



August 14, 2006

Frank V. Guzman, District Ranger  
McKenzie Ranger District  
1901 South Main Street,  
Watford City, North Dakota 58854

**RE: Black-tailed Prairie Dog Management Project Proposal for the  
Dakota Prairie Grasslands, McKenzie Ranger District**

Dear District Ranger Guzman,

Thank you for this opportunity to comment in response to the July 14, 2006 notice regarding the Forest Service's proposal to prepare an Environmental Assessment (EA) regarding prairie dog extermination on the McKenzie Ranger District of the Little Missouri National Grassland (Proposal). Please accept these comments on behalf of the 500,000 members and supporters of Defenders of Wildlife, Biodiversity Conservation Alliance, and Forest Guardians.

Prairie dog management is one of the most significant and controversial issues on the Little Missouri National Grassland. As such, it is surely worthy of honest consideration of a range of alternatives and of public input on these alternatives. The Proposal provides no legitimate range of alternatives, however, and makes clear that no legitimate range of alternatives will be provided in the upcoming EA. From a list of five alternatives, only one is described – the eradication alternative. The required “no-action” alternative is listed but not seriously considered or analyzed. All others are rejected – dropped from further analysis – with no serious consideration. Further, the Notice states that this is our only opportunity to comment.

The decision to produce an EA carries with it the responsibility to produce an EA with all the required elements. From the clear rejection of all alternatives but one in the scoping notice, the resulting EA is guaranteed to be wholly deficient under the National Environmental Policy Act (NEPA).

Defenders of Wildlife requests a full Environmental Impact Statement (EIS) rather than an EA. In this EIS, we ask that you seriously consider a range of alternatives as well as changes to the proposed action. We also ask that once completed you offer the public an opportunity to comment on the range of alternatives prior to your final decision.

Colorado Office  
1425 Market Street  
Suite 225  
Denver, CO 80202  
Telephone: 303-825-0918  
Fax: 303-825-0594

National Headquarters  
1130 Seventeenth Street, NW  
Washington, DC 20036  
Telephone: 202-682-9400  
Fax: 202-682-1331  
[www.defenders.org](http://www.defenders.org)

We are concerned that the practice of accepting comments on projects only at the scoping stage is increasingly favored by National Forests. To avoid establishing a Record of Decision not in accordance with law, the Forest Service must consider the following areas of concern:

- At least one additional comment period is required;
- An EIS is required;
- Cumulative Impacts Analysis must be sufficient.

### **At Least One Additional Comment Period Is Required**

The scoping notice for this prairie dog management project is clearly not intended to be a NEPA environmental analysis document. For example, the project description provides no information regarding the direct, indirect and cumulative impacts of the proposed action. The scoping notice is simply a general document alerting the public to a forthcoming project, providing a possible outline of what that project may look like, and soliciting early public input into shaping the draft project. Despite its purposely restricted nature, in order to properly comply with NEPA, the scoping notice must provide the public an opportunity to review and comment on the full proposal and its accompanying environmental effects.<sup>1</sup>

The practice of accepting comments only at the project scoping state is based on revised appeal regulations. 36 C.F.R. § 215.5(a)(2) (2003) provides that Responsible Officials may now choose the “most effective timing” for providing public comment on a project, eliminating the need to provide comment at the same administrative stage for all projects. However, applying this provision so that comments are only accepted at a project’s “scoping” stage is non-sensical because there is very little project information for the public to comment on, is inconsistent with the Appeal Reform Act’s goal of providing uniformity in the public comment and appeals process, and is inconsistent with NEPA.

The Forest Service acknowledges that NEPA applies to its actions, but in taking a “scoping-only” approach to comments, incorrectly assumes that NEPA does not require comment on an EA. The Forest Service has argued that this approach complies with the uniformity goals of the Appeals Reform Act (ARA): “[A]llowing the Responsible Official flexibility in determining when to give legal notice for the opportunity to comment meets

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<sup>1</sup> The Forest Service must “insure that environmental information is available to public officials and citizens before decisions are made . . .”, 40 C.F.R. § 1500.1(b); “to the fullest extent possible . . . encourage and facilitate public involvement in decisions which affect the quality of the human environment.” 40 C.F.R. § 1500.2(d); “involve environmental agencies, applicants, and the public, to the extent practicable, in preparing [environmental] assessments;” 40 C.F.R. § 1501.4(b); and “involve the public in implementing their NEPA procedures, and this includes public involvement in the preparation of EAs.” 46 Fed. Reg. 18026, 18037 (March 23, 1981)(“Forty Most Asked Questions Concerning CEQ’s NEPA Regulations,” Answer to Question 38.) The Forest Service must “[p]rovide public notice of . . . the availability of environmental documents so as to inform those persons and agencies who may be interested or affected,” 40 C.F.R. § 1506.6(b), including EAs and EIS, 40 C.F.R. § 1508.10, and in order to “[s]olicit appropriate information from the public.” § 1506.6 (d). Ultimately, “[t]he public must be given an opportunity to comment on draft EAs and EISs.” Citizens for Better Forestry v. U.S. Dept. of Agriculture, 341 F.3d 961, 970 (9<sup>th</sup> Cir. 2003), quoting Anderson v. Evans, 314 F.3d 1006, 1016 (9<sup>th</sup> Cir. 2002); see also Environmental Protection Information Center v. Blackwell, 2004 U.S. Dist. LEXIS 20717 (\* p. 77) (N.D. Cal. 2004); Montana Wilderness Association v. Fry, 310 F. Supp. 2d 1127, 1144 (D. Mont. 2004); Seattle Audubon Soc’y v. Espy, 998 F.2d 699, 704 (9<sup>th</sup> Cir. 1993). The preparation and circulation of the environmental review document “guarantees that the relevant information will be made available to the larger audience that may also play a role in both the decisionmaking process and the implementation of that decision.” Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 349 (1989).

the intent of the ARA. It provides a clearly defined, uniform period when public comment on specific Forest Service projects and activities is solicited.” 68 Fed. Reg. at 33,586; see also id. (“the Responsible Official [has] discretion to determine the most effective timing for providing the 30-day comment period.”). This explanation, however, can not overcome the ARA’s goal of uniformity. We urge the Forest Service to accept comments on the EA for this project.

### **An EIS is required**

The McKenzie District’s prairie dog management proposal encompasses prairie dog colonies scattered across the entire 500,000-acre District. Wildlife that benefits from prairie dog colonies in the area ranges from migratory songbirds to raptors to burrowing owls to badgers, and many others.

Within this context, and in an area where prairie dog colonies have already largely been eliminated, the Proposed Action would eradicate up to an additional 18% of the little that remains over a period of at least two years. Each year’s proposed poisoning would substantially affect wildlife and habitat. An environmental impact statement (EIS) is required by the National Environmental Policy Act (NEPA) for all such federal actions that significantly affect the quality of the human environment. 42 U.S.C. 4332 (C).<sup>2</sup>

### **Cumulative Impacts Analysis must be sufficient**

The McKenzie District must consider the cumulative impacts of the Proposal’s annual environmental effects. The cumulative impact analysis must list the past, present and reasonably foreseeable future projects within the analysis area that may contribute to cumulative impacts, specifically including plans to poison over multiple years. Moreover, the projects listed and considered must include other federal activities, and other activities on state and private lands.<sup>3</sup>

The cumulative impact analysis must also be of sufficient geographic scope. “[T]he agency’s EA must give a realistic evaluation of the total impacts and cannot isolate a proposed project, viewing it in a vacuum.” Grand Union Trust v. Federal Aviation

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<sup>2</sup> If a major federal action (defined by 40 CFR §1508.18) will either individually or cumulatively have a significant effect on the environment, or even if there are questions as to its significance, the agency must take a “hard look” at environmental consequences such as the cumulative impacts of the activity and prepare an Environmental Analysis (EA). Kleppe v. Sierra Club, 427 U.S. 390, 410 (1976). The EA determines whether possible impacts are significant, thereby warranting an EIS. Council on Environmental Quality (CEQ) regulations require that an EIS discuss cumulative—direct and indirect—impacts. An EIS must “catalogue adequately the relevant past projects in the area” and describe them with sufficient specificity to permit adequate review of their cumulative impact. City of Carmel-by-the-Sea v. U.S. Dep’t of Transp., 123 F.3d 1142, 1160, 1175 (9<sup>th</sup> Cir. 1997). “Without such detailed information, neither the courts nor the public, in reviewing the Forest Service’s decisions, can be assured that the Forest Service provided the hard look that it is required to provide.” Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372, 1379(9<sup>th</sup> Cir. 1998).

<sup>3</sup> NEPA regulations state: “Cumulative impact is the impact on the environment which results from the incremental impact of the [federal] action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” 40 C.F.R. § 1508.7. See, e.g., Muckleshoot Indian Tribe v. U.S. Forest Service, 177 F.3d 800, 810 (9<sup>th</sup> Cir. 1999); City of Carmel-by-the-Sea, 123 F.3d 1142, 1160 (9<sup>th</sup> Cir. 1997); Lands Council, Idaho Sporting Congress, Inc. v. Vaught, 198 F.Supp.2d 1211, 1245 (E.D.WA. 2002); Kettle Range Conservation Group v. United States Forest Service, 148 F.Supp.2d 1107, 1127 (E.D.Wa. 2001).

Administration, 290 F.3d 339, 342 (D.C. Cir. 2002); see also Earth Island Institute v. U.S. Forest Service, 351 F.3d 1291,1307 (9<sup>th</sup> Cir. 2003) (insufficient analysis of cumulative impacts on timber sale). The Forest Service must therefore conduct its evaluation of the prairie dog Proposal within a broad context, analyzing the cumulative impacts of this Proposal along with past prairie dog eradications, as well as any reasonably foreseeable future projects on the Little Missouri National Grassland. See 40 CFR §1508.25. The purpose of this broad geographical requirement is to ensure that numerous individual projects do not have a substantial combined environmental impact that would be overlooked if each project were considered only individually. Natural Resources Defense Council v. Hodel, 865 F.2d 288, 297-98 (D.C. Cir. 1988). The Forest Service must consider landscape-level prairie dog colony patterns throughout the Little Missouri National Grassland. cursory or geographically limited discussion of cumulative impacts is insufficient.

The analysis must specifically and adequately address the cumulative impacts on future recovery needs of the black-footed ferret. To maintain all required ferret habitat components, the Forest Service must analyze impacts of historical ferret habitat disturbance. Such analysis includes consideration of population connectivity between geographical areas. The Forest Service must thus analyze the potential for loss of ferret habitat and habitat connectivity.

### **The Proposal must not conflict with legislation, policy, or the LRMP**

Wildlife is one of the five mandatory multiple-use objectives for National Forests and Grasslands under the Multiple Use – Sustained Yield Act. 16 U.S.C. 528(1) (“It is the policy of the Congress that the National Forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes”). National Grasslands must “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives . . .” 16 U.S.C. § 1604(g)(3)(B). National Grasslands must “preserve and enhance the diversity of plant and animal communities, including endemic and desirable naturalized plant and animal species, including endemic . . . species, . . . so that it is at least as great as that which would be expected in a natural [landscape],” 36 C.F.R. § 219.27(g).

National Forests and Grasslands must “maintain viable populations of existing native and desired non-native vertebrate species . . .” 36 C.F.R. § 219.19. Further, “to insure that viable populations will be maintained, habitat must be provided to support, at least, a minimum number of reproductive individuals and that habitat must be well distributed so that those individuals can interact with others in the planning area.” Id. The Forest Service is also required to “provide for adequate fish and wildlife habitat to maintain viable populations of existing native vertebrate species.” 36 C.F.R. § 219.27(a)(6). A viable population is one with “the estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area.” 36 C.F.R. § 219.19.

The National Forest Management Act requires that “Resource plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands shall be consistent with the land management plans.” 16 U.S.C. 1604(i). This Proposal, however, appears to rely solely on the often repeated “good neighbor” concept (eliminating prairie dogs from areas next to private lands) rather than on the overall guidance of the Dakota Prairie Grasslands Land and Resource Management Plan (LRMP). The LRMP contains several standards and guidelines regarding black-tailed prairie dog management, which we have listed in Appendix A. Taken together they require the expansion of prairie dog populations on the National Grassland and specifically within the 3.63 Management Area, while allowing removal under limited circumstances only.

This Proposal, however, focuses entirely on prairie dog eradication and is silent on expansion. The Proposal therefore violates the clear intent of the LRMP. This Proposal would kill up to 18% of this already reduced prairie dog population, with no mitigation other than hoped-for natural increases elsewhere.

The “good neighbor” concept does not trump the requirement to maintain wildlife habitat and healthy wildlife populations of our National Grasslands. The possibility of plague on the Little Missouri National Grassland, as well as the ongoing unregulated shooting of prairie dogs, makes the “good neighbor” concept especially worrisome.

The LRMP does allow for prairie dog control under very limited circumstances, but this is in the framework of a larger requirement for prairie dog expansion. The LRMP also notes in detail the role that the McKenzie Ranger District will play for future reintroduction of the endangered black-footed ferret. This Proposal would send the McKenzie Ranger District in just the opposite direction. At best it is unfair to focus solely on the “exception” for control while ignoring the greater “rule” for expansion.

Defenders of Wildlife requests that the intent of the LRMP is respected by including in this Proposal proactive measures to protect and expand prairie dog populations within the McKenzie Ranger District.

### **Expansion cannot be assumed, especially under the proposed action**

The Proposal assumes prairie dog colonies will expand even with the significant losses that will occur if the Proposal is implemented:

Treatment would occur on up to approximately 18% of current acres over the course of the project; however, prairie dog acres in general are expected to expand during this treatment period, providing for an overall net loss of fewer than 18% of prairie dog acres.

Prairie dog colonies cannot just be expected to expand. Prairie dog colonies expand and contract and increase and decrease in density based on a number of complex factors that cannot be predicted. As recently as the late 1990s, prairie dog colonies in Conata Basin, South Dakota – the largest complex of black-tailed prairie dogs on federal land anywhere –

decreased by thousands of acres due to higher than average levels of precipitation, even with ongoing livestock grazing pressure and full protection from shooting and poisoning. Nothing in the Proposal justifies the assumption of continued prairie dog colony expansion. Thus, it is wrong to determine that the poisoning and shooting will not compromise the viability of prairie dog populations on Little Missouri National Grassland. Given the continuing unregulated shooting, this proposal for poisoning, and threat of plague, expansion certainly cannot be guaranteed.

### **Greater protection for McKenzie District's prairie dogs is required**

The black-tailed prairie dog is a keystone species of the Great Plains (see Appendix B). Their colonies provide habitat for a range of other species. Nine prairie wildlife species are prairie dog obligates—dependent on these keystone rodents (Kotliar et al. 1999). Black-tailed prairie dog populations have declined by 98-99 percent throughout their range (65 Federal Register 5476-5488). The Little Missouri National Grassland provides important habitat for prairie dogs and their associated species.

Black-tailed prairie dogs once were found across the Great Plains from northern Chihuahua, Mexico to southern Saskatchewan, Canada. They occupied 40-80 million acres of this region, living in colonies that were often tens of miles long. Whereas they once covered 10-20 percent of this 400 million acre region, today they occupy much less than one percent. As a result, numerous other species that benefit from prairie dogs have also experienced a tremendous crash in population.

Western North Dakota once contained very large complexes of prairie dog colonies. For example, a distance of approximately 53 km between present-day Belfield and Amadon appeared to have contained extensive prairie dog colonies (Knowles et al. 2003). Some of this area is upland prairie within the Little Missouri National Grassland.

Today prairie dogs are largely extirpated from North Dakota in all but two regions: one population on the Standing Rock Reservation and a separate population along the Little Missouri River. Within the Little Missouri population, the Forest Service manages 37% of the remaining prairie dogs (Knowles 2003). This acreage is minimal but even more important due to this fact.

At 2,860 acres of small scattered colonies, prairie dogs occupy less than one percent of the Little Missouri National Grassland. In fact, not one prairie dog complex exists in North Dakota large enough to support a viable population of black-footed ferrets, which would require at least 10,000 acres (CBSG 2004). By definition, therefore, North Dakota's prairie dog population is already functionally extinct.

This can be reversed. Because of the ongoing widespread persecution on private and state-owned lands, however, a healthy prairie dog population in North Dakota will depend on expanded protections and population increases on the Little Missouri National Grassland. Unfortunately, the Proposal would lead to the opposite outcome.

An additional point to note is that the official position of the North Dakota Game and Fish Department is in support of an increase in prairie dogs on public lands. From the Official Department Position Papers; Public Lands: A North Dakota Game and Fish Department Perspective, 1999 (can be found at <http://gf.nd.gov/info/publiclandwhitepaper.html>):

As part of the incremental process of implementing a vision for the future, the laundry list of the environmental concerns that needs attention includes the following... Grassland attributes requiring more concerted effort and consideration than in the past include increasing grassland structure, emphasizing a diverse array of seral stages including increasing the extent and distribution of prairie dog communities on public land, and a greater emphasis on native species/plant community integrity.

Finally, a recent report on burrowing owl trends on the Little Missouri National Grassland (Restani 2001) included the following recommendations:

1. To increase distribution and density of burrowing owls, increase the number and areal coverage of prairie dog colonies. This can be accomplished by translocation (see review by Truett et al. 2001), and should begin as soon as possible.
2. To monitor distribution and density of prairie dogs, use GPS technology to map colonies. Mapping should be conducted every two years to detect potential losses from plague, habitat destruction, and shooting. ...

### **The proposal must advance black-footed ferret recovery**

The black-footed ferret is one of the most endangered mammals in North America. The ferret's historic range includes the Little Missouri National Grassland area. The ferret is believed to be extirpated from North Dakota. The LRMP calls for prairie dog increases and ferret recovery in the 3.63 Management Area located on the McKenzie Ranger District.

The dramatic decline of the black-footed ferret is due primarily to the loss of the ferret's main food source, prairie dogs. Prairie dogs make up over 90 percent of the ferret diet. Black-footed ferrets rely on prairie dog burrows for breeding dens and refugia; they cannot survive without this keystone rodent (Miller et al. 1996). Black-tailed prairie dog colonies, however, have declined by more than 98 percent. Even more detrimental for the ferret, the small, scattered colonies that are the norm today are not sufficient. Ferrets require very large complexes of prairie dog colonies, but the once common large (>10,000 acres) complexes are almost entirely gone from the Plains.

A minimum viable black-footed ferret population is measured as 120 to 150 breeding adults, a number which would have a 95% chance of persistence over 100 years (Harris et al 1989). Each ferret family requires about 100 acres of prairie dogs (Forrest et al 1985). A viable population of ferrets requires more than 10,000 acres of prairie dog colonies (CBSG 2004).

Ferret survival is dependent on the success of reintroduction programs. The success of ferret reintroduction programs is in turn dependent on conservation and restoration of at least ten large prairie dog complexes. To downlist the ferret from “endangered” to “threatened” the Fish and Wildlife Service’s Black-footed Ferret Recovery plan calls for establishing ten self-sustaining sites of black-footed ferrets, a goal it is far from accomplishing.

There is a significant public interest in returning this species to all representative regions of its historic range. No site in North Dakota has yet attempted a black-footed ferret reintroduction. It is absolutely essential to protect prairie dog colonies on Little Missouri National Grassland for there to be any hope of re-establishing black-footed ferret populations in North Dakota. Prairie dog poisoning should not be tolerated; potential ferret habitat is too precious.

Ferrets are susceptible to sylvatic plague, as are prairie dogs. Thus, establishing many reintroduction sites to promote genetic diversity and allow for ferret survival if some reintroduction sites fail in the face of plague is essential.

In order to help meet the absolute minimum requirements for future black-footed ferret down-listing, the Multi-state Conservation Plan for the Black-tailed Prairie Dog (Luce 2003) calls for a minimum of one 5,000 acre prairie dog complex per state. Until or unless private landowners step forward to volunteer creation of such a complex on private land, public lands will be required to achieve this goal. North Dakota has only one National Grassland in which this goal can be achieved.

In addition, this 5,000 acre objective by itself is not sufficient. Although the U.S. Fish and Wildlife Service will consider beginning a ferret reintroduction effort in prairie dog complexes as small as 5,000 acres, ultimately ferrets need more than 10,000 acres of prairie dogs in one location to persist as a viable population (CBSG 2004). The Forest Service must do more to protect the existing prairie dogs and encourage colony expansion to reach the objective of at least one 5,000 acre complex in the short term, with the ability to expand to more than 10,000 acres over the long term.

Reintroducing black-footed ferrets and maintaining a viable ferret population must be explicit objectives in any prairie dog management plan for the McKenzie District.

### **Mitigation efforts to increase prairie dog colonies elsewhere are required**

The LRMP includes the following standard:

Require mitigation measures to protect the national grassland resources when animal damage control activities are conducted by other governmental entities. Emphasize public safety; threatened, endangered, and sensitive species conservation; water quality protection, or other resource values.

#### **Standard**

To be consistent with the LRMP, the McKenzie Ranger District must offer mitigation strategies for any prairie dog losses proposed. The following methods to increase prairie dog colonies should be included in the Proposal:

- closing the McKenzie Ranger District to prairie dog shooting, especially within the 3.63 management area;
- relocating prairie dogs to start new colonies in desired areas on the McKenzie Ranger District and other areas of the Little Missouri, especially to the 3.63 management area;
- immediately dusting prairie dog burrows in key colonies to prevent spread of plague if active plague is found in prairie dog colonies within approximately 25 miles.

The Record of Decision that accompanied the LRMP specifically mentions shooting restrictions and relocations as two ways to achieve population enhancements within the 3.63 area:

### **MA 3.63 – Black-footed Ferret Reintroduction Habitat**

This area is managed to maintain prairie dog complexes and compatible land uses that are established and/or maintained for black-footed ferret reintroduction. The black-footed ferret is one of North America's most endangered species. The ferret is reliant on prairie dogs for food and shelter. In this management area, prairie dog populations are further enhanced by creating habitat conditions conducive to prairie dog expansion, through shooting restrictions, and possibly, by prairie dog relocations. My decision allocates Horse Creek on the Little Missouri National Grassland to this management area. This area was identified as necessary for black-footed ferret recovery, and was determined to be the most appropriate location, through joint field review by the Forest Service and U.S. Fish and Wildlife Service. Oil and gas development can occur with the identified stipulations.

Defenders of Wildlife is interested in assisting with relocation efforts. We are willing to help find relocators and volunteers, and help finance relocation efforts if necessary. We have also purchased 9 dusters for use by anyone in the event of plague events. The dusters are housed at the black-footed ferret conservation center near Fort Collins, Colorado.

### **Relocation is an obvious and achievable solution**

The desire by some to remove prairie dogs from boundary areas presents an opportunity to implement key wildlife provisions of the LRMP by relocating prairie dogs to areas where the plan calls for increases. Unfortunately, with one inaccurate sentence the current Proposal rejects this opportunity even before the facts have been considered:

Alternative 4 will not be analyzed because it is relatively ineffective due to difficulty getting 100% removal, there is a high mortality rate of trapped prairie dogs, and cost is high.

This sentence is simply unfair and untrue, for several reasons. First, prairie dog relocation can achieve significant removal results. Numerous relocators licensed by the Colorado

Division of Wildlife regularly achieve greater than 90% removal (L. Sterling, pers. com. 2006). Regardless, poisoning rarely achieves 100% removal either. Poisoning efforts in South Dakota last year achieved only 50% effectiveness on Fort Pierre National Grassland, 70-95% on Buffalo Gap National Grassland, and 70-80% on Oglala National Grassland (Nebraska National Forest 2006). Why is poisoning not similarly rejected if 100% removal is the requirement?

Second, several prairie dog relocation efforts have achieved impressive survival rates. Efforts of the Turner Endangered Species Fund have achieved success time and again in starting new prairie dog colonies through translocation efforts. They and the relocators mentioned above rarely if ever kill prairie dogs during relocation efforts (L. Sterling, pers. com. 2006). Regardless, why is this even an issue when the proposed action is to poison, which of course leads to a 100% mortality rate? Wouldn't even a 50% survival rate be preferable to a 0% survival rate?

Third, cost of relocation is relative. What is your estimate of the cost for relocation and what is too high? What is the cost for the proposed action? A wide variety of Forest Service projects cost far more than prairie dog relocation. For example, what is the total cost to the Forest Service of the annual grazing program, or the administration of oil and gas activities on the district? It seems the cost of prairie dog relocation to increase populations in desired areas is high only if decision-makers consider this LRMP goal unimportant relative to other goals. Also, is this an all-or-nothing proposal: all prairie dogs must be relocated or else none will?

Under the proposed action, a maximum of 170 acres of prairie dog colonies would be poisoned the first year. An effort to relocate all prairie dogs from these 170 acres would cost somewhere between \$50,000-100,000. We request an estimate of the cost of the proposed action and an estimate of alternatives including a relocation alternative. In addition, Defenders of Wildlife is committed to assisting with relocation and, if necessary, helping pay for this expense.

Successful relocation could help guarantee a lower loss of prairie dog acres, and most likely even lead to an increase over a few years if new relocated colonies are protected from shooting. Examples of successful relocation resulting in new established prairie dog colonies are numerous.

### **Shooting closures are necessary**

Prairie dog shooting remains unregulated on the entire Little Missouri National Grassland. Prairie dog shooting significantly reduces black-tailed prairie dog populations and population densities, alters prairie dog behavior, and may decrease colony expansion rates; impacts may be unpredictable and colony-specific; there is evidence to suggest that prairie dog shoots result in the harming or killing of non-target species, such as the burrowing owl, ferruginous hawk, and mountain plover; and fragments of lead ingested by raptors when scavenging shot prairie dog carcasses have the potential to kill or severely disable raptors (see Appendix C).

The LRMP includes the following guideline:

Restrict prairie dog shooting where significant risks have been identified for other wildlife species or where shooting is preventing or slowing a desired prairie dog population expansion. Restrictions shall be year-long or seasonal, and dates of seasonal restrictions shall vary depending on the species at risk. Coordinate and consult with the appropriate wildlife agencies prior to implementation of restrictions. **Guideline**

Clearly from the evidence cited in Appendix C, and from the clear guidance of the LRMP, shooting should be closed, specifically within the 3.63 Management Area on McKenzie Ranger District.

**Buffer zones are effective, but must be off-limits to livestock**

Tall vegetation restricts prairie dog colonization; poisoning and shooting alone do nothing to prevent recolonization. Eliminating livestock grazing in areas where prairie dogs are not wanted will help create conditions unsuitable for prairie dog colonization. For the best chance of success, we request that it be made mandatory that livestock grazing and other disturbances not occur in any areas where prairie dogs are removed.

Rather than poisoning year after year, it is preferable to discourage prairie dog colonization in small buffer zones next to private lands by allowing the grass to grow tall. Research on the effectiveness of this technique is identified in the Dakota Prairie Grasslands 2005 Report of the Scientific Review Team:

Grazing deferment, or postponed grazing, can create a broader, vegetative barrier. Removing cattle and allowing only light grazing by bison increased the stature of vegetation and led to complete abandonment of a large colony in Oklahoma (Osborn and Allan 1949). Four years of deferred summer grazing in Kansas reduced a 45-ha colony to 5 ha (Snell and Hlavachick 1980).

When the pasture was restocked, cattle congregated near the prairie dogs and the colony expanded, but a single summer of deferred grazing with good growing conditions reduced the area back to 5 ha (Snell 1985). Although prairie dogs on ungrazed sites in South Dakota increased 4 percent for each of 10 years, the rate was 20 percent per year on grazed sites and burrow density increased twice as fast (Uresk et al. 1982). Cable and Timm (1988) controlled colony expansion with two years of summer deferment in shortgrass and mixed prairie. Colony area in deferred pastures did not change the first year because drought limited vegetative production, but grazed colonies increased 25 percent the second year and those in deferred pastures decreased 37 percent. The deferments also reduced prairie dog birth

rates and population growth. In this case, growing-season deferment was sufficient for effective control.

We are pleased to see that vegetative buffers are under consideration. We are also pleased to see the depth of buffers in this Proposal is limited to 600 feet. Recent unpublished research indicates that even less may be required for success, possibly as little as 50-100 feet, depending on the vegetative potential of the individual site. We recommend trying varying depths of ungrazed buffers, from 50 feet to 500 feet, as part of an adaptive management process. With the use of temporary electric fence to keep out livestock, buffer depths can be changed easily depending on outcomes over time. In this way, optimum depths can be found over time for the specific conditions in each location.

The following methods to limit unwanted prairie dog colonization on adjacent private lands should be included in the Proposal:

- consolidating public lands around important prairie dog colonies and potential habitat to reduce public/private conflicts in these areas;
- eliminating livestock grazing year-round in areas next to private lands where prairie dogs are not wanted so that vegetation has the opportunity to grow and make the areas less suitable for prairie dog colonization;
- eliminating livestock grazing during drought conditions in all areas where prairie dog expansion near private lands is not wanted.

### **Fear of plague is not a valid “human health and safety” reason to poison prairie dogs**

Rather than focus on the impact of plague as a threat to the viability of prairie dogs on the National Grassland, the Proposal makes the outrageous claim that the Proposed Action is in part to address “human health and safety” because plague could be spread to humans:

The plague can also be transmitted to human beings. When a human contracts the disease it is known as the bubonic plague. It is also a serious health threat to humans. Therefore, one of the primary health and safety issues with the prairie dogs is the potential to spread bubonic plague. Smaller prairie dog colonies are still susceptible to the plague. If the treated colonies were to become infected by the plague the health threat to human beings is thought to be somewhat less than in an untreated situation where the prairie dogs were allowed to continue to expand onto private lands. However, it is not currently possible to quantify the risk reduction.

Eradicating a keystone species because of the extremely remote possibility that a human will contract plague from the mere existence of prairie dogs is outrageous. Prairie dogs are only one of 76 species that carry fleas infected with plague. Very few of the small number of cases of humans contracting plague involve prairie dogs. Most involve another species. In addition, no scientific evidence would defend the Proposal’s claim that partially (or fully) poisoned prairie dog colonies are somewhat less of a health threat to humans. Prairie dogs are not silent, long-term reservoirs of plague; instead over 95% of prairie dogs will die within 78 hours of infection with plague. Because of this, prairie dogs can be an

indicator species for the presence of plague circulating in other rodent species in an area. The loss of a prairie dog colony over the course of a few weeks, in absence of human control, strongly indicates the presence of plague.

The Centers for Disease Control and Prevention states that, “The number of human plague infections is low when compared to diseases caused by other agents, yet plague invokes an intense, irrational fear, disproportionate to its transmission potential in the post-antibiotic/vaccination era.” Fears of humans contracting plague from prairie dogs are often exaggerated and sometimes – as is the case here – even used as an excuse for extermination.

The Colorado Department of Health states, “If precautions are taken, the probability of an individual contracting plague, even in an active plague area, is quite low.” Eric Stone, wildlife biologist for The US Fish & Wildlife Service at Rocky Mountain Arsenal National Wildlife Refuge confirms, "Contracting the Plague is very unlikely even if a person is walking through or living near a prairie dog colony. The fleas that carry plague stay in and around the burrows, so as long as a person or their pets are not coming in contact with the fleas, it is unlikely that they will contract plague."

## **Conclusion**

To restate our major requests, we request that you prepare an EIS rather than an EA, allow public comment on the completed EIS prior to a final decision, and adequately analyze cumulative impacts. We request serious consideration and analysis in one or more alternative of the following prairie dog management opportunities: relocate prairie dogs from limited boundary areas to the ferret recovery area, end livestock grazing within boundary areas from which prairie dogs are removed, and close the ferret recovery area to prairie dog shooting. Finally, Defenders of Wildlife is very interested in assisting in any way we can with prairie dog relocation activities to increase colonies within the ferret recovery area.

Thank you for considering our comments.

Sincerely,



Jonathan Proctor  
Great Plains Representative  
Defenders of Wildlife  
[jproctor@defenders.org](mailto:jproctor@defenders.org)  
303-825-0918

On behalf of:

Jeremy Nichols  
Biodiversity Conservation Alliance-Denver Office  
1536 Wynkoop, Suite B501  
Denver, CO 80202  
(303) 454-3370  
[Jeremy@voiceforthewild.org](mailto:Jeremy@voiceforthewild.org)

Lauren McCain  
Forest Guardians  
1536 Wynkoop St., Suite 300  
Denver, CO 80202  
(303) 573-4894  
[lmccain@fguardians.org](mailto:lmccain@fguardians.org)

cc: Gail Kimbell, Regional Forester  
Northern Region  
U.S. Forest Service

cc: Dave Pieper, Forest Supervisor  
Dakota Prairie Grasslands  
U.S. Forest Service

*[Defenders of Wildlife](http://www.defenders.org) is recognized as one of the nation's most progressive advocates for wildlife and its habitat. With more than 490,000 members and supporters, Defenders of Wildlife is an effective leader on endangered species issues. For more information, go to [www.defenders.org](http://www.defenders.org).*

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## Appendix A: Long Range Management Plan prairie dog-related sections

### From Record of Decision:

#### **MA 3.63 – Black-footed Ferret Reintroduction Habitat**

This area is managed to maintain prairie dog complexes and compatible land uses that are established and/or maintained for black-footed ferret reintroduction. The black-footed ferret is one of North America's most endangered species. The ferret is reliant on prairie dogs for food and shelter. In this management area, prairie dog populations are further enhanced by creating habitat conditions conducive to prairie dog expansion, through shooting restrictions, and possibly, by prairie dog relocations. My decision allocates Horse Creek on the Little Missouri National Grassland to this management area. This area was identified as necessary for black-footed ferret recovery, and was determined to be the most appropriate location, through joint field review by the Forest Service and U.S. Fish and Wildlife Service. Oil and gas development can occur with the identified stipulations.

### From LRMP:

#### **Threatened, Endangered, and Proposed Species**

##### **Black-footed Ferret**

23. Prohibit the following activities or land use disturbances within 1/8 mile of all prairie dog colonies occupied or thought to be occupied by black-footed ferrets from March 1 to August 31:

- Construction and reclamation (e.g., roads, trails, pipelines, utilities, water impoundments, oil and gas facilities).
- Mineral material extraction.
- Oil and gas drilling. **Standard**

24. If explosive charges are used for geophysical exploration, maintain a 1/8-mile buffer from prairie dog colonies occupied or thought to be occupied by black-footed ferrets.

##### **Guideline**

25. In prairie dog colonies known or thought to be occupied by ferrets, limit oil and gas development to one location per 160 acres aliquot parts of a section. **Guideline**

26. Where possible, locate all oil and gas facilities outside prairie dog colonies known or thought to be occupied by ferrets. **Guideline**

27. Align new roads to avoid prairie dog colonies. **Guideline**

28. Coordinate with state and federal wildlife agencies regarding black-footed ferret reintroduction as soon as prairie dog complexes reach sufficient size. **Standard**

44. Access to oil and gas facilities for routine maintenance, in prairie dog colonies occupied or thought to be occupied by black-footed ferrets, shall be limited to daylight hours. This does not apply to emergency repairs. **Guideline**

46. Manage for active prairie dog colonies that are larger than 80 acres. **Guideline**

##### **Black-tailed Prairie Dog**

47. Restrict prairie dog shooting where significant risks have been identified for other wildlife species or where shooting is preventing or slowing a desired prairie dog population expansion. Restrictions shall be year-long or seasonal, and dates of seasonal restrictions shall vary depending on the species at risk. Coordinate and consult with the appropriate wildlife agencies prior to implementation of restrictions. **Guideline**

48. Prohibit changes in existing water flow regimes due to oil and gas activities that would flood prairie dog burrows. **Standard**

49. Use livestock grazing and prescribed fire to enhance habitat suitability for prairie dogs where prairie dog expansion is desired. These areas are identified at the project level. **Standard**

50. Manage for low vegetative structure in areas where prairie dog expansion is desired. Emphasize areas adjacent to existing prairie dog colonies as well as at abandoned colony sites. **Standard**

51. Manage for high vegetative structure around prairie dog towns where prairie dog expansion is not desired. Emphasize maintaining high structure between existing prairie dog colonies and private land. **Standard**

1. Require mitigation measures to protect the national grassland resources when animal damage control activities are conducted by other governmental entities. Emphasize public safety; threatened, endangered, and sensitive species conservation; water quality protection, or other resource values. **Standard**

2. Limit the use of rodenticides (grain baits) for reducing prairie dog populations to the following situations:

- Public health and safety risks occur in the immediate area.
- Damage to private and public infrastructure or facilities, such as cemeteries and residences.
- To respond to unwanted prairie dog colonization on land adjoining the national grasslands when consistent with U.S. Fish and Wildlife Service approved, state-wide prairie dog conservation strategies. **Standard**

3. Reduce conflicts with adjacent landowners over prairie dog management through an active landownership adjustment program. **Guideline**

4. Restrict the use of rodenticides (above-ground grain baits) for reducing prairie dog populations outside the period October 1 to December 31 to reduce risks to migratory birds.

**Guideline**

5. Do not use burrow fumigants in prairie dog colonies. **Standard**

3. Consider the following when opportunities to acquire lands occur (Reference 36 CFR 254):

- Lands that include prairie dog colonies or that present opportunities to allow expansion of colonies that already exist on nearby National Forest System lands are a high priority.
- Lands that would reduce conflicts between Forest Service, tribal lands and private landownership objectives, especially when conflicts are adversely impacting National Forest System management. This includes reducing conflicts involving the management of prairie dog colonies along National Forest System lands.

## **BADLANDS GEOGRAPHIC AREA**

### **Little Missouri National Grassland**

#### **Setting**

The Badlands Geographic Area includes approximately 573,700 acres of National Forest System lands of the Little Missouri National Grassland (about 189,900 acres on McKenzie Ranger District and 383,800 acres on the Medora Ranger District).

**Early seral:** This seral condition would most commonly occur in and around prairie dog towns, and in areas of intensive livestock use such as around water developments or concentration areas near fences or natural barriers. This seral condition is important in providing habitat for prairie dogs and low structure obligate species.

Prairie dog colonies provide low structure, as do grassland areas intensively grazed by livestock.

#### **Black-tailed Prairie Dog**

- Establish two or more prairie dog colony complexes within 10 to 15 years. A colony complex is 10 or more colonies with a total combined acreage of at least 1,000 acres. Individual complexes may extend across the adjoining Rolling Prairie geographic area.

#### **Management Indicator Species**

1. Emphasize establishment and expansion of prairie dog complexes in the Indian Creek and Boyce Creek drainages. **Guideline**

## **ROLLING PRAIRIE GEOGRAPHIC AREA**

### **Little Missouri National Grassland**

#### **Setting**

The Rolling Prairie Geographic Area includes approximately 452,600 acres of National Forest System lands on the Little Missouri National Grassland (311,000 acres on the McKenzie Ranger District and 141,600 acres on the Medora Ranger District).

**Early seral:** This seral condition would most commonly occur in and around prairie dog towns, and in areas of intensive livestock use such as around water developments or concentration areas near fences or natural barriers. This seral condition is important in providing habitat for prairie dogs and low structure obligate species. These sites often contain large areas where club moss is a dominant floristic feature.

Prairie dog colonies provide low structure, as do grassland areas intensively grazed by livestock.

#### **Wildlife**

#### **Black-tailed Prairie Dog**

- Establish two or more prairie dog colony complexes within 10 to 15 years. Individual complexes may extend into Theodore Roosevelt National Park or Badlands Geographic Area.

### **Management Indicator Species**

1. Emphasize establishment and expansion of prairie dog complexes in the Horse Creek drainage and in the vicinity of Theodore Roosevelt National Park, South Unit. **Guideline**

### **3.63 BLACK-FOOTED FERRET REINTRODUCTION HABITAT**

The Forest Service, in cooperation with the U.S. Fish and Wildlife Service, actively and intensively manage black-tailed prairie dog colony complexes and intermingled public grasslands for reintroductions of black-footed ferrets.

#### **Desired Conditions**

Prairie dog colony complexes and compatible land uses are established and/or maintained for black-footed ferret reintroductions.

Prairie dog populations are maintained or increased through vegetation management and/or relocation of prairie dogs with consultation with State Game and Fish agencies into suitable habitat.

Plant and animal species and communities associated with black-footed ferrets and black-tailed prairie dogs are actively restored.

The Forest Service works with other agencies and organizations to pursue conservation agreements or easements with adjoining land jurisdictions to achieve black-footed ferret recovery objectives.

In areas where landownership patterns are not conducive to effective prairie dog management, landownership adjustments to achieve more favorable landownership patterns are pursued.

Unwanted impacts to adjoining lands are minimized.

#### **Standards and Guidelines**

##### **General**

1. Allow uses and activities only if they do not degrade the characteristics for which the area was allocated. **Standard**

##### **Mineral and Energy Resources**

1. Allow oil and gas leasing with surface occupancy; however, no ground-disturbing oil and gas activities are permitted if they adversely affect black-footed ferret reintroduction objectives. **Standard**

2. Exploration, development, operation and reclamation activities will be designed to avoid any un-permitted take of black-footed ferrets. **Standard**

3. Once initial ferret releases have occurred, require pre-project ferret surveys prior to development of construction projects. Activities in or near prairie dog colonies occupied or thought to be occupied by black-footed ferrets should occur outside the period March 1 to August 31. If this period cannot be avoided, conduct activities during midday when ferrets are least active. **Guideline**

4. Limit travel for exploration, petroleum operations and service work to daylight hours, except for emergencies or as provided for in the Surface Use Plan of Operations (SUPO). Use the maximum acceptable wellhead servicing interval. **Guideline**
5. Develop an emergency spill prevention containment plan that addresses risks to black-footed ferrets. Design and construct pits with berms to contain leachates, wastes and spills. **Standard**
6. Use pressure detectors to control equipment failures in prairie dog colonies, especially those likely to support female ferrets and litters. **Guideline**
7. Require closed system drilling for all new oil and gas wells within 220 yards of prairie dog colonies thought to have black-footed ferrets. **Standard**
8. Do not allow wastewater discharges in or near prairie dog colonies unless the discharges are treated to remove waste products and verified with testing. **Standard**
9. Vibration seismic exploration is preferred over explosive charge technique for geophysical exploration. If explosive charges are used, maintain a 1/8-mile buffer from prairie dog colonies occupied or thought to be occupied by black-footed ferrets. **Guideline**
10. To extent possible, limit travel to existing roads and align new access roads to avoid prairie dog colonies and colony expansion areas. **Guideline**
11. Based upon pre-project surveys, locate well sites outside prairie dog colonies and immediate colony expansion zones, and consider use of directional drilling if necessary. **Guideline**
12. In areas designated as “no road construction”, do not allow surface occupancy of oil and gas facilities. **Standard**
13. Do not establish pipelines, pump stations, treatment, storage and other support facilities on prairie dog colonies and the immediate expansion zone whenever possible. **Guideline**
14. Bury new power lines that occur within 0.25 mile of prairie dog colonies to avoid creating new raptor hunting perches. **Guideline**
15. *Refer to Chapter 1 (Grassland-wide Direction), Section D, for additional minerals and energy resources direction.*

#### **Livestock Grazing**

1. Use livestock grazing strategies and stocking rates to help achieve desired rates of prairie dog colony establishment and growth. **Guideline**
2. *Refer to Chapter 1 (Grassland-wide Direction), Section L, and Chapter 2 (Geographic Area Direction) for additional livestock management direction.*

#### **Invasive Species**

1. *Refer to Chapter 1 (Grassland-wide Direction), Section J, for additional invasive species direction.*

#### **Fish and Wildlife**

1. Use rodenticides to reduce prairie dog populations only in response to public health and safety risks. Mutual concurrence by the Forest Service and US Fish and Wildlife Service is required on a colony-by-colony basis before authorizing any poisoning. **Standard**
2. Allow relocation of prairie dogs only after consultation with appropriate state and Federal wildlife agencies. **Standard**

#### **Recreation**

1. Restrict shooting in prairie dog colonies unless needed to help reduce unwanted colonization of adjoining lands. Authorize shooting in selected areas only through mutual

concurrence by the Forest Service and U.S. Fish and Wildlife Service. Coordinate and consult with the appropriate state wildlife agency prior to implementation of authorized shooting. **Guideline**

## **6.1 RANGELAND WITH BROAD RESOURCE EMPHASIS**

### **Desired Conditions**

Prairie dog colonies will increase in some areas of the MA.

### *Monitoring and Evaluation 4-7*

**MIS 1:** What is the potential habitat capability for each management indicator species?

High Condition Disparity; Viability, Great Consequences; Key Issue Acres and Distribution of Potential Habitat

A Administrative

Unit wide

Fifteen Years

**Notes:** Management indicator species (MIS) for the Dakota Prairie Grasslands are the black-tailed prairie dog, sage grouse, sharp-tailed grouse, greater prairie chicken, and the western prairie fringed orchid. Determining and identifying potential habitat for each management indicator species is a regulatory requirement under NFMA.

Legal: 36 CFR 219.19(a)(6); 36 CFR 219.20; 36 CFR 219.27(5 and 6); Goal 1.b Objectives 2, 4, & 6

**MIS 2:** What is the current habitat suitability for each management indicator species?

High Condition Disparity; MIS for Key Issue (Grassland Vegetation Conditions)

Current Condition and Trend of Key Habitats for Each Management Indicator Species; Habitat Suitability Evaluation Ratings

A Administrative

Unit wide

Five years

**Notes:** Evaluating the current condition and trend of key habitats for each management indicator species is a regulatory requirement under NFMA

Key Issue; Legal: 36 CFR 219.19(a)(6); 36 CFR 219.20; 36 CFR 219.27(5 and 6); Goal 1.b; Objectives 2, 4 & 6

**MIS 4:** What are the population trends for black-tailed prairie dogs and associated wildlife species, and how have management activities affected this trend?

High Condition Disparity; Viability, Great Consequences; Key Issue Total acreage and number of active vs. inactive colonies

A Geographic

Area

Five Years

**Notes:** The black-tailed prairie dog (BTPD) is a Management Indicator Species and a species at risk. It is assumed that if habitat conditions and populations trends improve for the BTPD, they will also improve for closely associated species, such as burrowing owl.

USDA Departmental Regulation 9500- 4; 36 CFR 219.19 and 219.27(6); Goal 1.b Objective 2

**T&E 1:** To What Extent is the Dakota Prairie Grasslands and its Management Contributing to the Recovery and Viability of Blackfooted Ferrets?

Key Issue (Recovery and viability); Great Consequences Acres of Black-tailed prairie dog, number of Black-footed ferrets released

A Administrative

unit wide

5 years

**Notes:** The black-footed ferret (BFFE) is a species at risk and is currently listed as endangered under the Endangered Species Act. Currently the blackfooted ferret do not occur on the Dakota Prairie Grasslands. Efforts are being made to improve habitat suitability by increasing the numbers of black-tailed prairie dogs, which the ferrets rely on for food and shelter. If sufficient quantity and quality of black-footed ferret habitat is created, black-footed ferrets may be reintroduced by the USFWS.

36 CFR 219.19 and 219.27(6); Goal 1.b

**Viability 3:** To what extent has cooperative agreements and the landownership adjustment program been effective in reducing private land conflicts involving prairie dogs and enhancing long-term opportunities for development of prairie dog colony complexes in the priority National Grassland areas.

Key Issue (Viability and Biological Diversity); Legal Issue; Great Consequences Number of Conflict Situations Resolved; Additional Acres of Potential or Current Prairie Dog Habitat Under Federal Ownership or Cooperative Agreements

A Geographic

Areas

Five years

**Notes:** Landownership adjustments and cooperative agreements provide the key to long-term opportunities for expanding prairie dog populations and for reducing conflicts over prairie dog management.

Legal 36 CFR 219.7(f); Goal 4.b

**Community Relations 4:** To what extent are noxious weeds, invasive species, and animal damage spreading from the National Grasslands to other ownerships or from lands managed by other government agencies to the National Grasslands?

Key Issue; Acres of Noxious weeds spreading too or from other ownerships; Acres of prairie dogs spreading to or from other ownerships; Instances of insect infestations spreading to or from other ownerships.

A Geographic Annually

**Notes:** When unwanted plants and animals spread from NFS lands to other lands this places an economic hardship on the landowner to control the spread which can be a key issue with affected land owners.

## Appendix B: Ecological role of the black-tailed prairie dog

It is hard to overstate the importance of prairie dogs to the ecology of the short and mixed-grass prairie. The role of prairie dogs as a keystone species is now well-established scientifically (Kotliar et al. 1999; Kotliar 2000; Miller et al. 2000). Prairie dogs probably qualify under multiple categories of keystone species—as prey and for their modification of habitat (Mills et al. 1993). The short and mixed-grass prairie areas that prairie dogs inhabit should probably be considered ecosystems unto themselves.

Keystone species enrich ecosystem function uniquely and significantly through their activities, and their impact is larger than predicted relative to their biomass (Paine 1980; Terborgh 1988; Mills et al. 1993; Power et al. 1996; Kotliar et al. 1999; Miller et al. 1998/1999). Kotliar (2000: 1715). Prairie dogs are functionally unique; they perform roles within their ecosystem not performed by other species or processes. The scientific literature is growing that supports the argument that prairie dogs fulfill all the requirements of keystone species (Coppock et al. 1983a, b; Detling and Whicker 1988; Whicker and Detling 1988a, b; 1993; Reading et al. 1989; Society for Conservation Biology 1994; Kotliar et al. 1997; 1999; Wuerthner 1997; American Society of Mammalogists 1998; Kotliar 2000, Miller et al. 2000).

Prairie dog activities and the changes made by these activities create a unique ecological system known as the “prairie dog ecosystem” (Clark et al. 1989; Miller et al. 1996). Over 200 vertebrate species have been observed on prairie dog colonies (Koford 1958; Tyler 1968; Campbell and Clark 1981, Clark et al. 1982; O’Meilia et al. 1982; Agnew et al. 1986; Reading et al. 1989; Sharps and Uresk 1990; Mellink and Madrigal 1993; Hoogland 1995; Barko 1996; Manzano 1996; Ceballos and Pacheco 1997; Ceballos et al. 1999; Kotliar et al. 1999). Some of these species appear to depend on prairie dog colonies for their survival and many appear to benefit, at least seasonally or opportunistically from their existence (Reading et al. 1989; Hoogland 1995; Manzano 1996; Ceballos et al. 1999; Kotliar et al. 1999).

Prairie dogs and other animals inhabiting prairie dog colonies represent a rich prey patch for a large number of predators (Reading et al. 1989; Miller et al. 1996; Plumpton and Anderson 1997; Berry et al. 1998; Kotliar et al. 1999). A variety of predators including prairie rattlesnakes (*Crotalus viridis*), golden eagles (*Aquila chrysaetos*), great horned owls (*Bubo virginianus*), weasels (*Mustela frenata*), bobcats (*Lynx rufus*), coyotes (*Canis latrans*), and others prey on prairie dogs and small mammals that have a higher abundance on prairie dog colonies (Agnew et al. 1986). Some predators, especially black-footed ferrets (*Mustela nigripes*), are completely dependent on prairie dogs (Clark 1989; Miller et al. 1996). Other species, such as badgers (*Taxidea taxus*), swift foxes (*Vulpes velox*), and ferruginous hawks (*Buteo regalis*), benefit substantially from the presence of prairie dogs as prey (Uresk and Sharps 1986; Sharps and Uresk 1990; Allison et al. 1995; Plumpton and Andersen 1997, 1998; Berry et al. 1998; Goodrich and Buskirk 1998).

The benefits of prairie dogs extend well beyond simply being food for predators (Reading et al. 1989; Ceballos et al. 1999; Kotliar et al. 1999). Prairie dogs also substantially alter

their environment. Since prairie dogs excavate more burrows than they regularly utilize<sup>4</sup>, they create hibernacula, dens, and nests for many animals, such as black-footed ferrets, swift fox, badgers, cottontails (*Sylvilagus* spp.), burrowing owls, shrews, other rodents, and several species of reptiles and amphibians (Reading et al. 1989; Sharps and Uresk 1990; Plumpton and Lutz 1993; Fitzgerald et al. 1994; Desmond et al. 1995; Kretzer and Cully 2001). These species and more also use the burrows as refugia from predators or temperature extremes. As a result, researchers have found that desert cottontails (*S. audonbonii*), thirteen-lined ground squirrels (*Spermophilis tridecemlineatus*), and northern grasshopper mice (*Onychomys leucogaster*) exist in higher numbers on prairie dog colonies than in surrounding grasslands (O'Meilie et al. 1982; Agnew et al. 1988; Dano 1952 in Stapp 1998). Similarly, studies in Mexico found higher rodent species richness, density, and diversity, and higher avian species richness on prairie dog colonies compared with surrounding grasslands in Chihuahua, Mexico (Manzano 1996; Ceballos and Pacheco 1997; Ceballos, Pacheco, and List 1999). Most of the research to date has focused on birds and mammals with considerably less research on reptiles and amphibians (but see Kretzer and Cully 2001). Similarly, little is known about prairie invertebrates, yet the burrows in a prairie dog colony should offer habitat advantages to invertebrates as well.

Prairie dogs also have a large effect on vegetation structure, productivity, nutrient cycling, and ecosystem processes (Coppock et al. 1983; Detling and Whicker 1988; Whicker and Detling 1988a, b; 1993; Weltzin et al. 1997a; Stapp 1998). The activities of prairie dogs, especially their grazing and clipping of tall vegetation, result in changes in plant composition (Bonham and Lerwick 1976; Coppock et al. 1983, Detling and Whicker 1988; Whicker and Detling 1988a, b; 1993, Weltzin et al. 1997a; Detling 1998). In general, the vegetation on prairie dog colonies is characterized by lower biomass and a greater preponderance of annual forbs and short grasses compared to tall grasses and shrubs, but is higher in nitrogen content than vegetation from surrounding areas (Bonham and Lerwick 1976; Coppock et al. 1983, Weltzin et al. 1997a; Detling 1998). Prairie dogs negatively impact some plant species, reducing the prevalence and controlling the spread of taller grasses and several shrubs, such as mesquite (*Prosopis* spp.), sagebrush (*Artemisia* spp.), and longleaf jointfir (*Ephedra trifurca*) (Bonham and Lerwick 1976; Coppock et al. 1983; List 1997; Weltzin et al. 1997b). Ironically, prairie dogs are poisoned for livestock interests, but these shrubs reduce grass available for cattle, and mesquite makes roundups more difficult (Miller 1991).

Prairie dog burrowing activities modify ecosystem processes such as water, mineral and nutrient cycling. Prairie dogs turn over approximately 225 kg of soil per burrow system, which translates to several tons of soil per hectare (Whicker and Detling 1993). By mixing in nutrient-rich urine and manure, prairie dog digging can change soil composition, chemistry, and microclimate, facilitate below-ground herbivory, increase porosity of soil to permit deeper penetration of precipitation, and increase the incorporation of organic materials into the soil (Ingham and Detling 1984; Whicker and Detling 1988 a, b; Munn 1993; Outwater 1996). As a result, prairie dog colonies support higher numbers of nematodes and higher levels of soil nitrogen (Ingham and Detling 1984, Detling 1998). All

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<sup>4</sup>Despite the common belief that there are several prairie dogs per burrow entrance, there are actually several burrow entrances per prairie dog (Biggins et al. 1993; Hoogland 1995).

of these processes contribute to aboveground plants with a higher nutritional content, greater digestibility, and a larger live plant to dead plant ratio, creating favorable feeding habitat for other herbivores (Whicker and Detling 1993). Indeed, pronghorn and bison preferentially graze on prairie dog colonies (Coppock et al. 1983; Krueger 1986; Detling and Whicker 1993, Detling 1998). Foraging models predict that bison can gain weight faster by grazing on pastures with prairie dog colonies than on grasslands without prairie dogs (Vanderhyde 1985 in Whicker and Detling 1993).

Kotliar et al. (1999:177) concluded that collectively these functions are large, not wholly duplicated by other species (either in form or extent), and that the loss of prairie dogs would lead to "substantial erosion of biological diversity and landscape heterogeneity across the prairie." They concluded that the prairie dog therefore fulfills the definition of keystone species (see also Kotliar 2000). We agree (see Stapp 1998 for an alternative view). The structure, form, and function of prairie dog colonies provide a keystone role in the prairie, and the role is large. Despite the difficulty in quantifying a role, we contend that existing evidence indicates prairie dogs (and other associated species) provide important prey to predators, and their grazing and burrowing activities modifies the environment in a manner beneficially used by other prairie organisms (Whicker and Detling 1993; Kotliar et al. 1999). Most importantly, those grazing and burrowing activities affect vegetative composition, vegetation quantity and quality, productivity, nutrient cycling, and soil quality (Bonham and Lerwick 1976; Coppock et al. 1983; Detling and Whicker 1988; Whicker and Detling 1988 a, b; 1993). We suggest that these data should guide our policy decisions until future data prove otherwise (i.e., the 'Precautionary Principle'; Johnston et al. 1999; Foster et al. 2000).

## **Appendix C: Impacts of prairie dog shooting**

An environmentally harmful recreational activity that should be prohibited is prairie dog shooting. Prairie dog shooting is legal on the Little Missouri National Grassland.

The environmental impacts of prairie dog shooting are several. Prairie dog shooting significantly reduces black-tailed prairie dog populations and population densities (USFWS 1998a, b). Shooting also alters prairie dog behavior. For instance, Irby and Vosburgh (1994) found that even light shooting has a significant effect on prairie dog behavior, with 42% of prairie dogs retreating to the burrows on a lightly shot colony, contrasted with a 22% retreat rate on unshot colonies, and 55% retreat rate on heavily shot colonies. Further, Irby and Vosburgh (1994) found that prairie dog shooters prefer higher densities of prairie dogs. This causes shooters to spread the pressure of their activity depending on population density, causing uniformity in prairie dog populations across colonies. Biologically, such uniformity is destabilizing to prairie dog populations.

Studies also report that shooting may decrease colony expansion rates (Miller et al. 1993; Reading et al. 1989). One study revealed that a colony in Montana had a 15% annual expansion rate when prairie dogs were not hunted, contrasted with a 3% expansion rate when they were (Miller et al. 1993). This dramatic decrease in rates of expansion represents decreased migration, which constitutes human interference with prairie dog dispersal, which is an integral population dynamic in prairie dogs.

Even without shooting pressure, there is a low survival rate of dispersing males (Garrett and Franklin 1981). In addition, prairie dog dispersal takes place in late spring (Knowles 1985; Garrett and Franklin 1981), which is one of the most popular times of the year for recreational prairie dog shooting. The negative impacts of shooting on prairie dog migration may therefore be considerable.

Shooting impacts may be unpredictable and colony-specific. Knowles and Vosburgh (2001: 7) compared black-tailed prairie dog shooting studies conducted in Montana, and concluded, "Shooting can impact prairie dog populations and ...it is just a matter of the number of hours of shooting effort expended on a colony in relation to the size of the colony that determines the level of impact."

Individual shooters can seriously impact prairie dog colonies. Randall (1976) chronicled the activity of three individual shooters who traveled from Minnesota to shoot white-tailed prairie dogs in Wyoming. In one week they concentrated on seven towns and tallied 1023 kills. This was in 1976; prairie dog shooters are much better equipped today. Jerry Godbey of the U.S. Geological Survey Biological Resources Discipline reported that when he surveyed white-tailed prairie dog towns in Colorado, Utah, and Wyoming in 1997-1998, he found spent shells or dead prairie dogs at "virtually every site" (Jerry Godbey, USGS, personal communication to Erin Robertson, 3 August 2001). Mr. Godbey said that he met one shooter near Delta, Colorado with three rifles who said that he shot white-tailed prairie dogs at least four times a week. This shooter estimated that he used 10,000 rounds per year, with an estimated 95% kill rate. Those figures translate to take of 9500 prairie dogs

annually by a single person. Keffer et al. (2000) found that after they shot 22% of the black-tailed prairie dogs on one colony as part of a controlled shooting study, 69% (212 individuals) of the remaining prairie dogs left the colony. Small colonies may be particularly vulnerable to negative impacts from shooting (Knowles 2002, citing J. Capodice, pers. comm.). Entire colonies can potentially be eliminated from shooting pressure (Knowles 1988; Livieri 1999).

In addition, the threat that shooting poses extends to prairie dog associated species. For example, prairie dog shooting causes a reduction in the prey base. This may affect a broad range of avian and mammalian predators that prey on prairie dogs. The danger here is apparent:

Viable populations of associated species cannot be expected at low prairie dog densities. Based on our observations of other prairie dog complexes in Montana, prairie dog complexes need to be broadly distributed and with relatively high occupancy to assure minimal viable populations of associated species (Knowles and Knowles 1994).

Low population densities result from shooting and will therefore work to the detriment of mammalian and avian prairie dog predators. In addition, there is evidence to suggest that prairie dog shoots result in the harming or killing of non-target species, such as the burrowing owl, ferruginous hawk, and mountain plover, as first-hand accounts indicate that these shoots harm and kill of a variety of wildlife species other than prairie dogs (R. Reading, Denver Zoological Foundation and University of Denver, pers. comm. 2004).

Relatedly, there is growing concern about the effects that spent shells may have on prairie dog predators. A preliminary study on the effects of prairie dog shooting on raptors (Wyoming Cooperative Fish and Wildlife Research Unit 2001) showed that black-tailed prairie dog towns on Thunder Basin National Grassland that were shot were visited by raptors an average of 2.42 times per hour, while towns that were not shot were visited an average of 0.5 times per hour. Blood samples taken from burrowing owls on a town where shooting occurred showed elevated lead levels. Knowles and Vosburgh (2001: 15-16) also raise this issue:

Fragments of lead ingested by raptors when scavenging shot prairie dog carcasses have the potential to kill or severely disable raptors. Burrowing owls are reported to scavenge poisoned prairie dogs (Butts 1973) and would also be expected to feed on prairie dogs killed by recreational shooting. Ferruginous hawks and golden eagles are 2 other raptors known to scavenge on dead prairie dogs. Shooting in some areas has been sufficiently intense during the past decade to literally put millions of pieces of lead on the ground. It is unknown if passerine birds are picking up pieces of this toxic heavy metal. Mortalities in mourning [sic] doves have been noted with ingestion of only 2 lead pellets. Ingestion of lead is a known significant problem for birds (Lewis and Ledger 1968 and Wiemyer et al. 1988).

On his Moreno Valley (NM) study site, Cully (1986: 2) noted that, “One of the major sources of recreation for the residents of the area is shooting prairie dogs, a practice that may contribute to the attraction of raptors to the valley.” He suspected many of the area raptors were primarily subsisting on shot prairie dogs. To the extent shooters were using lead shot – which is extremely likely – those raptors were being exposed to lead poisoning.

While some of the above studies pertain to white-tailed and Gunnison’s prairie dogs, the cited biological impacts - reduced populations and population densities, altered behavior, potential colony extirpation, and impacts on associated wildlife – would reasonably extend to black-tailed prairie dogs.