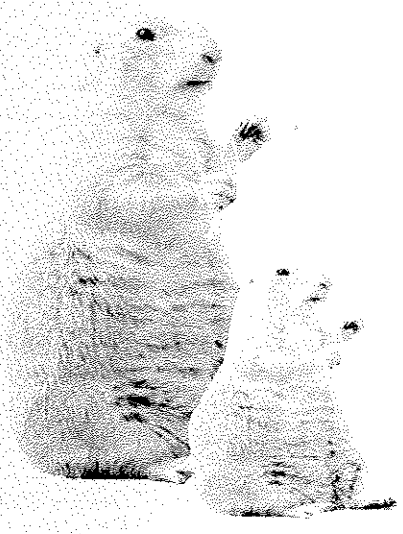
A Multi-State Conservation Plan For The Black-tailed Prairie Dog, *Cynomys ludovicianus*, in the United States

Addendum to the Black-tailed Prairie Dog Conservation Assessment and Strategy, November 3, 1999



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EXECUTIVE SUMMARY

In 1998, the National Wildlife Federation and Predator Conservation Alliance, Biodiversity Legal Foundation and Jon Sharps, filed petitions to list the black-tailed prairie dog as a threatened species. The U.S. Fish and Wildlife Service (Service) issued a "warranted but precluded" finding in February 2000. The petition and the finding both estimated the occupied acreage to be 768,000 acres range-wide, with 676,000 acres in the United States.

The eleven states within the range of the black-tailed prairie dog began a multi-state conservation effort in 1998 by forming the Interstate Black-tailed Prairie Dog Conservation Team. The Conservation Team developed the Black-tailed Prairie Dog Conservation Assessment and Strategy (CA&S) in 1999. The Multi-state Conservation Plan (MSCP) is an addendum to the CA&S, and was prepared to provide guidelines under which management plans will be developed by individual states and their respective working groups. The state management plans will contain the specific and measurable actions, deadlines, and objectives for that state. The target objectives in the MSCP are minimum values based on a range-wide analysis, and the states will build upon those minimum recommendations.

The MSCP, and eleven state management plans, are based on an adaptive management strategy. Therefore, the concepts and recommendations presented are considered a starting point from which to begin the conservation effort. The states do not assume that these initial measures alone will be effective in conserving the species for the long-term. The MSCP is based on first achieving the 10-year objectives, then modifying management as dictated by changing and evolving conditions.

Threats to the Species

The threats to the black-tailed prairie dog that were identified in the Service's 12-month finding and addressed in the Risk Assessment in the CA&S were:

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

Summary of the Threats

Habitat loss: Population declines related to loss of habitat across the range can be traced to conversion of grassland to farmland, urbanization, habitat conversion and habitat fragmentation. The Service's 12-month finding rated habitat loss as a moderate threat. The 2002 Candidate Assessment concluded that habitat destruction is not a threat, but that habitat modification remains a moderate threat and habitat curtailment a low threat.

Over-utilization/Unregulated shooting: Over-utilization of the black-tailed prairie dog is related to shooting. Prairie dog shooting was uncontrolled in all 11 states within the range in 1998. The Service rated shooting as a low threat in the 12-month finding. The 2002 Candidate Assessment concluded that effects due to recreational shooting do not rise to the level of a threat pursuant to the definitions and constraints of the ESA. Colorado, South Dakota, Arizona, and Montana now have closed seasons for the shooting of black-tailed prairie during the spring. All other states except Wyoming and New Mexico have the authority to establish seasons.

Sylvatic Plague: Plague is the disease most commonly affecting black-tailed prairie dogs on a significant scale and is the major threat to the species. It has the potential to decimate complete colonies or complexes within one season. There is currently no treatment for plague in prairie dogs or a known preventative measure that is effective. Plague was rated as a moderate threat in the 12-month finding, and the 2002 Candidate Assessment concluded that impacts due to this disease continue to be a moderate threat.

Inadequate Regulatory Mechanisms: The lack of adequate state regulatory mechanisms was rated as a moderate threat in the 12-month finding. The 2002 Candidate Assessment concluded, "concerns still remain, including the general absence of efforts to better monitor and regulate chemical control, the failure of most states to formally approve management plans, and the lack of acceptance by some states (Montana, North Dakota, and Oklahoma) of the 10-year occupied habitat objective developed by the Black-tailed Prairie Dog Conservation Team. Collectively, these limitations continue to constitute a moderate threat to the species." However, the Service believes the threat to be non-imminent compared to a previous imminent status because the threat is largely a potential threat.

Other Natural or Man-made Factors: Control by poisoning was rated as a moderate threat in the 12-month finding. The 2002 Candidate Assessment concluded that impacts to the species due to chemical control programs are a low-magnitude threat at present, and that the threats are non-imminent.

Elements of the Conservation Strategy

1) Develop interstate cooperation among the state wildlife agencies in the historic range,

2) Develop intrastate agency cooperation in each state between the wildlife agency, agriculture and other state agencies with an interest in black-tailed prairie dog issues,

3) Integrate management programs of state and federal agencies and Native American tribal governments,

4) Involve all public and private entities interested in black-tailed prairie dog management in the process,

5) Develop a multi-state management approach that includes acreage objectives,

6) Develop individual state management plans under the multi-state guideline,

7) Develop a map of the range delineating occupied and suitable habitat, and land ownership,

8) Identify potential conservation focus areas that will receive management emphasis.

State Actions That Have Been Accomplished

1) Eleven state wildlife agencies formed the Conservation Team and each designated a representative to attend range-wide planning meetings (December 1998),

2) Nine state wildlife agencies signed a Memorandum of Understanding (MOU) agreeing to a multi-state management approach (North Dakota and Colorado declined to sign) (February 2000),

3) The states agreed to integrate state planning efforts with those of the eight Native American tribes that form the Inter-Tribal Prairie Ecosystem Restoration Consortium (November 1999),

4) A Conservation Assessment and Strategy was developed (November 1999),

5) Although two states were not signatories to the MOU, all 11 state wildlife agencies have actively participated on the Conservation Team and agreed to the following:

- Formation in each state of a Working Group that includes all major stakeholders in the black-tailed prairie dog planning process (November 1999),
- Agreement to work towards completion of state black-tailed prairie dog management plans by October 2001 (see Appendix F for state by state schedule),
- Agreement to use state in-kind expenditures to match National Fish and Wildlife Foundation funds to support an Interstate Coordinator position (September 2000)

Goal:

The goal of the Conservation Assessment Strategy, the Multi-state Conservation Plan, and eleven state management plans is to remove enough threats to the black-tailed prairie dog that long-term conservation of the species is assured.

Target Objectives

1) Maintain at least the currently occupied acreage of black-tailed prairie dogs in the U.S.

2) Increase to at least 1,693,695 acres of occupied black-tailed prairie dog acreage in the U.S by 2011

3) Maintain at least the current black-tailed prairie dog occupied acreage in the two complexes greater than 5,000 acres that now occur on and adjacent to Conata Basin-Buffalo Gap National Grassland, South Dakota and Thunder Basin National Grassland, Wyoming.

4) Develop and maintain a minimum of 9 additional complexes greater than 5,000 acres (with each state managing or contributing to at least one complex greater than 5,000 acres) by 2011.

5) Maintain at least 10 % of total occupied acreage in colonies or complexes greater than 1000 acres by 2011,

6) Maintain distribution over at least 75% of the counties in the historic range or at least 75% of the historic geographic distribution.

Summary and Status of MSCP Proposed Actions (Completion or Projected Completion Date)

1) Develop a multi-state management approach that provides guidelines for development of state management plans (January 2003)

2) Develop and implement within each state a black-tailed prairie dog management plan (Completion or projected completion dates are shown in Appendix F)

3) Complete a black-tailed prairie dog inventory in each state to document current acreage, distribution of colonies, complexes of colonies, and land ownership of complexes (Baseline surveys completed in all states in 2002)

4) Delineate "conservation focus areas" that contain suitable habitat and within which intensive black-tailed prairie dog management can be carried out, and where the majority of landowner incentives will be directed (Process begun September 2002)

5) Develop a monitoring method applicable across the eleven states and monitor occupied habitat and distribution approximately every three years (In process).

6) Develop an occupied acreage target objective and other target objectives for the range in the U.S. and for each state (January 2003). Incorporate objectives into individual state management plans in each of the eleven states (In process).

7) Implement the Plague Protocol in the MSCP in all eleven states in cooperation with private landowners and other entities in order to document and react to significant sylvatic plague events.

8) Determine the long term potential for plague to preclude attainment of objectives. Develop adequate management approaches to mitigate the impacts of plague (Plague Protocol in the MSCP).

9) Develop programs to provide financial incentives for private landowners to voluntarily maintain prairie dog colonies on portions of their lands (In process)

10) Cooperate with federal, state, and private entities to make available/redirect funding for USDA-Wildlife Services, local Weed and Pest Control Districts, State Animal Damage Control agencies, or other approved entity (will vary by state) to fund control of prairie dogs where needed to meet state management plan objectives and agreements with private landowners. (In process)

11) Compatible with the goals and objectives in the state management plan, retain shooting opportunities in all eleven states. Develop regulatory authority for conservation of prairie dogs by establishing, through law or regulation, the ability of the state wildlife agency to limit or prohibit take by shooting (Four states have seasonal closures, all have regulatory authority except New Mexico and Wyoming)

12) Compatible with the goals and objectives in the state management plan, acquire or maintain adequate regulatory authority for conservation of prairie dogs by establishing through law, regulation, or cooperative agreement the ability of the state to limit or prohibit take by poisoning (In process)

13) Create/designate a coordinator position and/or other positions as needed in each state to conduct or supervise prairie dog conservation (All states have a full or part time coordinator)

14) Develop and implement strategies to monitor and reduce conversion of black-tailed prairie dog habitat to other land uses in each state (In process - Appendix G)

15) Cooperate with the Service to use the Bailey Eco-region habitat model target acreage objectives as a method for establishing a standard for state-federal Candidate Conservation Agreements with Assurances (CCAAs) (In process)

16) Continue to encourage development of an adequate and reliable long-term funding source for a private landowner incentive program (In process – conceptual plan in the MSCP)

17) Through state management plans coordinate with federal agencies (Being addressed through state working groups and management plans)

18) Cooperate with private conservation organizations on habitat protection, prioritization of areas, etc. (In process)

Introduction

The eleven states within the range of the black-tailed prairie dog (*Cynomys ludovicianus)* (Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming) began a multi-state conservation effort for the species in 1998 by forming the Interstate Black-tailed Prairie Dog Conservation Team (Conservation Team). The Conservation Team collaborated to develop the Black-tailed Prairie Dog Conservation Assessment and Strategy (CA&S)(Van Pelt 1999). This Multi-state Conservation Plan (MSCP) is written as an addendum to the CA&S, and is not a stand-alone document, but rather builds upon the CA&S. Therefore it does not address issues that were treated in the parent document. The MSCP was prepared to provide guidelines under which management plans will be developed by individual states and their respective working groups. The state management plans will contain the specific and measurable actions, deadlines, and objectives for that state. The target objectives in the MSCP are minimum values based on a range-wide analysis, and the states, via their management plans, will build upon those minimum recommendations.

The eleven state wildlife agencies represented on the Conservation Team believe that a multi-state approach will be more effective in providing long-term management of the black-tailed prairie dog than would either federal listing and protection under the Endangered Species Act (ESA) or disparate state planning efforts.

The CA&S determined the status of the species in 1999, and identified actions necessary for implementation of the strategy to conserve and manage the black-tailed prairie dog over the range in the U.S. Specifically, Item #3, Species Distribution, Status, and Monitoring, identified the need for the Conservation Team and state working groups to develop long-term occupied habitat objectives for the range in the U. S. Development and implementation of a methodology with which to establish those objectives is the primary thrust of the MSCP.

In the MSCP we provide a guiding document for the states to use as a template, leaving decisions on developing state management plans and adequate regulatory mechanisms up to the individual state wildlife agencies and working groups. The situations in the states are diverse and cannot be addressed specifically in a guideline document. The states' most pressing need is to engage all of the partners necessary to bring about effective change in laws, statutes, attitudes, and management strategies for the prairie dog, and we believe that the state working groups are the best avenue for that task. The respective states must work with their broad constituencies to integrate prairie dog conservation into existing land uses.

The 11-state target objective, as proposed in the CA&S, was to be expressed in number of occupied acres and number of individual complexes, be equitably distributed over the states, and be used as a template from which to develop acreage and distribution objectives for each state's management plan. Objectives are expressed in terms of acres of occupied habitat rather than number of animals or population size, assuming that with suitable habitat available, prairie dogs will occupy that habitat at a density that will maintain a viable population. The MSCP, and also the 11 state management plans, for reasons explained in detail within the plans, are based on an adaptive management strategy. The concepts and recommendations presented are a starting point from which to begin the conservation effort.

The states make no assumption as to whether or not these initial measures will be effective in conserving the species over the long-term. The MSCP is based on first achieving the 10-year objectives, then modifying management as dictated by changing and evolving conditions during that period.

The state management plans developed under the MSCP guidelines and approved by the respective agency/citizen working groups are expected to have support in the state and in local communities. If accepted by the Service as the best approach from a biological and scientific standpoint, implementation of the eleven state management plans could remove the need for the Service to list the species as threatened under the ESA, and eventually result in removal of the black-tailed prairie dog from the ESA Candidate List.

Background

In 1998, the National Wildlife Federation and Predator Conservation Alliance, Biodiversity Legal Foundation and Jon Sharps, filed two petitions to list the black-tailed prairie dog as a threatened species under the ESA. The Service placed the black-tailed prairie dog on the ESA Candidate List by issuing a "warranted but precluded" finding in February 2000 (U.S. Fish and Wildlife Service 2000).

The black-tailed prairie dog is somewhat unique among species proposed for ESA listing in that several million individuals currently exist over a large acreage in the wild. The actual number of animals present depends upon the density of animals in a particular colony or complex. The Service's 12-month finding estimated the occupied acreage to be 768,000 acres range-wide, with 676,000 acres in the United States. However, although widespread, the species occurs to a significant extent in remnant, segregated populations that may have limited potential for long-term persistence.

Elements of the Conservation Strategy

The MSCP addresses the following elements from the Conservation Strategy:

1) Develop interstate cooperation among the state wildlife agencies in the historic range,

2) Develop intrastate agency cooperation in each state between the wildlife agency, agriculture and other state agencies with an interest in black-tailed prairie dog issues,

3) Integrate management programs of state and federal agencies and Native American tribal governments,

4) Involve all public and private entities interested in black-tailed prairie dog management in the process,

5) Develop a multi-state management approach that includes acreage objectives,

6) Develop individual state management plans under the multi-state guideline,

7) Develop a map of the range delineating occupied and suitable habitat, and land ownership,

8) Identify potential conservation focus areas that will receive management emphasis.

State Actions

The following state actions were developed in response to the above listed elements:

1) Eleven state wildlife agencies formed the Conservation Team and each designated a representative to attend range-wide planning meetings (December 1998),

2) Nine state wildlife agencies signed a Memorandum of Understanding (MOU) agreeing to a multi-state management approach (North Dakota and Colorado declined to sign) (February 2000),

3) The states agreed to integrate state planning efforts with those of the eight Native American tribes that form the Inter-Tribal Prairie Ecosystem Restoration Consortium (November 1999),

4) A Conservation Assessment and Strategy was developed (Van Pelt 1999),

5) Although two states were not signatories to the MOU, all 11 state wildlife agencies have actively participated on the Conservation Team and agreed to the following:

- A strict implementation schedule that set dates for completing various stages of the process (November 1999),
- Formation in each state of a Working Group that includes all major stakeholders in the black-tailed prairie dog planning process (November 1999),
- Agreement to work towards completion of state black-tailed prairie dog management plans by October 2001 (see Appendix F for state by state schedule),
- Agreement to use state in-kind expenditures to match National Fish and Wildlife Foundation funds to support an Interstate Coordinator position (September 2000)

Purpose of this Document

The Conservation Assessment and Strategy identified the need for development of a multi-state approach to black-tailed prairie dog management in the United States. The purpose of the MSCP is to list the actions the eleven states represented on the Conservation Team propose to implement to provide long-term conservation of the black-tailed prairie dog, and thus preclude the need for ESA listing. This multi-state approach will also establish a standard for umbrella Candidate Conservation Agreement with Assurances (CCAAs) between the Service and the respective states that choose to use the CCAA approach.

Goal:

The goal of the CA&S, the MSCP, and eleven state management plans is to remove enough threats to the black-tailed prairie dog that long-term conservation of the species is assured.

Threats to the Species

The threats to the black-tailed prairie dog that were identified in the Service's 12-month finding (in order of listing) were:

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

Summary of the Threats

Habitat loss: Population declines related to loss of black-tailed prairie dog habitat across its range can be traced to conversion of grassland to farmland, urbanization, habitat conversion (conversion of grassland and savanna to shrubs), and habitat fragmentation. The Service's 12-month finding rated habitat loss as a moderate threat.

The Service's March 18, 2002 Candidate Assessment concluded that habitat destruction is not a threat, but that habitat modification remains a moderate threat and habitat curtailment a low threat.

Over-utilization/Unregulated Shooting: Over-utilization refers primarily to shooting in the case of the black-tailed prairie dog. Under certain circumstances, shooting may contribute to population fragmentation and reduction in colony productivity and health, may cause some loss of non-target species, and may preclude or delay recovery of colonies reduced by other factors such as sylvatic plague (Vosburgh, 1998). Shooting can impact colonies in areas where shooting is intense or persistent over an entire year (Vosburgh, 1998). Prairie dog shooting was uncontrolled in all eleven states within the range in 1998. The Service rated shooting as a low threat in the 12-month finding.

The Service's 2002 Candidate Assessment concluded that states with significant amounts of public land are experiencing greater shooting pressure on prairie dogs than previously estimated, and are implementing regulations to better monitor and control this activity. The Service stated: "we are not aware of data that support a conclusion that reductions in density are sufficient to reduce population persistence at a given site", and that "no information is available that demonstrates that any black-tailed prairie dog population has been extirpated or nearly extirpated by this activity." The conclusion was that effects due to recreational shooting do not rise to the level of a threat pursuant to the definitions and constraints of the ESA.

The following is a summary of the current status of state shooting regulations:

1) Colorado - Beginning September 2001, public lands (federal and state) were closed to the shooting of black-tailed prairie dogs year-round, but private landowners are allowed to control black-tailed prairie dogs in damage situations on private land without a license.

2) South Dakota - Beginning March 2001, the shooting of black-tailed prairie dogs on public lands (federal and state) was closed annually for the period March 1 to June 14, with no restrictions on private lands.

3) Arizona - Public and private lands are closed to take of black-tailed prairie dogs year-round. It is relevant to note that public and private lands are closed to take of Gunnison's prairie dogs from April 1 to June 15.

4) Montana - Beginning February 2002, the shooting of black-tailed prairie dogs on federal public lands was closed annually for the period March 1 to May 31, with no restrictions on private lands.

5) Wyoming - The state does not have the authority to regulate shooting on public or private lands. The U.S. Forest Service closes public land on 72,500 acres of Thunder Basin National Grassland to take of black-tailed prairie dogs yearlong.

6) Kansas – The state has the authority to regulate shooting but no season has been established

7) Nebraska - The state has the authority to regulate shooting but no season has been established

8) North Dakota - The state has the authority to regulate shooting but no season has been established

9) Oklahoma - The state has the authority to regulate shooting but no season has been established

10) Texas - The state has the authority to regulate shooting but no season has been established

11) New Mexico - The state requires out-of-state shooters to possess a license, and shooting on state trust lands is prohibited. The state does not otherwise have the authority to regulate shooting

12) Black-footed ferret reintroduction sites in Conata Basin/Buffalo Gap National Grassland in South Dakota, Charles M. Russell National Wildlife Refuge, and BLM "40" Complex in Montana are closed yearlong to the shooting of prairie dogs.

Sylvatic Plague: Plague is the major disease affecting black-tailed prairie dogs and has the potential to decimate complete colonies or complexes within one season. There is currently no treatment for plague in prairie dogs or a known preventative measure that is effective. Plague was rated as a moderate threat in the 12-month finding. The Service's 2002 Candidate Assessment concluded that impacts due to this disease continue to be a moderate threat.

Inadequate Regulatory Mechanisms: Pest Status and Unregulated Poisoning: The black-tailed prairie dog was classified as a pest by nine states within its historic range at the time the listing petition was filed in 1998. The states of New Mexico and Oklahoma did not classify the black-tailed prairie dog as a pest under state law. Most state statutes required eradication (New Mexico and Oklahoma were exceptions) and all states, except Oklahoma, permitted uncontrolled take in 1998 (Van Pelt 1999). The major federal land management agencies, Bureau of Land Management and Forest Service, manage prairie dog habitat to meet multiple-use objectives, and allowed poisoning before the black-tailed prairie dog was added to the candidate species list. Control by poisoning on U.S. Fish and Wildlife Service, Bureau of Land Management, and Forest Service lands is currently allowed only for protection of human health. The National Park Service conducts control at the discretion of individual National Parks and Monuments according to its good neighbor policy. The lack of adequate regulatory mechanisms was rated as a moderate threat in the 12-month finding. The Service's 2002 Candidate Assessment concluded that "concerns still remain, including the general absence of efforts to better monitor and regulate chemical control, the failure of most states to formally approve management plans, and the lack of acceptance by some states (Montana, North Dakota, and Oklahoma) of the 10-year occupied habitat objectives

developed by the Black-tailed Prairie Dog Conservation Team. Collectively, these limitations continue to constitute a moderate threat to the species." However, the Service believes the threat to be non-imminent compared to a previous imminent status because the threat is largely a potential threat.

Other Natural or Man-made Factors: Extensive poisoning was conducted throughout most of the black-tailed prairie dog's range from 1912 to 1972 in order to reduce the perceived forage competition between prairie dogs and domestic livestock. Control by poisoning occurs at a lesser but significant rate today (U.S. Fish and Wildlife Service, 2000). Currently, USDA-Wildlife Services is the primary federal agency contributing to prairie dog control either through assistance to private landowners, direct control programs, or grants-in-aid to states. In some states, county weed and pest districts or the state department of agriculture provide financial or extension assistance to landowners for control of prairie dogs. Control by poisoning was rated as a moderate threat in the 12-month finding. The Service's 2002 Candidate Assessment concluded that impacts on the species due to chemical control programs are a low-magnitude threat at present, and that the threats are non-imminent.

Proposed Actions

Actions proposed by the 11-state Conservation Team to implement a multi-state approach to address the threats described above include:

1) Develop a multi-state management approach that provides guidelines for development of state management plans

2) Develop and implement within each state a black-tailed prairie dog management plan (completion or projected completion dates are shown in Appendix F)

A. Management plans will be written by state wildlife agencies with oversight and review by agency/citizen working groups representing a cross section of the various interested parties in each state

B. Public comment periods will be incorporated into the planning process. Management plans will be dynamic, relying on the principles of adaptive management, and future revisions are anticipated to reflect new and evolving conditions

C. Federal agency roles, and management commitments required of federal agencies, will be identified in the state management plans. The states will work with federal agencies to incorporate black-tailed prairie dog objectives into all federal management planning documents and processes, especially Bureau of Land Management Resource Management Plans and U.S. Forest Service National Grassland Plans

3) Complete a black-tailed prairie dog inventory in each state to document current acreage, distribution of colonies, complexes of colonies, and land ownership of complexes

4) Delineate "conservation focus areas" that contain suitable habitat and within which intensive black-tailed prairie dog management can be carried out and where the majority of landowner incentives will be directed. Participation by private landowners will occur only with agreement by, and cooperation from, individual landowners. Conservation focus areas will be counties, groups of

counties, or large units of land with suitable habitat or extensive public lands, and will be unique to each state management plan.

National Grasslands and Bureau of Land Management public lands in the black-tailed prairie dog range that could potentially contain core lands around which conservation focus areas could be developed, and the acreage of potential and existing black-tailed prairie dog acreage in each, are shown in Appendix H.

Categories for Conservation Focus Areas (conservation focus area and complex are defined in Appendix A)

A. An area of public land containing suitable habitat, preferably with an existing complex of greater than 1,000 occupied black-tailed prairie dog acres in one or more colonies,

B. An area of mixed public and private or tribal land containing suitable habitat, preferably with an existing complex of greater than 1,000 occupied black-tailed prairie dog acres in one or more colonies,

C. An area of tribal lands or a combination of tribal and private lands within or adjacent to the exterior boundaries of Tribal reservations containing suitable habitat, preferably with an existing complex of greater than 1,000 occupied black-tailed prairie dog acres in one or more colonies,

D. An area on private lands owned or managed by a private conservation organization (The Nature Conservancy, Turner Endangered Species Fund, or others) containing suitable habitat, preferably with an existing complex of greater than 1,000 occupied black-tailed prairie dog acres in one or more colonies,

E. An area on other private lands containing suitable habitat, preferably with an existing complex of greater than 1,000 occupied black-tailed prairie dog acres in one or more colonies

5) Develop a monitoring method applicable across the eleven states and monitor occupied habitat and distribution approximately every three years.

A. Contract with the U.S. Geological Survey or a university cooperative research unit to house range-wide survey data and other pertinent data layers

B. Work towards development of a range-wide monitoring protocol similar to the National Wetland Inventory under which a statistically valid sampling procedure can be executed every three years using remote sensing, aerial transecting or other standard technique

C. Contract with the U.S. Geological Survey or a university cooperative research unit to conduct surveys and report data to states, Native American tribes, and other contributors

   1. Pool financial resources from all entities that will use the survey results

   2. Develop standard reporting method, reporting method, etc. among the contributors

D. Develop interagency agreements and coordinate resources to use state, tribal, federal agency or private personnel to conduct a statistically valid ground-truthing of surveys conducted by remote sensing, aerial transecting, or other method.

6) Develop an occupied acreage target objective and other target objectives for: 1) the range in the U.S., and 2) for each state. Incorporate objectives into individual state management plans in each of the eleven states.

A. Reserve Design Model

A reserve design model with which to predict the occupied acreage and distribution necessary for long-term viability of the species is not currently available for the black-tailed prairie dog. This is due at least partially to the lack of predictability of plague events and impacts west of roughly the 103rd Meridian. Therefore absolute values for the acreage and distribution necessary to maintain the species for the long-term are also not available. In the absence of precise information, the Conservation Team has chosen to use an adaptive management strategy based on the relative importance of different habitats to black-tailed prairie dogs. The Service's Candidate Conservation Agreement with Assurances (CCAA) policy supports such an adaptive management approach regarding species with population characteristics like the black-tailed prairie dog. Several adaptive management approaches were proposed and evaluated as a means to conserve black-tailed prairie dogs as an 11-state population. The Bailey Eco-region habitat model was determined to be a viable approach for establishing a baseline occupied acreage target for each state, an equitable distribution of target acreages between the eleven states based on the relative value of eco-regions from both a biological and a socio-political standpoint, and a reasonable 11-state occupied acreage objective for the next ten years.

B. Development of Acreage and Distribution Objectives

1. A few states used state-specific research data to develop detailed land use/land cover maps to delineate historic range and suitable habitat by examining vegetation and soils data for their state. Although more precise than the Bailey Ecoregion habitat model, state-specific coverages and applications were not available for most of the states, were inconsistent among the states that did have the data, and could not be combined into a multi-state approach. However, state data were factored into the Bailey Eco-region habitat model (Figures 1 and 2).

2. The Conservation Team reviewed land cover/land use maps and data based on U.S. Geological Survey 1:250,000 scale data layers for 10 states, and Landsat TM imagery (1:100,000) for Wyoming, to evaluate the potential for using 1% of historic range as a multi-state standard for developing habitat conservation acreage objectives. Data were assembled by PIC Technologies (PIC Technologies, October 2000, pers comm.). Land use/land cover data were aggregated into three categories: grasslands/shrublands, agricultural lands, and other lands. Areas with more than 10% slope were identified. Arc Info GIS software was used to determine the acreage of each land use/land cover type per state, and the gross historic range in each state. Although this methodology was able to derive target acreages that were equitable between the states since it was based on the historic habitat in each state, it was rejected as a multi-state approach. The historic range figures far exceeded the best acreage estimates derived independently by the states, and the data allowed the acreage objectives to be based only on gross range rather than historic suitable habitat.

3. Eco-regions and the sections into which they have been divided have well-defined soil, climate, floral, and faunal descriptions. Eco-regions are used by a variety of organizations when planning at a landscape level. Terrestrial eco-regions as defined by Ricketts et al. (1999) and Bailey et al. (1994) were explored by the Conservation Team in cooperation with the Service as a method for defining historic range over an 11-state area and calculating a target acreage for the entire range and for each state, respectively. Bailey Eco-regions, which are divided into sections, and are more refined than those in Ricketts et al., were chosen as the preferred method for defining black-tailed prairie dog historic range and developing target acreages for habitat conservation.

Appendix B contains an explanation of the methods used to gather the existing GIS coverages, incorporate the Hall (1981) range map and the range map created by the states, overlay Bailey Ecoregions and sections, and calculate non-suitable habitat and acreages.

a. GIS data based on Bailey Eco-regions established the total historic range of the black-tailed prairie dog as 368,308,727 acres within the 11 states in the U.S. This figure is less than the total historic range estimate of 391,427,199 acres derived using 11-state GIS land cover/land use data (PIC Technologies October 2000, pers comm).

b. The historic acreage estimate using the Bailey Eco-region habitat model does not strictly compare with the data available for some states, but it has the advantage of being comparable across the states and therefore is best suited for establishing a multi-state acreage objective and an equitable acreage objective for each state (Table 1).

4. Three data sets were identified related to the black-tailed prairie dog range:

a. Historic distribution (range) from the scientific literature

This is the range identified in the scientific literature (Hall 1981) that includes all specimen records and defines the furthermost extremes of the area where the species was found historically (Figure 1). This includes temporary expansion areas, marginal habitats, and areas occupied by disjunct populations.

b. Historic distribution (range) from the states best available data

This was developed using state-specific distribution data, wherein each state delineated historic range excluding temporary expansion areas, marginal habitats, and the area occupied by disjunct populations, based on their best available data (Figure 2).

c. Historic distribution (range) based on the Bailey Eco-region habitat model

Bailey Eco-regions and sections were overlaid on the Hall (1981) historic range map and the state-delineated historic range map to designate core and secondary range based on the states' estimate of where the best potential exists for prairie dog management in the next ten years. The designations were based on eco-region and ecosection descriptions of soils, fauna, flora, and climate (Figure 3

and Table 2). Eco-section descriptions of habitat and fauna are summarized in Appendix C. With some exceptions, Bailey eco-sections with optimal habitat (dominated by shortgrass prairie plant species) for black-tailed prairie dogs and mention of the black-tailed prairie dog in the list of native fauna were rated as core range. Eco-sections with less than optimal habitat (dominated by plant species other than those associated with shortgrass prairie), or eco-sections with historically suitable habitat but having a current socio-political situation that does not favor prairie dog management, even if the black-tailed prairie dog was listed as a native fauna, were rated as secondary range.

Eco-sections historically composed primarily of mixed-grass prairie were rated as secondary range. Regardless of the historic value of these lands to prairie dogs, much of this area has been converted to cultivated agriculture and those areas are an unlikely place, biologically, socially or politically, in which to manage significant acreages of grassland or populations of grassland dependent wildlife species.

Most of the land conversion from native prairie to cropland between 1850 and 1950 took place in the mixed-grass prairies. Although mixed-grass prairies were habitat for black-tailed prairie dogs historically, due to current conflicts with human uses of the land, their current and future value is lessened. In the opinion of the biologists on the Conservation Team, the shortgrass prairie is, with some exceptions, the core of the current range for the black-tailed prairie dog and will remain so for the next 10 years. Comparing the area the MSCP designates as "core range" with maps of the shortgrass prairie as it exists in 2003, not as it existed in 1850, shows that they closely coincide.

Additionally, forty-nine percent of historic black-footed ferret specimen records were from the shortgrass area identified in this MSCP as Core Range, and only nineteen percent occurred in mixed grass areas identified as Secondary Range. The remainder occurred outside of the black-tailed prairie dog range (Anderson et al. 1986). These figures indicate that the shortgrass region was the core of the historic range for the black-footed ferret, and given the significant loss of historic habitat in the mixed grass region, is most suited for modern-day recovery of the species.

This does not imply that what is now mixed-grass prairie, largely converted to cropland by 1920, with the possible exception of Native American reservations in South Dakota, is not suitable black-tailed prairie dog habitat. However, the best chance for expansion of occupied acreage on state jurisdiction (non-tribal) lands is in the shortgrass prairie. We believe, for the reasons stated above, that the relative value of the mixed grass and shortgrass prairies to prairie dogs, which may have fared best in the mixed-grass region pre-settlement, is not the same today. In addition, the states do not consider all shortgrass prairie to be suitable for significant expansion of black-tailed prairie dogs in the next 10 years. For this reason, based on biological, economic, political, and social parameters, some Bailey Eco-sections that currently contain shortgrass prairie are excluded from the core range.

Peripheral habitat can be important for survival of a species, and obviously in the case of the black-footed ferret was critical to survival since the last extant population was in white-tailed prairie dog habitat outside of the core range of the species (Anderson et al.1986). However, dependence upon peripheral, and perhaps marginal, habitat is not the best long-term solution for survival of a species, especially if suitable habitat remains in the core range. Conservation of a species and its habitat in the core range is the preferred alternative for long-term survival.

5. The following definitions are used for the purposes of this document:

The weighting of the value of core and secondary ranges' is necessarily subjective since no real data exist from which to differentiate the value of core versus secondary range based on their current value to prairie dogs. Order of magnitude differences are real differences and are the last resort for determining weighting factors. The U.S. Fish and Wildlife Service's 12-month finding addresses order of magnitude in a way similar to that presented in the MSCP. The classification of parts of the historic range as secondary range in 2003 does not imply that state management plans will not include objectives to aggressively manage lands within that area for prairie dogs where the opportunity presents itself.

Core Range - for the purposes of this document, defined as the area within which black-tailed prairie dogs occupy suitable habitat, and which comprises the core of the population. Each acre of the Core Range was multiplied by a factor of one (1), i.e. rated at full value as black-tailed prairie dog habitat (Table 2).

Secondary Range - for the purposes of this document, defined as the area historically occupied by prairie dog populations at least partially dependent upon vegetative manipulation by large herbivores to maintain habitat suitability, and in some cases, occupied only periodically. Each acre of Secondary Range was multiplied by a factor of one-tenth (1/10), i.e. 1/10 the value of the Core Range (Table 2).

Conservation Area - for the purposes of this document, defined as the Core Range + Secondary Range.

Target Objective - this figure constitutes the minimum 10-year target acreage objective for the range and for each state. Historic range, current acreage, and target acreage per state are shown in Table 1.

C. Target Objectives

The Conservation Team reviewed all available science before recommending a minimum complex size. Since data do not exist to define the minimum complex size needed for black-tailed prairie dogs, the Conservation Team reviewed the scientific literature for associated species. The black-footed ferret recovery program currently recommends a minimum complex size of 10,000 acres (Lockhart, pers. comm.). The scientific literature does not support complexes of this size as necessary for prairie dogs, burrowing owl, mountain plover,

ferruginous hawk, or swift fox. There are two potential justifications for the 10,000-acre recommendation. It was first proposed based on data from the last remaining population of black-footed ferrets at Meeteetse, Wyoming, where the complex size, perhaps by circumstance alone, was just over 12,000 acres.

The Meeteetse complex is occupied by white-tailed prairie dogs, which occur at less than one-half the density of black-tailed prairie dogs (Center for Native Ecosystems, et al. 2002), implying that black-footed ferrets could survive in much smaller complexes in black-tailed prairie dog habitat.

This in fact may be the case if one looks at the existing colony and complex sizes where reintroduced ferrets are surviving in South Dakota. The Conata Basin black-footed ferret reintroduction site consists of three sub-complexes: Sage Creek, Agate, and Heck Table, with a total of 12,856 acres of black-tailed prairie dogs within approximately 64,000 acres of grassland (Perry, pers comm.)

Sage Creek and Agate sub-complexes are about two miles apart and there is interchange of black-footed ferrets between them, however there is not evidence that the interchange is necessary to the viability of either sub-complex (Perry, pers. comm.). Heck Table is isolated since it is about eight miles from Sage Creek and ten miles from Agate sub-complexes, respectively. There is little black-footed ferret interchange with other sub complexes.

The Sage Creek sub-complex contains 7,654 acres of occupied prairie dog habitat within approximately 30,000 acres of grassland, and in 2001 supported 50 adult ferrets, with 32 litters born. It is considered a stable population.

The Agate sub-complex contains 3,538 acres of occupied prairie dog habitat (1-1,600 acre colony) within approximately 20,000 acres of grassland, and in 2001 supported 30-35 adult black-footed ferrets, with 20-25 litters born per year for 4 years. It is considered a stable population.

The Heck Table sub-complex contains 1,664 acres of occupied prairie dog habitat within approximately 15,000 acres of grassland, and in 2001 supported 20 adult black-footed ferrets, with 8 litters born per year for the last 3 years. Black-footed ferrets move off of the 1,664-acre complex into marginal habitat each year. This potentially indicates this habitat block is too small for a self-sustaining population.

The U.S. Forest Service's plan for the Fall River District on Buffalo Gap National Grassland is to expand the existing complex of 1,200-1,500 acres. Burn and livestock management programs are planned to increase the complex size to create and maintain 3,000 – 5,000 acres of occupied prairie dog habitat within 25,000 acres of grassland and manage the area as a black-footed ferret reintroduction site. This indicates that the Forest Service considers the site to be adequate to maintain a viable black-footed ferret population (Perry, pers. comm.).

The Conservation Team believes the scientific justification exists for using 5,000 acres as a <u>minimum</u> complex size for black-tailed prairie dogs and associated

species. A significant value of this approach is that it will both allow each of the eleven states to actively participate in creation and maintenance of at least one large complex, and allow states with several complexes to manage one or more at an objective level that exceeds the 5,000-acre minimum.

The rationale for development of target acreage objectives at the level presented in this document rests with historic and recent trends in occupied habitat. The best available data indicate that black-tailed prairie dogs could have occupied as much as 100 million acres historically. The best estimate of acreage in 1998, at the time the listing petitions were filed, and two years later at the time of the Service's 12-month finding, was approximately 800,000 acres in the range in the U.S., Mexico, and Canada. The estimate for the U.S. was 676,000 acres. The first objective developed by the Conservation Team was to maintain the acreage present in 1998 (slightly less than 1% of historic range).

Data gathered from 1999 to 2003 indicate that a larger acreage was probably present in 1998 than was known, but surveys had not been adequate to provide a better estimate than 676,000 acres. The objective to retain at least the occupied acreage present in 1998, whatever the actual figure, remains implicit in the entire planning effort. Secondly, an objective was developed to increase occupied acreage to a level above 1%. The objectives presented in this plan set an adaptive management strategy target to increase occupied acreage by 2011. If the objective is reached, and better biological data, a population viability analysis, associated species considerations, or other factors indicate a need to increase the objectives, the states will evaluate that need no later than 2011.

As stated in the Service's 12-month finding, recent, widely separated, site-specific declines have occurred in 50% of the historic range, where 60% of current range-wide populations occur. Using Montana as an example, from 1986 to 1998, 50% of black-tailed prairie dog occupied habitat was lost, largely due to plague. Plague is an unknown factor in black-tailed prairie dog management west of the "plague line", roughly the 103rd Meridian. Fortunately the "plague line" appears stable at the current time (Antolin et. al. 2002)

Also as stated in the 12-month finding, occupied habitat has decreased over the last century by at least two orders of magnitude (from approximately 100 million acres to approximately 1 million acres). Based on that historical perspective, if declines due to plague continue, it is conceivable that black-tailed prairie dog occupied habitat could decline to 100,000 acres or less (10% or less of the current estimate of occupied acreage in the U.S.).

The MSCP proposes to address plague, the major threat to the species, by developing objectives that not only increase occupied acres but also develop widely distributed large and small complexes, and retain small colonies throughout the range by maintaining distribution in at least 75% of the counties in which the species occurred historically. Widely separated, unconnected complexes or colonies are the only defense against plague west of the 103rd Meridian at the current time.

Target objectives for the U.S.

1. Maintain at least the currently occupied acreage of black-tailed prairie dogs in the U.S. (Table 1)

2. Increase to at least 1,693,695 acres of occupied black-tailed prairie dog acreage in the U.S by 2011

3. Maintain at least the current black-tailed prairie dog occupied acreage in the two complexes greater than 5,000 acres that now occur on and adjacent to Conata Basin-Buffalo Gap National Grassland, South Dakota and Thunder Basin National Grassland, Wyoming.

4. Develop and maintain a minimum of 9 additional complexes greater than 5,000 acres (with each state managing or contributing to at least one complex greater than 5,000 acres) by 2011. A state could contribute to a 5,000 acre complex that occurred along a state line by cooperating with the adjacent state to conserve part of the complex in one state and part in another. A similar agreement could be developed between a state and a Native American tribe.

5. Maintain at least 10 % of total occupied acreage in colonies or complexes greater than 1,000 acres by 2011,

6. Maintain distribution over at least 75% of the counties in the historic range or at least 75% of the historic geographic distribution (refer to historical range definition). All eleven states currently meet this objective except Arizona in which the black-tailed prairie dog was extirpated. This objective addresses the need to maintain all prairie dog colonies, whatever the size or location, throughout the range. State management plans will deal directly with management of individual, isolated colonies.

7) Implement the Plague Protocol in all eleven states in cooperation with private landowners and other entities in order to document and react to significant sylvatic plague events (Appendix D).

8) Determine the long term potential for plague to preclude attainment of objectives. Develop adequate management approaches to mitigate the impacts of plague.

A. Implement a reporting, investigation, and monitoring system for the occurrence of sylvatic plague epizootics in wild rodents,

B. Encourage research on a national scale to develop adequate management or mitigation techniques for sylvatic plague epizootics,

C. Develop and implement a plague protocol for states to follow when conducting plague monitoring or managing a plague episode (Appendix D).

9) Develop programs to provide financial incentives for private landowners to voluntarily maintain prairie dog colonies on portions of their lands (Appendix E). Private lands in conservation focus

areas (Proposed Action #4) will be given priority, but all lands and complexes/colonies will be considered and evaluated.

A. Develop a Landowner Incentive Program to provide an economic incentive to landowners that agree to maintain or expand occupied prairie dog habitat. This program will be designed and implemented similarly to existing Farm Bill and state-funded landowner incentive programs. Financial incentive programs should be developed for a minimum of ten years, and if possible coincide with state management plan review periods. Livestock grazing and burning would be allowed on enrolled lands as per the state management plan. These practices could be used to improve habitat for prairie dogs, not only on occupied lands, but also on lands upon which tall grasses or shrubs currently exclude occupation by prairie dogs. Enrollment of lands in this program for the purposes of prairie dog habitat protection would not include public or agency access, except as agreed to by the landowner and administering agency for the purposes of monitoring compliance with the agreement.

   These terms will be clearly presented in the enrollment agreement. Initial and on-going discussions (Appendix E) have assumed a rate of two to ten dollars per acre per year based on a ten-year enrollment. The program will be flexible in terms of enrollment period, allowing for twenty-year, thirty-year, or permanent easements, at the discretion of individual enrollees. The Farm Bill Conservation Reserve Program and similar programs, state incentive programs, local and/or state land evaluations, etc. will all be considered when developing the final formula.

B. Other potential incentives for private landowners include cost sharing on range improvement programs through existing farm programs, or participation in either individual Candidate Conservation Agreements with Assurances (CCAA) or a state umbrella CCAA with the Service. A CCAA would give the participating party assurances that it will only be responsible for the terms of the CCAA, even if the black-tailed prairie dog is listed as threatened in the future.

   The states will aid and facilitate incentive programs through:

   1. Development and dissemination of public informational materials and programs to inform landowners of available incentives programs for prairie dog habitat conservation,

   2. Personal contacts with owners of key habitat tracts, particularly in conservation focus areas, and any other landowner who expresses an interest in the program,

   3. Annual monitoring of compliance with agreements.

   4. Development of a site management plan for each landowner's enrolled lands, or his or her entire property, at the discretion of the landowner.

      a. With the assistance of the landowner, survey the lands proposed for enrollment and the entire property of that landowner to document and map existing prairie dog colonies,

b. The site plan and enrollment agreement will include the provision that if prairie dogs expand beyond the enrolled acreage, the landowner has the right to control the population outside of the enrolled acreage,

c. With the assistance of the enrolled landowner, contact adjacent landowners, explain the terms of the agreement on the enrolled lands, and request permission to document occupied acreage of prairie dogs within 7 km (4.35 mi) of enrolled lands,

d. Annually monitor the occupied prairie dog acreage and expansion area, if any.

10) The Conservation Team will continue to encourage development of an adequate and reliable long-term funding source for a private landowner incentive program. This program may be crucial to the success of the entire black-tailed prairie dog conservation effort. This program could be funded from any of several sources:

A. Federal funding dedicated to grassland habitat protection, with emphasis on the black-tailed prairie dog as a keystone species of the shortgrass prairie.

B. The 2002 Farm Bill Grassland Reserve Program contains provisions for protection of native and restorable native rangelands. This program could recognize needs related to grassland wildlife species and dedicate a portion of its funding for protection of grassland habitats specifically to address prairie wildlife species-at-risk, including the black-tailed prairie dog. Other Farm Bill programs may also be used.

11) Cooperate with federal, state, and private entities to make available/redirect funding for USDA-Wildlife Services, local Weed and Pest Control Districts, State Animal Damage Control agencies, or other approved entity (will vary by state) to fund control of prairie dogs where needed to meet state management plan objectives and agreements with private landowners.

The state wildlife agencies view this as a situation where funding for control is shifted rather than increased. The objective is to increase occupied acreage over the range in the U.S., in other words, achieve a net gain in acreage. The state agencies believe this can be done in combination with limited control, possibly under the auspices of a landowner incentive program. Agricultural interests believe the control issue to be extremely significant, and will not endorse management plans that do not provide for limited control.

An example where control would be necessary: Landowner A is being paid for enrolled acres and Landowner B, an adjacent neighbor who does not want prairie dogs on his land, has prairie dogs moving onto his land from Landowner A's lands. Rather than create a conflict between the two neighbors, the incentive program must provide quick- no questions asked- relief for Landowner B, and neither Landowner must bear any financial liability. Otherwise, Landowner A will have a disincentive to participate. With participation by Landowner A, a net gain of occupied acreage is achieved if Landowner A signs up a land area that exceeds his existing acreage at the time of the contract and allows prairie dogs to expand to occupy that habitat. No net loss will occur if prairie dogs are controlled on Landowner B because he would have had that option even in the absence of a landowner incentive program.

Elements of the program will include:

A. The enrollment agreement could stipulate that the enrolled landowner can request the appropriate agency in that state control prairie dogs that expand outside of the enrolled acreage onto his or her adjacent lands

B. The cost of control will be born by the designated agency, not the landowner, as long as the criteria of the agreement are met

C. The administering agency will contact all landowners within 7 km (4.35 mi) of enrolled lands and inform them that if they allowed documentation and mapping of prairie dog occupied habitat at the time of enrollment of a neighbors lands, they have the right to request control of any new colonies that develop on their land for the duration of the neighbor's enrollment agreement. If the landowner did not consent to mapping, he or she will have no recourse on prairie dog control under the auspices of the program.

D. The cost of control of new colonies on non-enrolled lands adjacent to enrolled lands will be born by the designated agency, not the landowner, as per Section C (above)

These provisions guarantee that private landowners living within 7 km (4.35 mi) of enrolled lands have the option to either enroll their lands and receive direct payment, or be relieved of the burden of removal of colonies created by enrollment of their neighbor. It should be noted that currently, if prairie dogs move from neighboring lands, control is the financial responsibility of the landowner whose lands are occupied by immigrating prairie dogs.

The control provisions in the enrollment agreement will be in effect even if the state as a whole is below its 10-year target acreage objective as long as the state is increasing towards its occupied prairie dog acreage as presented in the state management plan.

Control of black-tailed prairie dogs that occur more than 7 km (4.35 mi) from lands enrolled in the Landowner Incentives Program, or colonies that are within 7 km (4.35 mi) but existed prior to enrollment, will be the responsibility of individual private landowners - as is currently the case. Based on information provided by various entities, control costs range from $6/acre to $25/ acre (Reichenbach, pers comm.).

12) Compatible with the goals and objectives in the state management plan, retain shooting opportunities in all eleven states. Develop regulatory authority for conservation of prairie dogs by establishing, through law or regulation, the ability of the state wildlife agency to limit or prohibit take by shooting. Implementation of seasonal or yearlong closures to control take may be necessary to maintain the objectives in the state management plan. Individual states will retain the option to close the season yearlong or seasonally on all lands under their jurisdiction within the state, or only on public lands. Institution of seasonal or yearlong closures on tribal lands will be done only under the authority of the respective tribal governments. Seasonal closure during the whelping and dependent young period, March 1 to June 30, to address a decline in occupied habitat will be an option that can be evaluated annually. If an individual state has the regulatory authority to close the shooting season, it may choose to apply the closure or restriction if shooting appears to be an imminent threat to long-term viability of any segment of the statewide population.

To be most effective, the program should include the following elements:

A. Require all prairie dog shooters to obtain a permit,

B. Annual field checks and mail surveys to collect data on harvest, hunter days per county, and hunter days/harvested animal,

The data collected will provide quantification of the extent of prairie dog shooting, allow extrapolation of the economic value to the state, provide data from which to judge the impact of shooting on populations, and indicate where shooting regulations may be required to limit take.

C. Annual collation and reporting of information on location and amount of shooting to gauge the impact of shooting on black-tailed prairie dogs in each county, conduct trend analysis, and evaluate of the need for shooting restrictions in following years. Shooter survey information could be also used to direct shooting pressure to control prairie dogs that are above acreage objectives in local areas.

13) Compatible with the goals and objectives in the state management plan, acquire or maintain adequate regulatory authority for conservation of prairie dogs by establishing through law, regulation, or cooperative agreement the ability of the state to limit or prohibit take by poisoning. This authority would need to be invoked only if the objectives in the state management plan were not being met. To address the threat to the species posed by unregulated poisoning, the states must not only have the regulatory authority, but also be willing to use it.

States should pursue putting regulations in-place to control take whether or not the prairie dog has pest status in the state. Development of a Memorandum of Understanding between the State Department of Agriculture, Weed and Pest Board, or other entity, and the state wildlife agency is an option. Under this MOU, agencies could agree to limit control of prairie dogs if necessary to meet the acreage objectives in the state management plan.

14) Create/designate a coordinator position and/or other positions as needed in each state to conduct or supervise the following:

A. Black-tailed prairie dog surveys and data compilation,

B. Administration of a landowner incentive program, including monitoring enrolled lands for compliance with the terms of the agreement,

C. Compilation of shooter data,

D. Act as a clearinghouse for plague reporting, investigation, and documentation

1. Develop windshield survey routes in the prairie dog range,
2. Coordinate intensive on-site plague surveys if necessary
3. Develop and initiate mapping protocols to document the extend of plague outbreaks
4. Review/revise management plans to reflect current prairie dog management needs

E. Develop a permitting system to evaluate applications to control prairie dogs to determine whether the proposed action is warranted based on current occupied acreage data,

1. Coordinate with control agencies on requests for control,

2. Annually document location of chemical control and acreage controlled,

3. Annually compile information on black-tailed prairie dog chemical control by county and evaluate the impact of control measures on amount of occupied habitat,

4. Annually report, as long as the black-tailed prairie dog is a Candidate Species, to the Service on how the toxicant permit system, as part of the state's management plan, was used to address threats to the species, and move towards the three-year mileposts and the 10-year objective in the management plan.

F. Once every three years, monitor the amount of land conversion to document reduction of prairie dog occupied or suitable habitat and number of acres lost, and analyze the potential of the loss to impact the ability of the state to maintain or increase toward objective.

G. Pursue funding sources to fund surveys, ground-truthing, and other program needs

H. Annually report to the Service the progress of the state in completing the proposed actions in the MSCP, and implementation of the state management plan

15) Develop and implement strategies to reduce conversion of black-tailed prairie dog habitat to other land uses in each state.

A. Monitor habitat conversions and cumulative effects over the range on a three-year basis in cooperation with NRCS and state agricultural statistics agencies,

B Document reduction of prairie dog occupied or suitable habitat, number of acres lost, and analyze the potential of the loss to impact the ability of the state to maintain or increase toward objective.

C. Cooperate with USDA and the state agricultural agency to emphasize protection of prairie dog habitat in the administration of agricultural programs and policies,

D. Develop appropriate management responses if monitoring indicates habitat conversion trends that appear to significantly threaten maintenance of, (if the target objective has been met), or progress towards, prairie dog objectives.

16) The Conservation Team will cooperate with the Service to use the Bailey Eco-region habitat model target acreage objectives (Table 1) as a method for establishing a standard for state-federal Candidate Conservation Agreements with Assurances (CCAA) for the black-tailed prairie dog. The standard would be applied uniformly such that each of the eleven states can both demonstrate a commitment to a multi-state management approach and meet the "other necessary properties" standard for an umbrella CCAA between a state and the Service.

Development of an umbrella CCAA between a state wildlife agency and the Service could aid in conserving the black-tailed prairie dog while providing assurances that the regulatory restrictions of ESA will not be invoked. The states that sign an umbrella CCAA with the Service will receive regulatory assurance that their state, including all participating private landowners within that state, will avoid the restrictions of the ESA for the black-tailed prairie dog if the species is federally listed, as long as the terms of the CCAA are maintained. It will be advantageous for all eleven states to have similarly structured management plans and CCAAs, and to meet the multi-state standard established by the Bailey Ecoregion habitat model.

In it's draft CCAA Handbook the Service defines the CCAA standard as follows: for a property owner (*or Umbrella CCAA holder*) to receive assurances, the Service must determine that the benefits of the conservation measures to be implemented, when combined with those benefits that would be achieved if it is assumed that the conservation measures were also to be implemented on other necessary properties, would preclude or remove any need to list the covered species. Adoption of the target objectives presented in this document as CCAA standards would ensure broad distribution of the black-tailed prairie dog across its range and provide one of the few strategies available to the states to combat the impacts of sylvatic plague. This benefit will be realized by achieving and maintaining widely distributed black-tailed prairie dog complexes and colonies, with sufficient space between them to thwart the spread of plague.

17) Through state management plans coordinate with the Bureau of Land Management, U. S. Forest Service, U.S. Fish and Wildlife Refuge System, National Park Service, Department of Defense, and other federal agencies to maximize the conservation potential.

A. Identify colonies, complexes, and suitable habitat on federal lands

B. Conduct state review of Resource Management Plans, Allotment Management Plans and other planning documents to assure that grassland wildlife species' habitat are given due consideration, and that federal agencies are assisting the state in implementing its management plan

18) Cooperate with interested private conservation organizations on habitat protection, prioritization of conservation focus areas, etc.

Summary and Status of Proposed Actions (Completion or Projected Completion Date)

1) Develop a multi-state management approach that provides guidelines for development of state management plans (January 2003)

2) Develop and implement a black-tailed prairie dog management plan within each state (Completion or projected completion dates are shown in Appendix F)

3) Complete a black-tailed prairie dog inventory in each state to document current acreage, distribution of colonies, complexes of colonies, and land ownership of complexes (Extensive baseline surveys completed in all states in 2002)

4) Delineate "conservation focus areas" that contain suitable habitat and within which intensive black-tailed prairie dog management can be carried out and where the majority of landowner incentives will be directed (In process)

5) Develop a monitoring method applicable across the eleven states and monitor occupied habitat and distribution approximately every three years (In process).

6) Develop an occupied acreage target objective and other target objectives for the range in the U.S. and for each state (January 2003). Incorporate objectives into individual state management plans in each of the eleven states (In process).

7) Implement the plague protocol in all eleven states in cooperation with private landowners and other entities in order to document and react to significant sylvatic plague events (In process – see protocol in this document)

8) Determine the long term potential for plague to preclude attainment of objectives. Develop adequate management approaches to mitigate the impacts of plague (In process – see protocol in this document).

9) Develop programs to provide financial incentives for private landowners to voluntarily maintain prairie dog colonies on portions of their lands (In process)

10) Cooperate with federal, state, and private entities to make available/redirect funding for USDA-Wildlife Services, local Weed and Pest Control Districts, State Animal Damage Control agencies, or other approved entity (will vary by state) to fund control of prairie dogs where needed to meet state management plan objectives and agreements with private landowners. (In process)

11) Compatible with the goals and objectives in the state management plan, retain shooting opportunities in all eleven states. Develop regulatory authority for conservation of prairie dogs by establishing, through law or regulation, the ability of the state wildlife agency to limit or prohibit take by shooting (Four states have seasonal closures, all have regulatory authority except Wyoming and New Mexico)

12) Compatible with the goals and objectives in the state management plan, acquire or maintain adequate regulatory authority for conservation of prairie dogs by establishing through law, regulation, or cooperative agreement the ability of the state to limit or prohibit take by poisoning (In process)

13) Create/designate a coordinator position and/or other positions as needed in each state to conduct or supervise prairie dog conservation (All states have a full or part time coordinator)

14) Develop and implement strategies to monitor and reduce conversion of black-tailed prairie dog habitat to other land uses in each state (GIS level map and table – Appendix G)

15) Cooperate with the Service to use the Bailey Eco-region habitat model target acreage objectives (Table 1) as a method for establishing a standard for state-federal Candidate Conservation Agreements with Assurances (CCAAs) (In process)

16) Continue to encourage development of an adequate and reliable long-term funding source for a private landowner incentive program (In process – conceptual plan in this document)

17) Through state management plans coordinate with federal agencies (Being addressed through state working groups and management plans)

18) Cooperate with interested private conservation organizations on habitat protection, prioritization of conservation focus areas, etc. (In process)

Table 1. Historic range estimate using Bailey Eco-regions habitat model, minimum current acreage for each state, gross habitat, suitable habitat, and 10-year minimum acreage objective (excluding non-suitable habitat).

[Note: Native American tribes in Montana, South Dakota, and North Dakota will set an acreage objective independent of the state]

State	Historic Habitat*	Current Habitat	Gross Habitat**	Suitable Habitat*** and Minimum 10-Yr Objective	Acreage Objective in State Management Plan
AZ	7,047,137	0	7,047	4,594	4,594
CO	27,352,880	631,102	273,529	255,773	No Plan Yet
KS	35,835,079	130,521	150,714	148,596	148,596
MT	60,442,757	90,000	297,286	240,367[1]	104,000[1]
NE	36,035,433	80,000	146,741	137,254	137,254
ND	11,045,269	20,500	110,453	100,551[2]	33,000[2]
NM	39,021,449	60,000[7]	96,661	87,132[3]	87,132[3]
OK	21,606,120	64,214[6]	70,868	68,657	68,657
SD	29,262,553	160,000[7]	218,121	199,472[4]	199,472
TX	78,592,452	197,000[7]	310,945	293,129	293,129
WY	22,067,599	125,000[7]	179,072	158,170[5]	158,170[5]
Total:	368,308,727	1,558,337	1,861,436	1,693,695	1,234,004

* Refers to total potential habitat encompassed within the range (Hall 1981), not occupied habitat

** Gross habitat = total acreage of primary range x 1% + total acres of peripheral range x .1% (Table 2 and Figure 3)

*** Suitable habitat = gross habitat minus habitat with >10% slope, or other unsuitability factors (Agricultural lands were included in suitable habitat if they fit the slope and suitability factors)

[1] The acreage objective in the State of Montana's 2001 Management Plan is 90,000-104,000 acres for non-tribal lands. The state's acreage objective will be subject to modification in response to a financial incentives program for landowners if an incentives program is funded. Separate objectives will be set by individual Native American tribes.

[2] The current acreage objective listed in the North Dakota Management Plan is 33,000 acres, including non-tribal and tribal lands. The state of North Dakota and the Standing Rock Indian Reservation will determine the target acreage for each jurisdiction. The state is willing to consider an objective of 100,551 acres on non-tribal lands if a financial incentives program for private landowners is funded. Tribal lands will have separate acreage objectives.

[3] The New Mexico acreage objective is based on a percent increase per year, which would take approximately 10 years to achieve the current acreage objective. If future statewide survey efforts indicate a different acreage than the estimated minimum current acreage listed, the rate for achievement of the 10-year objective may be adjusted accordingly.

[4] The acreage objective for South Dakota includes 169,551 acres of non-tribal lands and 29,921 acres of tribal lands (pending final approval of management plan). Tentative ten-year acreage objective contingent upon completion of surveys and 2003 occupied acreage estimate.

[5] Wyoming's draft management plan contains an objective to maintain the current acreage, or 200,000 acres, which ever is greater.

[6] Oklahoma plans to conduct ground-truthing but has not completed any to date

[7] Texas has completed surveys in only 43 of the 55 high prairie dog density counties to date. New Mexico, South Dakota, and Wyoming have not completed surveys of all occupied habitat to date.

Table 2. Bailey ecoregion sections, rank of each section, acres in each section, total available habitat, and suitable habitat per state.

State Name	Bailey Ecoregion Sections	Rank	Acres in Ecoregion Sections	Total Habitat by Ecoregion Section	Suitable Habitat by Ecoregion Section
AZ	Basin and Range Section	0.1	7047137	7047	4594
AZ Total			7047137	**7047**	**4594**
CO	Arkansas Tablelands Section	1	13735052	137351	123683
CO	Central High Plains Section	1	9760525	97605	94025
CO	Central High Tablelands Section	1	3217220	32172	31696
CO	Southern High Plains Section	1	640083	6401	6368
CO Total			27352880	**273529**	**255773**
KS	Central High Tablelands Section	1	7933483	79335	78590
KS	South-Central Great Plains Section	0.1	23070784	23071	22520
KS	Southern High Plains Section	1	4830811	48308	47486
KS Total			35835079	**150714**	**148596**
MT	Belt Mountains Section	0.1	7812598	7813	3992
MT	Bighorn Basin Section	0.1	278305	278	162
MT	Northwestern Glaciated Plains Section	0.1	26035954	26036	22573
MT	Northwestern Great Plains Section	1	4181114	41811	38531
MT	Powder River Basin Section	1	22134787	221348	175108
MT Total			60442757	**297286**	**240367**
ND	Northwestern Great Plains Section	1	11045269	110453	100551
ND Total			11045269	**110453**	**100551**
NE	Central High Plains Section	1	2836999	28370	26603
NE	Central High Tablelands Section	1	5293363	52934	50088
NE	Nebraska Sand Hills Section	0.1	11851079	11851	11227
NE	North-Central Great Plains Section	0.1	2539076	2539	2346
NE	Northwestern Great Plains Section	1	4170304	41703	38002
NE	South-Central Great Plains Section	0.1	9344612	9345	8988
NE Total			36035433	**146741**	**137254**
NM	Arkansas Tablelands Section	1	858886	8589	4930
NM	Basin and Range Section	0.1	20220207	20220	16632
NM	Pecos Valley Section	0.1	12396873	12397	11295
NM	Texas High Plains Section	1	5545482	55455	54275
NM Total			39021449	**96661**	**87132**

State Name	Bailey Ecoregion Sections	Rank	Acres in Ecoregion Sections	Total Available Habitat by Section	Suitable Habitat by Section
OK	Arkansas Tablelands Section	1	369482	3695	3260
OK	Pecos Valley Section	0.1	43967	44	44
OK	Redbed Plains Section	0.1	10506098	10506	9711
OK	Rolling Plains Section	0.1	128378	128	121
OK	South-Central Great Plains Section	0.1	5454133	5454	5210
OK	Southern High Plains Section	1	4327363	43274	42665
OK	Texas High Plains Section	1	776699	7767	7647
OK Total			21606120	**70868**	**68657**
SD	Nebraska Sand Hills Section	0.1	131297	131	129
SD	North-Central Great Plains Section	0.1	8146940	8147	7654
SD	Northwestern Great Plains Section	1	20984316	209843	191689
SD Total			29262553	**218121**	**199472**
TX	Basin and Range Section	0.1	19400712	19401	16058
TX	Redbed Plains Section	0.1	746020	746	728
TX	Rolling Plains Section	0.1	24765218	24765	22319
TX	Southern High Plains Section	1	1123183	11232	11561
TX	Stockton Plateau Section	0.1	7863594	7864	6109
TX	Texas High Plains Section	1	24693724	246937	236354
TX Total			78592452	**310945**	**293129**
WY	Bighorn Basin Section	0.1	4622666	4623	3604
WY	Central High Plains Section	1	2353920	23539	22719
WY	Northwestern Great Plains Section	1	8400021	84000	71723
WY	Powder River Basin Section	1	6690993	66910	60125
WY Total			22067599	**179072**	**158170**
Grand Total			368308727	**1861436**	**1693695**

Literature Cited

Anderson, E., S.C. Forrest, T.W. Clark, and L. Richardson. 1986. Paleobiology, biogeography, and systematics of the black-footed ferret, *Mustela nigripes* (Audubon and Bachman), 1851. Great Basin Naturalist Memoirs (8) 11-62.

Antolin, M. F., P. Gober, B. Luce, D. E. Biggins, W.E. Van Pelt, D.B. Seery, M. Lockhart, and M. Ball. 2002. The influence of sylvatic plague on North American wildlife at the landscape level, with special emphasis on black-footed ferret and prairie dog conservation. Transactions of the 67th North American Wildlife and Natural Resources Conference. Wildlife Management Institute, Washington, D.C.

Bailey, R.G., P.E. Avers, T. King, and W.H. McNab (editors). 1994. Ecoregions and subecoregions of the United States. Washington, D.C.: USDA Forest Service

Biggins, D.C. and K.A. Fagerstone. 1984. Movements and activity of black-footed ferrets (*Mustela nigripes*). American Society of Mammalogists, 64th Annual Meeting. Abstract.

Biggins, D.C., B.J. Miller, L.R. Hanebury, B. Oakleaf, A.H. Farmer, R. Crete and A. Dood. 1993. A technique for evaluating black-footed ferret habitat in Management of prairie dog complexes for reintroduction of the black-footed ferret, U.S. Fish and Wildlife Service, Biological Report 13.

Center for Native Ecosystems, Biodiversity Conservation Alliance, Southern Utah Wilderness Alliance, American Lands Alliance and Forest Guardians. 2002. Petition to List the White-tailed Prairie Dog, 11 July 2002.

Hall, E.R. 1981. The mammals of North America. John Wiley and Sons, New York. 1181 pp.

Hoogland, J.L. 1995. The black-tailed prairie dog: social life of a burrowing mammal. The University of Chicago Press, Chicago. 577 pp.

Knowles, C.J. 1985. Observations on prairie dog dispersal in Montana. Prairie Nat. 17:33-39.

Kotliar, C.B., B.W. Baker, A.D. Whicker, and G. Plumb. 1999. A critical review of assumptions about the prairie dog as a keystone species. Environ. Management 24: 177-192

Richardson, L., T.W. Clark, S.C. Forrest, and T.M. Campbell, III. 1987. Winter ecology of black-footed ferrets (*Mustela nigripes*) at Meeteetse, Wyoming. American Midland Naturalist 117:225-239.

Ricketts, T.H., E.Dinerstein, D.M. Olson and CJ. Loucks, W. Eichbaum, D. Dellasala, K. Kavanagh, P. Hedao, P.T. Hurley, K.M. Carney, R Abell and S. Walters. 1999. Terrestrial ecosystems of North America: a conservation assessment. World Wildlife Fund. 485pp.

Smith, R.E. 1967. Natural history of the prairie dog in Kansas. Kansas Univ. Nat. Hist. Misc. Publ. 49.

U.S. Fish and Wildlife Service. 1999. Positive 90-day finding for a petition to list the black-tailed prairie dog. Unpublished Report. 50pp.

U.S. Fish and Wildlife Service. 2000. 12-month finding for a petition to list the black-tailed prairie dog as threatened. Federal Register, February 4, 2000 (Volume 65, Number 24, pages 5476-5488).

Van Pelt, W.E. 1999. The black-tailed prairie dog conservation assessment and strategy. Arizona Game and Fish Department, Phoenix, Arizona. 55pp.

Vosburgh, T.C. and L.R. Irby. 1998. Effects of recreational shooting on prairie dog colonies. J. Wildlife Manage 62: 363-372.

Appendix A

Glossary

[Compiled by the Arizona Game and Fish Department and the Black-tailed Prairie Dog Conservation Team from the Cambridge Illustrated Dictionary of Natural History (Lincoln and Boxshall (1987), and the US Fish and Wildlife Service web page]

Adaptive management- The process of monitoring results of implemented conservation efforts, then adjusting those efforts according to what was learned (Announcement of Draft Policy for Evaluation of Conservation Efforts When Making Listing Decisions, *Federal Register* June 13, 2000 (Volume 65, pages 37102-37108).

Associated Species- Species that benefit from black-tailed prairie dogs, either directly or indirectly, but are not dependent on prairie dogs for survival.

Candidate Conservation Agreement with Assurances (CCAA)- Voluntary agreement between a state (umbrella) or a landowner and the US Fish and Wildlife Service that identifies actions necessary to conserve a declining (proposed or candidate) species. In exchange, the Service provides the assurance that no additional conservation measures or land-use restrictions will be required above that indicated in the CCAA should the species be listed as threatened or endangered in the future. For a state or landowner to receive assurances, the Service must determine that the benefits of the conservation measures to be implemented, when combined with those benefits that would be achieved if it is assumed that the conservation measures were also to be implemented on other necessary properties, would preclude or remove the need to list the covered species. Assurances only apply to non-federal entities and do not apply to federal lands.

Candidate Species- Plants and animals that the US Fish and Wildlife Service, through review of available information, has determined should be proposed for addition to the federal threatened or endangered species list.

Colony- A concentration of black-tailed prairie dogs with an average density of at least ten prairie dogs per acre.

Complex- A group of prairie dog colonies distributed such that individual prairie dogs can physically disperse from one colony to another. For the purposes of this document, this is defined as 7 km (4.3 mi) which is the longest nightly movement recorded for the black-footed ferret, an obligate predator on prairie dogs. Inter-colony movements of black-tailed prairie dogs are typically confined to approximately 8 km (5 mi).

Summary of justification for definition of a complex from the scientific literature: Black-tailed prairie dog movement between colonies is most often confined to about 8 km (5 mi) (Smith 1967). Ten km (6 mi) movement has been documented but is considered rare (Knowles 1985). Garrett and Franklin (1988) documented movement of up to 5.2 km (3 mi). The longest nightly moves by black-footed ferrets at Meeteetse, Wyoming was 7 km (4.3 mi) (Biggins and Fagerstone 1984, Richardson et al. 1987, Biggins et al. 1993).

Conservation- (a) From section 3(3) of the federal Endangered Species Act: "... the use of all methods and procedures which are necessary to bring any endangered species or threatened species to the point at which the measures provided under {the} Act are no longer necessary;" (b) The retention of natural balance, diversity, and evolutionary change in the environment.

Conservation Easement- A voluntary land-protection tool that places restrictions on a piece of property to protect associated natural or man-made resources. A landowner can either sell or donate an easement and it is a legally binding agreement.

Conservation Focus Area- An area of greater than 1000 acres of suitable prairie dog habitat, encompassing either an existing complex of occupied prairie dog colonies or an area where a complex of colonies can be created to sustain a viable population of prairie dogs for long-term management.

Control Measures- Actions taken to reduce the numbers and/or occupied acreage of prairie dogs, primarily through lethal means.

Corrective Measures- Actions taken to increase the numbers and/or occupied acreage of prairie dogs, perhaps following a plague outbreak or some other event which may have caused occupied acreage to fall below target levels.

Coterie- A territorial, harem-polygynous family group of prairie dogs, typically consisting of a breeding adult male, two or three adult females, and several yearlings or juveniles (Hoogland 1995).

Dispersal- The outward spreading of organisms from their point of origin or release; the outward extensions of a species' range.

Ecosystem- Dynamic and interrelating complex of plant and animal communities and their associated nonliving (e.g., physical and chemical) environment.

Endangered Species- A species in danger of extinction within the near future throughout all or a significant portion of its range.

Extirpated Species- A species no longer occurring in a region that was once part of its range.

Habitat- The local environment occupied by an organism and those components required to complete its life cycles, including air, food, cover, water, and spatial requirements.

Historic Range- Those geographic areas the species was known or believed to occupy in the past.

Incentive- Assistance, financial payment or other action which encourages individuals or organizations to participate in an effort or activity, or which offsets any sacrifices an individual or organization may make to participate in an effort or activity.

Keystone Species- A species that (1) has a large overall effect on ecosystem structure or function, (2) has a disproportionately large effect relative to its abundance, and (3) has a unique function in the system not provided by other species (Power et al. 1996, Kotliar et al. 1999).

Listing- The formal process through which the US Fish and Wildlife Service adds species to the Federal List of Threatened and Endangered Wildlife and Plants.

Petition (for Listing)- A formal request, with the support of adequate biological data, suggesting that a species be listed, reclassified, or delisted, or that critical habitat be revised for a listed species.

Occupied Acreage- Land (acreage) that has animals in residence.

Obligate Species- Species that, either directly or indirectly, are dependent on black-tailed prairie dogs for survival.

Population- All individuals of one species occupying a defined area and usually isolated to some degree from other similar groups.

Range- The geographic area a species is known or believed to occupy.

Re-establish- To restore (reintroduce) a species to an area that it historically inhabited.

Species- A group of individuals that can actually or potentially breed with each other and produce fertile offspring under natural conditions, but cannot breed with other such groups.

Species of Concern- An informal term, conferring no legal status, given to species that are of management concern due to declining numbers and/or loss of habitat. State wildlife agencies maintain a list of species of special concern that identifies species whose occurrence may be in jeopardy.

State Trust lands- Lands entrusted to the state by the Federal government and managed by the State Land Department for revenue for Trust beneficiaries (e.g., public schools, colleges, hospitals, charitable institutions). These are not public lands except in Arizona, Montana and Wyoming (access permit required) and South Dakota (no access permit required).

Subspecies- A group of interbreeding natural populations differing morphologically and genetically, and often isolated geographically from other such groups within a biological species but interbreeding successfully with them where their ranges overlap.

Sylvatic Plague- An acute, infectious disease caused by the bacteria *Yersinia pestis* that primarily affects rodents, rabbits, and associated carnivore and scavenger species. The agent is transmitted through the bite of an infected flea or through direct contact with an infected carcass. It is known as bubonic plague in humans and sylvatic plague in the wild. This disease causes almost 100% mortality in infected black-tailed prairie dogs.

Threatened Species- A species that is likely to become endangered within the near future throughout all or a significant portion of its range.

Appendix B

Methods used to create Bailey ecoregion habitat model section maps and acreage estimates (Ernst, pers. comm. 2001)

1. Acquisition of GIS Data

Pre-existing GIS coverages were collected via the Internet:

State Boundaries: USGS Digital map of state boundaries of the conterminous United States. Source: http://water.usgs.gov

County Boundaries: USGS Digital map of county boundaries of the conterminous United States. Source: http://water.usgs.gov

Bailey's Ecoregions: Bailey, R.G., P. E. Avers, T. King, and W.H. McNab, editors. 1994. Ecoregions and subregions of the United States. Colored Map (1:7,500,000) with supplementary table of map unit descriptions compiled and edited by W.H. McNab and R.G. Bailey. U.S. Forest Service, Washington, D.C., USA. Source: www.fs.fed.us/institute/geolink

Landuse/Landcover: U.S. Environmental Protection Agency's (EPA) Office of Information Resources Management (OIRM). 1994. 1:250,000 Scale Quadrangle of Landuse/Landcover GIRAS Spatial Data in the Conterminous United States.

Digital Elevation Model: U.S.G.S. 1:250,000 Digital Elevation Models.

Hall (1981) BTPD distribution map and the state modified range maps (2000) were obtained from PIC Technologies, Inc.

2. Processing Digital Layers to create the black-tailed prairie dog GIS:

Ancillary data: state, county, ecoregion, and the individual state range maps were converted to Arc/Info format. The Albers Equal-Area Projection was chosen for two reasons: 1) It was the existing projection of the state boundaries, and 2) The Albers projection is used in the United States and other large countries with a larger east-west than north-south extent. In addition, an equal-area map projection portrays areas over the entire map so that mapped areas have the same proportional relationship to the areas on Earth that they represent. Therefore, all digital data layers imported into the BTPD GIS were projected to Albers Equal-Area. The function of clean/build was performed to build polygon topology.

LULC data: These data come in individual 1:250 quadrangles, therefore each piece was map-joined to make one entire layer for the each individual state. The state LULC layer was then projected and clipped to the individual state boundary. The data layer was then converted to a grid format with 30m cell size and cell values depicting the Anderson Level I classification scheme.

Digital Elevation Data (DEM) data: These data come in individual 1:250 quadrangles, therefore each piece was map-joined to make one entire layer for the each individual state. The state DEM layer was then projected and clipped to the individual state boundary. These data exist in a grid format with a 30m cell size but cell values contain elevation data. Therefore, Percent Slope was calculated based on 10 percent increments and then reclassified into four categories of interest for the black-tailed prairie dog.

3. Ecoregion Section Analysis

Total available habitat by section: The ecoregion map was reclassified to delineate ecosection boundaries. The ecosection coverage was then clipped to the BTPD range map boundaries, resulting in an ecosection map cut by BTPD boundaries. The clipped coverages were then unioned with the state boundaries. This resulted in Area (M^2) by state in ecoregion. Area was multiplied to create acres, and exported into Excel.

Suitable habitat by section: ArcView Spatial Analyst was used to overlay the slope and LULC data layers, outputting a grid depicting the combination of habitat variables. These variables were reclassified to 4 categories based on the suitable/unsuitable characteristics. Once the suitable layer was complete, areas were tabulated and exported to Excel.

It is important to note these calculations were accomplished by using ArcView 3.2 GIS software and the use of other software or different map projections may result in a slight difference in acreage estimates.

Appendix C

Brief Summary of Bailey Eco-Section Vegetation and Fauna Descriptions

Core Range

Arkansas Tablelands

Potential Natural Vegetation – Predominant vegetation consists of short grass and mid grass prairie, and some woodlands. Kuchler classified vegetation as grama-buffalo grass prairie, sandsage-bluestem prairie, and juniper-pinyon woodland.

Fauna – Black-tailed prairie dog not mentioned, black-footed ferret mentioned.

Central High Plains

Potential Natural Vegetation – Predominant vegetation is short and mid grass prairie. Kuchler classified vegetation as grama-buffalograss prairie and sandsage-bluestem prairie.

Fauna – Black-tailed prairie dog is mentioned.

Central High Tablelands

Potential Natural Vegetation – Predominant vegetation is short grass prairie. Kuchler classified vegetation as grama-buffalograss prairie, bluestem-grama prairie, sandsage-bluestem prairie, and wheatgrass-bluestem-needlegrass prairie.

Fauna – Black-tailed prairie dog is mentioned.

Northwestern Great Plains

Potential Natural Vegetation – Kuchler mapped vegetation as wheatgrass-needlegrass. Common species include blue grama, bluebunch wheatgrass, green needlegrass, needle-and-thread grass, western wheatgrass, and buffalo grass.

Fauna – Black-tailed prairie dog is mentioned.

Powder River Basin

Potential Natural Vegetation – Kuchler mapped vegetation as grama-needlegrass-wheatgrass. Common species include western wheatgrass, blue grama, green needlegrass, bluebunch wheatgrass, and needle-and-thread grass.

Fauna – Black-tailed prairie dog is mentioned

Southern High Plains

Potential Natural Vegetation – Predominant vegetation is short to mid-height grasslands. Kuchler classified vegetation as sandsage-bluestem prairie and bluestem-grama prairie. Common species include blue grama, buffalograss, hairy grama and little bluestem.

Fauna – Black-tailed prairie dog is mentioned

Texas High Plains

Potential Natural Vegetation – Kuchler classified vegetation as grama-buffalo grass and shinnery oak. The predominant vegetation is short grass communities composed of bunchgrasses with a sparse shrub layer. Common species include blue grama and buffalograss, sagebrush, mesquite and yucca.

Fauna – Black-tailed prairie dog is mentioned

Secondary Range

Basin and Range

Potential Natural Vegetation – Kuchler classified vegetation as trans-Pecos shrub savanna, grama-tobosa desert grasslands, oak-juniper woodland, and mesquite-tarbush desert scrub.

Fauna – Black-tailed prairie dog not mentioned.

Belt Mountains

Potential Natural Vegetation – Kuchler classified vegetation as foothills prairie (75%) and Douglas-fir forest (25%).

Fauna – Black-tailed prairie dog not mentioned.

Bighorn Basin

Potential Natural Vegetation – Kuchler classified vegetation as saltbush-greasewood, wheatgrass-needlegrass-shrubsteppe, and sagebrush steppe.

Fauna – White-tailed and black-tailed prairie dogs are mentioned.

Nebraska Sandhills

Potential Natural Vegetation – Mid and tall grass plant communities are present including Nebraska sandhills prairie (bluestem and sandreed). Kuchler classified vegetation as sandhills prairie, and wheatgrass-bluestem-needlegrass prairie.

Fauna – Black-tailed prairie dog is mentioned

North Central Great Plains

Potential Natural Vegetation – Kuchler mapped potential vegetation as wheatgrass-needlegrass prairie and wheatgrass-bluestem-needlegrass prairie.

Fauna – Black-tailed prairie dog is mentioned.

Northwestern Glaciated Plains

Potential Natural Vegetation – Kuchler mapped vegetation as grama-needlegrass-wheatgrass. Common species include blue grama, bluebunch wheatgrass, green needlegrass, needle-and-thread grass, western wheatgrass, and basin wildrye.

Fauna – White tailed and black-tailed prairie dog are mentioned.

Pecos Valley

Potential Natural Vegetation – Vegetation consists of grama and galleta grass, pinyon-juniper and mesquite bush.

Fauna – Black-tailed prairie dog is not mentioned.

Redbed Plains

Potential Natural Vegetation – Kuchler classified vegetation as bluestem-grama prairie and cross timbers, shinnery, and sandsage-bluestem prairie.

Fauna – Black-tailed prairie dog is not mentioned, black-footed ferret historic occurrence.

Rolling Plains

Potential Natural Vegetation – Kuchler classified vegetation as mesquite-buffalograss. Predominant vegetation is medium-tall grassland with sparse shrub cover.

Fauna – Black-tailed prairie dog is not mentioned, black-footed ferret historic occurrence.

South-Central Great Plains

Potential Natural Vegetation – Predominant vegetation is grass and prairie communities. Kuchler mapped vegetation as bluestem-grama prairie, sandsage-bluestem prairie, northern flood plain forests, and buffalograss.

Fauna – Black-tailed prairie dog is mentioned.

Stockton Plateau

Potential Natural Vegetation – Kuchler classified vegetation as trans-Pecos shrub savanna. Common species include desert shrubs in association with short to mid-height grasses and oak savannas.

Fauna – Black-tailed prairie dog is not mentioned.

Appendix D

Black-tailed Prairie Dog Sylvatic Plague Monitoring Protocol

Since its documented appearance in wild rodents on the Pacific Coast of North America in the early 1900s, sylvatic plague has spread eastward to approximately the 103rd Meridian, affecting sciurid and cricetid rodents, insectivores, lagomorphs, carnivores, and humans (bubonic plague) (Barnes 1982, Cully 1993). Prairie dog species are extremely susceptible to this typically flea-borne disease and may serve as "amplifying hosts" (Barnes 1993).

Plague epizootics may originate from focal areas, with possible maintenance in non-focal areas between epizootics. During epizootics, plague can spread over great distances and in the process affect humans, most often during and shortly following epizootics (Cully 1993). Several wildlife species are considered enzootic or maintenance species for sylvatic plague, meaning individuals have some or considerable resistance to the disease. Examples include the California vole (*Microtus californicus*) in San Mateo County California, kangaroo rats (*Dipodomys* spp.), deer mice (*Peromyscus maniculatus*), and northern grasshopper mice (*Onychomys leucogaster*) (Cully 1993).

In the past, plague has been monitored for the protection of human health and conservation of prairie dog populations for ecosystem values, particularly protection of reintroduced populations of black-footed ferrets. As part of a range-wide commitment to black-tailed prairie dog management, the Interstate Prairie Dog Conservation Team is developing this plague protocol to monitor and react to the threat of sylvatic plague on a range-wide basis.

Application of Deltadust Insecticide, a prophylactic treatment for flea control in burrows, is sometimes used prior to prairie dog relocation into plague-affected colonies (Dave Seery, pers. comm.) This technique may have limited applicability for flea control in other situations and is the only active treatment method currently available.

Sylvatic plague surveillance methods are summarized below.

Technique	Description
"Windshield surveys"	General observations of prairie dog towns to detect die-offs, with follow-up evaluations needed to confirm cause and status. Coordination with health professionals, field personnel, and private landowners will be important to achieve a valid sample of colonies statewide
Collection and analysis of dead prairie dogs	Prairie dogs often die in burrows, but a small percentage of those exposed to plague die above-ground and can be picked up if colonies are regularly surveyed for dead and dying prairie dogs
Collection and analysis of fleas from prairie dog burrows	This technique has had widespread use as a surveillance technique for human health concerns. It is a part of the Shirley Basin/Medicine Bow black-footed ferret plague contingency plan in Wyoming (Luce and Oakleaf 1994). Young et al. reported on using this technique on Fort Belknap Agency, Montana, and the Pueblo Chemical Depot in central Colorado
Collection of blood samples from members of Order Carnivora, especially coyotes and badgers	Although such species as badgers and coyotes can become infected with plague, their primary role in the disease cycle is the transport of plague-infected fleas (Poland and Barnes 1979 cited in Gage et al. 1994). Nobuto blood-sampling papers have been used extensively, since the technique does not require access to refrigerators and requires only 0.2 ml of blood (Wolff and Hudson 1974, Gage et al. 1994). This technique has recently been used in association with black-footed ferret reintroduction, either via collection of blood samples from live animals, dead animals collected for this purpose, or animals killed during animal damage control activities (Anderson et al. no date, Williams et al. 1998, Matchett 2001). In addition, black-footed ferrets captured for removal of radio collars, for implantation of transponder chips, or for canine distemper vaccination can be bled for disease analysis samples. This technique can easily be incorporated into blood collection for other purposes, such as genetic analyses (NPWRC 1999).
Collection of blood samples from domestic dogs	Barnes (1982) reported using domestic dogs as sentinels for exhibiting antibodies to plague. This technique has been effective on Native American reservations in the Southwest to detect seroconversion before plague was observed in rodents or humans.
Collection of blood from potentially resistant small mammals	Certain rodent species appear to be resistant to plague and may serve as maintenance or enzootic hosts that maintain plague between epizootics (Cully 1993, Gage et al. 1994). The Wyoming Game and Fish Department has monitored small mammals for plague seroconversion in Shirley Basin, Wyoming (Luce et al. 1994, 1996, 1997). Trapping efforts focused on deer mice and grasshopper mice, with the assumption that active plague would be detectable by antibodies produced during the short life span of these rodents. These investigations detected a relationship between seroprevalence of plague in deer and grasshopper mice and status of white-tailed prairie dog populations in Shirley Basin.

ACTIONS:

1. State wildlife agencies will initiate a public information program to inform landowners, hunters, and other members of the public concerning the need to notify the agency of die-offs of prairie dogs or ground squirrels.

2. State wildlife agency prairie dog coordinators, in cooperation with state public health officials, will take the lead to inform state Department of Agriculture, USDA-Wildlife Services, NRCS, veterinarians, and local government personnel that deal with animal control, or have regular contact with landowners and the public, of the need for reporting die-offs.

3. State wildlife agency prairie dog coordinators, in cooperation with state public health officials, will take the lead in providing information and training for state Department of Agriculture, USDA-Wildlife Services, NRCS, veterinarians, and local government personnel that deal with animal control, on protocols for collection of dead prairie dogs and ground squirrels, packaging and record keeping.

The CDC and Wyoming State Veterinary Laboratory (WSVL) both have extensive experience conducting disease surveillance in wild mammals. CDC does not charge for diagnostic services, but has limited laboratory capacity. The eleven black-tailed prairie dog states will use CDC, individual state diagnostic labs, or WSVL diagnostic services for examination of prairie dog and ground squirrel carcasses for disease detection. Although other laboratories can provide a similar service as the WSVL, there would be a significant advantage in having all of the diagnostic examination done at a lab that is familiar with the procedures, will produce consistent results, and will report them state by state for the eleven states as the WSVL has done for black-footed ferret reintroduction sites for several years. In addition to testing for plague, specimens will be tested for tularemia, pasteurellosis, undetected poisoning, drowning, and predator kill.

4. State prairie dog coordinators will develop windshield survey routes throughout the prairie dog range to be conducted annually by wildlife agency or other personnel in each county, or smaller unit where prairie dogs occur, during March and April. Windshield surveys will follow the CDC protocol (Enscore pers. comm.)(Appendix 1). Significant decline in any colony or complex should be immediately reported to the state prairie dog coordinator.

In the event of a suspected die-off (if a windshield survey route reports a significant loss of prairie dogs or ground squirrels), the state will implement the plague contingency plan immediately (Appendix 2).

A. Make local inquiries to determine whether or not the colony was poisoned, or whether mortalities were due to heavy shooting

B. If neither shooting nor poisoning occurred, the colony or complex should be searched for prairie dog and ground squirrel carcasses as soon as possible after discovery of the population decline. Carcasses should be handled in the field according to protocol (Appendix 2)

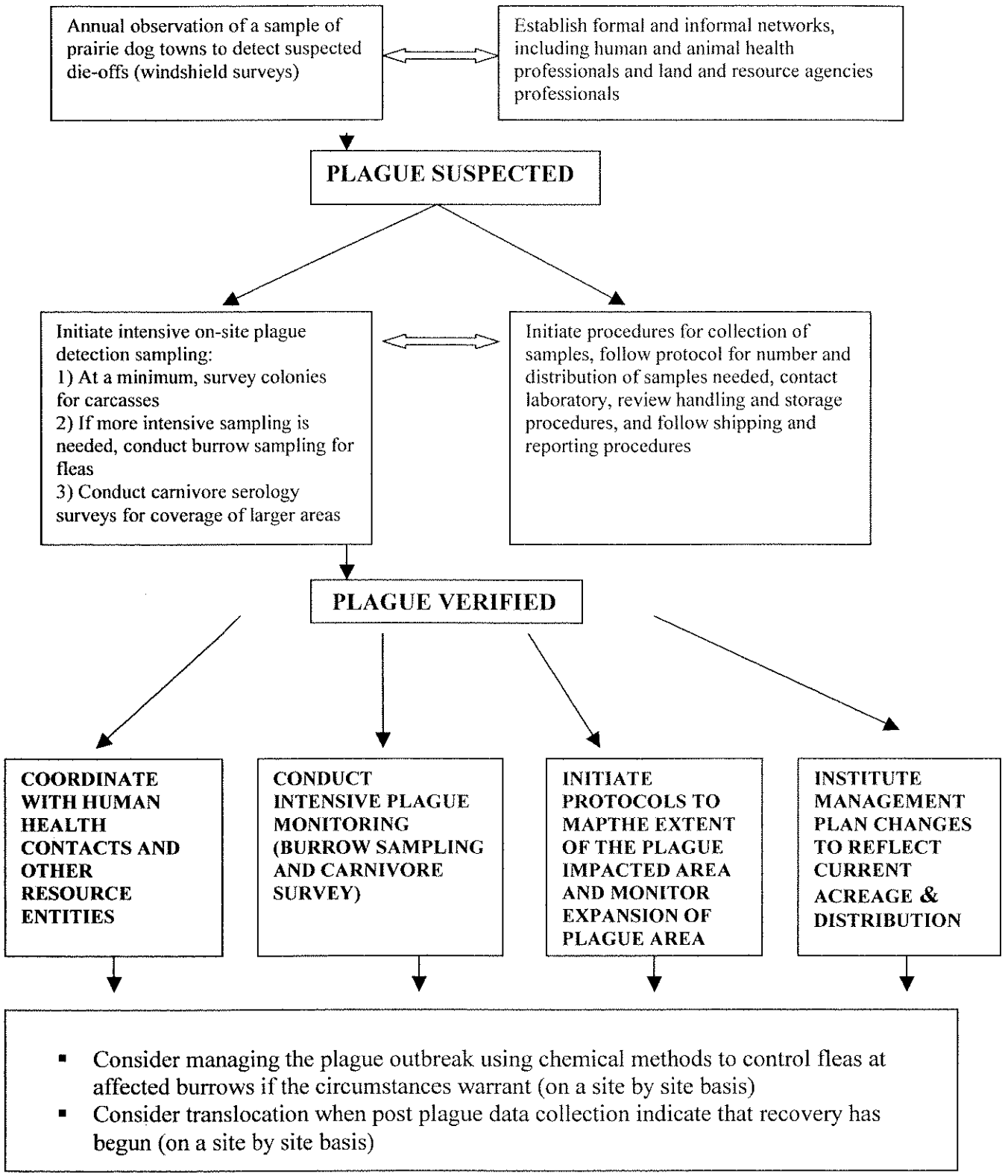
C. In the event that carcasses cannot be found, and the disappearance of prairie dogs is verified as recent, burrow swabbing should be conducted to collect fleas according to CDC protocol (Appendix 3)

6. If plague is verified, the prairie dog coordinator, in cooperation with state public health officials and CDC, should immediately notify, and make plague contingency recommendations to, the following: landowners and wildlife agency personnel in the affected area, state Department of Agriculture, USDA-Wildlife Services, NRCS, veterinarians, and local government personnel that deal with animal control, and the general public through local media sources.

7. Post-plague monitoring of prairie dog colonies should be conducted annually in March or April to document the rate of re-colonization and verify occupied acreage. Initial monitoring, which will take place from one to several years, should consist of windshield surveys. When visual surveys indicate prairie dog colonies are recovering, a quantitative survey method should be initiated. The recommended method, due to widespread use, particularly on black-footed ferret reintroduction sites, is transecting using the Biggins method (Biggins et. al. 1993) that equates active and inactive burrow densities to population density.

8. The prairie dog coordinator and the prairie dog working group should evaluate the extent of the impact of the epizootic as it effects the acreage and distribution objectives in the management plan. The group should determine whether or not there is a need to modify prairie dog management in the plague area, and potentially elsewhere in the state, if occupied acreage is below the objectives in the state management plan.

Plague Monitoring Framework



Appendix 1

Centers for Disease Control
Procedure for Visual Evaluation of Prairie Dog Colonies for Plague in the Southwestern United States

Citation: Enscore, R. personal communication. Undated. Centers for Disease Control and Prevention, NCID, Division of Vector Borne Infectious Diseases, Plague Section, Fort Collins, Colorado. 3pp.

A. HEALTHY COLONY

OBSERVATION: The vast majority of burrows show signs of recent use, unless it has rained within the past 24 hours – in which case the colony should be reexamined following a period of at least 24 hours without precipitation. Active prairie dogs are observed during periods of acceptable weather conditions. Only a relatively few (<10%) burrow openings appear inactive (lack of disturbed dirt, presence of cobwebs or wind-blown vegetation over the entrance). An occasional carcass or dried bones may be present as a result of non-plague death or predation.

EVALUATION: Unless recently (days) introduced, plague is not likely to be present. Fleas are not likely to test positive.

SAMPLE RECOMMENDATIONS: No samples recommended.

B. DEAD COLONY

OBSERVATION: The colony appears completely inactive. Burrows show no signs of recent use (re-examine if it has rained within 24 hours). An occasional desiccated carcass and bones may be present, and have likely been scavenged.

EVALUATION: 1) Make inquiries to determine if the colony was poisoned. This is especially likely if it appears that dirt was shoveled into the burrows. If there is no evidence of poisoning and the food supply appears ample: 2) it is likely that plague or some other zoonotic disease killed the colony. An experienced observer can usually make an estimate (recently, 1 season, or 2 seasons) on how long the colony has been inactive by considering the soil type and degree of burrow degeneration.

SAMPLE RECOMMENDATIONS: Sample only if there is no evidence of poisoning. A recent (same season) die-off might produce many fleas through burrow swabbing. Older die-offs will likely produce few or no fleas. Typically, many burrows (dozens or even hundreds) may be swabbed with only a few producing flees. If burrowing owls are using the inactive burrows, small black stick-tight fleas may be present in large numbers (in contrast to the larger, reddish-

brown prairie dog fleas). Fresh or desiccated prairie dog carcasses may also be collected for analysis.

C. SCATTER PATTERN:

OBSERVATION: Inactive burrows constitute an unusually high (typically 20-90%) percentage of the total burrows. Active burrows however are clearly evident and active prairie dogs are observed during periods of acceptable weather. Active and inactive burrows are scattered amongst each other in no particular pattern (see below), keeping in mind that family units may have multiple burrow openings and hence an inactive unit may produce a small cluster of 2-5 inactive burrow openings. An occasional carcass (fresh or desiccated) and bones may be present.

EVALUATION: Several scenarios could account for these observations – and more than one scenario may be in play at the same place and time. Presented in order of likelihood: 1) Make inquiries to determine if the colony was poisoned. This is especially likely if it appears that dirt was shoveled into the burrows. This scatter pattern could be produced if the application of poison was scattered and not comprehensive, 2) If there is no evidence of poisoning, assess the available food supply. Such a pattern of death could also be attributable to a population crash as a result of lost carrying capacity of the site or over-population, 3) If there is no evidence of poisoning or population crash, hunting by humans or excessive predation by carnivores or birds of prey are highly likely. Human hunting usually produces physical evidence such as footprints, tire tracks and spent ammunition shells. Depending upon the local culture, human hunters may collect their prey (many Native American groups regard prairie dogs as a delicacy) or leave it for scavengers. Experienced observers can often spot carnivore tracks and recognize hunting and attack patterns in these tracks near burrow entrances, 4) Finally, a zoonotic disease could be responsible, but given this mortality pattern, a disease with a lower mortality rate than plague is more likely.

SAMPLE RECOMMENDATIONS: If there is no evidence of poisoning, population crash, or excessive human hunting: collect fleas by swabbing burrows – especially inactive burrows – and collect fresh or desiccated prairie dog carcasses if available.

D. DEAD ZONE

OBSERVATION: Within an otherwise healthy appearing colony, there is a zone of inactive burrows. This zone may encompass a relatively small or large proportion of the colony, and may be located anywhere in the colony. Eventually it spreads to encompass a section of the colony and appears to be spreading, along a discernable line of demarcation over the remaining section of the colony. Experienced observers can often clearly distinguish and mark (flagging tape) this demarcation line between active and inactive regions. Marking allows for periodic re-examination to assess the rate of spread and facilitates sampling. Fresh or desiccated carcasses may be present. Near the demarcation line, recently inactive burrows may reveal the odor of decaying carcasses and flies may be common at burrow entrances.

EVALUATION: 1) There is a high probability that plague is active in such a colony. Although other zoonotic diseases are possible, plague is most likely, 2) Depending upon the location of the dead zone with respect to other human activity (homes, barns, etc.) poisoning is also a possibility and should be investigated.

SAMPLE RECOMMENDATIONS: Collect fleas by swabbing burrows immediately along both sides of the demarcation line, concentrating a majority of your efforts immediately along (within 10meters) the inactive (dead) side of the line. Fleas are likely to be numerous. You may wish to apply extra insect repellent but be extremely cautious not to directly or indirectly get repellent on your burrow swab! (If this happens: discard it, wash your hands, and start with a new one). If others in a group are getting fleas and you are not, and you are swabbing essentially the same area, you likely have repellent on your swab. Collect any available rodent carcasses (fresh or desiccated, prairie dog or other rodent) for testing.

Additional Notes: Please include GPS coordinates for all samples. One set of coordinates per colony is acceptable. Specify the type of inactivity pattern noted for each sampled colony: dead colony, scatter pattern, dead zone. Analysis of samples from "dead zone colonies" will receive laboratory priority.

The above activity patterns are typical for the warm months. Visual examination during winter months is more difficult due to decreased daily activity among even healthy animals.

Appendix 2

Field Procedures for Collecting and Handling Carcasses as Diagnostic Specimens

1. Search prairie dog colonies systematically using walking or 4-wheeler transects spaced at about 50 meters.

2. When a carcass is discovered, ascertain if possible, whether or not the animal was shot. If mortality by shooting is confirmed there is no need to collect the specimen.

3. Before you collect a carcass, prepare a tag with the following information: species, date, location (both legal description and UTM is recommended), name of collector, agency or affiliation of collector, telephone number and address of collector, brief description of circumstances for collection.

4. When collecting a carcass, the collector should wear leather or latex gloves, and a long sleeved shirt or jacket that is tight at the wrist, to ward off fleas.

5. Invert a one-gallon plastic ziplock freezer bag over your hand, grasp the carcass in your hand, quickly fold the bag over the carcass, roll the bag on the ground, away from your body, to expel the air, and seal the ziplock.

6. Immediately place in a second ziplock bag, put in the tag, roll and seal the second bag.

7. As soon as possible after collection, freeze the specimen.

8. Sample Size:

   1) If specimens are from a single sample area (one prairie dog colony or area) collect as many specimens as is practical up to 15, but initially ship only the freshest five specimens to the diagnostic lab.

   2) Freeze the additional specimens that were collected, up to ten, and save for further testing needs, depending upon the results from the testing of the first five specimens. Keep the samples until notified by the WSVL or other lab that results were obtained form the first five samples and that the additional specimens will not be needed.

9. Ship the frozen specimen to WSVL, CDC, or designated lab.

   (DO NOT USE UPS). U.S. Postal System or FEDEX can ship carcasses that are sealed in plastic bags and a cardboard box. Their regulations require:

1) Carcasses must be individually labeled and bagged in watertight bags (minimum triple bag in ziplocks)

2) Placement of absorbent packing material around the carcass (crumpled newspaper, etc.)

3) Use of approved laboratory shippers or hard-sided containers, adequately taped closed

4) Marking of the container with "Biomedical Material" label (for U.S. Postal Service) or shipped as hazardous material by Federal Express (requires a special form and should be labeled as Diagnostic Biomedical Material on the form. Labels and forms may be obtained from the U.S. Postal Service or Federal express.

5) Carcasses should be frozen or packed with frozen ice packs (no wet ice).

10. Cost: WSVL cost for testing for plague, tularemia, pasteurellosis, undetected poisoning, and predator kill is a maximum of $60.00 per specimen. CDC testing is free but the Ft Collins laboratory has limited capacity and can handle no more than 50 specimens per year.

11. Contact before shipping:

Dr. Beth Williams
Wyoming State Veterinary Lab
1174 Snowy Range Road
Laramie, WY 82070
307-742-6638

or

(Shipment by U.S. Postal System)
CDC/Bacterial Zoonoses Branch
c/o Mr. Leon Carter
P.O.Box 2087
Ft. Collins, CO 80522

(Shipment by FEDEX)
CDC/Bacterial Zoonoses Branch
c/o Mr. Leon Carter
Rampart Road (CSU Foothills Campus)
Fort Collins, CO 80521

Appendix 3

Centers for Disease Control
Procedure for Flagging (Swabbing) Rodent Burrows

Citation: Gage, K. Personnel Communication. Undated. Centers for Disease Control, Ft. Collins, CO. 3pp.

Leon Carter: 970-221-6444 (Biologist, Diagnostic and Reference Section - Responsible for handling specimens and doing much of the plague-associated laboratory work at CDC.)
Ken Gage: 970-221-6450 (Plague Section Chief - Responsible for CDC's plague surveillance and control program. Trained as medical entomologist/zoologist)
Rusty Enscore: 970-221-6452 (Environmental Health Specialist IV, Plague Section - Registered Sanitarian)
John Montenieri: 970-221-6457 (Biological Technician, Plague Section - GIS specialist)

Some important flea vectors of plague infest rodent species that live in burrows. Although these fleas usually can be found in abundance on live hosts, they also can be collected by a procedure known as burrow flagging or burrow swabbing.

This procedure requires:

1) **Burrow swabbing device** consisting of a flexible cable, wire, or strong rubber hose with spring-loaded clip attached to the end. We prefer a steel plummer's "snake" that has an alligator clip screwed on the end as a means of attaching the flag. A simple burrow swab can be made by attaching a flag to the end of a piece of wire (about the thickness of a coat hanger), but this primitive swab allows only the top 2 or 3 feet of a burrow to be swabbed and will miss some fleas. Despite the shortcomings of the latter technique, it can be useful when die-offs are encountered unexpectedly and more sophisticated means of swabbing fleas are not available.

2) **Flags** consisting of white flannel cloth squares (approx. 25 cm^2 or 10 in^2). We prefer white flannel because it is easier to see the fleas on white cloth than on cloths of other colors. Flannel is better than most other cloths because of its deep nap, which increases the likelihood that fleas will continue to cling to the cloth flag after it is removed from the burrow.

3) **Plastic bags** (approx. 20-40 cm^2 or 8-15 inches)(Zip-loc type are best)

4) **Insect repellent** (DEET) to spray on clothes and exposed skin on arms, legs, etc. Although this is recommended for safety reasons, care must be taken not to apply repellents to hands because the repellent is likely to transfer to the flagging material, thus preventing fleas from jumping onto the flag. Note: Clothing also can be treated with permethrin-containing sprays but these sprays should not be applied directly to the skin.

Procedure:

1. Attach a flag to the clip on the end of the burrow swab.

2. Force the flag as far as possible down the burrow. The fleas confuse the flag with their normal host and cling to it as it passes through the burrow.

3. Slowly withdraw the flag from the burrow after approximately 30 seconds.

4. Quickly place the flag in a plastic bag.

5. Seal the bag to prevent the fleas from escaping.

6. Keep track of the number of burrows swabbed so that a burrow index can be calculated.

   Burrow index = no. fleas collected/no. burrows sampled - This value often increases dramatically during die-offs among prairie dogs, rock squirrels, California ground squirrels, or other ground squirrel species)

7. Place another flag on the swab and repeat steps 1-6 for each burrow.

8. Transport flags back to laboratory in the plastic bags. Keep the bags in a reasonably cool place to prevent dessication of the flea samples (*Yersinia pestis* is very susceptible to death by dessication) or death of the plague bacilli due to excessive heat (remember pick-up hoods can get very hot in direct sunlight! Fried samples will come back negative for plague everytime!).

9. Place bags in freezer overnight to kill the fleas.

10. Place the flags and loose contents of the plastic bags in a white enamel pan. Fleas may be picked from the flags and bottom of the pan with forceps.

11. Place fleas in vials containing 2% saline and a very small amount of Tween-80 detergent (<0.0001% of solution). Remember the detergent is added to reduce surface tension and allow the fleas to sink to the bottom of the vial. Too much detergent will kill the plague bacteria and prevent successful isolation. Fleas can be submitted in 2% saline without Tween-80, but an effort should be made to submerge the fleas. If the fleas have been killed by freezing, this should not be a problem. Although not recommended for routine collecting, some investigators occasionally remove live fleas directly from the flags and place them in vials of saline. Live fleas placed in saline containing the Tween-80 detergent will be unable to float on the surface of the liquid, thus ensuring that they will drown soon after being placed in the saline. Without the detergent, surface tension can become a problem because the numerous bristles and setae found on fleas enable them to remain afloat on the surface of saline. This can be a potential safety problem because floating fleas often survive shipment and arrive at the laboratory ready to jump onto lab personnel. Rapid freezing of the fleas

obviously eliminates this problem, but adding Tween-80 to the saline also helps reduce the growth of fungi on flea samples. Dead fleas trapped in the surface tension at the air-saline interface rapidly become overgrown with fungi making identifications more difficult.

12. Vials containing 2% saline and fleas can be shipped to CDC for taxonomic identification and analysis of the fleas for *Yersinia pestis* infection. The fleas can be shipped at ambient temperature in the vials of 2% saline. For best results, ship the specimens as soon as possible because the fleas will start to decay soon after collection. Be sure and double wrap the vials in a leak-proof material and then place them in a crush-proof box or metal mailing tube for shipment to CDC.

13. CDC Address:

(Shipment by U.S. Postal System)
CDC/Bacterial Zoonoses Branch
c/o Mr. Leon Carter
P.O.Box 2087
Ft. Collins, CO 80522

(Shipment by FEDEX)
CDC/Bacterial Zoonoses Branch
c/o Mr. Leon Carter
Rampart Road (CSU Foothills Campus)
Fort Collins, CO 80521

Literature Cited:

Anderson, N., R. Stoneberg, and T. Vosburgh. Undated. Review of disease surveys of carnivores in association with black-footed ferret reintroduction efforts, 1993-1998.

Barnes, A.M. 1982. Surveillance and control of bubonic plague in the United States. Symp. Zool. Soc. Lond. 50:237-270.

Barnes, A.M. 1993. A review of plague and its relevance to prairie dog populations and the black-footed ferret. Pages 28-37 *in* Proc. of the Symp. on the management of prairie dog complexes for the reintroduction of the black-footed ferret. U.S. Dept. of Interior, U.S. Fish and Wildlife Serv. Biol. Rept. 13.

Biggins, D.C., B.J. Miller, L.R. Hanebury, B. Oakleaf, A.H. Farmer, R. Crete and A. Dood. 1993. A technique for evaluating black-footed ferret habitat *in* Management of prairie dog complexes for reintroduction of the black-footed ferret, U.S. Fish and Wildlife Service, Biological Report 13.

Carter, L., K. Gage, R. Enscore, and J. Montenieri. Undated. Procedure for flagging (swabbing) rodent burrows. Centers for Disease Control – Bacterial Zoonoses Branch, Ft. Collins, CO. 3pp.

Cully, J.F., Jr. 1993. Plague, prairie dogs, and black-footed ferrets. Pages 38-49 *in* Proc. of the Symp. on the management of prairie dog complexes for the reintroduction of the black-footed ferret. U.S. Dept. of Interior, U.S. Fish and Wildlife Serv. Biol. Rept. 13.

Enscore, R. Undated. Visual examination of prairie dog colonies for plague in the southwestern U.S. Centers for Disease Control and Prevention, NCID, Division of Vector Borne Infectious Diseases, Plague Section, Ft. Collins, CO. Personnel Communication. 3pp.

Gage, K.L. Undated. Procedure for Flagging (Swabbing) Rodent Burrows. Centers for Disease Control. Personnel Communication. 3pp.

Gage, K.L., J. Montenieri, and R.E. Thomas. 1994. The role of predators in the ecology, epidemiology, and surveillance of plague in the United States. Pages 200-206 *in* Proc. 16th Vertebr. Pest Conf., Univ. of Calif., Davis.

Luce, B. and B. Oakleaf. 1994. Shirley Basin/Medicine Bow black-footed ferret management area sylvatic plague contingency plan. Pages 97-105 *in* 1993 Annual Completion Report, April 15, 1993 – April 14, 1994, Black-footed Ferret Reintroduction Shirley Basin, Wyoming. Wyoming Game and Fish Dept.

Luce, B., T.D. Silvia, E.S. Williams, and S. Anderson. 1996. Small mammal trapping to monitor the distribution and rate of seroprevalence of sylvatic plague in Shirley

Basin, Wyoming in 1995. Pages 8-14 *in* Luce, B., B. Oakleaf, E.T. Thorne, and E.S. Williams, editors. Black-footed ferret reintroduction in Shirley Basin, Wyoming, 1996. Wyoming Game and Fish Department, Cheyenne.

Luce, B., R. Lockman, E.S. Williams, and S. Anderson. 1997. Small mammal trapping to monitor the distribution and rate of seroprevalence of sylvatic plague in Shirley Basin, Wyoming in 1996. Pages 10-16 *in* Luce, B., B. Oakleaf, E.T. Thorne, and E.S. Williams, editors. Black-footed ferret reintroduction in Shirley Basin, Wyoming, 1997. Wyoming Game and Fish Department, Cheyenne.

Matchett, R. 2001. January 31, 2001 memo to Pete Gober, State Supervisor, FWS-ES, Pierre, SD, subject: plague surveillance results from Montana.

Northern Prairie Wildlife Research Center 1999. Animal care protocol for collecting, handling, and storage of blood from canids. U.S.G.S.-BRD Northern Prairie Wildlife Research Center, Jamestown, ND. 5 pages.

Poland, J.D. and A.M. Barnes. 1979. Plague. Pages 515-597 *in* J.F. Steele, editor. CRC Handbook Series in Zoonoses, Section A: Bacterial, Rickettsial, and Mycotic Diseases. Vol. I. pp. 515-556 (ed.) J.F. Steele. CRC Press, Boca Raton, Florida.

Seery, Dave. pers. comm. U.S. Fish and Wildlife Service, Rocky Mountain Arsenal National Wildlife Refuge, Commerce City, Colorado, phone 303-289-0537.

Van Pelt, W.E. 1999. The black-tailed prairie dog conservation assessment and strategy – final draft. Nongame and Endangered Wildlife Program. Arizona Game and Fish Dept., Phoenix.

Williams, E.S., J. Edwards, W. Edwards, A. McGuire, S. Dubay, W. Cook, S. Anderson, and P. Jaeger. 1998. Survey of carnivores for diseases in the Conata Basin/Badlands black-footed ferret reintroduction site, 1996-1997. Report to South Dakota Dept. of Game, Fish and Parks.

Wolff, K.L. and B.W. Hudson. 1974. Paper-strip blood-sampling technique for the detection of antibody to the plague organism *Yersinia pestis*. Applied Microbiology 28(2):323-325.

Young, P.J., D.J. Mead, F. Ramberg, K.M. Canestorp, and T. Vosburgh. no date. Plague surveillance and flea communities on black-tailed prairie dog towns (abstract only).

Appendix E

Incentives for the Conservation of Short- and Mixed-grass Prairie Ecosystems, the Black-tailed Prairie Dog, and Associated Species on Private and Tribal Lands

Conceptual Proposal

Goal: To establish a voluntary, incentive-based program to foster ecological conservation of short- and mixed-grass prairie ecosystems on private and tribal lands, with emphasis on conservation and restoration of black-tailed prairie dogs and associated species.

Background: No ecosystem type in America reflects more dramatic declines than the continent's grasslands. The nation's prairies continue to disappear under development, crop production, fragmentation, and ill-conceived management. The loss of native grasslands has predictably entailed the decline of prairie species, many of which are now imperiled. The black-tailed prairie dog is representative of declining species and ecosystems in the short- and mixed-grass prairies.

The prairie dog is an important ecological component of the western landscape, considered by many scientists to be a keystone species of the short- and mixed-grass prairies, meaning its presence is critical to, and indicative of, overall ecosystem health. Studies have identified more than 140 wildlife species associated with prairie dog colonies. Their burrowing and feeding habits create unique micro-topography and plant community characteristics that attract a wide variety of birds, mammals, and reptiles. As occupied acreage of black-tailed prairie dogs has been reduced, populations of many associated species have declined as well, including the mountain plover, burrowing owl, black-footed ferret, prairie falcon, swift fox, golden eagle, ferruginous hawk, and others. Restoring and conserving the prairie dog's habitat will improve populations of many declining and sensitive wildlife species, helping to avoid future needs and costs for regulatory protection.

The black-tailed prairie dog's range historically encompassed an estimated 400 million acres in what is now the western United States, including parts of Arizona, Colorado, Kansas, Montana, Nebraska, New Mexico, North Dakota, Oklahoma, South Dakota, Texas, and Wyoming. At any one time, their colonies may have covered as many as 100 million acres within that range. Today, the occupied acreage has been reduced dramatically (currently estimated at roughly one percent of the historic level), by concerted efforts to exterminate them from grazing lands, by the impacts of the introduced disease sylvatic plague, and by conversion of native prairie to cropland and other uses.

In July of 1998, the National Wildlife Federation petitioned the U.S. Fish and Wildlife Service (FWS) to declare the black-tailed prairie dog as threatened under the Endangered Species Act (ESA) throughout its 11-state range. The FWS found that the species warranted threatened status and protection, but that listing was precluded by higher priority species needs.

Subsequently, the state wildlife agencies in the 11-state historic range of the black-tailed prairie dog convened the Interstate Black-tailed Prairie Dog Conservation Team to coordinate efforts to ensure the long-term viability of the species and preclude the need for ESA listing and protection. Each state wildlife agency is developing a prairie dog management plan for long-term conservation of the species within its jurisdiction. Several tribal governments within the historic range of the black-tailed prairie dog are developing similar plans. The cumulative effect of these

plans, when implemented, will conserve large areas of native short- and mixed-grass prairie and significantly reduce threats to the black-tailed prairie dog and associated species.

It is not possible to fully implement these plans without the participation of private landowners and Native American tribal governments, because more than two-thirds of the land that is currently occupied and potential habitat for black-tailed prairie dogs is in private and tribal ownership. Such participation is unlikely without financial incentives for landowners and tribal officials who voluntarily agree to sustain and enhance prairie dog habitat and populations, by maintaining their native prairies. Farmers, ranchers, and tribal governments rely on these lands for their livelihood.

For more than a century, ranchers and farmers have considered prairie dogs as pests, and many landowners and government agencies have invested significant effort and resources in eradicating the species. These long traditions will not change easily. Engendering landowner and tribal government support for prairie dog habitat conservation and persuading landowners and tribal governments to accommodate sustained or expanded colonies on their properties will require financial incentives. These incentives will need to address the long-term protection of native grasslands and the habitat needs of many wildlife species in these ecosystems.

The development of a financial incentive program to compensate private and tribal landowners for native grassland conservation would not only help to recover the black-tailed prairie dog, and thus preclude the need for ESA listing, it would also benefit a host of associated species including, mountain plover, burrowing owl, swift fox, ferruginous hawk, prairie falcon, and golden eagle, and others. This approach, addressing multiple species needs, will magnify the effect, efficiency, and public and landowner benefits of investments in short- and mixed-grass prairie conservation.

Proposed Program: The goal of a financial incentive program for native grassland conservation should be to achieve long-term persistence of the ecosystem, prairie dogs, and allied species. The program would benefit economic sustainability in the region, by compensating private landowners or tribal governments who voluntarily agree to maintain native grasslands and not to control prairie dogs or significantly alter their habitat within agreed-upon areas. Livestock grazing and other compatible uses could continue on lands under contract.

The program would rely upon short- and long-term agreements, selected by mutual consent of each landowner and the authorized agency. All such agreements would be voluntary and initiated only at the discretion of individual landowners or tribal governments. The Interstate Black-tailed Prairie Dog Conservation Team has set a 10-year objective to establish and protect just less than 1.7 million acres of occupied habitat, distributed over 11 states, including the lands of eight Native American tribes. At least two-thirds of the total area would need to be on private and tribal lands. This level of land enrollment provides a minimum of the acreage needed for long-term conservation of the nation's short- and mixed-grass prairies.

The program would direct the establishment of landowner agreements primarily to "focus areas" identified in each state and tribal black-tailed prairie dog conservation plan, and would utilize a habitat suitability index to rank applications according to their ecological importance and associated costs and benefits. Some preference would be given to the development and protection of large prairie dog complexes. Each of these measures would help to optimize both the conservation benefits and economic value of the program. Importantly, such a program

would provide needed financial assistance to many rangeland owners, who have not received such benefits through federal agriculture policy to date.

Possible Delivery and Funding Mechanisms: Such a program could be established and implemented under the Conservation Title of the Farm Bill. Its goals and landowner-friendly mechanisms are compatible with the Farm Bill's existing incentive-based programs and could be implemented as a component of the Conservation Reserve Program (CRP), the proposed Grasslands Reserve Program, or a new provision. Alternatively, the FWS is authorized to administer such a program, but would need funds specifically designated for this purpose.

Projected Costs: The estimated investment necessary to achieve long-term conservation of short- and mixed-grass prairie ecosystems, black-tailed prairie dogs, and associated species is approximately $40 million annually for the first three years, excluding administrative costs. Program expenses may vary in outlying years.

Appendix F

Status of State Management Plans

Completed plans:

North Dakota	November 2001
New Mexico	November 2001
Montana	February 2002
Kansas	April 2002
Texas	May 2002
Oklahoma	November 2002

Projected plan completion date:

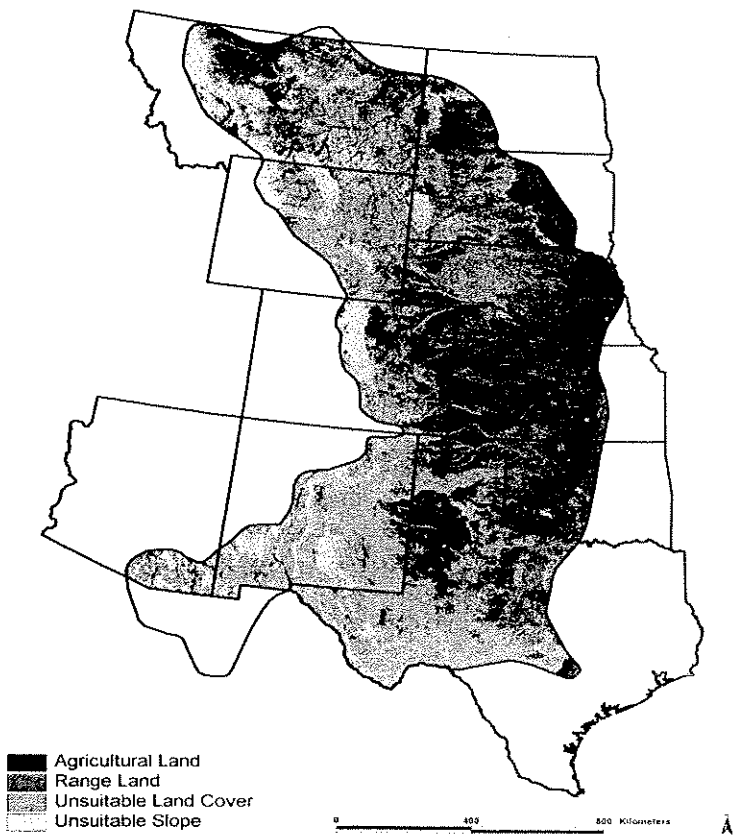
South Dakota	June 2003
Colorado	June 2003

Status of additional plans:

Arizona	Conducting a 12-step reintroduction evaluation
Nebraska	No date established – mapping continues
Wyoming	No date established – mapping continues

Appendix G

Suitable Black-tailed Prairie Dog Habitat (Rangeland) in the U.S. in 2002*.



*Tilled agricultural lands, lands not suitable for occupation by prairie dogs such as badlands and wetlands, and lands with greater than 10% slope are not defined as suitable habitat in this analysis

Suitable dry, untilled rangeland that currently exists per state:

Arizona	4,594,354
Colorado	14,281,204
Kansas	8,714,920
Montana	31,703,034
Nebraska	18,462,528
N. Dakota	4,448,389
N. Mexico	31,576,453
Oklahoma	6,657,682
S. Dakota	16,650,420
Texas	48,898,579
Wyoming	16,813,698
Total	**202,801,261 acres**

Appendix H

Black-Tailed Prairie Dog Colonies on U.S. Forest Service National Grasslands as of December 2002 (Sidle pers. comm.)

Unit	Size (acres)	(ha)	Potential Prairie Dog Habitat (acres)	(ha)	% unit	Existing Prairie Dog Coverage (acres)	
Little Missouri, No. Dak	1,028,030	(416,029)	730,990	(295,821)	71	2,026	(820)
Cedar River, No. Dak.	6,729	(2,723)	5,283	(2,138)	78	0	(0)
Grand River, So. Dak.	154,977	(62,717)	140,311	(56,782)	90	1,589	(643)
Fort Pierre, So. Dak.	115,994	(46,941)	95,998	(38,849)	83	719	(291)
Buffalo Gap, So. Dak	597,170	(241,666)	454,993	(184,129)	76	13,270	(5,370)
Thunder Basin, Wyo.	560,158	(226,688)	477,993	(193,437)	85	18,239	(7,381)
Oglala, Nebr.	94,478	(38,234)	83,999	(33,993)	89	741	(300)
Bessey, Nebr.	90,164	(36,488)	NA	NA	NA	69	(28)
McKelvie, Nebr.	116,056	(46,966)	NA	NA	NA	0	(0)
Pawnee, Colo.	193,056	(78,127)	NA	NA	NA	731	(296)
Comanche, Colo.	435,353	(176,181)	NA	NA	NA	1,374	(556)
Cimarron, Kans.	108,173	(43,776)	NA	NA	NA	1,287	(521)
Kiowa, N. Mex.	136,415	(55,205)	NA	NA	NA	613	(248)
Rita Blanca, Tex. and Okla.	92,988	(37,631)	NA	NA	NA	966	(391)
TOTAL	3,729,740	(1,509,372)	-	-	-	41,625	(16,845)

Black-Tailed Prairie Dog Colonies on public lands managed by the Bureau of Land Management (Haske, pers. comm.)

State			Unoccupied Potential Prairie Dog Habitat (acres)			Existing Prairie Dog Coverage (acres)	
Colorado						25,000	
Montana			7,876			28,659	
New Mexico			Unknown			809	
Wyoming			25,530			15,676	
TOTAL			33,406			45,144	

Figure 1. Historic distribution of the black-tailed prairie dog in the United States, Mexico and Canada (Hall 1981).

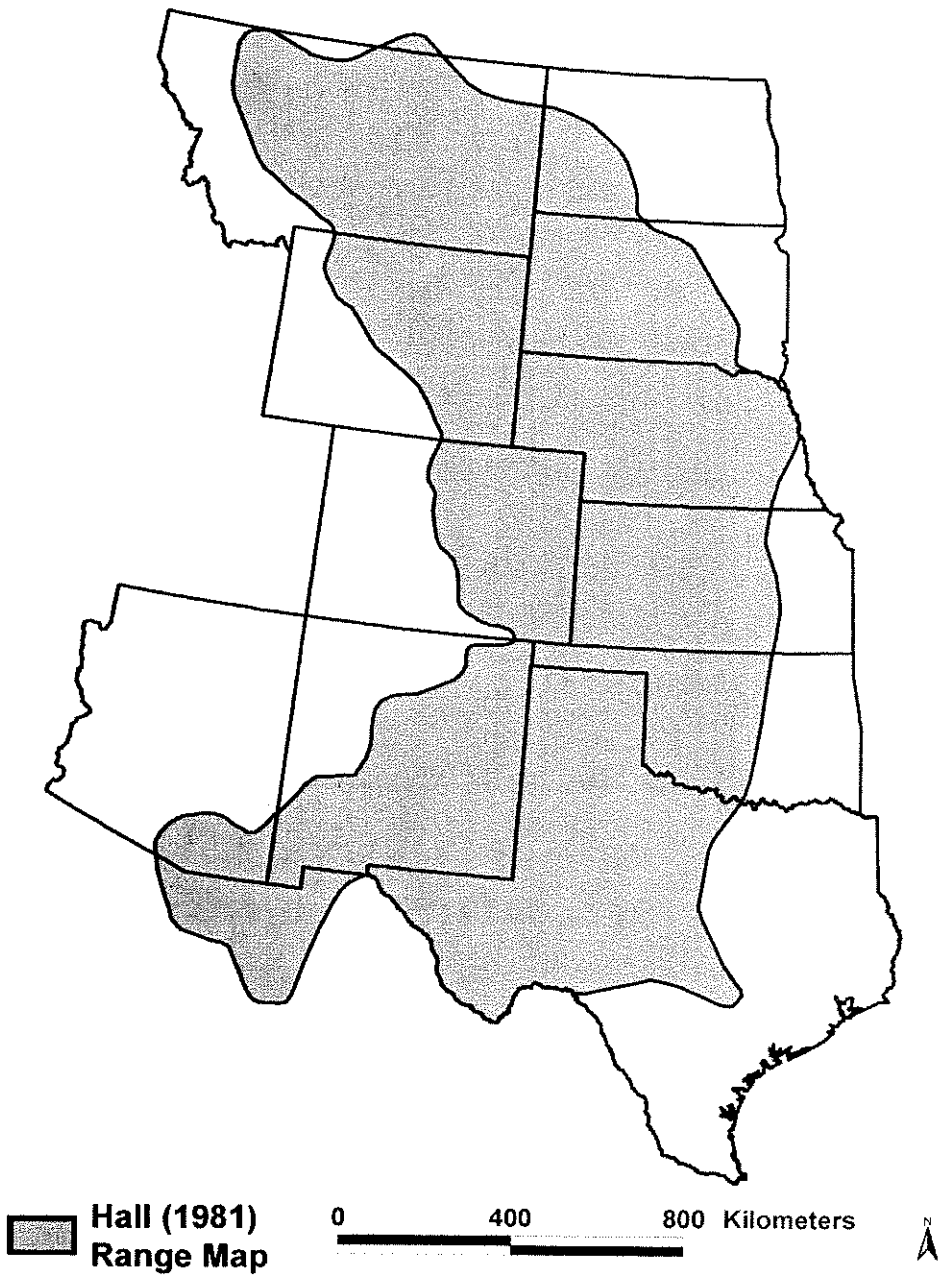


Figure 2. Historical distribution of the black-tailed prairie dog in the United States based on the scientific literature (Hall 1981), and the best estimate of historical range by each of the 11 states (shaded).

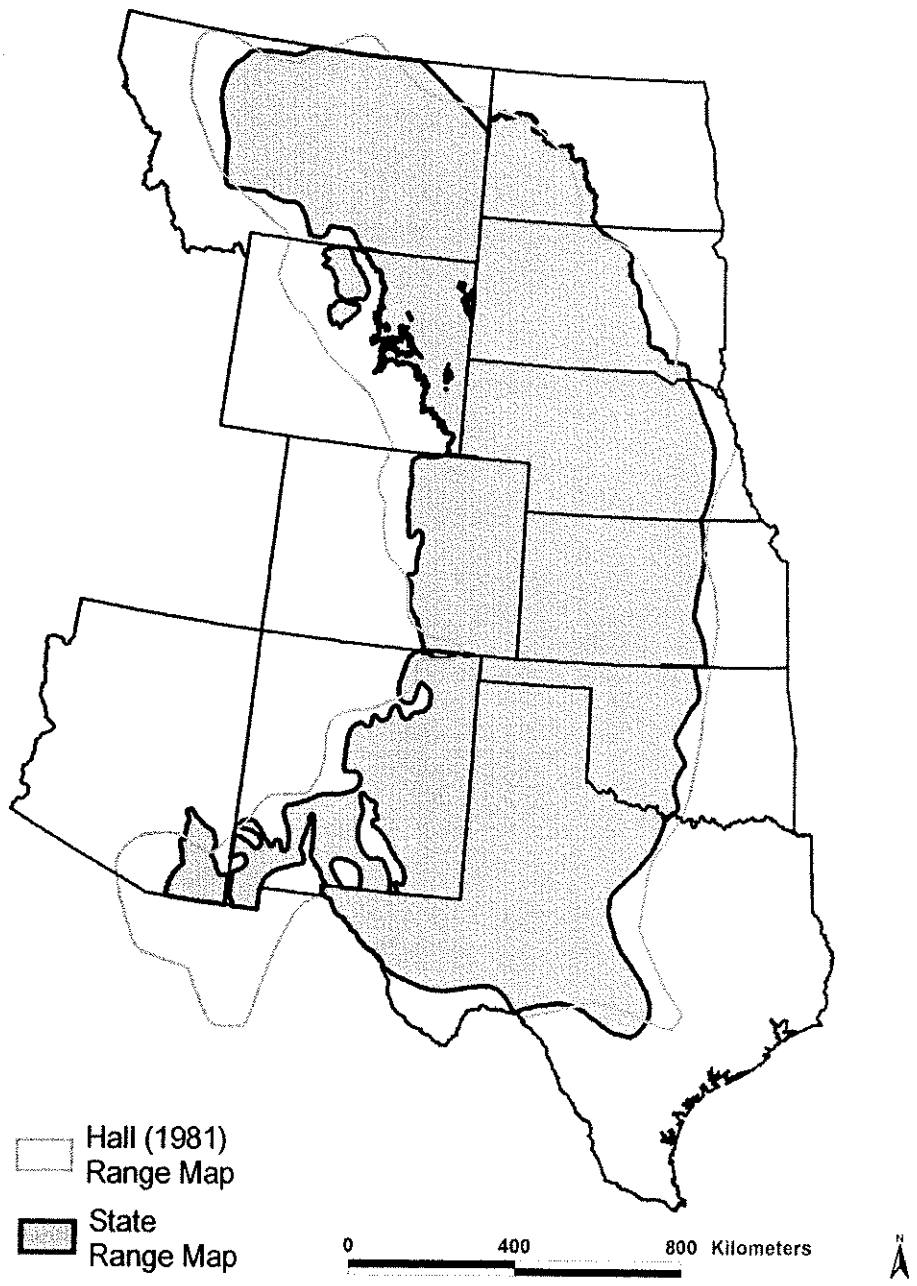
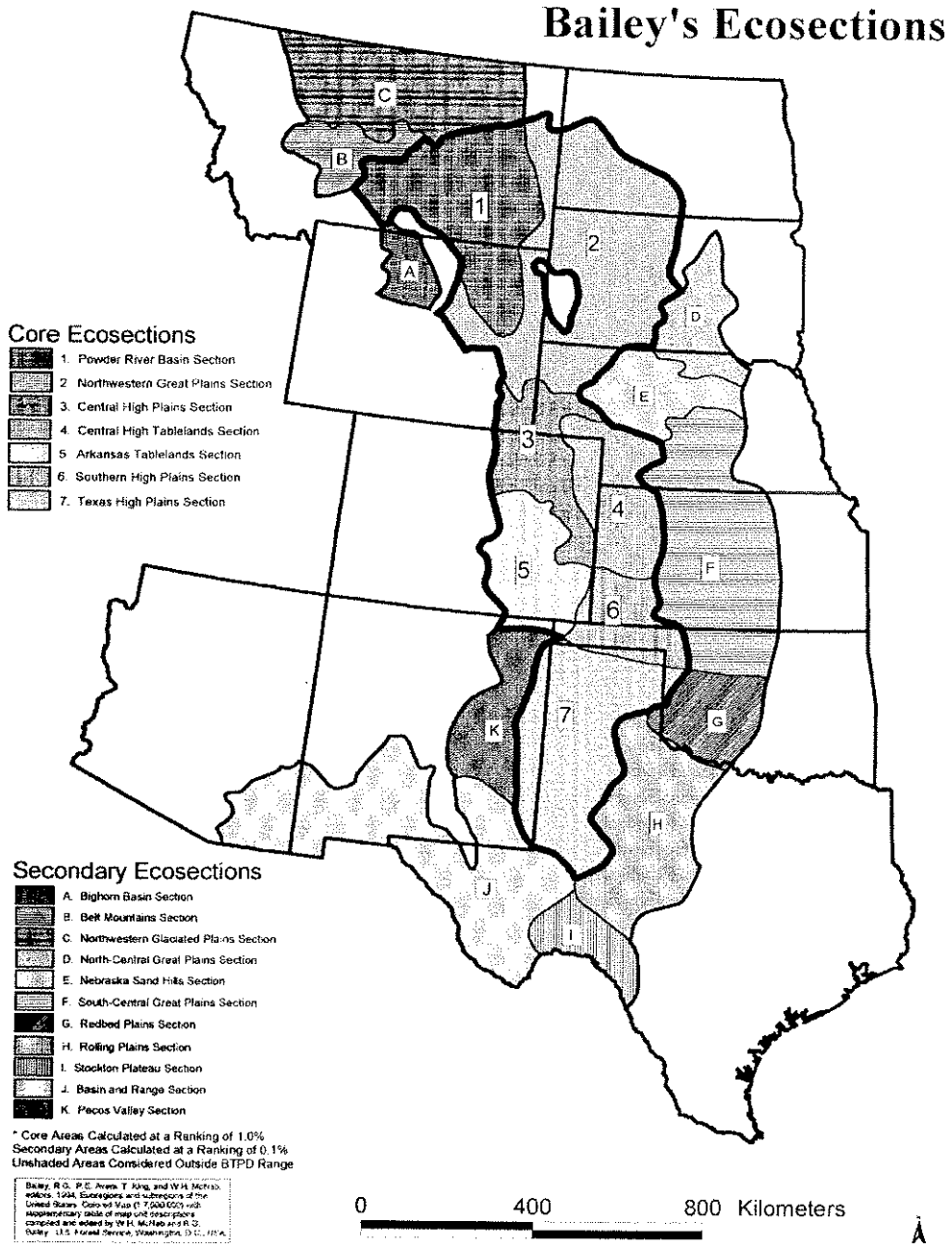


Figure 3. Bailey Eco-sections that correspond to the historic distribution of the black-tailed prairie dog in the United States.



Comparison of State Black-tailed Prairie Dog Management Plans and Programs

Updated February 2003

State	Anticipated Population Monitoring[1]	Management Plan Status Projected Date	Management Plan Status Completed	Species Status - State Wildlife Agency	State Dept Agriculture Control Status	State Dept Agriculture Control Mandatory	Toxicant Use License Required
Arizona	2006, 2009, 2012	In Review		Nongame	None	No	No
Colorado	2004, 2007, 2010	June-03		Small Game	None	No	No
Kansas	2004, 2007, 2010		April-02	Wildlife	Pest By Counties	Yes	Yes
Montana	2004, 2007, 2010		February--02	Nongame	Nongame	No	No
Nebraska	2004, 2007, 2010	Tabled		Unclassified	None	No	No
New Mexico	2004, 2007, 2010		November-01	Unclassified	None	Yes-if requested	Yes-Dept Ag
North Dakota	2005, 2008, 2011		November-01	Nongame	Pest	Yes	No
Oklahoma	2005, 2008, 2011		November-02	Species of Concern	None	No	Yes
South Dakota	2005, 2008, 2011	March-03		Species of Mgmt Concern	Joint[2]	No	No
Texas	2004, 2007, 2010		May-02	Nongame	None	No	Yes
Wyoming	2004, 2007, 2010	Tabled		Nongame	Pest	No	No

[1] Monitoring at 3-year intervals (baseline inventory completed by Fall 2003)

[2] Joint regulatory authority between Game, Fish and Parks Department and Agriculture Department

Comparison of State Black-tailed Prairie Dog Management Plans and Programs

Updated February 2003

State	Shooting Season Status (State Wildlife Agency)	Closed Season Dates	Requirement to Shoot	Shooter Survey
Arizona	Closed	Yearlong	License Required	Yes
Colorado	Closed on Public Land	Yearlong	License Required	Yes
Kansas	None - Authority to Regulate	None	License Required	No
Montana	Closed on Public Land	March 1-May 31	None	No
Nebraska	None - Authority to Regulate	None	NR License Required[4]	Yes
New Mexico	None - No Authority to Regulate	None	NR License Required	No
North Dakota	None - Authority to Regulate	None	NR License Required[4]	No
Oklahoma	None - Authority to Regulate	None	License Required	No
South Dakota	Closed on Public Land	March 1 - June 14	License Required	Yes
Texas	None - Authority to Regulate	None	License Required	No
Wyoming	None - No Authority to Regulate	None[3]	None	No

[3] 72,500 acres closed to take of prairie dogs on Thunder Basin National Grassland
[4] Non-residents required to possess a small game license

Comparison of State Black-tailed Prairie Dog Management Plans and Programs

Updated February 2003

State Management Plan Target Objectives that meet or exceed the Multi-state Conservation Plan Guidelines

State	Maintain at Least Current Acreage	Total Occupied A. Obj.	1- 5,000 A. Complex[5]	Maintain at Least 10% in Complexes >1,000 A.	Maintain >75% Distribution in Range
Arizona	Yes	Yes (draft plan)	Yes (2)	Yes	Yes
Colorado	Yes	No draft plan yet	No draft plan yet	No draft plan yet	Yes
Kansas	Yes	Yes (final plan)	Yes (1)	Yes	Yes
Montana	Yes	No (final plan)	Yes (2)	Yes	Yes
Nebraska	Yes	Yes (draft plan)	No	Yes	Yes
New Mexico	Yes	Yes (final plan)	No	No	Yes
North Dakota	Yes	No (final plan)	No	No	Yes
Oklahoma	Yes	Yes (draft plan)	Yes (1)	Yes	Yes
South Dakota	Yes	Yes (draft plan)	Yes (3)	Yes	Yes
Texas	Yes	Yes (final plan)	Yes (2)	Yes	Yes
Wyoming	Yes	Yes (draft plan)	Yes (2)	Yes	Yes

[5] Number of complexes proposed in the management plan are in parenthesis