variety of wildlife species ranging from the black-tailed prairie dog (*Cynomys ludovicianus*) and Mountain Plover (*Charadrius montanus*), to herds of American bison (*Bison bison*), elk (*Cervus elaphus*), deer (*Odocoileus* spp.) and pronghorn (*Antilocapra americana*). Although livestock production remains high throughout most of the region, much has changed within the last century. Conversion of native grasslands to agricultural cropland and urban development has altered the look and character of the shortgrass prairie region. This alteration and fragmentation has changed the level of wildlife diversity once supported by the landscape. Concern has grown over the past several years for the long-term sustainability, diversity and integrity of many components of the shortgrass prairie grassland ecosystem. The Conservation Plan for Grassland Species in Colorado (Plan) offers objectives and actions for the conservation of the black-tailed prairie dog and associated shortgrass prairie species in Colorado. It focuses on high quality science, development of partnerships, voluntary non-regulatory incentives, and uses an adaptive management approach. This includes a continuous process of planning, acting, monitoring and evaluating designed to take into account changes in ecological and social systems, identify and evaluate new information, and make adjustments in actions to achieve specific goals and objectives.

GOAL OF THE PLAN

"The goal of the Plan is to ensure, at a minimum, the viability of the black-tailed prairie dog and associated species (Mountain Plover, Burrowing Owl, swift fox and Ferruginous Hawk) and provide mechanisms to manage for populations beyond minimum levels, where possible, while addressing the interests and rights of private landowners."

Objective 1: Meet occupied acreage and distribution target objectives as defined for Colorado in "*A Multi-State Conservation Plan For The Black-tailed Prairie Dog, Cynomys ludovicianus, in the United States, Addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy*" (Luce 2003).

Colorado currently exceeds all acreage and distribution target objectives defined in "*A Multi-State Conservation Plan For The Black-tailed Prairie Dog, Cynomys ludovicianus, in the United States, Addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy*" (Luce 2003). A tiered approach to defining actions for black-tailed prairie dog conservation was developed based on active occupied acreage. Current conditions are described and zones are defined based on a range of active acres for the black-tailed prairie dog. (See Table 3.) Zones are assigned colors and

descriptors based on active occupied acreages starting with the Blue Zone – Abundant (> 450,000 acres) to the Red Zone – Danger (< 150,000 acres). In general, when population levels are at or beyond the Green Zone – Secure (350,000 – 450,000), there are no or minimal restrictions or required actions. Actions focus on voluntary, non-regulatory, incentive-based partnerships with public and private landowners, ongoing monitoring and analysis, and implementation of management actions when populations drop below 250,000 acres.

Objective 2: The Colorado Division of Wildlife (CDOW) will continue its efforts to produce, encourage and support the best available science regarding monitoring long-term population trends and distribution of shortgrass associated species.

Data are inadequate to define specific target objectives for shortgrass associated species including the Mountain Plover, Burrowing Owl, Ferruginous Hawk, and swift fox. Population trend data are available for a number of grassland bird species. In many cases, however, data are inadequate for monitoring birds with broad distribution and low population densities. Standardized methodologies are being developed to estimate long-term population trends and distribution. This data will allow managers to identify populations or areas experiencing declines, evaluate reasons for declines and better identify areas for conservation.

Objective 3: Recognizing that private landowners provide critical habitat and act as stewards to the land supporting populations of the black-tailed prairie dog and other shortgrass associated species, voluntary, incentive-based, non-regulatory partnerships with private landowners will be used to ensure the conservation and management of these species and their habitats in Colorado.

Conservation efforts focus on providing secure, quality habitat in eastern Colorado to support viable populations of the black-tailed prairie dog and shortgrass associated species including the Mountain Plover, Burrowing Owl, Ferruginous Hawk, and swift fox. The concept of habitat conservation as envisioned in the Plan includes a broad suite of proven conservation tools including working with willing landowners to establish easements and/or management agreements, providing technical assistance on habitat improvements and developing partnerships with private landowners and other agencies/organizations with an interest in shortgrass prairie conservation. The Plan encourages the use of existing incentive programs: Conservation Reserve; Conservation Reserve Enhancement; Grassland Reserve; Wildlife Habitat Incentives; and Environmental Quality Incentives Program through USDA. In addition, the Plan calls for an increased focus on Colorado Species Conservation Partnership Program, Protecting Colorado's Landscapes, and other habitat conservation programs.

Objective 4: Raise awareness of grassland conservation needs within the private and public sectors. Maintain healthy populations of grassland wildlife in conjunction with economic development and viability, and protection of property rights. Raise awareness for grassland wildlife of high conservation concern including: how to identify the species, habitat needs and management recommendations. Familiarize private landowners with different grassland habitat incentive programs including state, federal and non-profit partners with which they can work. Promote long-term conservation and sustainable use of grassland wildlife and their habitats.

Working with private and public landowners is an important component of the Plan. Most of the untilled shortgrass prairie is owned and managed by private operators. Providing conservation guidance and information on grassland species to land managers over large areas not only has direct benefits to shortgrass prairie species but also is additive to more focused and intensive strategies that are usually applied to secured areas. Raising awareness of shortgrass prairie conservation needs also helps build partnerships between private land managers and others interested in shortgrass prairie conservation, and helps maintain viable, sustainable agricultural producers in eastern Colorado. A good example of this is the Mountain Plover Nest Clearing Project, which encourages landowners to call a toll free number prior to tilling their fields.

Technicians then survey the field and mark Mountain Plover nests so landowners can avoid them. The goal of the project is to increase nest success for the Mountain Plover on tilled agricultural fields. The Mountain Plover Nest Clearing Project is being implemented through partnerships with private landowners, the CDOW, the US Fish and Wildlife Service (USFWS), the USGS Biological Resources Division, the Rocky Mountain Bird Observatory, the Colorado Farm Bureau, The Nature Conservancy, the Playa Lakes Joint Venture and the Colorado Natural Heritage Program at Colorado State University (See Appendix G).

Objective 5: Collaborate with Colorado Department of Agriculture (CDA) to demonstrate through law, regulation, or cooperative agreement adequate regulatory authority and regard for black-tailed prairie dog conservation objectives as it relates to the use of toxicants or shooting to control black-tailed prairie dogs causing damage to private property.

The federal Endangered Species Act (ESA) places a premium on the need to have a regulatory framework in place that will serve to prevent extinctions or further endangerment of species. This Plan calls for the development of a Memorandum of Understanding between the CDOW and CDA which outlines each agency's authorities and responsibilities regarding the use of toxicants to control prairie dogs in Colorado as it relates to the conservation objectives described within this Plan by July 2005.

Objective 6: Adaptive management, including a continuous process of planning, acting, monitoring and evaluating designed to take into account changes in ecological and social systems, identify and evaluate new information, and make adjustments in actions to achieve specific goals and objectives will be used.

Adaptive management was one of the guiding principles used in the formulation of this Plan. As ecological or social systems change, adjustments in the objectives and actions outlined in this Plan may be needed. Currently, monitoring systems for the black-tailed prairie dog are on a 3-year schedule. By fall 2006, a technical committee will be selected to review new research information and analyze monitoring data as it is collected, identify changes that would move acreage and distribution targets from one zone to another and make recommendations to decision makers regarding the changes in management necessary to maintain viable shortgrass species populations.

Objective 7: The CDOW will initiate, continue ongoing and stimulate new research to identify and minimize, eliminate, or mitigate causes for declines when possible for short grass associated wildlife species.

The Plan calls for a strong research agenda that will support the commitment to adaptive management and effective strategies. It also includes a scientifically rigorous monitoring program. Such a program will evaluate changes in key areas of biology and allow for change of actions in a meaningful timeframe. In addition, this Plan calls for the collection of information that allows for the evaluation of cumulative impacts that result from multiple factors.

Objective 8: The CDOW will encourage significant contributions from publicly owned lands, particularly the National Grasslands, toward grassland species conservation and work with federal, state, county and municipal partners to support these efforts.

Significant shortgrass prairie habitat, which supports grassland-associated species in Colorado, is publicly owned and administered. While the State of Colorado cannot mandate how other federal, state, county and city governments manage wildlife habitat on their property, the Plan outlines recommended actions and encourages significant contributions from publicly owned lands, particularly the USDA Forest Service National Grasslands.

Objective 9: The CDOW will encourage the acquisition and management of city and county open space on suitable grassland habitat along the front range for the conservation of the black-tailed prairie dog and associated grassland species.

The black-tailed prairie dog and associated species that are the focus of this Plan reside in the greatest numbers on Colorado's eastern plains. As a result, many of the conservation objectives and strategies outlined in this Plan are focused on Colorado's eastern plains. Even so, the black-tailed prairie dog and associated species reside along the front range in urban areas and within the urban/rural interface. These species have considerable value for front range residents. The black-tailed prairie dog, Ferruginous Hawk and other associated species are valued not only as contributors to ecological balance in the ever-changing front range landscape, but also have inherent value as individual animals and are the focus of a wide range of wildlife viewing opportunities. While the biological significance of front range populations of the black-tailed prairie dog is limited with regard to the overall conservation of the species, conservation actions must consider the ecological impacts of changes in habitat and population numbers and the added social relevance of these species for people along the front range.

Objective 10: Establish shared responsibility (front range and eastern plains) for conservation of the black-tailed prairie dog and associated species.

The black-tailed prairie dog populations along the front range contribute to the statewide acreage and distribution target objectives defined in this Plan. Actions outlined in the Plan call for developing mechanisms for front range interests (developers, non-profit organizations, etc.) to mitigate the loss of prairie dog habitat along the front range and provide support for shortgrass prairie habitat conservation in eastern Colorado.

Objective 11: Support and encourage public education and wildlife viewing opportunities on suitable black-tailed prairie dog and grassland open space areas.

Public outreach will be a necessary part of the conservation effort along the front range for shortgrass prairie species. Raising awareness for grassland wildlife of high conservation concern including impacts to species by fragmentation, overall habitat needs and conservation objectives will be important in gaining support for additional open space lands, building mechanisms for mitigation, developing management strategies for open space lands and so forth.

Objective 12: The CDOW will work towards developing substantial increases in funding necessary for the conservation of grassland species in Colorado.

Traditional funding for species conservation work in Colorado includes three primary sources: Great Outdoors Colorado (GOCO), Species Conservation Trust Fund (SCTF) and Game Cash (GC), generated from the sale of hunting and fishing licenses. As this conservation Plan and others like it are completed and implementation begins, it is apparent that substantially more funding will be needed in the future. This argues for seeking a new funding source. This Plan calls for pursuing partnerships with other federal, state, county and municipal agencies, private foundations, private landowners and non-governmental organizations to increase funding for the conservation of grassland species and develop innovative ideas for funding of grassland species conservation in Colorado.

In summary, this conservation Plan outlines a conservation strategy for select shortgrass prairie species in Colorado and does so in the framework of commitment to the people making a living off of the land, adaptive management, high quality science and by fostering the institutional commitments of lead agencies and key partners. A fundamental part of this Plan is the development of habitat goals for the black-tailed prairie dog while at the same time committing to a larger conservation effort that supports the associated species as well as other elements of Colorado's natural heritage.

INTRODUCTION

The shortgrass prairie grassland region of the central United States has been an important component in our Nation's agricultural productivity, ecological diversity and unique character for more than 150 years. Across North America, this region stretches from southern Canada to northern Mexico, from the foothills of the Rocky Mountains to western portions of the Dakotas, Nebraska, Kansas, and Oklahoma. In the United States, this region occupies land found in eleven different western and central plains states - Montana, Wyoming, North Dakota, South Dakota, Nebraska, Colorado, Kansas, New Mexico, Oklahoma, Arizona and Texas.

Early settlers in this region found a sea of productive grasslands suitable for raising livestock and a vast array of wildlife species ranging from the black-tailed prairie dog (*Cynomys ludovicianus*) and prairie chicken (*Tympanuchus* spp.), to herds of American bison (*Bison bison*), elk (*Cervus elaphus*), deer (*Odocoileus* spp.) and pronghorn (*Antilocapra americana*). Although livestock production remains high throughout the region, much has changed within the last century. Conversion of native grasslands to agricultural cropland and urban development has changed much of the look and character of the shortgrass prairie region. This alteration and fragmentation of the landscape has changed the level of wildlife diversity once supported.

Because of these changes, concern has grown over the past several years for the long-term sustainability, diversity and integrity of many components of the shortgrass prairie grassland ecosystem. From Canada to Mexico numerous agencies, organizations and individuals are working toward long-term conservation of the shortgrass prairie ecosystem. In Colorado, the federally endangered black-footed ferret has been extirpated. Three additional mammal and 24 bird species (Rocky Mountain Bird Observatory staff, pers comm. 2003) found within the shortgrass prairie are in some way categorized as species in need of conservation assistance. While some of these species are officially listed for protection and recovery under the ESA, many are species of conservation concern with some being candidates for listing in the near future.

In order to preclude the need for formal listing of these species under the ESA, state wildlife and natural resource agencies are taking a proactive approach to conservation and recovery of candidate species and species of special conservation concern. In June 2002, CDOW Director Russell George appointed a Working Group charged with developing a draft grassland species conservation plan for the black-tailed prairie dog and associated species. The Working Group was made responsible for consensus recommendations, an interim and final draft conservation plan, and reviewing and considering feedback from interested agencies, organizations and individuals. The Working Group is made up of representatives from the following interests: agricultural, animal welfare, conservation, economic and governmental.

This conservation Plan is the result of work by the Colorado Grassland Species Conservation Working Group. This Plan offers direct actions for the conservation of the black-tailed prairie dog and associated species in Colorado. This conservation Plan uses an adaptive management approach that includes new science and understanding of conservation allowing for flexibility in responding to changing conditions, either in the status of the black-tailed prairie dog and associated species populations, or social and economic circumstances.

BACKGROUND

Colorado's Conservation Effort

In 1998, the National Wildlife Federation (NWF) and the Predator Conservation Alliance along with the Biodiversity Legal Foundation and Jon Sharps filed two separate petitions to the United States Fish and Wildlife Service (USFWS) to list the black-tailed prairie dog as threatened under the ESA (USFWS 1999). Those petitions listed several factors as major threats to the long-term viability and conservation of this species. Included were habitat loss, unregulated shooting, unregulated poisoning, the lack of regulatory control over shooting and poisoning, disease, and

combinations of these and other factors (USFWS 1999, Luce 2003). In February of 2000, the USFWS's 12-month finding was that the black-tailed prairie dog was warranted but precluded for listing under the ESA (USFWS 2000) as resources needed to complete the process were not available. The factors that were considered as part of the threat analysis under the ESA relative to the black-tailed prairie dog were identified in the USFWS's 12-month finding and (in order of listing) included:

1. The present or threatened destruction, modification, or curtailment of its habitat or range;
2. Over-utilization for commercial, recreational, scientific, or educational purposes;
3. Disease or predation;
4. Inadequacy of existing regulatory mechanisms;
5. Other natural or man-made factors affecting its continued existence.

In response to the petitions, the 11 states located within the range of the black-tailed prairie dog began a multi-state conservation effort by forming the Interstate Black-tailed Prairie Dog Conservation Team (Conservation Team) (Luce 2003). The belief was that a multi-state conservation effort would be more effective in providing long-term conservation and management of this species than federal listing under the ESA or individual state planning efforts. If accepted by the USFWS as the best approach for long-term conservation, the 11 states' management and conservation efforts could effectively eliminate the need for listing of the black-tailed prairie dog and remove it from the ESA candidate list. Although an active participant in the Conservation Team, Colorado did not officially sign on to the multi-state conservation Memorandum of Understanding (MOU). Rather than develop a single-species black-tailed prairie dog conservation plan, Colorado wildlife officials determined that a comprehensive, multi-species plan could better address the common conservation issues among a variety of shortgrass prairie species.

During the time of the formation of the Conservation Team, the CDOW and others believed Colorado had significantly more acres of active black-tailed prairie dogs throughout their historic range than originally estimated in studies by the NWF and the USFWS. Both entities estimated Colorado's active occupied acres of the black-tailed prairie dog to be less than 100,000 acres; the NWF cited studies by Knowles that found approximately 44,000 occupied acres (Knowles 1998) while the USFWS cited studies that estimated approximately 93,000 active occupied acres (USFWS 2000). After the USFWS published the results of their 12-month finding on the petitions in February of 2000, within which they listed the black-tailed prairie dog as "warranted but precluded," the Colorado Department of Natural Resources (CDNR) contracted EDAW, Inc. to conduct a "Black-tailed Prairie Dog Study of Eastern Colorado" (EDAW 2000). The objective of this project was to contact species experts around the state to locate all current data sources on the black-tailed prairie dog in Colorado and assemble all existing inventory data, which when field verified, could serve as baseline data for the species concerning the distribution and number of active occupied acres of the black-tailed prairie dog in Colorado.

EDAW (2000) reported an estimated minimum of 214,570 active occupied acres of black-tailed prairie dogs in eastern Colorado. Because the EDAW report was only to provide baseline information, and because the report indicated more than double the active occupied acres the USFWS estimated, the CDOW initiated a complete aerial survey of the black-tailed prairie dog acres throughout its entire historic range within Colorado in the summer of 2001. This survey was completed using aerial survey techniques described by Sidle et al. (2001).

In that same year, the CDOW signed an MOU with other state and federal agencies including: CDA, CDNR, Colorado State University Cooperative Extension, Colorado State Land Board of Commissioners, USDA APHIS Wildlife Services, US Bureau of Land Management, US DOD Fort Carson, US Environmental Protection Agency, USFWS and USDA Forest Service. The primary goal of the MOU was to "Develop and implement a program that achieves conservation of the black-tailed prairie dog in Colorado while recognizing that control is necessary and appropriate in

areas where prairie dogs conflict with agriculture and other human activities." A working group (MOU Group) made up of signatory agencies was created and over time expanded to include interested citizens, representatives of various conservation organizations and special interest groups. This MOU Group continued to meet periodically to share ideas concerning conservation efforts for the black-tailed prairie dog in Colorado and to receive updates as to the latest information and activities the CDOW and others were doing for prairie dog conservation. As an active extension of this MOU Group, the CDOW developed the Working Group in July of 2002. Members of the Working Group were appointed by the Director of the CDOW based on nominations received from members of the MOU group. The Working Group is made up of individuals from the CDOW, the USFWS, the CDA, the Colorado Farm Bureau, the Colorado Cattleman's Association, the Colorado Livestock Growers Association, the Nature Conservancy, the Rocky Mountain Bird Observatory, the NWF, the Boulder County Nature Association, the Colorado Association of Home Builders and representatives of the State Land Board and County Commissioners, Roe Ecological Services (a private wildlife consulting company) and prairie dog advocacy groups. This Working Group was responsible for developing Colorado's Draft Grassland Species Conservation Plan and met monthly starting in July of 2002, continuing through October of 2003 to discuss ideas and develop the goals and management strategies that will be used to ensure the long-term conservation of the black-tailed prairie dog and other associated species within Colorado's shortgrass prairie region.

In addition to the development of the Working Group in the summer of 2002, the CDOW completed the aerial survey initiated in 2001. Results of this survey indicated that Colorado currently has 631,102 total occupied acres of the black-tailed prairie dog ± 60,000 acres with a 95% confidence interval throughout the species' historic range (White et al. 2003) (See Table 1). Because the majority of these active acres reside on private lands, the CDOW and the members of the Working Group felt there was a tremendous opportunity and obligation to coordinate grassland species conservation efforts through voluntary, incentive-based conservation partnerships. By creating cooperative, voluntary partnerships between the private landowners currently harboring these species and the agencies, organizations and individuals interested in grassland species conservation, the hope is that more acres of quality habitat can be conserved than would be possible through legislative regulation.

Conservation actions outlined in Colorado's Plan are intended to be a model for multi-species conservation efforts and ultimately preclude the need for listing the black-tailed prairie dog and other grassland associated species under the ESA. This Plan may be used as a basis for applying for an umbrella Candidate Conservation Agreement with Assurances (CCAA) that would apply to all landowners in the state from the USFWS. By securing an umbrella CCAA with the USFWS, Colorado could ensure State control, management and conservation of the black-tailed prairie dog and other grassland species. The species included in the CCAA application would remain unaffected by a federal ESA listing as long as the CCAA terms were met. Landowners are also able to apply for CCAAs on an individual basis.

In addition to the black-tailed prairie dog, the Plan includes the Western Burrowing Owl (*Athene cunicularia*), Ferruginous Hawk (*Buteo regalis*), Mountain Plover (*Charadrius montanus*) and swift fox (*Vulpes velox*). All four of these additional species are grassland species of special conservation concern in Colorado and other parts of the U.S., and may benefit from the conservation efforts employed for the black-tailed prairie dog and grassland conservation as a whole. By incorporating these five species into one Plan, the CDOW and Working Group members hope to preclude the need for five separate conservation plans in the future. This will help to not only conserve monetary and logistical resources by the CDOW and other agencies, but also will likely help increase public and landowner acceptance of the conservation efforts needed for these species on private lands.

Participation in the recovery of the black-footed ferret (*Mustela nigripes*), a federally endangered, prairie dog-associated species that was extirpated from eastern Colorado prior to the 1970's, is not a specific objective of this Plan. We recognize that it is likely that there may be black-tailed

prairie dog complexes in eastern Colorado that meet the recovery criteria for the black-footed ferret. As we move forward with conservation efforts for grassland species in Colorado, consideration will be given to black-footed ferret recovery criteria.

Role of the Black-tailed Prairie Dog in the Grassland Ecosystem

Considered everything from a destructive rodent pest to a "keystone species," the black-tailed prairie dog is one of the most controversial wildlife species at the forefront of conservation in recent U.S. history. Since 1998, when petitions to list this species as threatened under the ESA were filed, state wildlife agencies have been working to develop conservation strategies for the black-tailed prairie dog that address its conservation needs while at the same time being publicly acceptable. Colorado's efforts to this end are no exception.

The concept of the black-tailed prairie dog as a "keystone species" in the grassland ecosystem is one that has been widely debated over the past few years in the scientific literature. The "keystone species" concept, as well as general statements relating to species abundance in relation to the black-tailed prairie dog, has been a fundamental argument in driving the black-tailed prairie dog conservation "movement" (Miller et al. 1994, Kotliar et al. 1999). A "keystone species" is defined as a species that has large effects on community structure or ecosystem function, whose effects should be large relative to abundance (Power et al. 1996). While many report that the black-tailed prairie dog and its function in the grassland ecosystem meet these criteria, others disagree. Mills, et al. (1993) provide a good discussion on the "keystone species" concept and its relationship to management policies regarding species conservation. They conclude that policy makers and managers should focus on the complexity of interactions in natural systems rather than the designation of a species as "keystone."

In looking at the black-tailed prairie dog, there is little doubt that the species impacts the overall shortgrass prairie ecosystem. Their herbivory, nutrient recycling, role as a prey species and so forth have played a role in shaping the shortgrass prairies of eastern Colorado. Reading et al. (1989), Barko et al. (1999), and Kotliar et al. (1999) identified numerous species thought to be associated with prairie dogs at some level. Kotliar et al. (1999) identified three species that showed a strong association, including the black-footed ferret (obligate), the Mountain Plover (strongly facultative) and the Western Burrowing Owl (strongly facultative). Additionally, six species were described as associated with prairie dogs; including the Ferruginous Hawk, Golden Eagle (*Aquila chrysaetos*), swift fox, Horned Lark (*Eremophila alpestris*), deer mouse and grasshopper mouse. Barko et al. (1999) noted that prairie dog colonies created patches of habitat that attracted grassland bird species particularly during the breeding season. There are other species that often are assumed to be associated with prairie dog colonies such as the badger, prairie rattlesnake and tiger salamander. Data to support this belief however is incomplete (Kotliar et al. 1999).

Regardless of whether or not the black-tailed prairie dog is a "keystone species," it is generally accepted that the black-tailed prairie dog does serve an important role in the grassland ecosystem. Several studies have shown that the black-tailed prairie dog alter the species composition and structure of plant communities on which they are found. Typically, there is greater cover and abundance of perennial short-grasses and annual forbs on prairie dog colonies. In contrast, perennial mid-height grasses and perennial forbs generally characterize non-prairie dog colonized sites (Bonham and Lerwick 1976, Coppock et al. 1983, Agnew et al. 1986, Archer et al. 1987, Whicker and Detling 1988, Weltzin et al. 1997, Witmer et al. 2002). Consequently, across large landscapes prairie dogs can contribute to overall landscape heterogeneity. They can also affect the rate of ecosystem processes, including disturbance and nutrient cycling (Ingham and Detling 1984, Whicker and Detling 1988) and can provide nest sites and shelter for wildlife such as the Burrowing Owl and rattlesnake. In addition, prairie dogs often either consume or clip the aboveground biomass to the ground surface and even denude the vegetation further by digging up the roots (King 1955, Koford 1958, Smith 1967).

Status of the Black-tailed Prairie Dog and Associated Species
Because the black-tailed prairie dog is an important wildlife species and component in Colorado's grassland ecosystem, and because several wildlife species of conservation concern are associated in some way with the black-tailed prairie dog, Colorado's Plan follows along the lines of ecosystem conservation rather than a single-species approach. Kotliar et al. (1999) found that, among others, the Burrowing Owl, Ferruginous Hawk, Mountain Plover and swift fox were dependent upon or closely associated with the black-tailed prairie dog in some way. These four species are also listed by the CDOW as having a status of either special conservation concern (Ferruginous Hawk, Mountain Plover, and swift fox) or State Threatened (Burrowing Owl). By concentrating on conserving quality grassland habitats that include the black-tailed prairie dog, Colorado wildlife officials hope to meet the conservation needs of the black-tailed prairie dog and these other wildlife species as well, and to do so all under one Plan. The hope is that not only will an ecosystem approach for the conservation of these five species be ultimately more successful, but that it will also be much more acceptable to various stakeholders.

STATEMENTS OF BROAD POLICY

Legislative Direction
"It is the policy of the state of Colorado that wildlife and their environment are to be protected, preserved, enhanced and managed for the use, benefit and enjoyment of the people of this state and its visitors. It is further declared to be the policy of the state that there shall be provided a comprehensive program designed to offer the greatest possible variety of wildlife-related recreational opportunity to the people of this state and its visitors and that, to carry out such program and policy, there shall be a continuous operation of planning, acquisition and development of wildlife habitats and facilities for wildlife-related opportunities." Colorado Revised Statutes 33-2-102.

"The general assembly finds and declares that it is the policy of this state to manage all non game wildlife, recognizing the private property rights of individual property owners, for human enjoyment and welfare, for scientific purposes and to insure their perpetuation as members of ecosystems; that species or subspecies of wildlife indigenous to this state which may be found to be endangered or threatened within the state should be accorded protection in order to maintain and enhance their numbers to the extent possible; that this state should assist in the protection of species or subspecies of wildlife which are deemed to be endangered or threatened elsewhere; and that adequate funding be made available to the Division annually by appropriations from the general fund." Colorado Revised Statutes 33-2-102.

Agency Mission
"The mission of the Colorado Division of Wildlife is to perpetuate the wildlife resources of the State and to provide people with the opportunity to enjoy them" CDOW 2002 – 2007 Strategic Plan

Vision for Species Conservation
"The Division will emphasize the development of management approaches encompassing multi-species communities across the landscape. The Division defines species conservation as conserving, protecting and enhancing Colorado's native wildlife, by taking the actions necessary to assure the continued existence of each species and thereby precluding or eliminating the need for state and/or federal listing."

"The Division will form partnerships with landowners, land management agencies and others to manage, protect, enhance and restore wildlife and their habitats. The Colorado Division of Wildlife will lead efforts to monitor wildlife communities and manage them as needed to prevent their decline. The Division will work aggressively with others to recover threatened and endangered species. The Division encourages partnerships to share in the vision to protect, enhance and restore wildlife communities that need assistance to survive."

GOAL OF THE PLAN

"The goal of this Plan is to ensure, at a minimum, the viability of the black-tailed prairie dog and associated species (Mountain Plover, Burrowing Owl, swift fox and Ferruginous Hawk) and provide mechanisms to manage for populations beyond minimum levels, where possible, while addressing the interests and rights of private landowners."

MANAGEMENT PRINCIPLES

The following are elements from several sources that may be considered as guidance for the development of Colorado's Grassland Species Conservation Management Plan.

Multi-State Conservation Plan for the Black-tailed Prairie Dog, *Cynomys ludovicianus,* in the United States (Luce 2003)

- 10 year population objective for Colorado – minimum of 255,733 acres of occupied habitat
- 1 complex of at least 5, 000 occupied acres
- 10% of complexes >= 1, 000 occupied acres
- Maintain distribution over at least 75% of the counties in the historic range
- Conduct monitoring every three years

Policy for Evaluation of Conservation Efforts when Making Listing Decisions (USFWS 2003)

Evaluation Factors:
- Staffing, funding and other resources identified and secured for implementation
- Authority to implement the Plan exists and procedural requirements are identified
- Level(s) of voluntary participation identified and secured
- Regulations are in place to implement the Plan
- Implementation schedule identified
- The Plan has approval of all parties to implementation
- Nature and extent of threats being addressed are described
- Explicit objectives and dates for achieving them are stated
- Steps to meet objectives are clearly identified
- Quantified parameters that will demonstrate achievement and standards for measurement are identified
- Provisions for monitoring and reporting are included
- Principles of adaptive management are incorporated

Listing Considerations:
- Present or threatened destruction, modification, or curtailment of habitat or range
- Over-utilization for recreational purposes
- Disease or predation
- Inadequacy of regulations to address recreational shooting and poisoning
- Other man-made factors (e.g. statutory status as a pest, unregulated control and poisoning)

Colorado Division of Wildlife 2002-2007 Strategic Plan (CDOW 2002)
- S1.1 – "The Division will strive to maintain, create and manage habitat to support the broadest-sustainable wildlife populations in Colorado."
- S1.2 – "The Division will expand wildlife conservation partnerships with private landowners to ensure the conservation and management of wildlife and their habitat in Colorado."
- S2.1 – "The Division will continue its efforts to preserve, protect and enhance wildlife species that may be at risk of becoming threatened or endangered."

Adaptive Management

Adaptive management is a continuous process of planning, acting, monitoring and evaluating designed to take into account changes in ecological and social systems, to identify and evaluate new information and to make adjustments in actions to achieve specific goals and objectives (Shindler et al. 1999).

Table 1: Results of CDOW Aerial Inventory - November 2002

Totals for State							
County	**Acres of Prairie Dogs**	**County CI (%)**	**Miles Flown**	**Acres in County**	**% County in PD**	**Acres Suitable Habitat**	**% Occupied Suitable Habitat**
Adams	9569	29.5%	1034	768099	1.25%	119568	8.0%
Arapahoe	10728	62.5%	378	514107	2.09%	157358	6.8%
Baca	71988	20.9%	1769	1638109	4.39%	745820	9.7%
Bent	80465	33.9%	1298	968918	8.30%	701455	11.5%
Boulder	17769	37.9%	577	480686	3.70%	22525	78.9%
Cheyenne	21352	20.0%	1087	1139829	1.87%	274460	7.8%
Crowley	22437	37.3%	679	512422	4.38%	339977	6.6%
Denver[1]				99617	0.00%	1037	
Douglas	3777	107.8%	432	538527	0.70%	149643	2.5%
Elbert	4248	114.8%	597	1182788	0.36%	798523	0.5%
El Paso	16652	58.4%	805	1362591	1.22%	760465	2.2%
Fremont	8535	73.1%	542	980558	0.87%	51803	16.5%
Huerfano	0	0.0%	485	1019181	0.00%	295093	0.0%
Jefferson	5162	76.3%	345	497077	1.04%	41762	12.4%
Kiowa	46722	63.5%	1116	1142545	4.09%	262717	17.8%
Kit Carson	18106	32.4%	1187	1384342	1.31%	386505	4.7%
Larimer	15761	40.7%	1049	1684129	0.94%	73562	21.4%
Las Animas	32450	56.1%	2460	3053720	1.06%	1701882	1.9%
Lincoln	16854	48.3%	1295	1654625	1.02%	879442	1.9%
Logan	16857	35.7%	993	1180965	1.43%	372218	4.5%
Morgan	5028	62.9%	537	828447	0.61%	141700	3.5%
Otero	23271	61.5%	461	810779	2.87%	623084	3.7%
Phillips	0	0.0%	161	440701	0.00%	22742	0.0%
Prowers	66895	25.9%	1185	1052516	6.36%	401554	16.7%
Pueblo	45481	31.1%	1871	1534410	2.96%	846180	5.4%
Sedgwick	1894	92.1%	158	350979	0.54%	88680	2.1%
Washington	3317	77.7%	1002	1618865	0.20%	382922	0.9%
Weld	52637	21.3%	3570	2570639	2.05%	880600	6.0%
Yuma	13146	43.2%	1027	1512499	0.87%	289432	4.5%
Totals	**631102**		**28100**	**32522670**	**1.94%**	**11812711**	**5.3%**
Lower CI	570947						
Upper CI	691258						
% CI[2]	95.3%						

[1] Suitable habitat in Denver County was not flown because of Air Space Closures around DIA.
[2] 95% sure that the mean (total) falls between Lower Confidence Interval & Upper Confidence Interval.

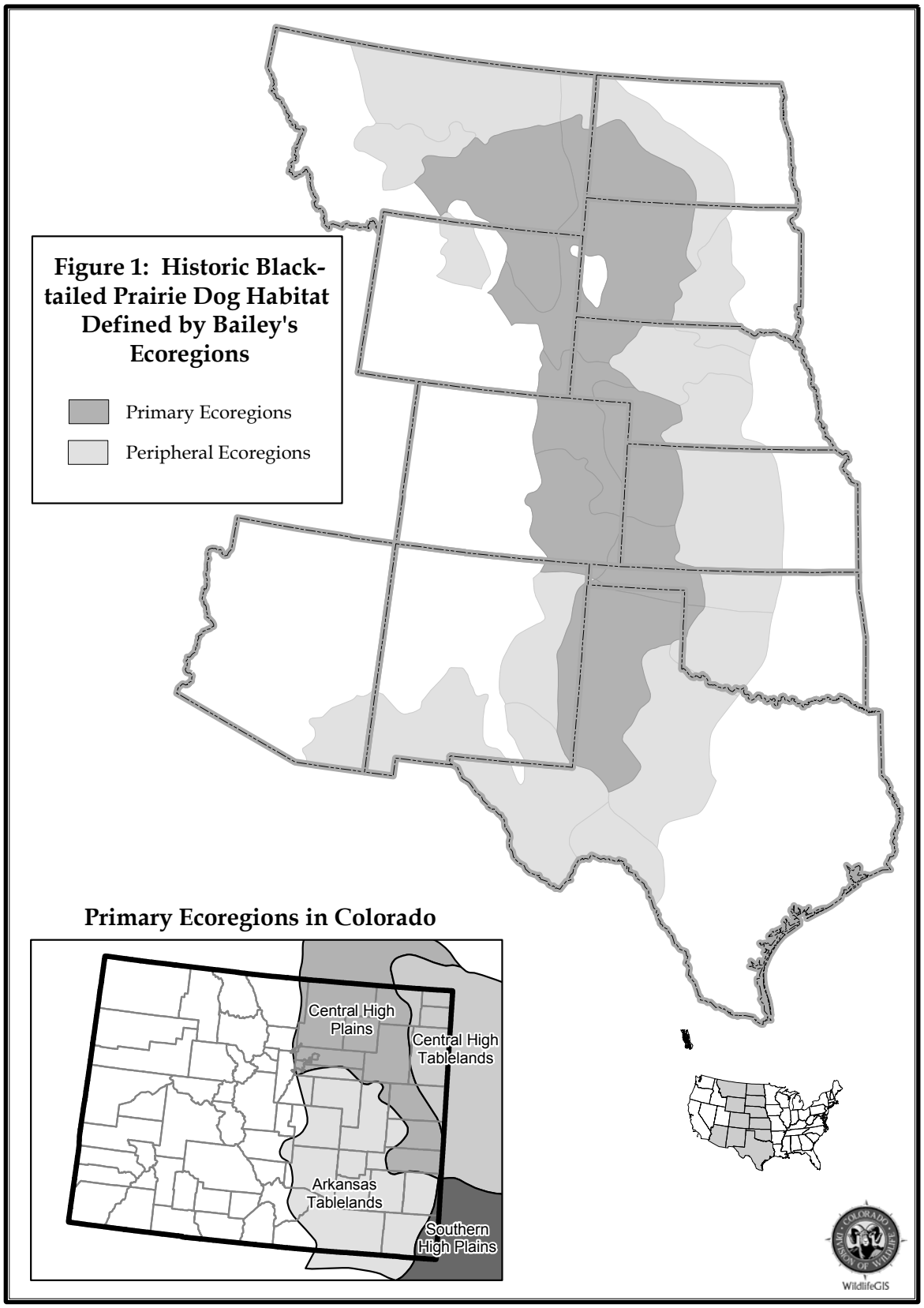
Figure 1: Historic Black-tailed Prairie Dog Habitat Defined by Bailey's Ecoregions
Primary Ecoregions
Peripheral Ecoregions
Primary Ecoregions in Colorado
Central High Plains
Central High Tablelands
Arkansas Tablelands
Southern High Plains
WildlifeGIS

OBJECTIVES AND ACTIONS

Black-tailed Prairie Dog Acreage and Distribution
In November of 2002, the CDOW completed an aerial survey of the black-tailed prairie dog throughout its historic range in Colorado as described in Luce 2003 (Figure 1). The survey is based on techniques described in Sidle et al. 2001 and is currently being submitted for peer review and publication (Appendix M - White et al. 2003). The survey found that, with 95% confidence, there are approximately 631,000 ± 60,000 active acres of the black-tailed prairie dog across its historic range in Colorado. Currently, prairie dogs occupy 100% of the counties in Colorado's historic range and approximately 1.94% of the total area of eastern Colorado. In 2001, the CDOW developed a model to estimate historic and current potentially suitable habitat for the black-tailed prairie dog. It is estimated that historically, there were approximately 24,000,000 acres of suitable habitat in Colorado (Figure 2) and that currently there are approximately 11,800,000 acres of potentially suitable grassland habitat for the black-tailed prairie dog (Table 2). Tying this back to the aerial inventory data, 2.6% of historic potentially suitable habitat and 5.3% of current potentially suitable habitat is occupied by the black-tailed prairie dog. In further analyzing these data with regard to complexes of black-tailed prairie dog colonies, based on a 7 km (4.4 mi) proximity between active black-tailed prairie dog colonies, Colorado has 18 complexes with a density greater than 10 colonies per 150 km² (excluding the Denver urban corridor) and 20 complexes with a density greater than 10 colonies per 150 km² (Figure 3).

Colorado is working with the multi-state conservation team to improve monitoring methodologies used by the states. The goal is to develop a common methodology across the range of the black-tailed prairie dog. The current aerial sampling methodology used in Colorado as well as several neighboring states gives us an estimate of the extent of black-tailed prairie dog colonies over an extensive area. Additional information, particularly more specific information on the percent occupancy of colonies identified as active and the density of active colonies, is needed. Additional research has been funded to begin gathering this information (Appendix G).

In February 2003, the multi-state black-tailed prairie dog Conservation Team completed the "*Multi-state Conservation Plan for the Black-tailed Prairie Dog, Cynomys ludovicianus, in the United States, Addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy*" (MSCP) (Luce 2003). This document, approved by the Directors of all 11 states, details proposed actions for the conservation of the black-tailed prairie dog over the next 10 years. The goal of the MSCP is to remove enough threats to the black-tailed prairie dog to ensure the long-term conservation of the species. Colorado currently exceeds all acreage and distribution target objectives (see Management Principles) defined in the MSCP. A tiered approach to defining actions for black-tailed prairie dog conservation was developed based on active occupied acreage as outlined in Table 3. Current conditions are described and zones are defined based on a range of active acres of the black-tailed prairie dog. The zones are assigned colors and descriptors based on active occupied acreages starting with the Blue Zone – Abundant (> 450,000 acres) to the Red Zone – Danger (< 150,000 acres). Zone ranges are based on a 33.3% disease and/or natural catastrophe buffer. Best available data suggest that in the absence of plague, natural populations fluctuate an average of ± 20% over roughly a 4-year cycle. This natural fluctuation can reach as high as ± 40%. Specific actions have been outlined for implementation in each zone. In general, when population levels are at or beyond the Green – Secure (350,000 – 450,000), there are no or minimal restrictions or required actions. Management focuses on voluntary, incentive-based partnerships with both public and private landowners to secure habitat for approximately 150,000 occupied acres. Adaptive management for the black-tailed prairie dog will require ongoing monitoring and analysis. Proposed objectives and actions are summarized below:

Objective 1: Meet occupied acreage and distribution target objectives as defined for Colorado in "*A Multi-State Conservation Plan For The Black-tailed Prairie Dog, Cynomys*

***ludovicianus*, *in the United States, Addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy*" (Luce 2003).**

Population Monitoring and Analysis

Action 1.1: Submit for peer review and publication, the methodology, discussion and results of the 2002 aerial survey of the black-tailed prairie dog in eastern Colorado.

Action 1.2: Implement a monitoring protocol to estimate the black-tailed prairie dog populations and distribution in eastern Colorado on a three-year interval (2002, 2005, 2008, 2011)

Action 1.3: Coordinate with the multi-state black-tailed prairie dog Conservation Team to implement a standardized monitoring protocol applicable in all 11 states of the black-tailed prairie dogs' range.

Action 1.4: If populations fall into the Yellow – Vulnerable zone (250,000 – 350,000 active acres) or below, frequency and intensity of monitoring will increase to determine the cause of the decline and management actions will be developed to stabilize or reverse the decline.

Table 2: Potential Habitat for the Black-tailed Prairie Dog in Colorado

Vegetation Type[1]	Acres (Slope < 10 and soil HSI > .33)	
Urban	397,482	
Dryland Ag.	8,340,731	
Irrigated Ag.	2,180,500	
	Sum of Urban, Dry and Irrigated Ag.	10,918,713
Tallgrass Prairie	486,631	
Midgrass Prairie	943,412	
Shortgrass Prairie	9,512,602	
Foothill/Mt. Grassland	214,684	
Sand Dune Complex	627,340	
	Sum of Grassland Types	**11,784,670**[2]
Xeric Upland Shrub	23,559	
Gambel Oak	80,820	
	Sum of Shrub Types	104,379
Sum of All Vegetation Types		22,807,761

[1]Includes all vegetation types with active prairie dog colonies identified from the EDAW report.

[2]Potentially suitable habitat for the black-tailed prairie dog in Colorado based on vegetation type, suitable soil conditions and slopes less than 10%.

Table 3: Active Occupied Acreage Zones for the Black-tailed Prairie Dog

Zones	Monitoring/Analysis		Statewide Regulations		Specific Management Tools		
Current Conditions							
Active Occupied Acreage is: 631,000 acres ± 60,000 acres (95% confidence)	Plague - Reports made to CDPHE when suspected outbreak may impact human health. Random testing, primarily coyotes in SE and West slope by APHIS.		Cartridges allowed for general use without a license or permit. Zinc and aluminum phosphide use is restricted and licenses required for all users	Sport shooting closed range wide. Control allowed on private lands to protect property.	SB-99111 requires county approval for relocations across county lines		
Acreage (thousands)	**Population**	**Plague**	**Toxicants[1] MOU-DOW/AG**	**Shooting**	**Incentives[2]**	**Repopulation[3]**	**Plague Management**
Blue - Abundant >450	-Inventory conducted every 3 years	-Public outreach -Voluntary reporting protocol	-Status quo	-Status quo	-Provide as necessary to ensure long term protection		-Public outreach activities ongoing
Green - Secure 350 - 450	-Inventory conducted every 3 years	-Public outreach -Voluntary reporting protocol -Mandatory reporting for all contracts on prairie dogs or associated species	-Gather and compile annual product sales data in Colorado by registrants	-Status quo	-Identify funding sources as necessary to ensure long-term protection		-Public outreach activities ongoing
Yellow - Vulnerable 250 – 350	-CDOW analyzes cause of decline with additional monitoring (i.e. increased frequency and/or additional tools)	See **Specific Management Tools** -Public outreach -Voluntary reporting protocol -Mandatory reporting for all state funded contracts on prairie dogs or associated species	-Gather and compile annual product sales data in Colorado by registrants and dealers	-Status quo	-CDOW - evaluate tools appropriate to address decline -CDOW - develop adaptive management agreement with counties in high decline areas		
					-Secure long-term funding	-Regulation- SB-99111 - no change -Funding - private and public	-Implement multi-state conservation protocols when plague is suspect
Orange - At Risk 150 – 250	-CDOW analyzes cause of decline with additional monitoring (i.e. increased frequency and/or additional tools)	See **Specific Management Tools** -Public Outreach -Voluntary reporting protocol -Mandatory reporting for all state funded contracts on prairie dogs or associated species.	-Gather and compile annual product sales data in Colorado by registrants, dealers and end-users	**Same as Yellow plus:** -Limited to landowner damage situations. -Take permit required to monitor	-Implement adaptive agreements		
					-Focus incentives on high need areas	**-**Regulation- SB-99111 - no change **-**Funding – private and public	**-**Implement multi-state conservation protocols when plague is suspect **-**Consider active control measures on lands in LIPS
Red - Danger <150	-CDOW analyzes cause of decline with additional monitoring (i.e. increased frequency and/or additional tools)	See **Specific Management Tools** -Public outreach -Voluntary reporting protocol -Mandatory reporting for all state funded contracts on prairie dogs or associated species	-Gather and compile annual product sales data in Colorado by registrants, dealers and end-users -Heavily restricted; permitting based on stringent criteria	-Special permit only	-County participation in adaptive agreements required for inclusion in CCAA		
					-Focus incentives on high need areas	-Regulation- SB-99111 - no change -Funding - private and public	-Implement multi-state conservation protocols when plague is suspect -Consider active control measures on lands in LIPS

[1] Product is defined as a pesticide product registered for use on the black-tailed prairie dog in Colorado.
[2] Relocation will be used primarily in the event of major die-off and based on an assessment of the potential for recovery utilizing other management actions.
[3] Goal for protected acreage through broad incentives and on public lands - 150,000 active occupied acres.

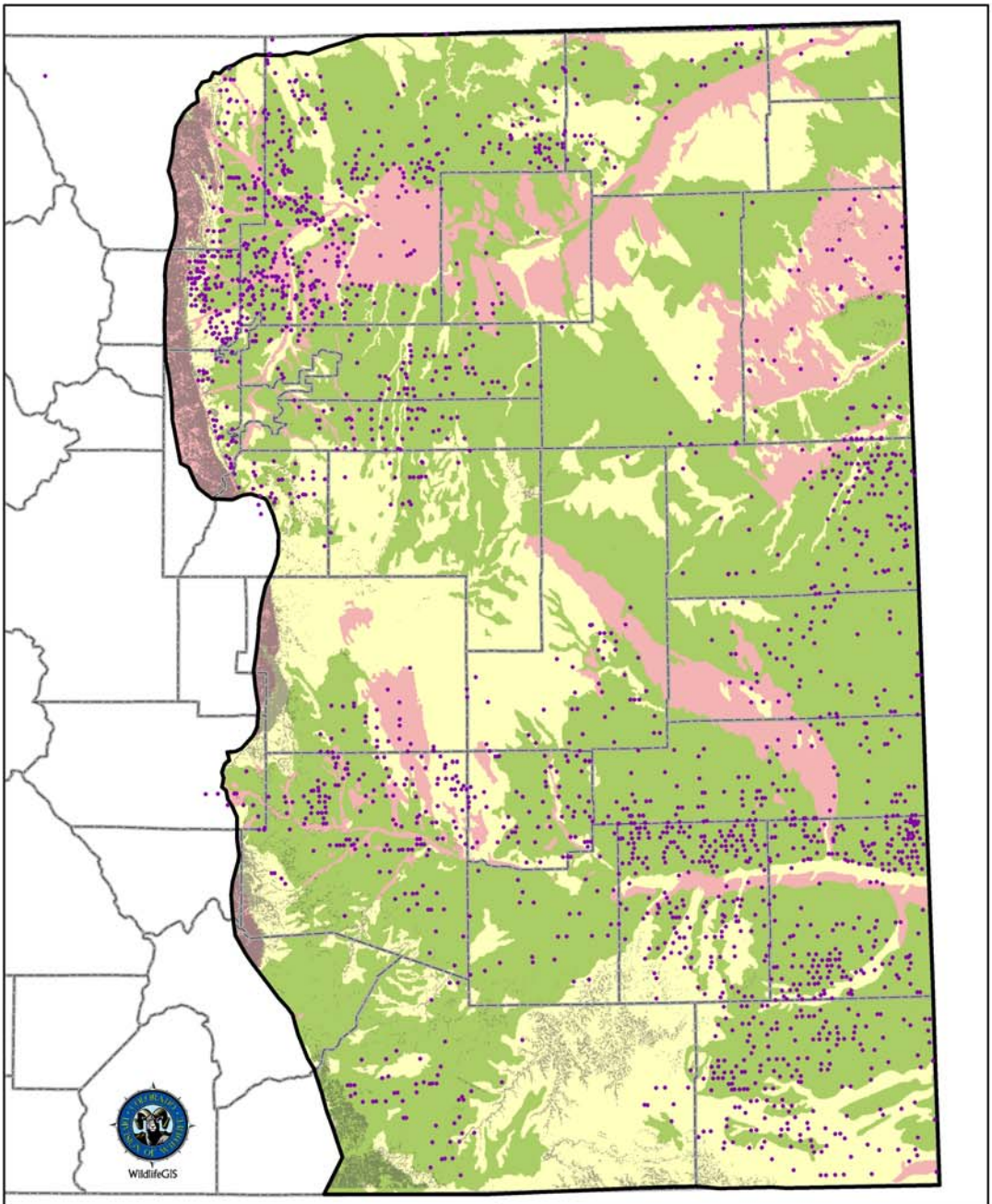

Figure 2: Modeled Historic Habitat and Potentially Suitable Black-tailed Prairie Dog Habitat in Colorado

SOIL TEXTURE (HSI)

- High (0.67 - 1)
- Moderate (0.34 - 0.66)
- Low (0 - 0.33)
- Slope > 10°
- Observed Prairie Dog Colony

20 0 20 40 60 80

Miles

Acreage of Suitable Habitat by Soil and Slope:

		SOIL TEXTURE SUITABILITY INDEX			
		High	Moderate	Low	TOTAL
SLOPE (in degrees)	0 - 5	15,351,688	7,621,044	3,414,132	26,386,864
	>5 - 10	511,970	667,010	197,111	1,376,091
	>10	165,485	443,576	447,701	354,168
	TOTAL	16,029,163	8,731,630	4,058,944	XXXXXXXX

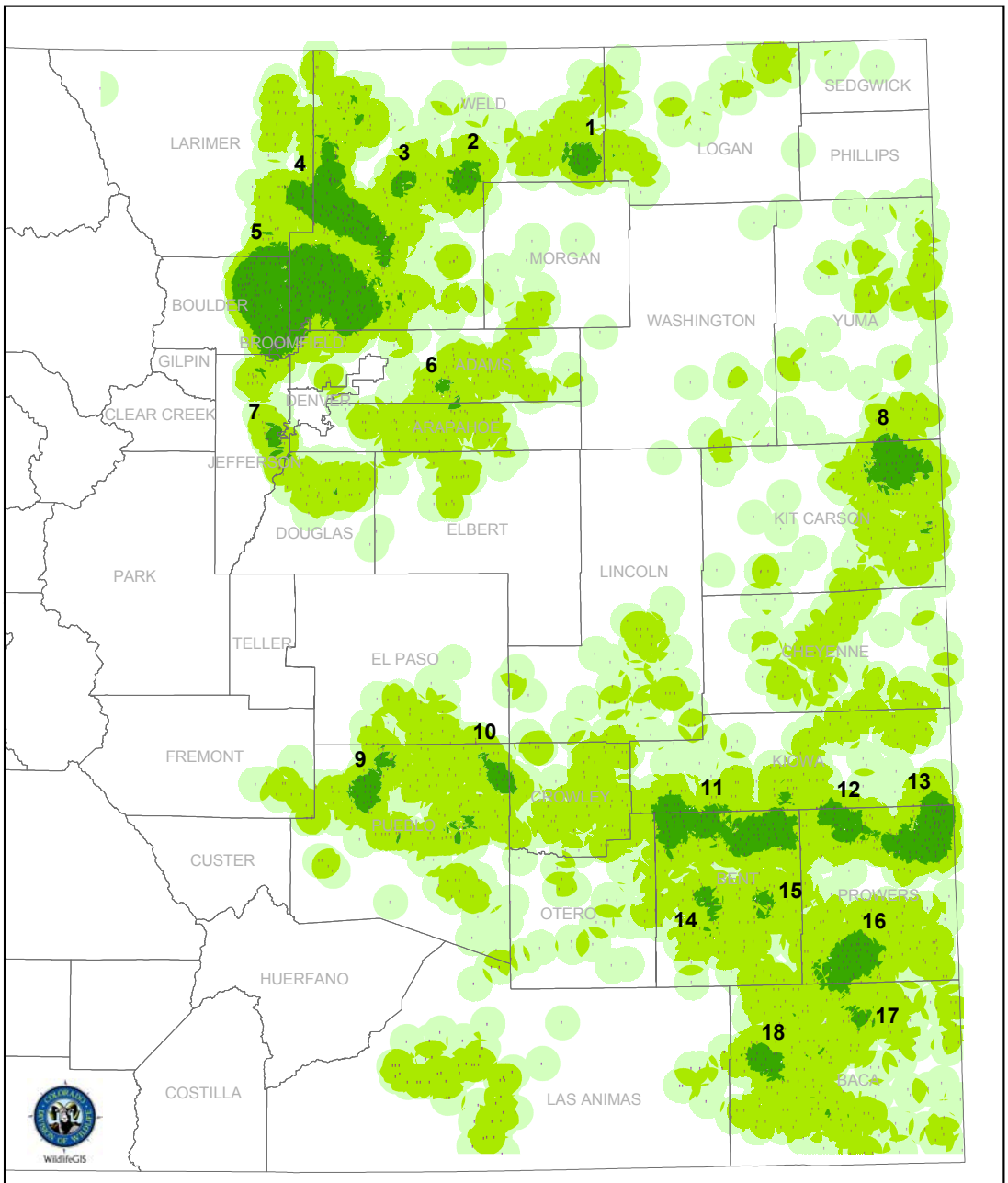

Figure 3: Black-tailed Prairie Dog complexes defined by densities of Prairie dog colonies on Colorado's eastern plains.

- Density >10 colonies/150Sq.Km.
- Density 3 - 10 colonies/150Sq.Km.
- Density 1 - 2 colonies/150Sq.Km.
- Observed Prairie Dog Colony

Number of colonies in complexes where Area > 5,000 acres and Density > 10 colonies/150SqKm:

1:	17 Colonies	10:	14 Colonies
2:	16 Colonies	11:	86 Colonies
3:	9 Colonies	12:	22 Colonies
4:	89 Colonies	13:	61 Colonies
5:	127 Colonies	14:	9 Colonies
6:	1 Colony	15:	5 Colonies
7:	6 Colonies	16:	39 Colonies
8:	38 Colonies	17:	4 Colonies
9:	24 Colonies	18:	17 Colonies

Plague Monitoring
Action 1.5: Initiate a public outreach program to inform landowners, hunters and other members of the public concerning the need to notify the Colorado Department of Public Health and Environment (CDPHE) and CDOW of die-offs of prairie dogs or ground squirrels.
Action 1.6: Develop and implement a voluntary reporting protocol.
Action 1.7: CDOW field personnel will report die offs of prairie dogs.
Action 1.7: If populations fall into the Green – Secure zone (3500,000 - 450,000 active acres) or below, a clause requiring the reporting of die-offs of prairie dogs or ground squirrels will be added to all CDOW contracts for work involving prairie dogs or associated species.
Action 1.8: If populations fall into the Yellow – Vulnerable zone (250,000 – 350,000 active acres) or below, plague monitoring protocols (see Appendix I) recommended in the "*A Multi-State Conservation Plan For The Black-tailed Prairie Dog, Cynomys ludovicianus, in the United States, Addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy*" (Luce 2003) will be implemented.

Associated Species Populations
Data are inadequate to define specific target objectives for shortgrass prairie associated species including the Mountain Plover, Burrowing Owl, Ferruginous Hawk and swift fox. Population trend data are available for a number of grassland bird species (Appendix F), but in many cases, data are inadequate for monitoring birds with broad distribution and low population densities. Populations of the Mountain Plover are thought to be declining, but data collected is inconclusive. Data clearly show reductions in Mountain Plover populations locally (i.e. Pawnee National Grassland). Surveys have been geographically restricted, however. Broader surveys could show local declines balanced by other local increases or at least maintenance. These birds are inconspicuous and easily overlooked and much of the data is based on low abundance and/or small sample sizes. Populations of the Burrowing Owl are thought to be stable or increasing in eastern Colorado (Hanni 2003). Along the front range of Colorado, the Burrowing Owl has disappeared from much of its historic range in response to habitat fragmentation and disturbance to its nesting areas by people, dogs, cats and activities associated with high urban densities. Workers for the Colorado Breeding Bird Atlas (Jones 1998) reported the Burrowing Owl breeding range to be primarily in eastern Colorado, despite their once having been widespread throughout the state. Populations of swift fox are considered abundant and wide spread in Colorado. Ferruginous Hawk populations are considered stable in Colorado (See individual species accounts, Appendices A – E).

Associated Species Population Monitoring and Analysis
Current Breeding Bird Survey (BBS) information for shortgrass associated species like the Mountain Plover, Burrowing Owl and Ferruginous Hawk are frequently based on small sample sizes or low abundance, resulting in uncertain conclusions. Low population densities and the patchy distribution of these species require the development and implementation of specialized monitoring methodologies. Standardized methodologies are being developed to estimate long-term population trends and distribution. This data will allow managers to identify populations or areas experiencing declines, evaluate reasons for declines and better identify areas for conservation. A summary of ongoing population monitoring and research projects is included in Appendix G.

Objective 2: The CDOW will continue its efforts to produce, encourage and support the best available science regarding monitoring long-term population trends and distribution of shortgrass associated species.

Action 2.1: Support ongoing efforts to monitor long-term population trends for the Mountain Plover on the Pawnee National Grassland (PNG) and in South Park.
Action 2.2: Support ongoing efforts to evaluate potential Mountain Plover and other shortgrass prairie bird monitoring methodologies in eastern Colorado.

Action 2.3: Implement best available monitoring methodologies for shortgrass associated bird species including Burrowing Owl and Ferruginous Hawk to determine long-term trends and distribution.
Action 2.4: Implement mark-capture monitoring protocol to estimate swift fox populations in eastern Colorado on a five-year interval (2003-04, 2008-09, 2013-14).

Management Response
Management activities listed in Table 3 are designed to address the listing factors relative to the black-tailed prairie dog; and to the extent possible, conservation of not only the black-tailed prairie dog, but also other shortgrass associated species. Management decisions will have their basis in sound biological science and will consider the interests of private landowners, local governments and other interests. Conservation efforts will focus on providing secure quality habitat in eastern Colorado to support viable populations of the black-tailed prairie dog and shortgrass associated species including the Mountain Plover, Burrowing Owl, Ferruginous Hawk and swift fox. Issues unique to management of front range grassland species populations are identified and addressed in a separate section of the Plan.

Habitat Considerations and Engaging Private Landowners

Objective 3: Recognizing that private landowners provide critical habitat and act as stewards to the land supporting populations of the black-tailed prairie dog and other shortgrass associated species; voluntary, incentive-based, non-regulatory partnerships with private landowners will be used to ensure the conservation and management of these species and their habitats in Colorado.

Action 3.1: Secure 150,000 acres of high quality shortgrass prairie habitat for the conservation of the black-tailed prairie dog and associated species through permanent (preferred) or long-term easements or conservation agreements by 2011.
Action 3.2: Work with other federal, state and municipal agencies as well as non-governmental organizations, state agricultural organizations and private landowners to identify high priority areas to implement partnerships.
Action 3.3: Map existing areas that provide secure quality native shortgrass prairie habitat and their spatial relationship to proposed areas for conservation easements/agreements.
Action 3.4: Promote coordination and partnering among existing entities that have land protection capacity and an interest in the shortgrass prairie (potentially including CDOW, The Nature Conservancy, Colorado Cattleman's Agricultural Land Trust, Colorado Open Lands, Douglas County Land Conservancy, Colorado Department of Transportation, etc.).
Action 3.5: Support efforts of the Interstate Coordinator for the Prairie Dog Conservation Team and others in building public/private partnership initiatives like the High Plains Partnership to provide federal funding for conservation efforts.
Action 3.6: Work in partnership with the Natural Resources Conservation Service (NRCS) to implement conservation programs under Farm Bill programs such as the Conservation Reserve, Conservation Reserve Enhancement, Grassland Reserve, Wildlife Habitat Incentives and Environmental Quality Incentives Programs (EQIP) to benefit grassland associated species.

- Specifically expand the use of USDA Farm Bill programs toward the goal of grassland species conservation.
- Raise awareness of land managers to the capability of various programs in meeting grassland species objectives and the mechanics of making programs work for grassland species.
- Explore alternative methods of implementing programs such as set asides under EQIP for grassland species projects.
- Investigate the potential for developing a Conservation Reserve Enhancement Project (CREP) that focuses specifically on grassland species.

Action 3.7: Implement Mountain Plover nest conservation in cultivated fields project to minimize the impact of agricultural cultivation activities on the nesting Mountain Plover.

Action 3.8: Develop Candidate Conservation Agreements with Assurances (CCAAs) and other cooperative agreements, as needed, with private landowners for species that are candidates for federal listing.
Action 3.9: Support the Colorado Department of Transportation's (CDOT) Shortgrass Prairie Initiative, which is designed to streamline regulatory compliance and fulfill CDOT's mitigation needs in the shortgrass prairie through the establishment of proactive perpetual conservation easements and active management.

Public Outreach and Education

Objective 4: Raise awareness of grassland conservation needs within the private and public sector. Maintain healthy populations of grassland wildlife in conjunction with economic development and viability, and protection of property rights. Raise awareness for grassland wildlife of high conservation concern including how to identify the species, habitat needs and management recommendations. Familiarize private landowners with different grassland habitat incentive programs including state, federal and non-profit partners they can work with. Promote long-term conservation and sustainable use of grassland wildlife and their habitats.

Action 4.1: Develop a standard presentation and "train-the-trainers" on delivery at local meetings.
Action 4.2: Build and expand partnerships for grassland conservation with Colorado Farm Bureau, Colorado Cattleman's Association, Colorado Livestock Association, Cooperative Extension, Resource Conservation & Development, Natural Resources Conservation Service, Soil Conservation Districts, County Commissioners, CDOW, private landowners and others through outreach.
Action 4.3: Use workshops as an outreach tool to:

- Discuss grassland conservation priorities and raise awareness for priority species and their habitat needs
- Discuss incentive programs for grassland habitats
- Provide a cooperative atmosphere for landowners to network with partners on the grasslands
- Raise awareness for Mountain Plover conservation efforts
- Provide outreach documents including Sharing Your Land with Shortgrass Prairie Birds, Shortgrass Prairie Resource Guide, Pocket Guide to Prairie Birds, CDOW's program booklet and so forth

Action 4.4: Attend annual Farm Bureau, Cattleman's, State Conservation District, County Commission and other agricultural-related organization meetings and give presentations on grassland conservation and/or have informational booths.
Action 4.5: Distribute the Mountain Plover video to agricultural organizations and other interested parties.
Action 4.6: Develop web pages on CDOW's web site with information on Colorado's Grassland Conservation Plan, including:

- Upcoming outreach activities
- Links to partners
- Links to other state plans and information
- Information on CCAAs

Action 4.7: Facilitate implementation of on-the-ground grassland conservation efforts through outreach, technical service and financial assistance.
Action 4.8: Develop press releases for local and statewide newspapers and radio stations on grassland conservation, ongoing projects and upcoming activities and meetings.
Action 4.9: Secure long-term funding for outreach, education and on-the-ground conservation.

Regulatory Considerations
While the CDOW is responsible for wildlife management in Colorado, the authority of the CDPHE, the CDA, and of Boards of County Commissioners (BOCC) directly impact the management of

the black-tailed prairie dog. State statutes outlining these authorities include: CRS 35-7-101 and 102: Department of Agriculture/Control and Eradication of Rodents; CRS 35-7-203: Prohibits release of prairie dogs into a county other than the county where they were taken unless expressly approved by the Division of Wildlife and the Board of County Commissioners; CRS 30-11-107: Powers of Board of County Commissioners; and CRS 25-1-107: Powers and Duties of CDPHE. These statutes can be accessed via the State of Colorado web site: http://www.colorado.gov/government.htm. Regulatory considerations for the conservation of grassland species will focus on the development of cooperative agreements between CDOW and other responsible state agencies, counties and municipalities.

Objective 5: Collaborate with Colorado Department of Agriculture to demonstrate through law, regulation, or cooperative agreement adequate regulatory authority and regard for black-tailed prairie dog conservation objectives as it relates to the use of toxicants or shooting to control prairie dogs causing damage to private property.

Action 5.1: Develop a MOU between the CDOW and CDA that outlines each agencies' authorities and responsibilities regarding the use of toxicants to control prairie dogs in Colorado as related to the conservation objectives described within this Plan by July 2005.
Action 5.2: If populations fall into the Green – Secure zone (350,000 – 450,000 active acres), gather and compile annual product sales information for Colorado by registrants for toxicants used to control prairie dogs to create a baseline on toxicant sales.
Action 5.3: If populations fall into the Yellow – Vulnerable zone (250,000 – 350,000 active acres), gather and compile annual product sales information for Colorado by registrants and dealers for toxicants used to control prairie dogs.
Action 5.4: If populations fall into the Orange – At Risk zone (150,000 – 250,000 active acres), gather and compile annual product sales information for Colorado by registrants, dealers and end users for toxicants used to control prairie dogs.
Action 5.5: If populations fall into the Red – Danger zone (<150,000), gather and compile annual product sales information for Colorado by registrants, dealers and end users for toxicants used to control prairie dogs. Use of toxicants heavily restricted and use by permit only. Permitting based on stringent criteria.
Action 5.6: If populations fall into the Orange – At Risk zone (150,000 – 250,000 active acres), shooting allowed for control of prairie dogs causing damage on private property. Permits will be issued to monitor take.
Action 5.7: If populations fall into the Red – Danger zone (<150,000), shooting will be allowed for control of prairie dogs causing damage on private property by special permit only.

The black-tailed prairie dog is classified as a small game species in Colorado. Currently the hunting seasons are closed by regulation east of Interstate 25, although prairie dogs may be taken year-round by landowners, members of the landowner's family, lessees, agents, designees, or any employee of the landowner under the provisions of 33-6-107(9) C.R.S. as necessary to protect private property. Biologically, recreational shooting has been demonstrated to reduce black-tailed prairie dog population densities at specific sites, but no information is available to demonstrate recreational shooting of the black-tailed prairie dog as a threat to the species on a broad scale. According to the USFWS 2002 Candidate Assessment and Priority Form for the Black-tailed Prairie Dog, "We now conclude that effects due to recreational shooting do not rise to the level of a threat pursuant to the definitions and constraints of the Act."

Management Tools
A broad array of management tools will be considered to address declines in prairie dog acreage and distribution when populations fall into or below the Yellow zone – Vulnerable (250,000 – 350,000). Declines will be analyzed at the local level to determine cause; then working with local landowners and decision makers, adaptive management agreements will be developed to reverse declines using the appropriate tools. Management tools could include but are not limited to:

- Focusing incentives in areas with declining populations

- Implementing plague mitigation protocols when plague is suspect including:
    - Use of pesticides for reducing flea populations, particularly in incentive areas
    - Supporting the development of and use of a plague vaccine
- Developing cooperative management agreements with counties and municipalities to outline management authorities and implement conservation measures
- Assessing the need for repopulation in the event of a major die off, particularly on publicly owned lands
- Monitoring and inventory range wide and on a local basis
- Assessing the need for and implementation of habitat restoration projects

Objective 6: Adaptive management, including a continuous process of planning, acting, monitoring and evaluating designed to take into account changes in ecological and social systems, identify and evaluate new information, and make adjustments in actions to achieve specific goals and objectives will be used.

Action 6.1: The CDOW will form a technical committee to review new research information and analyze monitoring data as it is collected on a three-year interval, identify changes that would move acreage and distribution targets from one zone to another, and make recommendations to decision makers regarding the changes in management necessary to maintain viable shortgrass species populations. The technical committee members will be nominated by members of the Working Group and approved by the CDOW.

Action 6.2: If populations fall into the Yellow zone – Vulnerable (250,000 – 350,000), evaluate and implement management tools to address the decline.
Action 6.3: If populations fall into the Yellow zone – Vulnerable (250,000 – 350,000), develop conservation agreements with counties and municipalities in high decline areas to implement management tools to address the decline.
Action 6.4: If populations fall into the Orange zone – At Risk (150,000 – 250,000), implement adaptive management agreements with counties and municipalities.
Action 6.5: If populations fall into the Red zone – Danger (< 150,000), implement adaptive management agreements with counties and municipalities in order to receive certificates of inclusion in statewide umbrella CCAA.

RESEARCH

Objective 7: The CDOW will initiate, continue ongoing and stimulate new research to identify and minimize, eliminate, or mitigate causes for declines when possible for shortgrass associated wildlife species (See Appendix G for summary of ongoing projects).

Action 7.1: Support ongoing research to develop habitat suitability models for the black-tailed prairie dog on the PNG. The models will be used to determine how much of the area has been used by the black-tailed prairie dog over time, establish relationships to black-tailed prairie dog population estimates and provide supporting data for ongoing work on black-tailed prairie dog genetics and plague surveillance.
Action 7.2: Support ongoing research for developing vaccines to control plague and on plague dynamics.
Action 7.3: Support ongoing research on vegetation manipulation by livestock to maintain a mosaic of successional stages in shortgrass prairie habitat.
Action 7.4: Support ongoing research to resolve conflicts of Mountain Plover breeding on private lands.
Action 7.5: Support ongoing research on using stable isotopes to document links between breeding and wintering locales for the Mountain Plover.
Action 7.6: Support ongoing research on the relationship between Mountain Plover breeding activity and prairie dog colonies.

Action 7.7: Identify, prioritize and seek funding for additional research needs in Colorado for shortgrass prairie associated species.

Management on Federal, State and Local Government Lands

The federal government owns and administers significant shortgrass prairie habitat supporting grassland-associated species in Colorado. The most significant of these areas include:

- The Pawnee National Grassland in northeast Colorado administered by the USDA Forest Service
- The Comanche National Grassland in southeast Colorado administered by the USDA Forest Service
- The Rocky Mountain Arsenal National Wildlife Refuge administered by the USFWS
- Fort Carson Army Base administered by the Department of Defense
- Buckley Air Base administered by the Department of Defense
- Pueblo Chemical Depot administered by the Department of Defense
- Piñon Canyon administered by the Department of Defense

While the State of Colorado cannot mandate how the federal government manages wildlife habitat on their property, the following are recommended objectives and actions from the Working Group to federal land managers that control significant grassland species habitat. The Working Group feels these actions are necessary to maintain habitat for the conservation of grassland species.

Objective 8: The CDOW will encourage significant contributions from publicly owned lands, particularly the National Grasslands, toward grassland species conservation and work with federal, state, county and municipal partners to support these efforts.

Action 8.1: An inventory of shortgrass prairie habitat occurring on CDOW State Wildlife Areas (SWAs) will be conducted and where appropriate shortgrass prairie habitat occurs, SWAs will be managed with the conservation of grassland species as a priority.
Action 8.2: Participate in planning efforts on publicly owned lands to integrate conservation measures for grassland species in public land management planning efforts.
Action 8.3: Work with public land managers to quantify active occupied acres of the black-tailed prairie dog on publicly owned lands.
Action 8.4: Encourage consolidation or creation of conservation buffers on publicly owned lands through conservation easements, land trades or acquisitions. Colorado Division of Wildlife incentive programs will give added consideration to projects adjacent to other publicly owned lands managed for grassland species conservation.

<u>Pawnee and Comanche National Grasslands</u>
Action 8.5: Recommend maintaining a minimum of 20% of the total acreage of shortgrass prairie habitats in low structure vegetation suitable for the nesting Mountain Plover and other shortgrass associated species with a long term goal of increasing this to 40%, particularly on the PNG which is predominantly shortgrass prairie habitat.
Action 8.6: Recommend maintaining low structure vegetation on suitable shortgrass prairie habitats by increasing range allotment carrying capacity and grazing intensity, encouraging expansion of black-tailed prairie dog colonies, or through prescribed burning as appropriate.
Action 8.7: Recommend positioning areas targeted for low structure vegetation based on historic records of concentrations of the nesting Mountain Plover.
Action 8.9: Secure funding to partner with the USDA Forest Service to implement changes in allotment infrastructure to return to or maintain low structure vegetation with no financial burden passed on to permit holders.

The Comanche National Grassland includes approximately 200,000 acres of shortgrass prairie habitat, which supports the black-tailed prairie dog, Mountain Plover and other shortgrass associated species. In addition, consideration should be given to managing midgrass/sandsage prairie habitats for the conservation of the Lesser Prairie-chicken and other declining species dependant on these habitat types.

State Land Board Lands

State Land Board (SLB) lands are considered private lands in Colorado to be managed for a reasonable and consistent income for SLB beneficiaries.

Action 8.9: The CDOW will work with the SLB to develop and implement a Threatened and Endangered Species Policy to address SLB involvement in species conservation issues and explore the fiscal feasibility of developing a conservation bank for the conservation of grassland species.

Management on the Front Range

The black-tailed prairie dog and associated species that are the focus of this Plan reside in the greatest numbers on Colorado's eastern plains. In addition, the fragmentation of the remaining shortgrass prairie habitat in areas of increasing urban growth along the front range do not support an intact shortgrass prairie ecosystem. For example, Jones and Bock (2002) note that in Boulder County, which manages one of the most extensive grassland open space systems in North America, shortgrass associated bird species declined significantly between the 1980's and 1990's amid rapid urban growth in the area. They conclude that grassland open space areas may support populations of mixed grassland birds, but sustaining species associated with the shortgrass prairie would be difficult. Many of the conservation objectives and actions outlined in this Plan are focused on management of eastern plains colonies and complexes where biologically it makes the most sense to focus efforts.

Even so, the black-tailed prairie dog and associated species reside along the front range in urban areas and within the urban/rural interface. These species have considerable value for front range people. The black-tailed prairie dog, Ferruginous Hawk and other related species are valued not only as contributors to ecological balance in the ever-changing front range landscape, but also have intrinsic value as individual animals, and are the focus of a wide range of wildlife viewing opportunities. While the biological significance of front range populations of the black-tailed prairie dog is limited with regard to the overall conservation of the species, management must take into account ecological impacts of changes in habitat and species numbers, and the added social relevance of these species for members of the public along the front range.

The Black-tailed Prairie Dog

Populations of the black-tailed prairie dog can be found within every county along the front range. Populations vary from less than one acre to several hundred acres in size. Individual populations not only occur in the rural areas of each county, but on the interior of urban areas as well in most counties. Depending on the size and location of these populations, black-tailed prairie dog colonies serve a variety of ecological and social roles within the front range. Larger, more rural populations of the black-tailed prairie dogs often serve as foraging sites for coyotes, foxes, badgers and a variety of hawks and eagles, as well as providing valuable wildlife viewing opportunities. In some areas, these larger, more ecologically significant populations also provide nesting areas for the Burrowing Owl. Within the more urbanized areas of the front range, black-tailed prairie dog populations often serve a much more limited ecological role, but are extremely important in providing the bulk of public viewing opportunities and enjoyment.

The Burrowing Owl

The Burrowing Owl is highly dependent upon black-tailed prairie dog colonies in Colorado. Along the front range, the Burrowing Owl is most often dependent upon large black-tailed prairie dog colonies relatively unaffected by urban development and habitat fragmentation. Examples of these areas include some of Boulder County Open Space properties and the Rocky Mountain

Arsenal. Although many existing Burrowing Owl populations reside on protected conservation areas or public open spaces, some populations reside on private lands.

The Ferruginous Hawk

The Ferruginous Hawk can be found along the front range throughout the year, especially in the more rural areas. While the front range is within its nesting range, the Ferruginous Hawk does not tolerate disturbance when nesting. As a result, its nests are primarily in rural areas in eastern Colorado, well removed from urban and suburban areas. Wintering Ferruginous Hawks are, however plentiful along the front range wherever there are substantial black-tailed prairie dog populations. While the Ferruginous Hawk utilizes a wide variety of small mammals for food, the black-tailed prairie dog is an extremely important prey species, especially during the fall and winter months. Similar to the Burrowing Owl, a large percentage of Ferruginous Hawk activity can be found within, and adjacent to, the large conservation areas and protected open spaces like those found in Larimer and Boulder Counties, and on the Rocky Mountain Arsenal.

The Mountain Plover

The Mountain Plover is a small shore bird highly dependent on shortgrass prairie and barren ground for nesting and foraging opportunities. Listed as a species of special concern in Colorado, conservation efforts for this species are important. While suitable Mountain Plover habitat exists on a very limited basis along the front range, the Mountain Plover occurs primarily on the eastern plains.

The Swift Fox

The swift fox is shy and reclusive, and depends on the shortgrass prairie grasslands and an assortment of small mammals and insects for its survival. Within the front range, it is unlikely that many swift fox exist except possibly in the rural areas of Pueblo and Fremont Counties. The swift fox often does not proliferate in areas of high habitat fragmentation and in urbanized areas.

Local Governmental Influence on Conservation Within the Front Range

Many city and county governments along the front range have policies or ordinances related to black-tailed prairie dog management within their jurisdictions. These policies range from simple unwritten policies that local governments recommend, to ordinances prohibiting the taking of the black-tailed prairie dog. Conservation efforts and recommendations outlined in this section must take into account these ordinances and policies and will encourage cooperation between local and county entities, non-governmental conservation organizations, the CDOW, the USFWS and other entities interested in grassland and species conservation.

In addition to black-tailed prairie dog ordinances and policies, many cities and counties have set aside open space areas within their jurisdictions for agricultural preservation, public recreation, protected view sheds and wildlife conservation interests. Regardless of the underlying management objectives for many of these open spaces, wide varieties of wildlife species utilize them for nesting, foraging and general cover. Excluding Roxborough, Lathrop, and Trinidad Lakes State Parks, the front range contains over 225,000 acres of protected habitat. Protected acres are generally distributed evenly across the front range from north to south along the eastern edge of the foothills and provide critical habitat for a variety of wildlife species, especially raptors and neo-tropical migratory songbirds. Of that protected acreage, there are more than 11,000 protected acres of black-tailed prairie dog colonies along the front range.

Over the last 150 years, changes to the front range landscape have resulted in conditions under which natural ecological processes within this zone no longer characterize natural historical habitat and wildlife interactions. Therefore, recommendations and guidelines concerning the black-tailed prairie dog and associated species along the front range are based upon the following assumptions:

1. For the species identified in this Plan, the ecological significance of conservation efforts for black-tailed prairie dog populations along the front range lies primarily in providing prey resources for the wintering Ferruginous Hawk and other raptors and to a limited extent, nesting habitat for the Burrowing Owl.
2. Wildlife viewing resources (to include black-tailed prairie dogs and raptors) are extremely important to many. Therefore, increased opportunities to enjoy these resources are highly desirable and should be encouraged.
3. Public support for, and acceptance of, additional conservation areas will be higher if conservation areas are developed as multiple-use objective areas to provide for public viewing, education and recreation.
4. Ecological significance and public acceptance of additional conservation areas will be greater if conservation areas are developed away from residential areas.
5. Public acceptance of additional conservation areas will be greater if associated management plans address, and strive to ensure, minimal conflicts with humans.
6. Larger conservation areas provide a greater potential for ecological significance. Public access to larger conservation areas should be limited to a few trails on the periphery of the property to maintain ecological integrity.
7. New conservation areas should provide for increased connectivity to existing conservation areas and important habitats along raptor migration corridors, and for increased wildlife viewing opportunities.
8. Conservation areas for black-tailed prairie dogs within the front range should not negatively impact critical habitat for other wildlife species of conservation importance.

Objective 9: The CDOW will encourage the acquisition and management of city and county open space on suitable grassland habitat along the front range for the conservation of the black-tailed prairie dog and associated grassland species.

Action 9.1: If populations fall into the Yellow zone – Vulnerable (250,000 – 350,000), develop conservation agreements with counties and cities in high decline areas to implement management tools to address declines.
Action 9.2: Provide scientific expertise and recommendations to front range open space managers on standardized monitoring methodologies developed by the multi-state black-tailed prairie dog Conservation Team.
Action 9.3: Develop science-based, best management practices for addressing grassland species management issues including relocation, maintaining corridors and so forth for use by managers of front range open space.
Action 9.4: Develop a consolidated resource of updated scientific information (biological and social) addressing grassland species conservation issues in urban and suburban areas.
Action 9.5: Conduct bi-annual symposia to provide an open forum for discussion and summarize new information on the conservation of grassland species.

Objective 10: Establish shared responsibility (front range and eastern plains) for conservation of the black-tailed prairie dog and associated species.

Action 10.1: Develop mechanisms for front range interests (developers, non-profit organizations, etc.) to provide funding for grassland species management.
Action 10.2: Develop and distribute (hard copy and electronic) informational materials that inform the public about the necessity of shared responsibility for management of grasslands species.
Action 10.3: Conduct urban wildlife and habitat conservation and management workshops.

Objective 11: Support and encourage public education and wildlife viewing opportunities on suitable black-tailed prairie dog and grassland open space areas.

Action 11.1: Provide scientific expertise and recommendations to local open space managers in the development and use of educational and interpretive materials.
Action 11.2: Assist in the development and enhancement of wildlife viewing opportunities

Funding Sources

Traditional funding for species conservation work in Colorado includes three primary sources: GOCO, SCTF and GC, generated from the sale of hunting and fishing licenses. For Fiscal Year 2003-04, these sources make up approximately 96% of the total funding, 52%, 21% and 23% respectively. The remaining 4% includes federal funds from Section 6 and the State Wildlife Grant program and 100% grants from federal and private sources. Another important financial contribution comes from private landowners who act as stewards for over 75% of all shortgrass prairie habitat for the benefit of all wildlife in the state of Colorado.

As this Plan and others like it are completed and implementation begins, it is apparent that substantially more funding will be needed in the future. This argues for seeking a new funding source. This has been the focus of the national Teaming with Wildlife initiative and the High Plains Partnership; but additional state, federal and private funding sources will be necessary for the success of species conservation in Colorado.

Objective 12: The CDOW will work towards developing substantial increases in funding necessary for the conservation of grassland species in Colorado.

Action 12.1: Pursue partnerships with other federal, state, county and municipal agencies, private foundations, private landowners, and non-governmental organizations to increase funding for the conservation of grassland species.
Action 12.2: Pursue innovative ideas for funding of grassland species conservation in Colorado.

Relevance to Listing Factors

"The goal of the Plan is to ensure, at a minimum, the viability of the black-tailed prairie dog and associated species (Mountain Plover, Burrowing Owl, swift fox and Ferruginous Hawk) and provide mechanisms to manage for populations beyond minimum levels, where possible, while addressing the interests/rights of private landowners." In doing this, there is a commitment to assure the continued existence of the target species and thereby preclude or eliminate the need for state and/or federal listing. Therefore, the successful implementation of this Plan, to the degree that it accomplishes the above goal should be of great relevance to the USFWS. We believe that this Plan provides strong direction and commitment to conservation of the pertinent grassland species and to a significant portion of other less rare species that occupy the same habitats.

Federal listing is determined by a detailed consideration of five key factors that are believed to cause a species to decline to levels that are considered endangered or threatened.

1. Present or threatened destruction, modification, or curtailment of the species' habitat or range;
2. Over-utilization for commercial, recreational, scientific or educational purposes;
3. Disease or predation;
4. Inadequacy of existing regulatory mechanisms; and
5. Other natural or manmade factors affecting the species' continued existence.

This Plan addresses each of the listing factors with direct and indirect efforts. As such, the strategies employed propose to reduce or eliminate the need for listing those species not already listed as a federally protected species. Furthermore, it will add significantly to the recovery of some species that are already listed.

1. Present or threatened destruction, modification, or curtailment of a species' habitat or range

Habitat loss or modification is generally agreed upon as a primary reason for species decline. This Plan focuses largely on the development of strategies and actions that will secure land, reduce or abate threats related to habitat and apply land management tools that stabilize or decrease the negative impacts of specific land management practices. The objectives and actions are developed in ways that consider and support the ongoing management of land by private landowners to the maximum extent possible. This is accomplished by using high quality scientific information, incentives and partnerships, focusing efforts on grasslands that will produce the most benefits, and creating flexibility for landowners throughout the area.

Habitat Conservation

Habitat Conservation is a key strategy of the Plan. This strategy effectively manages or abates the threats of grassland conversion, suggests alternatives for mitigating conflicts on agricultural and urban lands and addresses many of the current and future threats from fragmentation. Key elements of the Plan include:

- The concept of habitat conservation as envisioned in this Plan includes a broad suite of proven conservation tools including easements and management agreements.
- Habitat conservation will be achieved using voluntary, non-regulatory, incentive-based partnerships with private landowners and others with an interest in grassland species conservation.
- There is a specific intent to leverage resources expended to achieve the highest value conservation through focusing habitat conservation in areas of highest biological return.
- To strategically conduct conservation there is a need to establish biologically meaningful goals and criteria for successful protection efforts. The progress toward achieving these goals needs to be monitored and measured. Such a process supports not only leveraged conservation, but also provides a strong degree of accountability.
- The Plan recognizes the significance of conservation efficiency and effectiveness and calls for the consideration of the possible consolidation of secure habitat area boundaries (where willing landowners are found).
- Maintenance of potential habitat in addition to currently occupied habitat such that species have the opportunity for colonization/re-colonization. In addition, the availability of additional habitat may buffer against any potential impacts of biological or social change.

Land Management

Land management is noted as a major contributor to the status of targeted grassland species. A large part of this Plan focuses on maintaining or increasing compatible land management tools (e.g., many grazing practices) and decreasing or more suitably placing the practices that may have less desirable effects on the species considered in this Plan. Unlike habitat conservation, land management changes focus on incentive packages. While recognizing the value of changes made by landowners and managers, incentive packages can be highly cost-effective. Private operators manage most of the untilled shortgrass prairie. Influencing land management over large areas has direct benefits to species of concern and also provides a buffer to more focused and intensive strategies that are usually applied to protected areas.

The Plan recognizes a suite of tools that can be used to influence the management of lands to maintain or increase the habitat and food supply for species of concern which include:

- Encouraging the use of USDA incentive programs such as: Conservation Reserve, Conservation Reserve Enhancement, Grassland Reserve, Wildlife Habitat Incentives and EQIP. In addition, the Plan calls for an increased focus on CDOW's Colorado Species Conservation Partnership Program. While some of these programs are also considered

protection programs, their focus is in managing lands in a way that can also have large benefits to declining prairie species.

- The native prairie contained variable structure or grasslands and shrublands that existed due to substrate differences as well as the differential impacts of ecological processes such as grazing, insect outbreaks, precipitation and fire. Recognizing the importance of variability in the prairie, this Plan calls for management encouraging grazing and other management tools that result in a mosaic of grassland structure and types. Since habitat management recommendations for the creation and maintenance of variability are not readily available, the Plan calls for the development of habitat management recommendations for the purposes identified in this Plan. Incentive programs would encourage their use.
- The Plan also calls for specific management tools to be applied in areas where focal species have requirements that may be more difficult to achieve in a broad management strategy (e.g., the Mountain Plover).
- There is a concerted effort in this Plan to focus key efforts on larger black-tailed prairie dog towns, maximizing the benefits to associated species and black-tailed prairie dog goals. At the same time, there is a specific purpose to encourage compatible management of potential habitat for most species.
- In an effort to reduce management impacts and maintain conservation and landowner management options, the Plan calls for black-tailed prairie dog control efforts, where necessary, designed to reduce numbers rather than eliminate the black-tailed prairie dog. It also provides guidance and encouragement to control with tools that minimize or eliminate the negative impacts to associated species (e.g., conducting control efforts at times when associated species are not present or have completed nesting activities).
- Several tools minimize impacts to nesting birds. The Plan calls for the conservation of traditional nesting sites by specific nesting site identification, working with landowners to minimize impacts to nesting grassland birds (particularly the Mountain Plover) when possible and reducing disturbance of key species (especially raptors).

2. Over-utilization for commercial, recreational, scientific or educational purposes

This factor is considered to have low impact on the black-tailed prairie dog and the overall declines of grassland species (although historically it may have had disproportionately large impacts). Current commercial uses are highly limited. In response to existing uses, this Plan:

- Discourages poisoning and shooting on National Grasslands until target objectives are met and provides a system for evaluating the need to change from the use of discouragement to regulation or policy at specific population levels.
- Recognizes that while shooting of the black-tailed prairie dog (in particular) will occur at least as a recreational activity, there is a strong potential for negative effects on non-target species. The Plan calls for a focused effort to inform hunters of the presence and sensitivity of other species where shooting is allowed.

3. Disease or predation

Disease is a key issue for the black-tailed prairie dog throughout its range. While there are no means of preventing plague, the Plan calls for planning, implementation, and monitoring the threat such that effective proactive and defensive (i.e., adaptive) actions can be undertaken, therefore mitigating the impacts of plague.

- The first strategy is to work at a statewide scale to conserve the black-tailed prairie dog. Reducing conservation strategies to a few places would place any benefits at high risk. The Plan calls for maintaining the black-tailed prairie dog over a large portion of its historic range.
- There are design features that may benefit or mitigate the potential negative impacts of plague. The Plan calls for research in this area, a focus on large landscapes and maintenance of distances between colonies and towns.

- Finally, the Plan calls for a centralized monitoring of plague throughout Colorado's plains. Such monitoring will aid in adapting local and statewide management actions as well as providing important information on status and progress toward occupied town goals.

4. Inadequacy of existing regulatory mechanisms

The federal ESA places a premium on the need to have a regulatory framework in place that will prevent extinctions or further endangerment of species. This Plan documents the changes in regulations made and suggests that some new regulations may be needed under some circumstances. The Plan:

- Encourages CDNR to assume a lead role, primarily through CDOW. The CDOW has the mandate to act on most elements of this Plan and the CDNR provides direction to CDOW.
- Recognizes the need to maintain existing regulations (i.e., the increased regulations that are placed after the listing proposal).
- Develops a monitoring program (see references to populations occurring in the variously colored zones) to guide any changes in the regulations.
- Calls for collaboration between CDA and CDNR to demonstrate through law, regulation, or cooperative agreement, adequate regulatory authority and regard for black-tailed prairie dog conservation objectives as it relates to the use of toxicants or shooting to control the black-tailed prairie dog causing damage to private property
- Encourages the use of existing federal regulation or policy to facilitate the contribution of federal lands to grasslands conservation goals.

5. Other natural or man-made factors affecting the species' continued existence

The USFWS must consider any other factors that may contribute to species declines or stresses that have not been considered in the previously evaluated factors. The Plan contributes direction on these issues.

The Plan addresses the potential cumulative effects of multiple factors by minimizing negative impacts of all other factors. The Plan also monitors individual and combined effects through the call for a science-based monitoring plan.

In addition, individual factors and the effects of combined factors are made easier to address through several strategies that are included in the Plan. The Plan calls for a:

- Strong public outreach element. Such a program, effectively implemented, facilitates all aspects of the Plan (i.e. makes implementation and sustainability easier).
- Scientifically rigorous monitoring program. Such a program will evaluate changes in key areas of biology and allow for change of actions in a meaningful timeframe. In addition, this Plan will collect information that allows for the evaluation of cumulative impacts that result from multiple factors.
- Strong research agenda that will support the commitment to adaptive management and effective strategies.

In summary, this Plan addresses all key listing factors within the framework of commitment to the people making a living off the land. The Plan uses adaptive management and high quality science while fostering the institutional commitments of lead agencies and other key partners. A fundamental part of this Plan is the development of habitat goals for the black-tailed prairie dog while at the same time committing to a larger conservation effort that supports the associated species and other less well-known elements of Colorado's natural heritage. Under this Plan, we believe that an evaluation of the key listing factors would greatly reduce or eliminate listing concerns for the state of Colorado.

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